May 2017

By Steve Williams,
Head Portfolio Manager –
Core Markets

Nikko Asset Management

GREEN BONDS –THE NEXT GLOBAL DISRUPTER?

With the accelerating technological shift towards renewable energy, it is becoming apparent that green bonds are set to be a significant global disrupter in addressing climate change. This technology shift is akin to some of the most significant in history such as horse carriages to cars, or more recently, cell phones to smart phones, which occurred, astonishingly, in less than a decade.

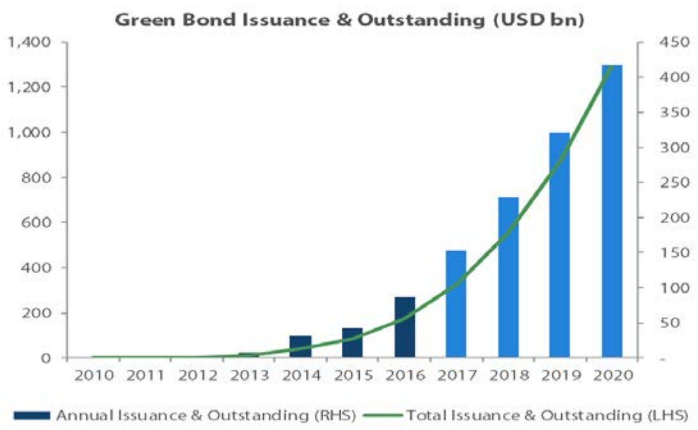
Regarding the increasing global response to climate change, we are starting to see the same type of shift towards renewable or sustainable technologies in energy sources, electric vehicles, energy efficient buildings and water treatment. The ongoing development of these technologies will be expensive and very capital intensive, prompting the question of how these projects can or will be funded, but we believe that much will come from the Green Bond market.

The rise and rise of Green Bonds

The World Bank launched the first AAA-rated Green Bond in 2008 in response to demand from large Scandinavian pension funds that were seeking an effective and direct way of supporting climate-friendly projects. In line with its strategy of promoting financing to support climate change mitigation, the World Bank has now issued approximately USD 9.7 bn in Green Bonds, which has helped support nearly 70 key projects around the world[1].

This active effort by the World Bank has driven the Green Bond market to grow from a niche asset class to nearly USD 200 bn (as of 31 Dec 2016). We estimate this amount will double by year-end to over USD 400 bn and if the market continues to develop at its current rate, the Green Bond market should exceed USD 1.2 trillion in total issuance and outstanding, by 2020 (see Chart 1).

Chart 1: Green Bonds are seeing huge growth



Source: Bloomberg, Nikko Asset Management estimates

Private investors are leading the way

Strong demand from private investors is helping drive this massive growth, with investment policies shifting in public pension funds and insurance companies also making a significant contribution.

While the current US administration's pro-fossil fuel / anti-EPA stance, coupled with its denial of climate change, has polarised the market somewhat, it has also mobilised private investors to take a leadership role in the development of the asset class. Our view has always been that the private investor market would be the likely source of much of the required growth in climate change financing if the world was to meet the Paris Accord threshold of no more than a two degree increase in global temperatures in the next hundred years. To achieve this objective, it has been estimated that USD 12.1 trillion in infrastructure investment will be required over the next 25 years - which is 75% greater than most consensus growth projections.

Thus, with the global bond market worth around USD 100 trillion, it will require the reallocation of a significant part of this massive asset pool to allow the necessary funds from private investors to be directed into this infrastructure development via Green Bonds.

A fixed income disrupter

Along with disrupting traditional segments of the global fixed income market, the growth in Green Bonds has also opened up a number of exciting investment opportunities in new fixed income asset classes. For instance, Green Bond investing was initially driven by Multilateral Development Banks (eg. World Bank), but the first corporate was issued in 2013, and since then, corporate issuers have acted as a catalyst, driving innovation, growth and new issuance in the market.

