

# Rethink Fixed Income with Climate Bonds

Fixed Income · Impact Investing  
March 2017

From Green Bonds to climate  
bonds: expanding the universe

p.06

## At a glance

- The worst effects of climate change may be avoided if we limit the global temperature increase to 2° C above pre-industrial levels, which is now an internationally-agreed target for 2100.
- To achieve that goal, the World Economic Forum estimates that we may need to invest an extra USD 700 billion a year in the low-carbon economy.
- Green Bonds have developed over the past decade as a way to earmark financing for climate-friendly business activities, with new standards of transparency and impact reporting.
- Today Green Bonds exhibit the historical return and credit-quality profile of conventional investment-grade bonds,<sup>1</sup> and are therefore potentially an investment-grade bonds replacement for all mainstream investors.
- Green Bonds do have some marked currency, country, regional and industrial-sector biases, some of which we believe can be addressed by expanding the investment universe beyond “labelled” Green Bonds to the broader non-labelled climate-bond markets.
- In our view, investing with integrity in the broader climate-bond market requires sophisticated data and research capabilities and proprietary selection and monitoring criteria – indeed, an investor with these capabilities soon learns that even “labelled” Green Bonds are not necessarily aligned with its own sustainability or impact criteria.
- We believe that both investors and issuers will come to recognise the value of the transparency, use-of-proceeds reporting, and investor-engagement standards of the climate bond market, making it a model for fixed-income governance as a whole.

<sup>1</sup> As represented by the Barclays Global Aggregate Index.

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Climate bonds have revolutionised our fight against climate change. The model could revolutionise the world of fixed-income investing, too.

Lombard Odier Impact Office

For further information

Email us at [Impact-Office@lombardodier.com](mailto:Impact-Office@lombardodier.com)  
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## Climate change: a global challenge

Tackling climate change is one of the biggest challenges of our generation. Climate-related disasters have already displaced 23 million people every year since 2008, according to the Internal Displacement Monitoring Center. The World Health Organisation forecasts that it will cause hundreds of thousands of deaths over the next 30 years. If current trends continue, some studies estimate that the effects of climate change will wipe out almost a quarter of the world's potential GDP by the end of the century, and up to a quarter of some crop yields by 2050.<sup>2</sup>

Many scientists agree that we can avoid some of the worst effects of climate change if we limit the increase in global temperature to 2°C above pre-industrial levels, and this objective was agreed by the 223 countries at the 21st session of the Conference of the Parties to the United Nations Convention (COP21) in December 2015.

But credible estimates based on an analysis of OECD and International Energy Agency data have suggested that, to achieve that goal, we need to invest an additional USD 700 billion each year in low-carbon energy, energy efficiency and resource management.<sup>3</sup>

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## Green Bonds: earmarking climate-friendly finance

The Green Bonds market is one of the most important financial innovations in the effort to make that a reality. These bonds are issued by sovereigns, municipalities, multilateral organisations, financial institutions and corporations to raise finance that is earmarked for specific projects that either mitigate or help the world adapt to the effects of climate change.

Eligible projects can be in a diverse range of energy, resource-efficiency, infrastructure, land- or water-management and marine sectors. They include everything from building new solar farms, to improvements to energy transmission grids or sanitation systems, new buildings constructed with sustainable technologies, flood

barriers and sustainable forestry, and investments in fishing-stock management.

Examples are the GBP 400 million, 10-year bond issued by Transport for London to finance low-carbon transport in the UK's capital city; Dutch bank ING's USD 800 million, three-year bond issued to refinance loans in the wind power, solar power, green buildings, energy-efficiency and waste- and water-management sectors; and the World Bank's financing of a project to bring 1.4 million hectares of marine area off Indonesia under biodiversity protection.<sup>4</sup>

