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Green Bonds: What's New, What's Next and Why Does it Matter?

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Summary

Green bonds are a newly labeled asset class created to “help mobilize private sector financing for sound climate- and environmentally-sustainable investments and help enhance transparency of environmental finance.”¹

Although green bonds are a new asset class, they are not a new financing mechanism. That is, they are debt instruments differentiated from other debt instruments by virtue of their targeted uses of proceeds and not by their financial architecture.

Green bonds are only meaningful to the extent that they represent environmentally beneficial activity, but there is no single definition of a green bond and, in fact, a green bond can be self-declared by the issuer. But because the green bond market is driven in large part by investor interest in supporting environmental solutions, there is great demand for transparency with regard to intended and actual uses of bond proceeds, and certain standards, definitions and processes have gained widespread acceptance in the market place.

The issuance of green bonds is growing very rapidly, though it is still a small portion of the overall debt market. Global sales of labeled green bonds totaled \$161 billion (\$US) in 2017, up from \$81 billion in 2016, \$41.8 billion in 2015, and \$2.6 billion in 2012.² The worldwide debt securities market included bond sales of \$21 trillion in 2016,³ putting green bonds below one percent of the total.

Growth in the market includes growing diversification of issuers, uses and geography:

- Green bond issuers were largely confined to multilateral development banks through 2012. Issuers now include commercial banks, industrial corporations, real estate entities, government-affiliated entities, such as transportation and water authorities, and governments, with green bonds increasingly seen as an instrument of policy.
- While renewable energy projects remain the most prevalent use, they were down to 33% of green bond proceeds in 2017, followed by energy efficiency projects for buildings and industry (29%), low carbon transport (15%) and sustainable water projects (13%).⁴
- In 2012, green bond issues were originated in 6 countries; in 2017, 37 countries.⁵

Coupled with investor demand, continued growth in the green bond market is fueled by countries' desires to meet their Nationally Determined Contributions (NDCs) toward 2015 Paris Agreement carbon reduction targets, the interests of states and localities to make local environments cleaner, as well as various corporate interests. Corporate use of green bonds is largely driven by demand for renewables, energy efficiency installations by energy companies and property owners, and by corporations such as Apple, Toyota and Unilever choosing green strategies in products, manufacturing and/or other operational processes. Green bond financing is one method companies use to highlight these activities to the public.

As a related matter, it is notable that assets under management in the U.S. with environmental, social and governance (ESG) goals grew nearly six-fold from 2012 to 2016 and now exceed \$8 trillion.⁶ This explosive growth, mirrored internationally, is a significant statement of investors' values and preferences. As such, it is likely a factor not simply in the decisions of corporations and units of government to issue green bonds for qualifying activities, but also, and far more importantly, to adopt more and more practices that merit a green label. And this is likely to continue to grow as more and more people – as consumers, investors, and citizens – make their preferences clear.

¹ African Development Bank, et. al.; Joint communication on a revised proposal for Green Bond impact reporting harmonization; December 2, 2015

² Climate Bonds Initiative (CBI); Green Bonds Market Summary Q1 2018; April 2018; Green Bond Highlights 2016; Jan 2017; 2015 Green Market Roundup; undated. Please note that the \$161 billion figure for 2017 excludes certain labeled green bonds that do not meet green bond standards, as judged by the CBI. Measurement of green bond activity tends to vary somewhat from source to source, based on differing standards of “green.”

³ Securities Industry and Financial Markets Association (SIFMA); 2017 Fact Book

⁴ CBI; Green Bond Market Highlights 2017

⁵ Environmental Finance; The Green Bond Database

⁶ The Forum on Sustainable and Responsible Investing; Report on US Sustainable, Responsible and Impact Investing Trends, 11th Edition, 2016

Background

The first labeled green bonds date to 2007 and 2008 when, in response to investor desire to support environmentally beneficial projects, the European Investment Bank and the World Bank structured bonds whose proceeds solely supported such projects.⁷ That is, rather than issue bonds to fund a variety of projects without specific reference to environmental impact, they instead segregated environmentally beneficial projects into issues that could then be labeled green.

From a financial standpoint, green bonds are the same as other project-oriented bonds. That is, just like any bond financing, green bonds can be secured by, for example:

- The general credit strength of the issuing entity;
- Solely the specific project or projects financed by the specific bond issue; or
- A specific and dedicated revenue source, such a certain tax or fee.

To date, the vast majority of green bonds have been investment grade instruments,⁸ structured for purchase by the broadest possible investor market and not geared solely for environmental or social benefit funds.

The figures cited above on the green bond market's growth are based on bonds that are specifically labeled as green.⁹ The growth is impressive and an important marker of investor preferences and issuers' responses to environmental challenges, but it needs to be understood as an indicator rather than an accurate measure of new, additional or total debt-financed green activity. This is for several reasons:

- Many green uses are financed with bonds not labeled green. Tesla, for instance, and other "pure play" entities sometimes choose to issue without a specific green label.¹⁰ Green projects can also be included within issues that fund a variety of uses. The World Bank, for instance, has noted that its labeled green bonds, where 100% of the proceeds go towards green uses, represent only about one-quarter of its commitments with climate benefits.¹¹
- There is no single definition of green, and opinions can differ on whether certain labeled green bonds are, in fact, green. This can be technical and around the edges, such as whether or not an issuer's reporting meets accepted verification standards, or more basic, as in the case of China's green bond standards, which include coal-fueled uses. To give a sense of scale, the Climate Bond Initiative's \$161 billion green bond total for 2017 excludes \$22.5 billion in labeled green bonds that the CBI, upon examination, decided did not adequately meet standards.¹²
- Many of the uses of green bond proceeds, such as clean water projects, are not new. Instead, they are newly categorized and labeled as green.
- Green bonds can be used to refinance an existing project.

