

GREEN BONDS: COUNTRY EXPERIENCES, BARRIERS AND OPTIONS



In support of the G20 Green Finance Study Group

This Input paper has been prepared by the authors as a contribution to the G20 Green Finance Study Group (GFSG) but has not been endorsed by it nor does it represent the official views or position of the GFSG or any of its members.

Prepared by the Organisation for Economic Co-operation and Development (OECD), International Capital Markets Association (ICMA), Climate Bonds Initiative (CBI), and the Green Finance Committee (GFC) of China Society for Finance and Banking. The lead authors are Ma Jun (People's Bank of China and GFC), Christopher Kaminker (OECD), Sean Kidney (CBI) and Nicholas Pfaff (ICMA). The authors are grateful for comments and inputs received from GFSG members, especially members of the GFSG green bond subject team and their colleagues (BIS, Canada, EU, France, Germany, India, Indonesia, Korea, Singapore, Saudi Arabia, South Africa, and Sweden), from Bank Negara Malaysia, Robert Youngman (OECD), Bridget Boulle (CBI) and Olivier Lavagne d'Ortigue (UNEP). Xu Nan and Ricco Zhang provided important research support.

Contents

1. Background and History of the Green Bond Market	4
1.1. What Are Green Bonds.....	4
1.2. Why Green Bonds.....	5
1.3. Evolution of the Green Bond Market.....	8
2. Green Bond Guidelines and Standards	12
2.1. Background.....	12
2.2. Green Bond Principles.....	12
2.3. Climate Bonds Standard	14
2.4. Local Currency Market Standards: The Cases of China and India	15
2.5. Harmonization Issues	18
3. External Reviews and Ratings	21
3.1. Green Bond Reviews	21
3.2. Green Bond Ratings.....	24
4. Indices and Listings	26
4.1. Green Bond Indices.....	26
4.2. Green Bond Stock Exchange Lists	27
5. Barriers to Scaling-up the Green Bond Market	28
5.1. General Challenges to Bond Market Development.....	28
5.2. Lack of Awareness of the Benefits of Green Bonds and Existing International Guidelines and Standards.....	28
5.3. Lack of Local Green Bond Guidelines.....	28
5.4. Costs of Meeting Green Bond Requirements.....	29
5.5. Lack of Green Bond Ratings, Indices, and Listings.....	29
5.6. Lack of Supply of Labelled Green Bonds	29
5.7. Difficulties for International Investors to Access Local Markets.....	29
5.8. Lack of Domestic Green Investors.....	29
6. Emerging Options	30
6.1. Promoting the Integrity of Green Bonds and Raising International Awareness of their Benefits	30
6.2. Providing Technical Assistance for Developing Local Green Bond Guidelines.....	30
6.3. Providing Technical Assistance for Local Currency Bond Market Development	31
6.4. Reducing Costs of Green Bond Issuance and Reporting	31
6.5. Developing Green Bond Indices, Ratings, and Stock Exchange Lists.....	31
6.6. Labelling qualified “green bonds”	31
6.7. Promoting international collaboration to facilitate cross-border green capital flows	31
6.8. Incubating Local Green Investors	32
6.9. Enhancing the Role of MDBs/DFIs and Public Entities in Developing Green Bond Markets.....	32
Appendix 1: GBP Executive Committee (June 2016)	34
Appendix 2: KfW as Anchor Investor For Green Bonds	35
Appendix 3: Green Bonds as Aggregator for Green Projects: The Case of Sweden	37

1. Background and History of the Green Bond Market

1.1. What Are Green Bonds

Green bonds are debt instruments used to finance green projects that deliver environmental benefits. A green bond is differentiated from a regular bond by its commitment to use the funds raised to finance or re-finance “green” projects, assets or business activities. Green bonds can be issued by either public or private actors up front to raise capital for projects or for re-financing purposes, freeing up capital and leading to increased lending.