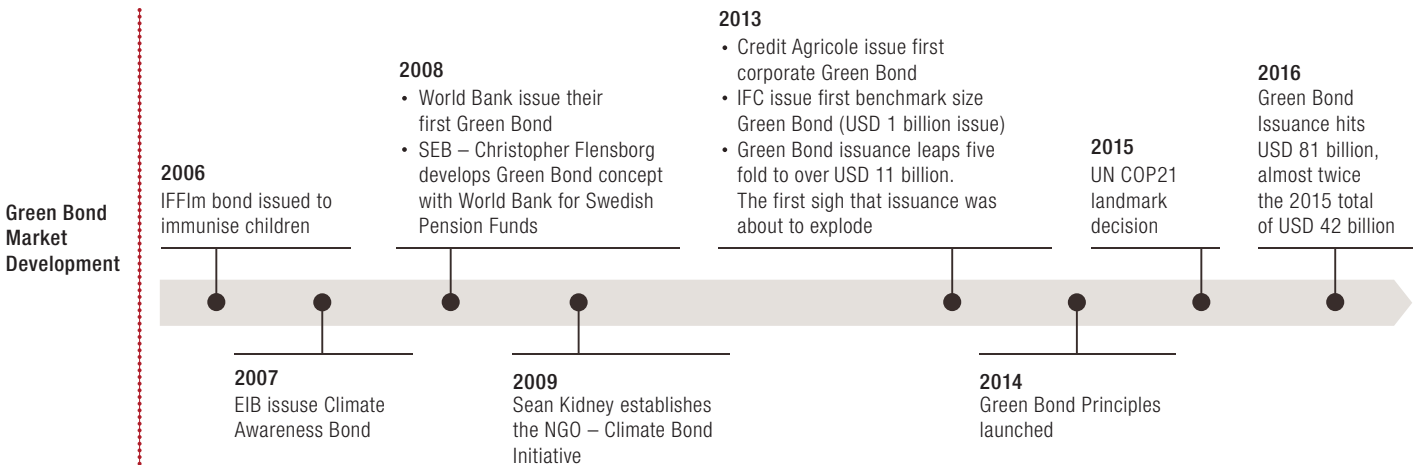
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<sup>2</sup> Marshall Burke, Solomon Hsiang, Edward Miguel, "Global non-linear effect of temperature on economic production," World Bank, September 2015; Intergovernmental Panel on Climate Change.

<sup>3</sup> World Economic Forum, "The Green Investment Report: The ways and means to unlock private finance for green growth - A Report of the Green Growth Action Alliance," 2013.

<sup>4</sup> The information provided in this document is for illustrative purposes only and does not purport to be a recommendation of an investment in, or a comprehensive statement of all of the factors or considerations which may be relevant to an investment in, the referenced securities.

**FIG. 1 A DECADE OF CLIMATE BOND LANDMARKS**



Source: Lombard Odier; Climate Bonds Initiative

This market has its origins in the European Investment Bank’s (EIB) first “Climate Awareness Bond,” issued in 2007 to raise EUR 600 million for projects “contributing to climate action in the fields of renewable energy and energy efficiency.” The following year Swedish bank SEB partnered with the World Bank to develop a similar concept to meet demand from Sweden’s pension funds.