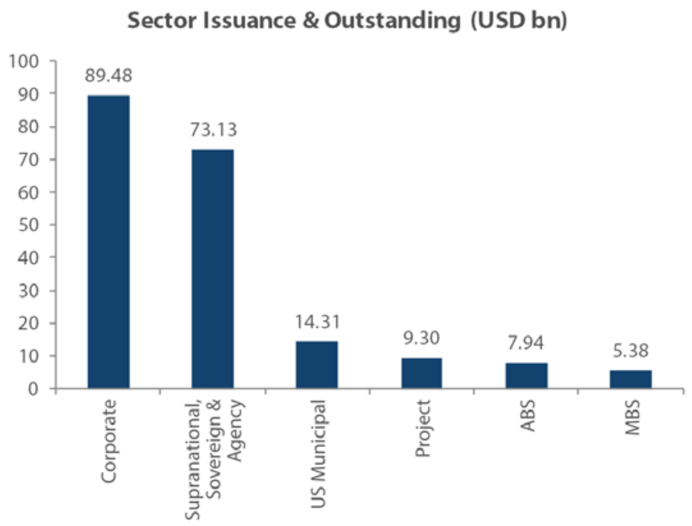
In recent years Green Bond issuance has grown substantially, confirming the validity of the investment approach, and raising expectations of the benefits of further expansion. Many sovereign funds have now indicated their willingness to build on this momentum and have also started issuing Green Bonds.

Poland was the first country to launch a Green Bond, with its EUR 750m issue. France was the first G8 country to roll out a significant program of Green Bonds with EUR 7bn issued in February 2017. China also issued nearly USD 36 bn in Green Bonds last year, with early signs that this figure could double in 2017. We would expect these commitments, as well as others made by governments in Brazil, Morocco, Nigeria, Sweden and Kenya, to encourage even more corporates to become involved and start issuing Green Bonds.

Federal government involvement has also helped to drive and implement "green" issuance in the US municipal bond market, with US state and local governments in Washington State, Massachusetts and New York all now issuing green municipal bonds, many of which have been used to invest in transportation and water-related projects.

We have also seen some issuers of asset-backed securities (ABS) and mortgage-backed securities (MBS) starting to launch Green Bonds, as a way of providing investors interested in combating climate change an access point via these more mainstream asset classes.

Chart 2: A diverse range of asset classes



Source: Bloomberg, Nikko Asset Management

Transparency is critical

When evaluating Green Bonds from an investment perspective, alongside traditional metrics like credit quality, maturity and price, there also needs to be an assessment of the projects that the bond will support. To help with this process, and in order to make this growing asset class more appealing to institutional investors, the International Capital Market Association (IMCA) developed the "Green Bond Principles." These principles are supported by over 115 institutions that participate in the Green Bond market, and comprise four core components:

1. **Defined use of proceeds**, in which the environmental benefits of every project that the bond will support are clearly specified.
2. **Continuous project evaluation and selection**, in which the bond's project evaluation and selection is complemented by regular independent reviews of each project's performance.
3. **Management of proceeds**, in which funding allocations to every project are clearly identified, as are the underlying investment of any unallocated funds.
4. **Reporting**, which lists all projects to which money has been allocated, including a project description, amount invested and expected environmental impact.

As new asset classes of Green Bonds have emerged, so too have new varieties with different 'shades of green'. It is for this reason that the Green Bond Principles are so important. They help issuers and investors to distinguish between pure Green Bonds, which must meet very strict criteria about the projects they support, and "lighter green" bonds, which have can be used for wider range of projects.

Investor demand has also prompted leading asset consultant, S&P Global Ratings, to create a Green Bond Evaluation tool, which can be used alongside traditional bond analysis. This tool aims to evaluate the environmental impact of each project that is financed by a particular Green Bond.

We believe the strong focus on transparency, coupled with participation by key players in the industry, will not only help issuers when launching Green Bonds but, more importantly will ensure investor demand continues to grow, by clearly setting out the true environmental impact of their Green Bond investments.

A broad market effort

To reach the USD 12.1tn investment threshold over the next 25 years, it will require a significant commitment from all market participants. Green Bonds typically have the same yields and pricing characteristics as traditional bonds. This, coupled with the growing demand, transparency and diversification of Green Bonds, means that the asset class is more and more likely to develop into a mainstream part of an investor's global fixed income portfolio.

In summary, Green Bonds has in the past been a smaller element of the total global fixed income market. However, with the recent growth of issuance, it will help to meet the Paris Accord at a faster rate.

[1] http://treasury.worldbank.org/cmd/htm/WorldBankGreenBonds.html

Important Information

This document is prepared by Nikko Asset Management Co., Ltd. and/or its affiliates (**Nikko AM**) and is for distribution only under such circumstances as may be permitted by applicable laws. This document does not constitute investment advice or a personal recommendation and it does not consider in any way the suitability or appropriateness of the subject matter for the individual circumstances of any recipient.