In line with mainstream bonds, green bonds involve the issuing entity guaranteeing to repay the amount borrowed over a certain period of time, and remunerating creditors through a coupon with a fixed or variable rate of return. They can be structured as asset-backed securities tied to specific green infrastructure projects but to date have most commonly been issued in the form of “use-of-proceeds” bonds that raise capital to be allocated across a portfolio of green projects. The momentum of continued issuance and market demand has led to growing consensus on what constitutes a green bond and progress has been made on standards and criteria for what constitutes a green project or activity.

Green bond project definitions and requirements for disclosure of the use of proceeds are the basis for developing a credible green bond market by avoiding “green washing”. Globally, the most widely accepted standards are the Green Bond Principles, a set of voluntary guidelines elaborated by key market participants under the coordination of ICMA, and the Climate Bonds Standard, which also includes sector specific criteria, developed by scientific experts under the stewardship of the Climate Bonds Initiative (CBI).

The GBP, updated most recently in June 2016, have achieved broad market acceptance as well as growing recognition by policy makers and regulators. As of June 2016, over 117 Green Bond issuers, underwriters and investors have become members of the GBP and in excess of 73 organisations are observers. The GBP outline voluntary guidelines for issuing green bonds, focusing on disclosure and transparency. They also provide guidance on eligible green project types through key areas of concern and high level project categories.

There are a number of international and national taxonomies addressing green bond project definitions, including the Climate Bonds Standard issued by the Climate Bonds Initiative (CBI) and the Green Bond Endorsed Project Catalogue (2015 Edition) issued by the Green Finance Committee (GFC) of China Society for Finance and Banking. Nonetheless in the absence of globally accepted specific guidance on what is a green project, the majority of issuers commission independent reviews of their green bond investment frameworks for the benefit of investors.

According to Bloomberg (as reported at the June 2016 Green Bond Principles Conference) some 20% of issuers self-label what constitutes a green bond, forgoing the use of an independent review. This has decreased from 40% in 2014 according to CBI figures. As of June 2016, USD 118 billion of labelled green bonds were outstanding (CBI/HSBC, 2016).

Also, beyond this labelled green bond market, there are unlabelled bonds that have been identified as supporting green projects but are not specifically labelled as green. This larger market for unlabelled or “climate-aligned” bonds was valued at USD 576 billion as of June 2016 (CBI/HSBC, 2016). For instance, traditional bonds of “pure-play” wind energy companies qualify as unlabelled green bonds, as do rail bonds in China and France where the use of proceeds have been specified

(note that rail bonds where proceeds are used for fossil fuel transport are excluded by CBI). Most such issuers are not yet aware of the potential utility of using the green label (as discussed in Table 1); and some issuers may choose not to label bonds as green due to concerns over a lack of standardisation in the market, political or stakeholder sensitivities and concerns over restrictions associated with the label.

There are both narrow and broad definitions of green bonds. The narrow definition includes only “labelled” green bonds, including self-labelled and those labelled by independent reviewers. The broader definition also includes unlabelled “pure play” bonds in sectors that are considered as “green” without controversies.¹ The broadest definition is “climate-aligned bonds” as defined by CBI, which includes many unlabelled bonds that are assessed by CBI to be “green”. The GBP recommends that the term “green bonds” be used only for GBP-aligned bonds while the wider universe should be referred to as climate or environmental themed bonds. For the statistics cited in this report the green bond definition used is cited as well.

1.2. Why Green Bonds

An estimated USD 6-7 trillion in annual investment will be needed globally over the next 15 years to meet the demand for green investment in sectors such as environmental remediation, energy efficiency, clean energy, clean transportation and green buildings, in order to facilitate the global transition to an environmentally sustainable and low-carbon economy.² Rising climate change concerns exacerbate the need to fund this transition to a low-carbon economy as soon as possible.

Private sector investment in low-carbon infrastructure needs to be scaled up significantly to meet climate change goals, including in clean energy. According to the IEA³, in order to limit the temperature increase to 2°C, investment would need to increase by a factor of three for “low-carbon” power generation, and by a factor of eight for energy efficiency. Cumulative investment in energy supply and energy efficiency globally will need to reach USD 53 trillion by 2035 in a 2 degree scenario.