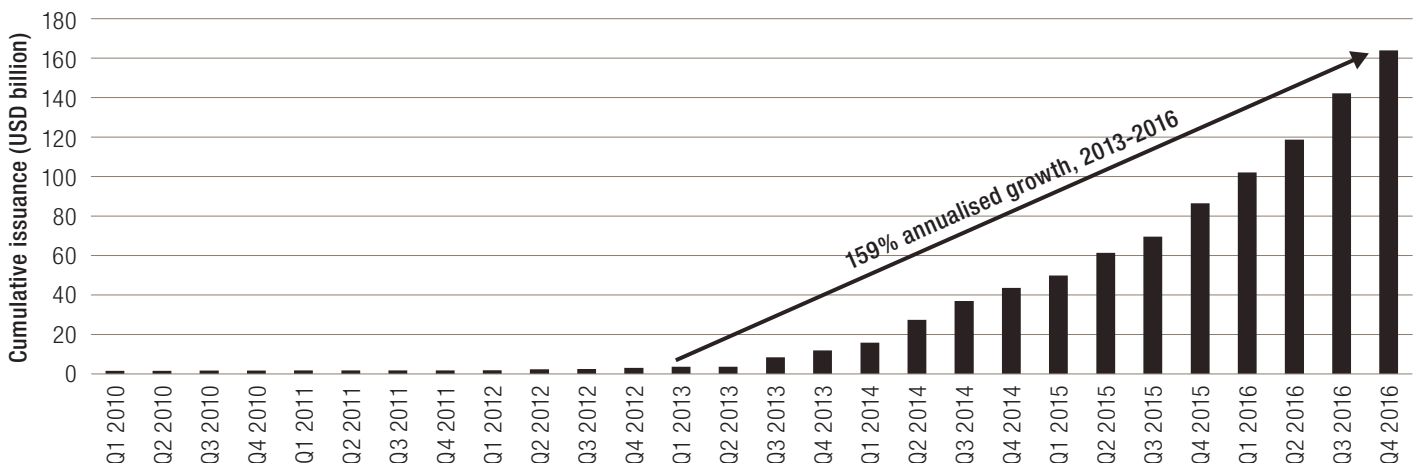
The resulting bonds were backed by strict use-of-proceeds and impact reporting protocols established by Judith Moore (now with LOIM’s climate bonds partner, Affirmative Investment Management) and the World Bank’s Treasury team, as well as the creditworthiness of the World Bank itself because these project-specific bonds were treated *pari passu* with conventional World Bank issues. They were stamped with the label, “Green Bonds,” and an asset class was born.

The backing of a highly-rated multilateral entity meant that investors did not have to take direct exposure to the projects’ risks and complexities. The many multilateral and government entities

that have come to the market since the World Bank and the EIB have been prepared to take on this kind of contingent liability to remove barriers to private capital – to increase the leverage available for climate-friendly projects, but also in acknowledgement of tighter public finances against the background of the Great Recession.

Within two years of the World Bank’s first labelled Green Bond, the Climate Bonds Initiative, a non-government organisation, was established to lend the market momentum, and the first Green Bond Fund was launched. Crédit Agricole became the first corporate issuer of a labelled Green Bond in 2013, followed by other banks and utilities. In 2014 the Green Bond Principles formalised the World Bank standards for project eligibility and reporting into a set of voluntary guidelines aimed at assisting future Green Bond issuers to provide sufficient transparency and disclosure to investors. Issuance has grown substantially since then, and today the market stands at more than USD 160 billion.

**FIG. 2 CUMULATIVE GREEN BOND ISSUANCE, 2010-2016**



Source: Bloomberg.

## A conventional return and credit-quality profile

Given their unusual structure, how do these bonds compare with conventional investment-grade issues, in terms of historical return, yield, duration, liquidity and tracking error?

Since 2009, in US dollars, the S&P Green Bond Index has returned 17.9%. This compares with 19.5% from the Barclays Global Aggregate Index. As Table 1 shows, average credit ratings

and yields are very similar, while duration in the Green Bond indices is slightly shorter – which accounts for the relatively strong performance of the Global Aggregate Index over the past six years of falling interest rates. In short, it is possible to invest in Green Bonds and maintain the potential for returns in-line with the conventional investment-grade bond market.

**TABLE 1 GREEN BOND INDICES VERSUS CONVENTIONAL BOND INDEX**

	2009	2010	2011	2012	2013	2014	2015	2016
Barclays Global Aggregate Index USD	6.93%	5.54%	5.64%	4.32%	-2.60%	0.59%	-3.15%	1.29%
Barclays Global Green Bond Index USD						0.21%	-5.71%	0.36%
S&P Green Bond Index USD	5.74%	11.86%	1.14%	9.15%	-2.23%	-2.31%	-7.12%	1.78%

	YIELD-TO-WORST	MODIFIED DURATION	AVERAGE CREDIT RATING
Barclays Global Aggregate Index USD	1.63%	6.91 years	AA-
Barclays Global Green Bond Index USD	1.61%	5.69 years	AA-
S&P Green Bond Index USD	2.00%	5.51 years	AA-

Source: Standard & Poor's; Bloomberg. Yield, duration and credit-rating data as at December 31, 2016. Past performance is not a guarantee of future results. Yields are subject to change and can vary over time.