To put it another way, the lack of a green label doesn't mean a funded activity isn't green, and the presence of a green label doesn't necessarily mean an activity is new or additional, and it may not even mean the activity meets a widely accepted definition of green. So it is hard to measure how big the market of bonds supporting green activities actually is and the degree to which its growth represents new environmentally beneficial activity.

These caveats may become less relevant as the market for labeled green bonds gets larger, particularly to the extent that market growth is fueled by projects in China, India and emerging

⁷ The World Bank; What are Green Bonds; 2015

⁸ Moody's puts the figure at 98.6% investment grade for 2016 and 93.9% for 2017 through three quarters. Moody's Investor Service; Moody's: Global green bond issuance in 2017 eclipses 2016 record; Nov 9, 2017

⁹ Volume figures in this paper are as reported by the Climate Bonds Initiative (CBI). Other organizations tracking green bond issuance include Environmental Finance, Bloomberg, and Moody's. Their figures differ somewhat, typically based on technical interpretations of issuers' compliance with green bond standards.

¹⁰ Chasen, Emily; Tesla Skipping Green Bond Label Keeps Fledgling Market Limited; Bloomberg; Aug 16, 2017

¹¹ The World Bank Green Bond Impact Report; June 2015

¹² Of the total exclusions, \$14 billion were Chinese bonds that did not CBI green standards. CBI; Green Bond Highlights 2017; January 2018

markets where environmental benefit may be a new national priority and virtually every new appropriately labeled green financing can make an environmental contribution. The CBI estimates the climate-aligned bond market, labeled green and otherwise, at nearly \$900 billion in bonds outstanding as of September 2017, of which \$221 billion were labeled green.¹³

What is New About Green Bonds?

The advent of green bonds triggered a certain level of head scratching on Wall Street, with many wondering why the fuss given the absence of any financial innovation. Even when the proceeds are used to fund some kind of new environmental solution, for instance, the same can be done with non-green bonds, as in the Tesla example cited above. One columnist neatly summarized the skeptics' view: "Trendy green bonds offer little beyond feel-good vibes..."¹⁴

But it has become very clear that the green bond concept speaks very powerfully to the preferences of a large and growing body of investors. This suggests a marketing advantage to green bonds that is more than just a "feel-good vibe." Beyond claiming a green aura, properly labeled green bonds represent something real: actual environmental benefit and the information needed to verify that accomplishment. And this gets to what is new about green bonds and what they contribute towards environmental solutions. They:

- Bundle uses of funds into solely environmentally-friendly purposes, and
- Use transparency protocols related to green uses (discussed further below), which may include pre-issuance disclosures, an environmental opinion from an outside party, and a compliance protocol.

That is, in an investment market exploding with interest in supporting environmentally sustainable projects, properly labeled green bonds provide the green uses and information to prove it. This is hugely valuable not only to investors, but also to the companies, countries, states and localities that want to make and demonstrate verifiable progress towards environmental goals.

The bundling of green uses helps not only those who want to support environmentally-friendly endeavors, but also those who additionally want to diversify their portfolios, including hedging against assets that are vulnerable to climate change. Per one estimate, as much as 55% of pension fund investments are exposed to climate risks.¹⁵ Similarly, the European Union's High-Level Expert Group on Sustainable Finance (HLEG) reports institutional investor equity assets at 45% in carbon-intensive sectors and less than 1% in green infrastructure assets.¹⁶

Although the uses of green bonds are not necessarily new, particularly in developed markets, the label lends "visibility to projects that might otherwise fly under the public's radar",¹⁷ and there is value in public awareness of environmental progress.

For instance, water districts in the United States have been issuing bonds for clean water projects for decades. In 2014, the Washington, DC Water and Sewer Authority (DC Water) issued \$350 million in green bonds for a clean water project, and the project received a certain level of public notice as a "first green bond" in several categories, such as the first green century bond and the first green bond for clean rivers.¹⁸ In the past, this bond issue would have been categorized as a "water bond," part of a large and mature market that tends not to get much press, no matter how important or environmentally beneficial the financed water projects might be. Similarly, the market for financing energy efficiency projects pre-dates green bonds, but this type of project is a core recipient of green bond proceeds.

Issuers – the users of green bond proceeds – see advantage to the green label. Looking again at

¹³ CBI; Bonds and Climate Change; Sept 2017

¹⁴ Amante, Maria; Trendy Green Bonds Offer Little Beyond Feel-Good Vibes For Issuers, Investors; Forbes; Feb 9, 2018

¹⁵ The Economist 7/5/2014 – Green Grow the Markets, O; The World Bank; What are Green Bonds?