This document is for information purposes only and is not intended to be an offer, or a solicitation of an offer, to buy or sell any investments or participate in any trading strategy. Moreover, the information in this material will not affect Nikko AM's investment strategy in any way. The information and opinions in this document have been derived from or reached from sources believed in good faith to be reliable but have not been independently verified. Nikko AM makes no guarantee, representation or warranty, express or implied, and accepts no responsibility or liability for the accuracy or completeness of this document. No reliance should be placed on any assumptions, forecasts, projections, estimates or prospects contained within this document. This document should not be regarded by recipients as a substitute for the exercise of their own judgment. Opinions stated in this document may change without notice.

In any investment, past performance is neither an indication nor guarantee of future performance and a loss of capital may occur. Estimates of future performance are based on assumptions that may not be realised. Investors should be able to withstand the loss of any principal investment. The mention of individual stocks, sectors, regions or countries within this document does not imply a recommendation to buy or sell.

Nikko AM accepts no liability whatsoever for any loss or damage of any kind arising out of the use of all or any part of this document, provided that nothing herein excludes or restricts any liability of Nikko AM under applicable regulatory rules or requirements.

All information contained in this document is solely for the attention and use of the intended recipients. Any use beyond that intended by Nikko AM is strictly prohibited.

Japan: The information contained in this document pertaining specifically to the investment products is not directed at persons in Japan nor is it intended for distribution to persons in Japan. Registration Number: Director of the Kanto Local Finance Bureau (Financial Instruments firms) No. 368 Member Associations: The Investment Trusts Association, Japan/Japan Investment Advisers Association/Japan Securities Dealers Association.

United Kingdom and rest of Europe: This document constitutes a financial promotion for the purposes of the Financial Services and Markets Act 2000 (as amended) (FSMA) and the rules of the Financial Conduct Authority (the FCA) in the United Kingdom (the FCA Rules).

This document is communicated by Nikko Asset Management Europe Ltd, which is authorised and regulated in the United Kingdom by the FCA (122084). It is directed only at (a) investment professionals falling within article 19 of the Financial Services and Markets Act 2000 (Financial Promotions) Order 2005, (as amended) (the Order) (b) certain high net worth entities within the meaning of article 49 of the Order and (c) persons to whom this document may otherwise lawfully be communicated (all such persons being referred to as relevant persons) and is only available to such persons and any investment activity to which it relates will only be engaged in with such persons.

United States: This document is for information purposes only and is not intended to be an offer, or a solicitation of an offer, to buy or sell any investments. This document should not be regarded as investment advice. This document may not be duplicated, quoted, discussed or otherwise shared without prior consent. Any offering or distribution of a Fund in the United States may only be conducted via a licensed and registered broker-dealer or a duly qualified entity. Nikko Asset Management Americas, Inc. is a United States Registered Investment Adviser.

Singapore: This document is for information only with no consideration given to the specific investment objective, financial situation and particular needs of any specific person. You should seek advice from a financial adviser before making any investment. In the event that you choose not to do so, you should consider whether the investment selected is suitable for you. Nikko Asset Management Asia Limited is a regulated entity in Singapore.

Hong Kong: This document is for information only with no consideration given to the specific investment objective, financial situation and particular needs of any specific person. You should seek advice from a financial adviser before making any investment. In the event that you choose not to do so, you should consider whether the investment selected is suitable for you. The contents of this document have not been reviewed by the Securities and Futures Commission or any regulatory authority in Hong Kong. Nikko Asset Management Hong Kong Limited is a licensed corporation in Hong Kong.

Australia: Nikko AM Limited ABN 99 003 376 252 (**Nikko AM Australia**) is responsible for the distribution of this information in Australia. **Nikko AM Australia** holds Australian Financial Services Licence No. 237563 and is part of the Nikko AM Group. This material and any offer to provide financial services are for information purposes only. This material does not take into account the objectives, financial situation or needs of any individual and is not intended to constitute personal advice, nor can it be relied upon as such. This material is intended for, and can only be provided and made available to, persons who are regarded as Wholesale Clients for the purposes of section 761G of the Corporations Act 2001 (Cth) and must not be made available or passed on to persons who are regarded as Retail Clients for the purposes of this Act. If you are in any doubt about any of the contents, you should obtain independent professional advice.

New Zealand: Nikko Asset Management New Zealand Limited (Company No. 606057, FSP22562) is the licensed Investment Manager of Nikko AM NZ Investment Scheme and the Nikko AM NZ Wholesale Investment Scheme.