It may surprise some that there is little discernible complexity premium for investors, but in fact this is intuitive: as well as the risk de-coupling structure that many multilateral-backed bonds enjoy, the necessarily enhanced initial engagement between issuers and the market, and third-party verification and monitoring of the use of proceeds, give the investor more transparency than they get with the average conventional bond. So far, investors appear to have priced Green Bonds according to the credit risk of the issuer, effectively getting the positive environmental impact and enhanced transparency for free.

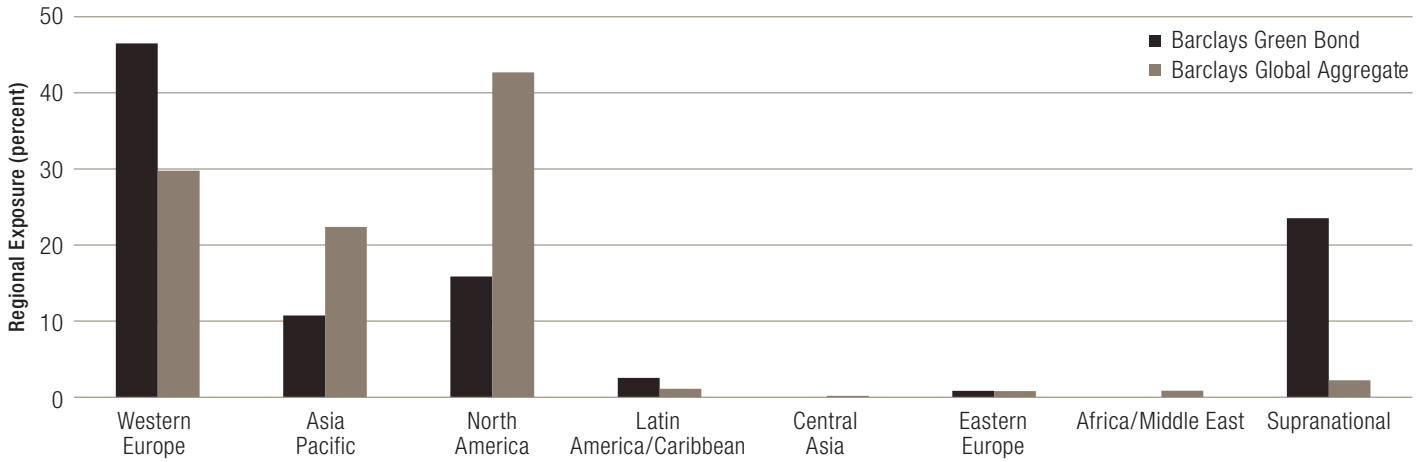
Similarly, there is no apparent liquidity risk premium for investors, despite the relatively small size of the market. Demand for Green Bonds outweighs supply by an order of magnitude: getting an offer is far more challenging than getting a bid, and good relationships with the key issuers and brokers – not to mention a demonstrable commitment to sustainable investing – remains important for securing primary-market allocations. Liquidity will improve but there is still a long way to go.