Currently, most green debt investment is financed through bank credit. However, the bond market, which provides about 1/3 of total financing for corporates globally⁴, has yet to play a comparable role in green financing. An OECD quantitative analysis examining the potential for the bond markets to finance a 2°C energy investment scenario, estimates that bonds for low-carbon investments in the renewable energy, energy efficiency and low-emission vehicle sectors have the potential to scale to around USD700 billion in annual issuance in four markets by 2030 (China, Japan, the EU, and US) provided governments adopt policies to support and promote the use of bonds for low-carbon investments.⁵ OECD estimated that labelled green bonds issued globally in 2015 represented less than 1% of total US bond issuance alone and less than 0.2% of debt securities issued globally. Thus, the potential for scaling-up the green bond market is tremendous.

The green bond market can offer several important benefits for green investment:

a) **Providing an additional source of green financing.** Given immense green investment needs, bonds are one appropriate financing instrument to address such projects. As traditional sources of debt financing will not be sufficient in light of immense green investment needs, there is a need to introduce new means of financing that can leverage a wider investor base including institutional investors (such as pension funds, insurance companies and sovereign wealth funds) that manage over USD 100 trillion in assets globally. The development of the green bond market can provide an additional source of funding to green lending by banks and green equity financing by investors.

- b) **Enabling more long-term green financing by addressing maturity mismatch.** In many countries, the ability of banks to provide long-term green loans is constrained due to the short maturity of their liabilities and a lack of instruments for hedging duration risks⁶. Corporates that can only access short-term bank credit also face refinancing risks for long-term green projects. If banks and corporates can issue medium- and long-term green bonds for green projects, these constraints on long-term green financing can be mitigated.
- c) **Enhancing issuers' reputation and clarifying environmental strategy.** Issuing a green bond is an effective way to develop and implement a credible sustainability strategy to investors and the general public by clarifying how proceeds raised will contribute to a pipeline of tangible environmental projects. Green bonds can thus help enhance an issuer's reputation along with internal sustainable development policies, as this is an effective way for the issuer to display its commitment towards improving environmental sustainability. These enhancements may result in benefits for product marketing as well as potential government policy incentives for business operations. Setting up a green bond framework also can serve to upgrade issuers' environmental risk management process due to their commitment to "green" disclosure.
- d) **Offering potential cost advantages.** While the cost advantage is not yet evident in the current nascent green bond market, it is possible that, once the market attracts a wider investor base both domestically and internationally, a better pricing for green bonds vs. regular bonds may emerge provided demand is sustained. According to CBI, a number of issuers also report a benefit in the increased speed of "book building" (i.e. the process of generating, capturing, and recording investor demand for a bond issue), which translates into reduced costs for marketing and road shows. In some countries, **government incentives** such as tax reduction, interest subsidies and credit guarantees, are also being discussed as options for further reducing the funding costs for green bonds, with the US having already experimented in this area with green property bonds and municipal bonds.
- e) **Facilitating the "greening" of traditionally brown sectors.** The aforementioned benefits of the green bond market can function as a transition mechanism that encourages issuers in less environmentally-friendly sectors to take part in the green bond market (provided they ring-fence proceeds for green projects) and also to reduce their environmental footprint by engaging in green investment activities that can be funded via a green bond. This complements mandatory 'real economy' policies that lead to changes in business models (such as carbon pricing, waste reduction and recycling targets, policies to promote the circular economy, etc.)
- f) **Making new green financial products available to responsible and long-term investors.** Pension funds, insurance companies, sovereign wealth funds and other institutional investors that have a special preference for sustainable (responsible) investment and long-term investment are looking for new financial instruments to achieve their investment targets. Green bonds provide these investors with the access to such products and a way for many other investors to diversify their portfolios. The green label is a discovery mechanism that lowers the "search costs" for investors looking for green opportunities in a vast ocean of bonds.