¹⁶ High-Level Expert Group on Sustainable Finance; Financing a Sustainable European Economy Interim Report; July 2017

¹⁷ DiStasio, Cat; MTA offers its first-ever green bonds to people who want to invest in the planet; Inhabitat.com; 02/16/16

¹⁸ Cherney, Mike; D.C. Water Authority to Issue 100-Year 'Green Bond'; Wall Street Journal; July 2, 2014; Goldman Sachs website (<http://www.goldmansachs.com/who-we-are/progress/dc-water/index.html>)

the DC Water example:

"It is a way to identify to the investor community who you are and what you do," said George Hawkins, general manager of [DC Water]. It helps municipalities attract a new cadre of investors who might otherwise ignore a water infrastructure bond program. Hawkins's team made a 100-year taxable green bond offering ... and within a few hours on the first day of sale, they had \$1.1 billion in buy-orders, with \$116 million from socially responsible funds that only invest in green initiatives. The huge level of interest allowed DC Water to extend the initial offering from \$300 to \$350 million and to lower their interest rate by 15 basis points, which saved rate payers \$9 million. "It eclipsed all of our best case scenarios," Hawkins said.¹⁹

While it is impossible to prove that the green label made any difference in the success of the DC Water bond sale -- under favorable market conditions, any bond issue can be expanded in size and the interest rate lowered -- it is clear that the market finds the new label useful. In the words of the Investor Network on Climate Risk, green bonds "enable investors to incorporate environmental objectives into their investment strategies and, as such, are likely to attract increased investor interest."²⁰

How Do We Know They are Green?

Although any issuer can call its bond issue green, once the universe of issuers moved beyond quasi-public development banks in 2013 to include private companies, the investment market responded rapidly to protect the integrity of the asset class by establishing standards.

The standards, although voluntary, appear to be effective. Investors, who want to be confident that their green preferences are met, predominantly invest through major funds such as public employee retirement systems and money management firms with large and capable research departments. Others in the market -- issuers and underwriters -- want to accommodate investor demand by adhering to verifiable green bond standards.

Similarly, adherence to green bond standards enables companies, and now countries, to make investments that credibly demonstrate progress towards carbon reduction and other climate goals.

There are currently two sets of widely-accepted standards. Others have been developed, and yet more are in development, including country-specific standards. Some are designed to compliment each other, though there is concern of standards proliferation, as has occurred in other areas of green finance.²¹

The two now most widely in use appear to be:

- Green Bond Principles (GBP), promulgated under the auspices of the International Capital Markets Association (ICMA), a trade association of major lenders, investors, law firms and others involved in the capital markets; and
- Climate Bonds Standards, promulgated by the Climate Bonds Initiative (CBI), a London-based non-profit.

The GBP, described in more detail below, focus on transparency, so the investor community can make an informed judgment as to a particular green bond's environmental bona fides and impact. The GBP establish guidelines on the types of projects they seek to encourage, set forth a set of processes, including disclosure, and recommend that green bond issuers get an outside opinion as to whether the issuer has complied with the GBP.

¹⁹ Gale, Sarah Fister; Green Bonds: Are Your Projects A Good Fit?; Waterworld.com; undated

²⁰ Ceres Investor Network on Climate Risk; A Statement of Investor Expectations for the Green Bond Market; Feb 10, 2015

²¹ Roumpis, Nick; EIB and China working on "Rosetta Stone" of Green Finance; Environmental Finance; Nov13, 2017; Hurley, Michael; Proliferation of Standards is Impediment to Green Bond Market, says EIB; Environmental Finance; Oct 30, 2017

The CBI expects an issuer to follow the GBP transparency processes and additionally sets specific performance standards that funded projects must meet to be “Climate Bond Certified.” CBI has established or is completing standards for water, solar, wind, geothermal, marine renewable energy, low carbon buildings, low carbon transport, bioenergy, and projects related to land use, including agriculture and forestry.²²

The GBP processes and the CBI performance standards set a frame of reference that financial regulators in many countries are using for additional sets of criteria. For instance, regulators in China and India have set criteria for issues from their markets in connection with their national strategies to reach NDCs associated with the COP21 agreements.²³

China’s standards set expectations with regard to transparency in the offering documents as well as segregation, tracking and reporting on use of proceeds. The standards encourage third party assessments.²⁴ China also established categories of projects eligible for green bond status.²⁵ Reflecting the relative nature of environmental benefit, China’s definition of green includes not only renewable energy, clean transport and other expected categories, but also cleaner coal standards. The GBP and CBI exclude any coal uses, and an effort is under way to harmonize China’s standards with those of the West.²⁶ The CBI excluded about 40% of China’s 2017 green bonds from its reported totals for the year.²⁷

India’s standards, updated in 2017 by the Securities and Exchange Board of India (SEBI), follow the GBP, including eligible project categories, disclosure of the use of proceeds and projects financed, as well as procedures used for tracking the use of proceeds.²⁸

Moody’s has established a set of standards to assess an issuer’s ability to manage the proceeds effectively and accomplish its green goals. In establishing its Green Bond Assessment criteria, which result in a GB1 (Excellent) through GB5 (Poor) grade, Moody’s cites the voluntary nature of the GBP and “variations around the interpretation and application” of the GBP.²⁹

Although the various standards appear to be working together reasonably well, Moody’s may see an opportunity in the proliferation for its assessment to act as an overlay that creates the transparency the market will require, much as its ratings do for the myriad credits seeking market access.

At the moment, the GBP appear to be the most widely recognized and replicated standards, and they are described here in more detail.

An Executive Committee, composed of equal numbers of major international investors, issuers and underwriters, oversees the GBP. Members currently include BlackRock, TIAA-Investments, The World Bank, Bank of China, HSBC and Bank of America Merrill Lynch.