## Duration, currency, country and sector risks

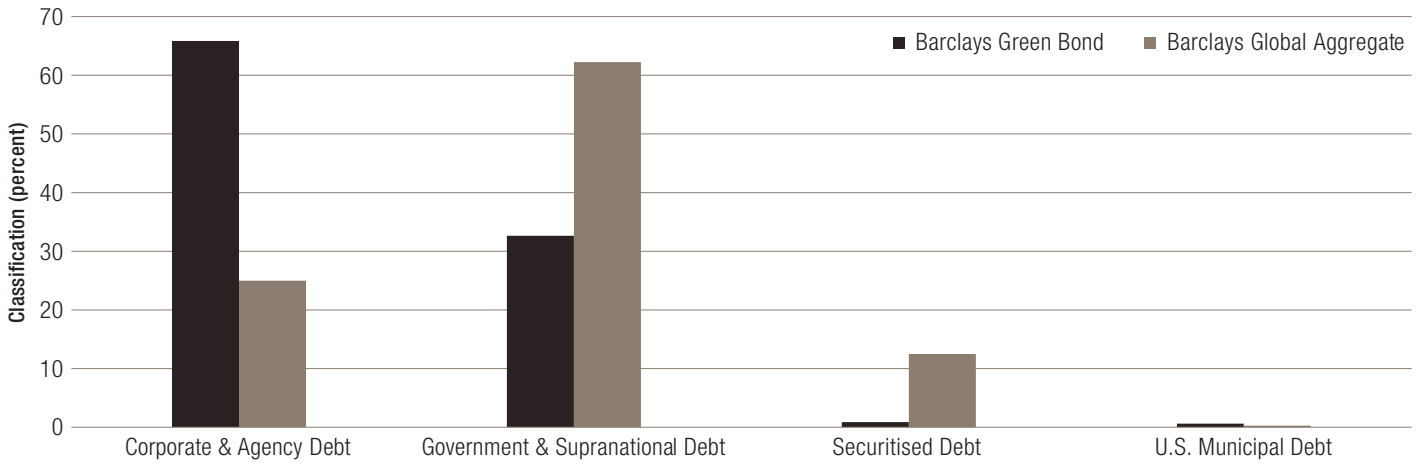
Investors who intend to allocate part of their conventional investment-grade allocation to a Green Bonds portfolio may find that managing tracking error against a broad fixed income benchmark is a more substantial challenge than finding liquidity.

As the common factor of interest-rate duration starts to drop out of bond-market performance, following several years of declining yields, divergent currency, country, regional and industrial-sector risks could become more prominent.

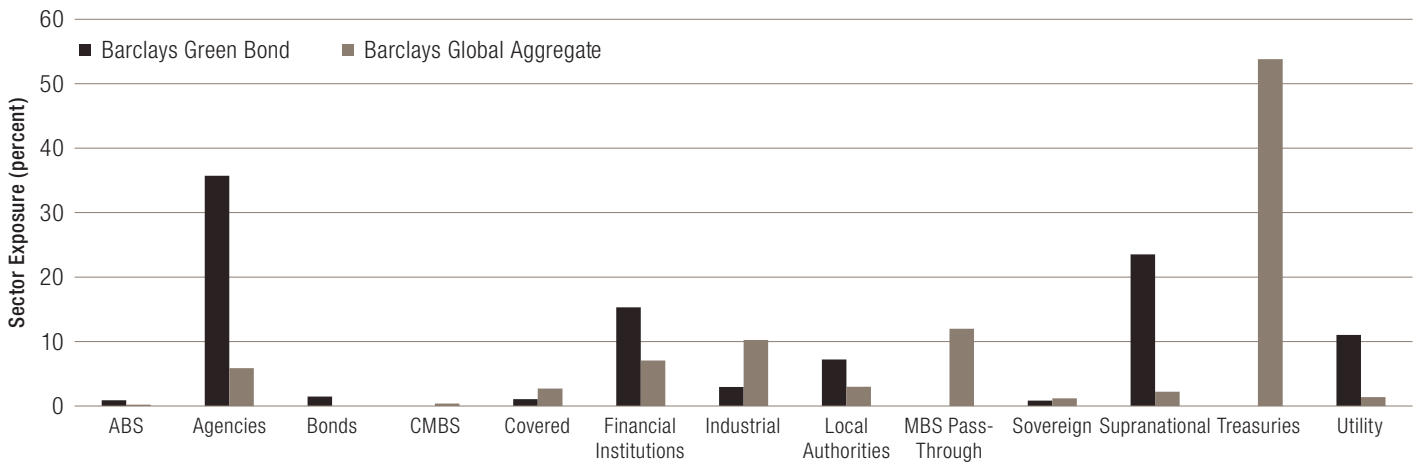
**FIG. 3 POTENTIAL SOURCES OF RISK VERSUS CONVENTIONAL BONDS: SECTOR AND REGIONAL EXPOSURES**



Source: Bloomberg. For illustrative purposes only.