Table 1: Advantages and disadvantages of green bonds as cited by investors and issuers

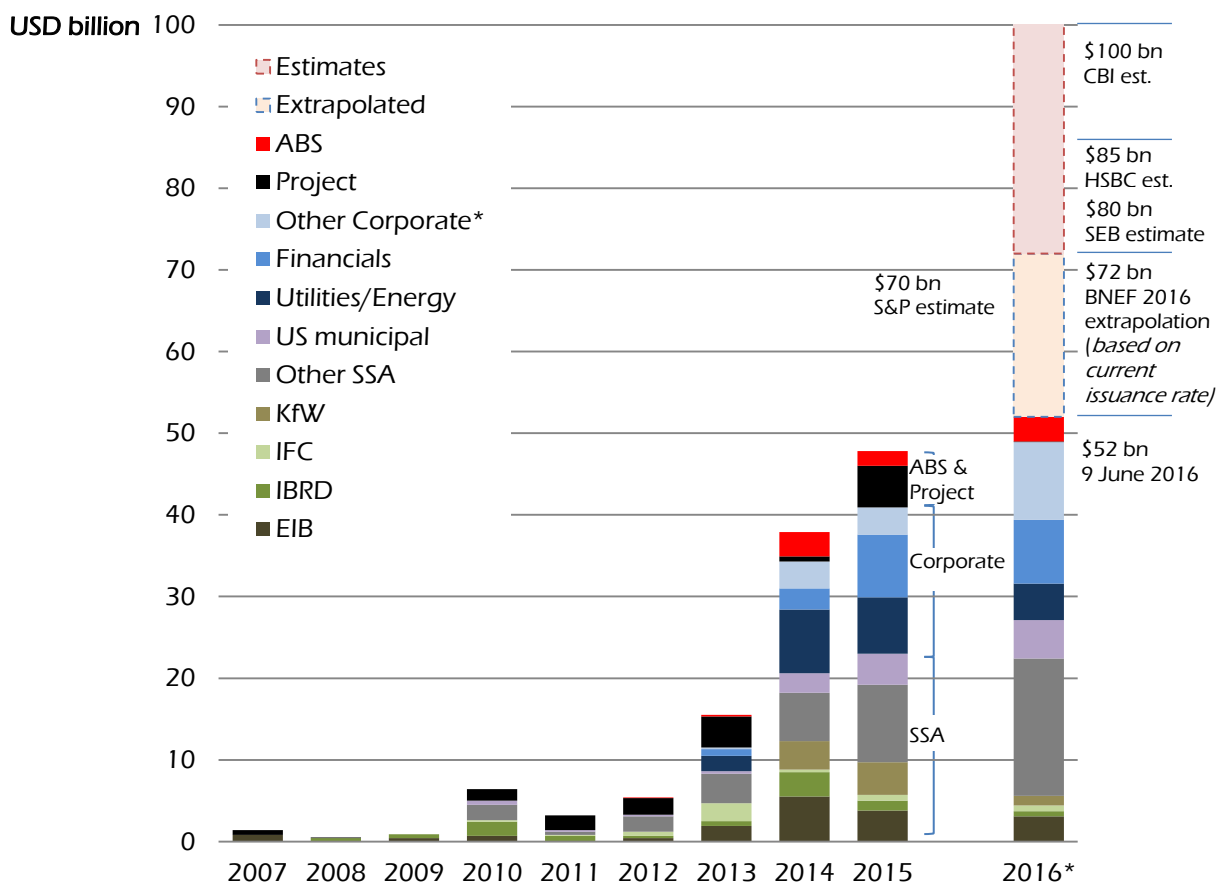
FOR INVESTORS	
Advantages	Disadvantages
Commonly cited	
<ul style="list-style-type: none"> Investors can balance risk-adjusted financial returns with environmental benefits Satisfies Environment, Social and Governance (ESG) requirements and green investment mandates Improved risk assessment in an otherwise opaque fixed income market through use of proceeds reporting Potential use of pure-play, project and ABS to actively hedge against climate policy risks in a portfolio that includes emissions-intensive assets Recognized by UNFCCC as non-state actor “climate action” 	<ul style="list-style-type: none"> Small and nascent (and potentially less liquid) market, small bond sizes Lack of unified standards can raise confusion and possibility for reputational risk if green integrity of bond questioned Limited scope for legal enforcement of green integrity Lack of standardization can lead to complexities in research and a need for extra due diligence that may not always be fulfilled
Infrequently cited	
<ul style="list-style-type: none"> Engagement and private dialogue with issuers on ESG topics related to green bond issuance results in information that enhances credit analysis, through more comprehensive credit profiles of borrowers (BlackRock, 2015) Added transparency of proceeds use and reporting requirements provides informational advantage otherwise unavailable (on spending efficiency, project details and updates, impact performance) which gives green bond investors a significant information advantage (Nikko, 2014) Tracking of proceeds use and reporting leads to improved internal governance structures and a positive feedback loop which improves the overall credit quality of the issuer (Nikko, 2014) 	
FOR ISSUERS	
Advantages	Disadvantages
Commonly cited	
<ul style="list-style-type: none"> Demonstrating and implementing issuer’s approach to ESG issues Strong investor demand can lead to oversubscription and potential to increase issuance size Improving diversification of bond issuer investor base, potentially reducing exposure to bond demand fluctuations Evidence of more “buy and hold” investors for green bonds which can lead to lower bond volatility in secondary market Reputational benefits (e.g. marketing can highlight issuer’s green credentials and support for green investment) Articulation and enhanced credibility of sustainability strategy (“money where your mouth is”) Access to “economies of scale” as majority of issuance costs are in setting up the processes 	<ul style="list-style-type: none"> Up front and ongoing transaction costs from labelling and associated administrative, certification, reporting, verification and monitoring requirements (cost estimates vary) Reputational risk if a bond’s green credentials are challenged
Infrequently cited	
<ul style="list-style-type: none"> Tracking of proceeds use and reporting leads to improved internal governance structures, communication and knowledge sharing between project side and treasury side of business (Nikko, 2014) 	<ul style="list-style-type: none"> Investors may seek penalties for a “green default” whereby a bond is paid in full but issuer breaks agreed green clauses (KPMG, 2014)