The initial GBP standards were issued in 2014, with updates since then designed to protect the integrity of the market. Updates have included more specificity on expected environmental benefits and more specificity on expected disclosure, including suggested templates.³⁰

The GBP defines green bonds as any bond instrument whose proceeds are used “exclusively” to finance or re-finance projects providing “clear environmental benefits, which will be assessed and, where feasible, quantified by the issuer”³¹ and that follow GBP transparency processes. The GBP are clear that the activities must be fully disclosed so as to enable investors to make their own determinations as to how green the financed activities may be. In addition, the GBP provides clear

²² CBI website

²³ Robinson-Tillett, Sophie; Setting the Standard; Environmental Finance; Mar 30, 2016

²⁴ The People’s Bank of China Announcement No. 39 [2015]; Dec 15, 2015

²⁵ Green Finance Committee of China Society of Finance and Banking; Preparation Instructions on Green Bond Endorsed Project Catalogue (2015 Edition); Oct 2015

²⁶ European Investment Bank & Green Finance Committee of China Society for Finance and Banking; The Need for a Common Language in Green Finance; Nov 11, 2017

²⁷ CBI; Green Bond Highlights 2017; Jan 2018

²⁸ Securities and Exchange Board of India; Disclosure Requirements for Issuance and Listing of Green Debt Securities; May 30, 2017

²⁹ Moody’s Investor Service; Green Bonds Assessment; Mar 30, 2016

³⁰ ICMA; The Green Bond Principles; 2014, 2015, 2016 and 2017 editions

³¹ ICMA; The Green Bond Principles; 2017 edition

guidance on the types of projects they anticipate promoting, called “Green Projects,” including those addressing “climate change, natural resources depletion, loss of biodiversity and air, water or soil pollution.”³² Specifically listed project categories are:

- Renewable energy
- Energy efficiency
- Pollution prevention and control (including emissions reductions and waste management)
- Sustainable land use and living natural resource management (including sustainable forestry, agriculture and fisheries)
- Biodiversity conservation
- Clean transportation
- Sustainable water management (including clean and/or drinking water)
- Climate change adaptation
- Circular economy adapted products
- Green buildings³³

The GBP transparency processes, all to be clearly described in the bond offering documents, cover:

- The project selection process, including criteria for determining how the projects to be funded fit the Green Projects criteria and what the project’s environmental sustainability goals are;
- Management of bond proceeds to track their use for eligible Green Project uses; and
- Reporting, where the GBP recommend an annual process detailing use of funds and environmental benefit.

Finally, the GBP recommend the use of outside assurances – such as a second opinion at the time of issuance as to whether the financing has in fact complied with the GBP. Given that any issuer can call its bonds “green,” and the term has no formal legal definition, a second opinion by a reputable organization creates credibility and lends value. It should be noted that the opinions carry no guarantee that the proceeds will ultimately be used for green purposes, and some issuers have used audits to verify and demonstrate that the funds were used as promised. About 70% of total green bond issuance to date has incorporated some form of external review.³⁴

Organizations providing ‘green opinions’ include Deloitte and other major accounting firms, as well as specialized firms such as Sustainalytics. The opinions generally follow the GBP and include descriptions of:

- Intended use of proceeds;
- Internal processes used to vet projects;
- Compliance and reporting processes and procedures; and
- A concluding opinion based on the information above.

CICERO (the Centre for International Climate and Environmental Research - Oslo), an academic consortium based in Oslo, which describes itself as “the world’s biggest provider of second opinions of green bonds,”³⁵ has introduced a “Shades of Green” methodology to enable some comparison of the relative environmental benefit from one green bond to the next (i.e., “how green is green”). The three-level methodology includes:

- Dark green, for projects implementing a 2050 climate solution today, such as solar or wind renewable energy;
- Medium green, for projects on the way to a 2050 climate solution, such as “sustainable buildings” with good energy efficiency ratings; and

³² *ibid*

³³ *ibid*

³⁴ CBI; Green Bonds Market Summary Q1 2018; April 2018. In Q1 2018, 87% of issues had some form of external review.

³⁵ Clapp, Christa and Torvanger, Asbjorn; CICERO Grades Climate-Friendly Bonds with Shades of Green; CICERO website; April 30, 2015

- Light green, for projects providing short-term gains but not a long-term climate solution, such as energy efficiencies that reduce GHG emissions but do not shift away from a fossil fuel-based economy.³⁶

Examples of Green Bond Financings

Since the inaugural green bonds issued by the European Investment Bank and the World Bank in 2007 and 2008, green bonds have diversified in many ways:

- The types of bonds now include not only standard recourse-to-issuer general obligation debt, but also revenue bonds, project bonds, and securitizations backed by a variety of asset types. 2017 saw the first green sukuk, a bond-like instrument that conforms with Islamic proscriptions against charging interest.³⁷
- From the multilateral development banks, issuers have diversified to industrial corporations, commercial banks, quasi-public agencies and all levels of government, including country-level sovereign bonds. In 2017, there were 239 different issuers, and to date, issuers have come from 47 countries on 6 continents.³⁸
- The World Bank's initial green bonds funded renewable and energy efficiency projects,³⁹ and these remain leading uses. Additional uses by the various issuers have proliferated, as listed above, including transport, clean water, green buildings, and more.