Source: Bloomberg. For illustrative purposes only.



Source: Bloomberg. For illustrative purposes only.

The slight deficit in duration can be addressed with a derivative overlay, or by overweighting some of the longer-dated, high-quality Green Bonds currently available: Norway’s Kommunalbanken has a 2025, AAA-rated US dollar bond outstanding, for example; in 2015 the World Bank issued a 30-year, AAA-rated euro bond; and there was even a 100-year, AA-rated issue from District of Columbia Water in 2014.<sup>4</sup>

Currency risk will also need to be managed. Green Bonds have been issued in more than 20 currencies – not surprising, given the predominance of projects in the emerging world and the World Bank’s enthusiasm for using Green Bonds to add to its own emerging-currency issuance. We expect growing issuance from China and India (where environmental problems are climbing fast up the government agenda) and from Brazil (where the government’s budget pressures are making private financing of infrastructure projects more attractive) to maintain the balance between hard- and local-currencies. Investors who regard their Green Bond allocation as a simple investment-grade strategy

rather than a global all-currencies strategy may find hedging some of the emerging local-currency risk a challenge.

The currency risk implies country and regional risk. Many Green Bond projects are located in the emerging world – even when the issuers are developed-world multilaterals, banks or infrastructure businesses. Issuers themselves have tended to be located in Europe rather than the US or Japan. Even within Europe, the lack of Green Bonds from Italy creates substantial divergence from broad investment-grade benchmarks.

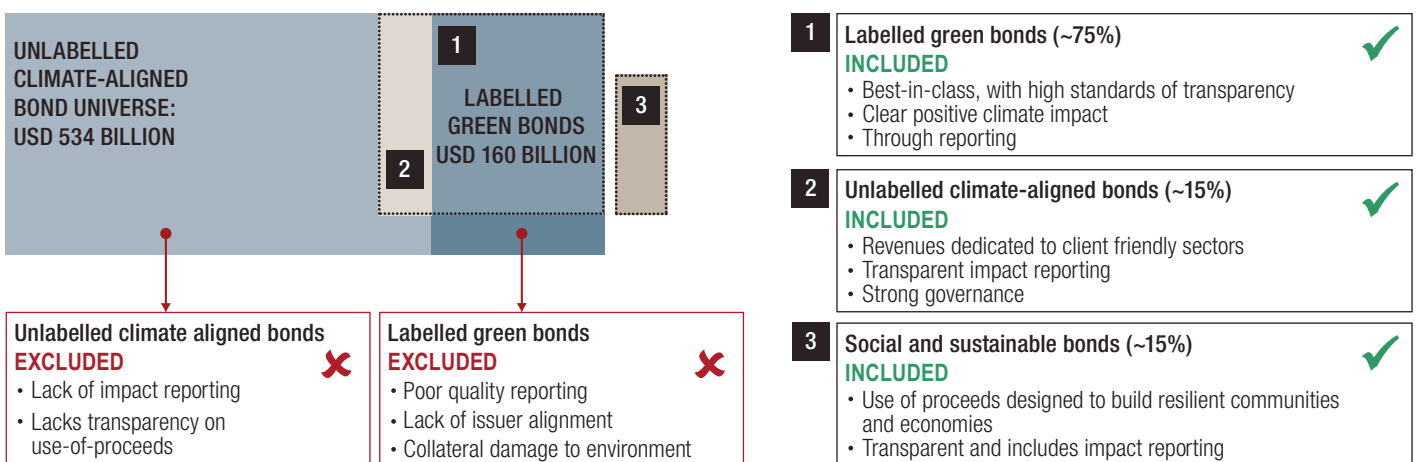
In terms of sectors, multilaterals and corporates are a larger portion of the Green Bond universe than the broader universe. The ease with which financial institutions can separate and re-package Green Bond-eligible loans has led to banks being a large sector; and the business of utilities and some infrastructure companies has also led them to be leading issuers. These industrial-sector biases are structural and difficult to manage.