Source: OECD/Bloomberg Philanthropies (2015), Policy Perspectives, Green bonds: Mobilising the debt capital markets for a low-carbon transition: [http://www.oecd.org/environment/cc/Green%20bonds%20PP%20\[f3\]%20\[lr\].pdf](http://www.oecd.org/environment/cc/Green%20bonds%20PP%20[f3]%20[lr].pdf)

1.3. Evolution of the Green Bond Market

The green bond market emerged in 2007-08 with the first few issuances by Multilateral Development Banks. From 2007-2012, the market mainly featured issuance of green bonds by so called Sovereign Supranational and Agency (SSA) actors such as the European Investment Bank, IFC and World Bank, along with a few local government funding agencies, municipalities and national development banks. With growing market appetite for such bonds there was increasing diversification of issuers and investors participating in the green bond market. 2013 and 2014 saw more active participation from private sector issuers, including corporates and banks, supported by the launch of the GBP. Annual issuance of labelled “green bonds” rose from just USD 3 billion in 2012 to USD 47.8 billion in 2015 with issuance occurring in 14 of the G20 markets. Annual green bond issuance continues to grow rapidly and current estimates for 2016 range from USD 72 to USD 100 billion, with much of this growth being the impact of Chinese issuers in the market.

Figure 1: Labelled Green Bond Issuance and Market Composition



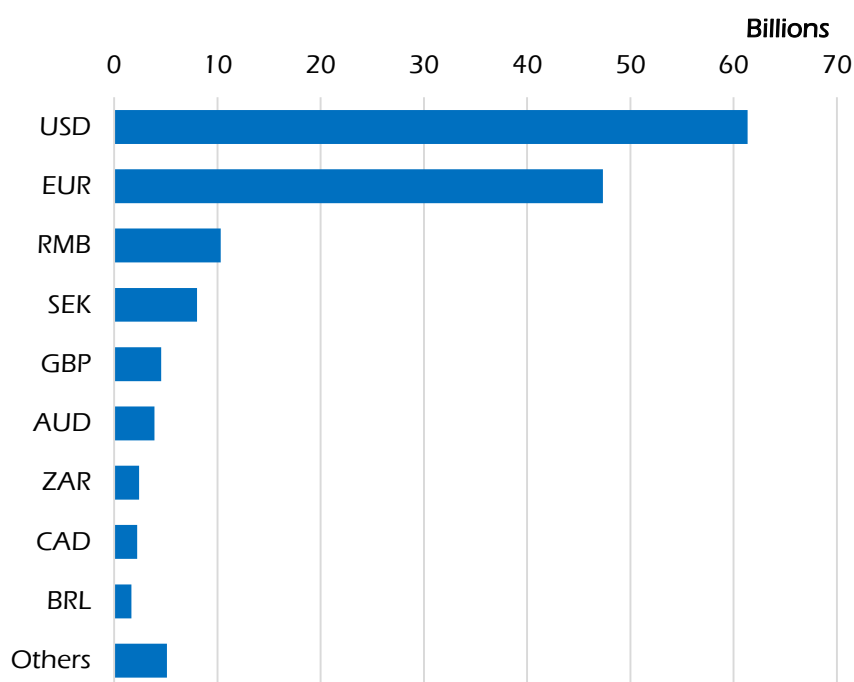
Note: “Other SSA” includes other types of Sub-sovereign, Supranational and Agency issuers such as development banks, local funding authorities, export credit agencies, etc. “Other Corporate” includes sectors such as Consumer Discretionary and Staples, Technology, Industrials and others.

Note: Figure 1 includes project bonds that are “tagged green” on the Bloomberg Terminal which are not included in other lists such as that of the Climate Bonds Initiative. Note also that 2016 figures include all Chinese green bonds issued in line with the PBOC green catalogue although some of these do not meet international investor expectations of green bonds due to the inclusion of clean coal. These amount to approximately USD 5.8 billion. These two differences mean that CBI figure for 2016 issuance amounts to USD 46.2 billion.

Source: Bloomberg and CBI data in OECD (2016, forthcoming) Mobilising the Bond Markets for a Low Carbon Transition

By the end of 2014, 93% of total (cumulative) issuance of labelled green bonds was denominated in eight currencies (EUR, USD, SEK, AUD, ZAR, GBP, BRL, CAD), and among these, bonds denominated in EUR and USD accounted for about 80%.⁷ This means that green bond issuance in all other currencies (accounting for about 60% of global GDP) account for only 7% of the total green bond issuance in the world. Figure 2 shows that currency denomination of labelled green bond issuance as of August 2016.

Figure 2: Labelled Green Bond Issuance by Currency as of 30 August 2016



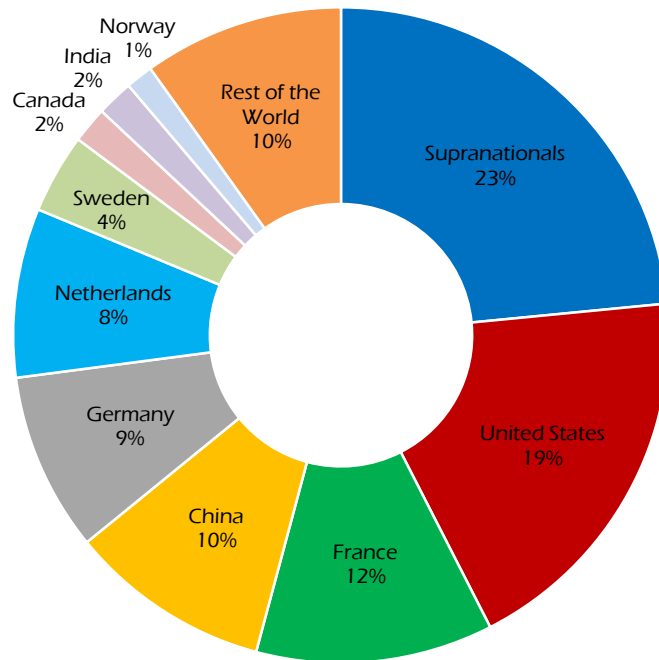
Source: CBI/HSBC (2016)