Corporate use of green bonds is largely associated with the development of renewable sources and energy efficiency projects. Examples include:

- Apple issued \$1.5 billion in green bonds in 2016 followed by an additional \$1.0 billion in 2017 to fund a series of projects to help the company reach its goal of 100% renewable-powered operations. An Apple official stated that the firm decided to issue green bonds in the wake of the December 2015 Paris climate summit, at which many corporations pledged to combat climate change.⁴⁰
- TenneT, a Dutch grid operator, has raised €5.0 billion in multiple green issues to develop grid connections for renewable energy, such as wind farms off the shore of Germany.⁴¹
- Solar City (now merged into Tesla Energy), an American solar power system provider, has sold several dozen issues to fund corporate expansion (i.e., the ability to provide more rooftop solar power systems). It is an example of a smaller pure play that typically did not get a second opinion.⁴²
- Unilever, in 2014, issued £250 million to fund multiple projects designed to reduce GHG emissions, water usage and waste generation by 50% in new factories and 30% in retrofitted factories.⁴³

The examples below give a sense of green bond uses by public agencies in the United States:

- Fannie Mae was the largest green bond issuer in the world in 2017 with over \$27 billion in green mortgage-backed securities. The financings cover multifamily residential buildings that receive green building certifications, such as LEED or Energy Star, or which include

³⁶ *ibid*

³⁷ CBI; Green Bond Highlights 2017; Jan 2018

³⁸ CBI; Green Bond Highlights 2017; Jan 2018; CBI; Green Bonds Market Summary Q1 2018; April 2018; Environmental Finance; Green Bonds Review of 2017

³⁹ The World Bank; Green Bond Investor Update; 2009

⁴⁰ Volcovici, Valerie; Apple Issues \$1.5 Billion in Green Bonds in First Sale; Reuters; Feb 17, 2016; Webb, Alex; Apple Issues a Second Green Bond to Finance Clean Energy; Bloomberg; June 13, 2017

⁴¹ CBI website, Labelled Green Bonds Data; Environmental Finance; Bond of the Year - Corporate: TenneT; May 3, 2016

⁴² Martin, Christopher; Solar City to Offer \$200 Million Retail Green Bonds Online; Bloomberg; Oct 15, 2014; CBI green bond database

⁴³ Unilever website; Unilever Issues First Ever Green Sustainability Bond; Mar 19, 2014

improvements designed to reduce energy or water use by at least 20%.⁴⁴

- The New York Metropolitan Transportation Authority (MTA) was the biggest municipal green bond issuer in the U.S. in both 2016 and 2017, with over \$5 billion issued in total. Its initial issue of \$783 million, to support system upgrades for the subways and commuter rail systems serving New York City, was originally sized at \$500 million and was increased due to favorable demand and pricing. The MTA bonds' uses meet the CBI's Low Carbon Transport Standards, and the bonds are Climate Bond Certified by CBI.⁴⁵
- Massachusetts, in 2013, issued \$100 million in green bonds for a series of uses, including clean water, energy efficiency in State buildings, and open space protection. The issue did not have a second opinion and the proceeds were not fully directed to green uses. This is an example of a self-declared green bond that pre-dates the GBP and, although praised by environmentalists, does not meet current green bond standards.⁴⁶
- Like DC Water, discussed above, Spokane, Cleveland and St. Paul are among the cities that have issued green bonds to fund clean water projects.

Sovereign debt is a major factor in world capital markets, but a new entrant to the green bond market. Its introduction signals the importance of environmental factors in national policy, including commitments to meet NDCs, and is also an important milestone in the development of the green bond market. Sovereign issuers include:

- Poland issued the first sovereign green bonds, €750 million in late 2016, and followed it with €1.75 billion in 2018. The Polish issues raise a central debate -- can a brown issuer do a green project? Poland will use its green bond proceeds for GBP eligible uses, including renewable energy, clean transport and forestation, and received a positive second opinion from Sustainalytics. Per the World Health Organization, Poland is home to 33 of the 50 most polluted cities in Europe, in part due to the country's dependence on coal, which fuels 80% of its electricity. The coal industry is a major employer in Poland, and coal is seen as a national security hedge against Russian gas. In December 2017, the new Polish government reaffirmed its commitment to coal as the nation's primary source of energy and announced plans for two new coal mines.⁴⁷
- France was the second sovereign issuer, issuing a total of €9.7 billion in 2017. A second opinion confirmed that the uses and management conform with the GBP and support various of the UN Development Goals, including affordable and clean energy, sustainable cities and communities, and climate action.⁴⁸
- Fiji, which includes 300 islands, issued the first emerging market sovereign green bonds. The \$50 million issue, in 2017, supports climate resilience projects, including support towards its goal of 100% renewable energy by 2030. The World Bank provided technical assistance on the issue, and Sustainalytics a second opinion.⁴⁹

Nigeria, Belgium, and Indonesia have also issued sovereign green bonds, and a series of other countries have sovereign issues in the works.⁵⁰

⁴⁴ Jones, Alicia; Fannie Mae Wins Recognition as Largest Issuer of Green Bond by the Climate Bonds Initiative; FNMA website; Mar 20, 2018

⁴⁵ Metropolitan Transportation Agency (MTA) website. MTA to Issue Its First 'Green Bonds'; Feb 10, 2016; Environmental Finance; Bond of the Year – Municipality: MTA; Mar 28, 2018

⁴⁶ Kidney, Sean; Massachusetts to issue AA+ \$100m Green Bond on 4 June; CBI Blog; May 23, 2013