This material is for the use of researchers, financial advisers and wholesale investors (in accordance with Schedule 1, Clause 3 of the Financial Markets Conduct Act 2013 in New Zealand). This material has been prepared without taking into account a potential investor's objectives, financial situation or needs and is not intended to constitute personal financial advice, and must not be relied on as such. Recipients of this material, who are not wholesale investors, or the named client, or their duly appointed agent, should consult an Authorised Financial Adviser and the relevant Product Disclosure Statement or Fund Fact Sheet (available on our websitewww.nikkoam.co.nz).

Kingdom of Bahrain: The document has not been approved by the Central Bank of Bahrain which takes no responsibility for its contents. No offer to the public to purchase the Strategy will be made in the Kingdom of Bahrain and this document is intended to be read by the addressee only and must not be passed to, issued to, or shown to the public generally.

Kuwait: This document is not for general circulation to the public in Kuwait. The Strategy has not been licensed for offering in Kuwait by the Kuwaiti Capital Markets Authority or any other relevant Kuwaiti government agency. The offering of the Strategy in Kuwait on the basis a private placement or public offering is, therefore, restricted in accordance with Decree Law No. 7 of 2010 and the bylaws thereto (as amended). No private or public offering of the Strategy is being made in Kuwait, and no agreement relating to the sale of the Strategy will be concluded in Kuwait. No marketing or solicitation or inducement activities are being used to offer or market the Strategy in Kuwait.

Kingdom of Saudi Arabia: This document is communicated by Nikko Asset Management Europe Ltd (Nikko AME), which is authorised and regulated by the Financial Services and Markets Act 2000 (as amended) (FSMA) and the rules of the Financial Conduct Authority (the FCA) in the United Kingdom (the FCA Rules). This document should not be reproduced, redistributed, or sent directly or indirectly to any other party or published in full or in part for any purpose whatsoever without a prior written permission from Nikko AME.

This document does not constitute investment advice or a personal recommendation and does not consider in any way the suitability or appropriateness of the subject matter for the individual circumstances of any recipient. In providing a person with this document, Nikko AME is not treating that person as a client for the purposes of the FCA Rules other than those relating to financial promotion and that person will not therefore benefit from any protections that would be available to such clients.

Nikko AME and its associates and/or its or their officers, directors or employees may have or have had positions or material interests, may at any time make purchases and/or sales as principal or agent, may provide or have provided corporate finance services to issuers or may provide or have provided significant advice or investment services in any investments referred to in this document or in related investments. Relevant confidential information, if any, known within any company in the Nikko AM group or Sumitomo Mitsui Trust Bank group and not available to Nikko AME because of regulations or internal procedure is not reflected in this document. The investments mentioned in this document may not be eligible for sale in some states or countries, and they may not be suitable for all types of investors.

Oman: The information contained in this document nether constitutes a public offer of securities in the Sultanate of Oman as contemplated by the Commercial companies law of Oman (Royal decree 4/74) or the Capital Markets Law of Oman (Royal Decree80/98, nor does it constitute an offer to sell, or the solicitation of any offer to buy non-Omani securities in the Sultanate of Oman as contemplated by Article 139 of the Executive Regulations to the Capital Market law (issued by Decision No. 1/2009). This document is not intended to lead to the conclusion of any contract of whatsoever nature within the territory of the Sultanate of Oman.

Qatar (excluding QFC): The Strategies are only being offered to a limited number of investors who are willing and able to conduct an independent investigation of the risks involved in an investment in such Strategies. The document does not constitute an offer to the public and should not be reproduced, redistributed, or sent directly or indirectly to any other party or published in full or in part for any purpose whatsoever without a prior written permission from Nikko Asset Management Europe Ltd (Nikko AME). No transaction will be concluded in your jurisdiction and any inquiries regarding the Strategies should be made to Nikko AME.

United Arab Emirates (excluding DIFC): This document and the information contained herein, do not constitute, and is not intended to constitute, a public offer of securities in the United Arab Emirates and accordingly should not be construed as such. The Strategy is only being offered to a limited number of investors in the UAE who are (a) willing and able to conduct an independent investigation of the risks involved in an investment in such Strategy, and (b) upon their specific request.

The Strategy has not been approved by or licensed or registered with the UAE Central Bank, the Securities and Commodities Authority or any other relevant licensing authorities or governmental agencies in the UAE. This document is for the use of the named addressee only and should not be given or shown to any other person (other than employees, agents or consultants in connection with the addressee's consideration
thereof).

No transaction will be concluded in the UAE and any inquiries regarding the Strategy should be made to Nikko Asset Management Europe Ltd.