## From Green Bonds to climate bonds: expanding the universe

We expect the Green Bond universe to continue to grow and diversify, but the strictness of the eligibility criteria may limit this development. Expanding the available universe would go some way to help manage these benchmark tracking-error risks, and we believe that can be achieved by moving beyond labelled Green

Bonds into the much bigger market of “climate-aligned” bonds. The Climate Bonds Initiative reckoned this universe was already more than three-times larger than the labelled market by July 2016, at almost USD 550 billion, and we believe the combined climate-bond universe can reach USD 1 trillion within the next three years.

FIG. 4 OUR VIEW OF THE CLIMATE-BOND MARKET: MORE THAN JUST GREEN BONDS



Source: Lombard Odier, Climate Bonds Initiative. Illustrative only. Shows the climate-bond universe expanded in accordance with Lombard Odier & Affirmative Investment Managers’ investment criteria. Other mandates may differ.

The first step should be into “pure-play” climate-aligned bonds. These are not labelled “Green” by their issuers, but come from corporates that derive at least 95% of their revenues from climate-aligned business, as assessed by the Climate Bond Initiative. These issuers might be solar panel manufacturers, waste-management businesses or railroad operators, for example. This market is part of item 2 in Figure 4.

A further step can be taken into bonds issued by climate-aligned corporates or multilaterals who are not strictly pure players. These might include bonds from energy and utility companies that derive a substantial portion of their revenues from climate-aligned business and projects (part of item 2 in Figure 4); or Social Bonds that finance projects that help mitigate the effects of climate change, such as the issues from the International Finance Facility for Immunisation (IFFIm) that fund anti-malarial vaccination programmes (item 3 in Figure 4).

Expanding the universe in this way introduces risk. Labelled Green Bonds’ earmarking, transparency, and reporting protocols leave investors with fewer doubts as to the environmental impact of their capital. Other climate bonds do not offer the same commitments on use of proceeds and transparency, greatly increasing the risk of “greenwashing” – fine words and marketing images with little

verifiable follow-through. As soon as investors step beyond the pure players, therefore, they may need to create their own transparency using proprietary data and research, and proprietary selection and monitoring criteria.

Indeed, if investors have specific criteria for the impact of their investments, all of these bonds – whether labelled Green Bonds, pure-play or climate-aligned – require evaluation. Much depends on the geographic, economic, social-governance and technological context of a project.

Will an investor disqualify “light green” climate bonds in favour of “dark green” ones with a higher environmental impact? Or will it recognise that many of the Social Bonds and Sustainable Bonds that some criticise as “light green” have much greater overall impact than some “dark green” climate bonds? How should one prioritise a bond financing a windfarm in the UK versus a windfarm in a coal power-dominated economy such as Poland’s? Or a bond financing mitigation projects (which exhibit excellent greenhouse gas-avoidance but are already well-capitalised) versus one financing adaptation projects (where there is more complexity to specific outcomes but which have so far been starved of capital)? And how confident can the investor be that its capital is ultimately going to the stated projects?

## Transparency and issuer alignment: more than just a label

A robust approach is required to make these judgements. We believe that means evaluating the issuer as well as the bond; integrating environmental, social and governance criteria into the fundamental credit analysis of both bond and issuer; reviewing and monitoring the process of management and disbursement of proceeds; and requiring full impact reporting on use of proceeds.