⁴⁷ Allen, Kate and Shotter, James; Environmental qualms cloud Poland's green bond sale; Financial Times; Feb 5, 2018; Kidney, Sean; Poland wins race to issue first green sovereign bond. A new era for Polish climate policy? CBI website; Dec 15, 2016; Sustainalytics; Republic of Poland Green Bond Framework Second Party Opinion; Dec 5, 2016; The Economist; Why 33 of the 50 most-polluted towns in Europe are in Poland; Jan 18, 2018; Nabrdalik, Maciek and Santora, Marc; Coal Warms Poland's Hearths, and Fouls Its Skies; New York Times; Apr 23, 2018

⁴⁸ Vigeo Eiris; Second Party Opinion on the Sustainability of the French Republic's Green OAT; Jan 2017

⁴⁹ World Bank press release; Fiji Issues First Developing Country Green Bond, Raising \$50 Million for Climate Resilience; October 17, 2017

⁵⁰ CBI; Green Bond Highlights 2017; Jan 2018; CBI; Green Bonds Market Summary Q1 2018; April 2018

Impact of Green Bond-funded Initiatives

As with other aspects of the green bond market, impact measurement is undergoing rapid changes towards transparency and standardization. The earliest impact reports, if they existed, were simple descriptions of projects, whereas more recent reports are more data-oriented.

There is no aggregate data on green bond impact, and it appears that there are so many methodological and other differences that reliable aggregate data will not be available for some time. Comparative data can present similar problems.

In December 2015, a group of 11 multilateral development banks active in the green bond market (The World Bank and others) released a proposal for more standardized reporting, which they termed a “Harmonized Framework.”⁵¹ The statement, though couched in the passive and conditional language sometimes needed to achieve widespread agreement, nonetheless presents a clear set of core impact reporting principles, along with suggested reporting templates. The principles, which focus on renewable energy and energy efficiency projects, are consistent with the GBP and include recommendations for:

- Formal processes for allocating funds to their declared green projects;
- Annual reporting on use of proceeds, and expected and actual environmental impact; and
- Use of a limited set of core indicators to facilitate comparisons, including GHG emissions reduced or avoided, energy savings and renewable energy produced.

As an example of one hurdle to standardized and aggregated impact reporting, the statement recognizes the absence of a universal standard for the calculation of GHG emissions reduced/avoided and recommends that issuers make their assumptions and methodologies clear.

Since the 2015 Framework, a GBP Impact Reporting Working Group has additionally released suggested metrics for sustainable water and wastewater management projects (June 2017) and for sustainable waste management and resource-efficiency projects (February 2018).⁵²

The multilateral development banks are seen as best practice leaders in many areas of green finance, including reporting, and the International Finance Corporation (IFC) provides a good example of the direction of impact reporting, with increasingly detailed annual reports. Its 2014 report, which was its first, was predominantly a set of project descriptions, with some estimates of energy production. Its 2015 Green Bond Impact Report states, “Total GHG reductions reached almost 2.5 million tons of CO₂e[.] [T]hat is equivalent of taking around 500,000 cars off the road or carbon sequestered by 2 million acres of U.S. forest in one year. Annual renewable energy generation of 3.5 million MWh is sufficient to supply over 300,000 U.S. homes with electricity.”⁵³ The report backs those totals with detailed lists of projects with individual impact estimates.

The IFC is in many ways a green bond leader. It started its green bond program in 2010 and is a member of the GBP Executive Committee.⁵⁴ In November 2015, it released CICERO’s “Second Opinion” of its Green Bond program. CICERO noted IFC’s focus on GHG reductions and gave IFC’s program a “medium green” shading.⁵⁵

One IFC project demonstrates the many difficulties of defining “green” and reporting overall green impacts accurately in situations where environmental priorities are in conflict with each other. The project is the green bond financing of a hydroelectric dam on the Reventazón River in Costa Rica. The Reventazón hydroelectric dam project is projected to generate 10% of the energy produced in Costa Rica and decrease carbon emissions by displacing fossil fuel power generation.⁵⁶ The IFC impact report, from 2014, does not include an estimate of GHG reduction/avoidance. At the same time, the project is classified, based on its Environmental Assessment, as a project likely to cause

⁵¹ African Development Bank, et. al.; Green Bonds - Working Towards a Harmonized Framework for Impact Reporting; December 2015

⁵² ICMA website; Green Bond Principles, Impact Reporting

⁵³ IFC; Green Bond Impact Report FY 2015.

⁵⁴ IFC website; Overview of IFC’s Green Bonds

⁵⁵ CICERO; ‘Second Opinion’ on IFC’s Green Bond Framework; Nov 23, 2015

⁵⁶ IFC; Green Bond Stories of Impact; circa 2015 (undated)

the highest level of environmental damage. Specifically, “it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented”⁵⁷ because of the “potential significant and irreversible impacts on the Mesoamerican biological corridor which is considered critical habitat, the ecological integrity of the Reventazón River, and on the complex and ecologically sensitive downstream ... hydro-biological system.”⁵⁸

The CBI has found much room for improvement in reporting by green bond issuers. It looked at reporting practices of 146 issuers (other than multilateral development banks, which were excluded because they all report in reasonable detail) and found that 74% provided post-issuance reports on use of proceeds. The 74% reporting accounted for 88% of the bond value, meaning that those not reporting tend to be the smaller issuers. Post-issuance reporting is lower where the green bond is an asset-backed security (ABS). An ABS is typically a refinancing, with proceeds fully spent at closing and no new information to report thereafter. Certain of the corporate issues are private placements, where post issuance reporting is not publicly available. Of those reporting, 38% provided information on impacts (based on data from 4 years), with the percentage rising each year. CBI found that impact reporting could be improved with better baseline data and provides several best practice examples. It makes a series of recommendations, including more standardization of measures.⁵⁹

Green Bonds’ Financial Performance

Given all of the investor interest, green bond issuers and market watchers are constantly on the lookout for a green bond premium – a “greenium” -- with investors willing to pay more and accept a lower yield in return for making a green investment.

Most data suggests that there is no greenium, with green bonds performing similarly to comparably rated non-green bonds. This makes sense, since green bonds are differentiated from other bonds by virtue of the uses of proceeds and not by credit strength or financial structure. It is reasonable to assume, for instance, that there would be no difference in performance between an Apple green bond and an Apple non-green bond, with each an equal obligation of Apple.

Nonetheless, there are reasons why there could be a pricing differential. Most particularly, it is possible that demand for green bonds could simply outstrip supply or has at certain times, as more and more investors put more and more money into ESG-oriented funds, and the funds pay up to meet their mandate. And there have been reports from time to time of the emergence of a greenium.⁶⁰ The general consensus, however, is that green bonds price with the broader market, at least to date.

The CBI and the International Finance Corporation (IFC) are jointly conducting a continuing study of green bond performance, with four reports to date covering bonds issued in 2016 and 2017.

Findings thus far include:

- In the primary market, green bonds performed comparably to the broader market on a series of measures, including pricing and levels of oversubscription.
- Issuers routinely report that green bonds attract a broader set of investors, which suggests reduced volatility over time, a positive.
- The data do suggest a possible pricing differential in the secondary market, with green bonds trading at a slightly higher price, but this is not sufficiently consistent to draw any conclusions.⁶¹

A consistent secondary market premium would presumably soon translate into a primary market premium – lower-cost funds for green purposes. As good as that sounds, it would likely disappear

⁵⁷ IFC website; excerpt from World Bank Operational Policy 4.01, Environmental Assessment, Jan 1999

⁵⁸ IFC Projects Database; Reventazon HPP Environmental & Social Review Summary

⁵⁹ CBI; Post-Issuance Reporting in the Green Bond Market; July 2017

⁶⁰ One example: Preclaw, Ryan and Bakshi, Anthony; The Cost of Being Green; Barclays Credit Research; Sept 18, 2015

⁶¹ Harrison, Caroline, et. al.; Green Bond Pricing in the Primary Market; CBI and the International Finance Corporation (IFC); reports published July 2017; Nov 2017; Feb 2018; May 2018

immediately, as the vast majority of investment managers are obligated to get market returns and would be precluded from purchasing higher-priced, lower-yielding green bonds. And this is probably a good thing for the green bond market, since it forces it back into the mainstream, where funding is abundant, and safely away from a green bubble.

As the market matures over time and as it further diversifies, with, among other things, a higher proportion of non-investment grade and other lower-rated issuers, the green bond market should experience defaults at rates similar to comparable bond issues.⁶² To the extent that the defaults are related to standard business failures, they should not have a significant impact on green bonds and the reputation of the market. Should a default be related to a deceptive or fraudulent activity – if Volkswagen had financed its diesel engines via green bonds, for instance – it could have a serious impact on the credibility of the green bond market.

The performance of green bonds, particularly as compared to otherwise similar non-green bonds, will be an interesting and important area of continued inquiry.

What's Next for Green Bonds?

The future of green bonds appears likely to include:

- Growth, spurred not only by investor demand, but also by public demand for green solutions, and supported by policy changes as well as improved financial infrastructure, such as green bond funds;
- Greater standardization of definitions and protocols; and
- Increased transparency.

Public support for green and climate change solutions will drive funding needs, and investor demand will support green bonds as a material portion of that funding. Moody's states that meeting the emissions targets of the December 2015 Paris Agreement "will require an unprecedented allocation of capital, measured in trillions of dollars a year."⁶³ Moody's further notes, "Green bonds have gained attention for their potential role in mobilizing capital toward environmental solutions."⁶⁴ The growth of ESG funds is one measure of investor interest, but there is a great deal of evidence that growth to date is just the beginning of a very large wave. For instance, HSBC reports that 97% of its investor clients in Europe and 85% in the U.S. want to increase their investments in climate solutions, and B of A Merrill reports that 90% of its younger clients share this interest.⁶⁵ A 2018 survey of 20 leading investment banks found greater optimism for SRI/green bond volume growth than any other market segment.⁶⁶

Christiana Figueres, the former Executive Secretary of the UN Framework Convention on Climate Change and an architect of the Paris agreements, has said that effective climate action requires \$1 trillion in annual green bond investment by 2020,⁶⁷ and the CBI, in its advocacy role, has adopted that target. Sovereign issuers, whose debt comprises 40-50% of global debt capital markets but only a small percentage of green bonds thus far, are a logical source of substantial growth as they seek funding for the very large infrastructure needs associated with their NDCs and climate change resilience.