At Lombard Odier we, and our strategic partner for fixed income impact investing, Affirmative Investment Management (AIM), take a flexible view on project eligibility – prioritising environmental and social impact over apparent “greenness” while taking a very strict view on the broader environmental and social activities of a climate-bond issuer.

One result is that, whereas many forestry bonds make the grade based on our impact criteria, issues from UPM Forestall Oriental in Uruguay do not.<sup>5</sup> Despite the fact that it leaves one-third of its land unplanted for conservation projects with the World Wildlife Fund, and has all of the industry’s main ecolabels, what it does plant are

genetically-modified eucalyptus monocultures. Moreover, its parent company, Finland’s UPM, is involved in nuclear energy and is the subject of a number of social and environmental controversies.

Even some pure players are ineligible for our portfolios. Rushydro’s small-scale hydroelectric and tidal power projects, as well as its work in irrigation systems, would certainly make the cut were it not for some of the company’s other actions.<sup>5</sup> Its involvement in the Boguchany power plant in Siberia displaced residents and severely damaged the surrounding ecology, and the Evenkijskaya Dam Project had to be halted due to inadequate health-and-safety procedures that led to a fatal disaster in 2009.

Indeed, these risks are not only relevant for investors who venture beyond the labelled Green Bond market. When strict or bespoke criteria are applied, even the most innocuous-looking bonds can hide significant risks to the integrity of a climate bond impact strategy. Some 15% of the labelled Green Bonds fails to meet our criteria. For example, a EUR 1.2 billion Green Bond from French

renewable energy and power company Engie, which finances renewable-energy and smart-meter projects with annual reporting on installed renewable capacity and energy-consumption reduction, is excluded because one of its projects was halted in 2016 by Brazil's environmental protection agency over fears for the local freshwater ecology and indigenous communities.<sup>5</sup>

Ultimately, the logic of selecting a specialist manager whose proprietary selection, monitoring and reporting capabilities enables it both to expand the available universe of bonds and detect the elephant traps in the labelled Green Bond market seems unassailable – even more so once low-cost exchange-traded funds become available to track the labelled Green Bond index.

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## Climate bonds: a model for conventional bond-market governance

An “active” climate-bond portfolio manager relying on third parties by investing only in the labelled market provides very little added value, in our view, and we believe this will become even more evident as the market develops. The Green Bond market will continue to grow, but we think the real growth is likely to be concentrated in the non-labelled market, as more and more companies recognise the advantages of attracting investors looking for earmarked financing, without putting off mainstream investors with a specific label.

That will make the necessity of a sophisticated approach to transparency on issuer alignment and use of proceeds clearer than ever, of course, for a climate-bonds investor.

But we think there is an additional imperative to develop this expertise, as best practice in the climate bonds begins to spread into other “thematic” impact-bond markets - education bonds or “Blue” ocean bonds, for instance - and influence the governance of credit portfolios in general. Investors who have seen the advantages of use-of-proceeds reporting - the potential for deeper credit

analysis and the ability to construct theme-specific credit portfolios - are already encouraging conventional bond issuers to provide more information and engage more deeply in advance of issuance.

Investment-bank intermediaries are helping companies respond to this dynamic. While there is likely to be resistance at first due to the additional costs, complexity and transparency, we believe that issuers will come to recognise the insights they can gain from thinking in a more compartmentalised way about their capital allocation. Eventually, they may face lower demand for bonds that are not issued to these transparency standards.

We argue for climate bonds as a viable, high-quality, high-impact replacement for a portion of a conventional investment-grade fixed income allocation. But in the longer-term, we also expect a deeper convergence between the governance practices of the conventional and impact worlds of fixed income. Climate bonds have already revolutionised our fight against the effects of climate change. They are also set to revolutionise the world of fixed-income investing.

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<sup>5</sup> Any reference to a specific company or security does not constitute a recommendation to buy, sell, hold or directly invest in the company or securities. It should not be assumed that the recommendations made in the future will be profitable or will equal the performance of the securities discussed in this document.



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