Private companies, as well as municipalities and other sub-sovereign levels of government, also show great interest in investment that supports NDCs, but not incidentally also leads to lower operating costs, cleaner local environments, and greater climate change resilience. This is particularly relevant in the U.S., where, in response to the federal government effectively

⁶² Per an email communication, CBI is aware of one default – Aligera, a Swedish wind energy company. Aligera news release; Aligera AB (publ) is considering filing for bankruptcy and Aligera Vind AB and Aligera Holding AB (publ) will file for bankruptcy; Jan 26, 2018

⁶³ Moody's Investor Service; Green Bonds Assessment; March 30, 2016

⁶⁴ *ibid*

⁶⁵ Klier, Daniel; presentation at HSBC Sustainable Financing and Investing Responsibly Forum; NYC; September 18, 2017; Coleman, Murray; Financial Times; US Investors Drawn to Environmentally Friendly Green Bonds 3/30/17

⁶⁶ Global Capital; Debt Capital Markets Outlook Survey; Jan 2018

⁶⁷ Figueres, Christiana, et. al.; Three Years to Safeguard Our Climate; Nature; June 28, 2017

abandoning its NDC, many states, localities and private companies are stepping in. This is an element in the continuing diversification of the market, including growth in asset-backed securitizations, which was the predominant type of green bond in 2017 due to the Fannie Mae issues.

Growth and diversification is further supported by the emergence of green bond indices and green bond funds, which bring increased liquidity to the market and thereby support yet more investment. This is another milestone in the mainstreaming of the green bond market, and another indicator of the success of the green bond concept which, from its beginnings, was designed to tap into the \$100 trillion mainstream debt capital markets, where funding availability for climate solutions is effectively unlimited.

The increasing urgency of climate change challenges has spurred policy developments designed to attract investment. China has been a leader in policy support for green investment, and other countries are also adopting or considering specific policy supports. At the modest end of the scale, Singapore is covering the costs of independent reviews.⁶⁸ China's far more extensive actions include "central bank policy support and incentives ... for financial institutions issuers in the form of collateral eligibility, relending and interest subsidies",⁶⁹ leading directly to Chinese issuers' major presence in the green bond market. In 2017, China announced the establishment of five "green finance reform and innovation experimental zones" to test various incentives to "raise the share of ... green finance" in certain sectors.⁷⁰ The focus in one zone is on strengthened cooperation with non-Chinese financial institutions,⁷¹ which could help foster increased use of green principles by China and its international partners in the ambitious Belt and Road Initiative, a long list of infrastructure projects linking China to some 70 trading partners and carrying a cost estimate of \$4 trillion.⁷²

The European Union, through its High-Level Expert Group (HLEG) on Sustainable Finance, is looking at policy changes to support a sustainable European economy, with climate change initiatives and Paris agreement commitments first on the agenda. Amid broader recommendations designed to encourage the longer-term investment horizons needed to support sustainability, the HLEG recommends the creation of a sustainability taxonomy and the adoption of official green bond standards. The HLEG recognizes that to mobilize capital at scale, the market needs definitions of "green" and "sustainable" and the required disclosure protocols to make everything transparent and verifiable.⁷³

A potentially very high-impact policy considered by the HLEG is the use of a "green supporting factor" – reduced capital requirements for lending to green projects. As intriguing as the concept is, the HLEG found it fraught with serious complications, including the lack of firm definitions of green, the absence of quantified reduced lending risk to justify lenders' holding less capital for green loans, and the potential to induce a green bubble. Nonetheless, given the proposal's ability to attract green investment at great scale, the HLEG recommends further study of quantifiable risk differentials that could support such a factor.⁷⁴

Underlying the HLEG recommendations is the concept that policy support and incentives necessarily bring regulation and regulatory scrutiny to ensure that public support drives the achievement of public goals. Perhaps this will commence the wind down of the voluntary basis that has driven the green bond market thus far. If so, it hardly feels like the end of the rodeo, given the green bond market's roots in the establishment elite of the capital markets. Instead, it feels like a natural next step, in which a good idea is driven to scale by its adoption and integration into the

⁶⁸ Hay, Jon; Green Finance – Everyone is Doing It; Global Capital; Jan 3, 2018

⁶⁹ Moody's Investor Service; Moody's: Green Bond Issuance Could Exceed \$50 Billion in 2016; Moody's Global Credit Research; Feb 1, 2016

⁷⁰ Ministry of Ecology and Environment, The People's Republic of China; China to Establish Green Finance Reform and Innovation Experimental Zones; Xinhua; June 15, 2017

⁷¹ Stanway, David; China Launches Five 'Green Finance' Pilot Zones; Reuters; June 26, 2017

⁷² Hillman, Jonathan; China's Belt and Road Initiative: Five Years Later; Center for International Strategic Studies; Jan 25, 2018

⁷³ High-Level Expert Group on Sustainable Finance; Financing a Sustainable European Economy, Final Report; Jan 2018

⁷⁴ *ibid*

highest levels of policy.

In connection with the December 2015 Paris Agreement, a group of institutional investors representing \$11 trillion in assets released "The Paris Green Bonds Statement," in which they recognized the "significant risk" of climate change and made three broad recommendations to support the continued growth of a green bond market that "makes a real contribution to addressing climate change." The recommendations called for:

- Government action in the form of policies, regulations and credit supports, such as guarantees and tax credits, to support investments that address climate change while allowing investors to meet their fiduciary responsibilities;
- Clear standards, created by recognized and independent experts, to measure the climate change impacts and benefits of financed projects; and
- Increased transparency with regard to use of proceeds and project benefit, including the use of credible third party reviews and verifications.⁷⁵

The green bond market is moving in precisely these directions. The next question is the speed and urgency with which this market, and all its participants, can move.

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⁷⁵ ACTIAM, et. al. The Paris Green Bonds Statement; Dec 2015

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