From 2013 on, there was a surge in the issuance of labelled green bonds with increased diversity of issuer profiles away from the core issuers such as Multilateral Development Banks that created the market. In 2014, the first green asset-backed securities (ABS) were brought to market by Toyota. As labelled green corporate bonds were issued, a move down the bond ratings spectrum commenced, with NRG Yield (rated Bb1 by Moody's) and Abengoa Greenfield SA (rated B by S&P) bringing high yield green bonds to the market in Q3. In 2015, corporate bonds moved beyond the utilities and real estate sectors to include transport and waste, with a GBP 400 million green bond from Transport for London and a EUR 480 million issuance from French recycling company Paprec. In 2016, the first technology company issued a labelled green bond, with Apple's USD 1.5 billion green bond backing renewable energy for data centres, energy efficiency and green materials. The seven-year security, with a coupon of 2.85%, is the first green bond from the world's largest consumer electronics company and the largest single issue from a corporation unconnected to electricity generation.

In 2015, a few more countries (regions) joined the climate aligned bond market: Brazil, Denmark, Estonia, China, Hong Kong SAR of China, India, Latvia, and Mexico. They jointly added USD 3.2 billion of these bonds to the market. The country composition of climate aligned bonds issued as of August 2016 is shown below in Figure 3.

In 2016, China emerged rapidly as the leader in green bond issuance. In the first seven months of 2016, the amount of labelled green bonds issued by Chinese issuers (including in the domestic and overseas markets) reached USD 18.5 billion, accounting for about 42% of global issuance during the same period.⁸

Figure 3: Outstanding Green Bonds by Issuing Country as of 30 August 2016



Source: CBI/HSBC (2016)

Some 45% of labelled green bond proceeds in 2015 were allocated to renewable energy, with low carbon buildings being the second biggest use of proceeds. Green bonds for low carbon buildings were represented across all the issuer types: development banks (e.g. Development Bank of Japan), corporates (e.g. Regency, Vornado Realty, Vasakronan) and municipalities (e.g. those in the US). In the past year, labelled green bonds use of proceeds has also diversified, with more green bonds issued to finance sustainable water, transport and waste projects.

The French Green Bond Market

As early as 2012, the “Ile-de-France” regional government issued one of the first large sub-sovereign public green bonds for an amount of EUR 350 million, renewed with an issuance of EUR 600 million in 2014. The Agence Française de Développement (AFD) joined other development banks with a EUR 1 billion climate bond issuance of its own in 2014.

- The French green bond market accounts for 21% of the self-labelled green bond global market as of the end of 2015. In 2015, total issuance on the French market amounted to EUR 4 billion.
- Issuers (corporate non-financials, financials and public sector), investors and rating agencies alike are represented.

The French market has traditionally been at the forefront of the development of the green bond market.

After the first years where supranationals, agencies and government were the most active issuers, 2014 marked a turning point for corporates. Following this worldwide trend, the French market has also recently experienced increased corporate activity. Throughout 2015, French non-financial corporates, financials and public sector agencies issued almost EUR 4 billion in green bonds. As a result of this rapid diversification of issuers, a diversified ecosystem has emerged in France.

In the private sector, the largest issuances came from French corporates. In the energy sector, Électricité De France (EDF) issued a EUR 1.4 billion green bond in 2013 and Engie (formerly GDF Suez) issued the largest green bond to date at EUR 2.5 billion in 2014. They both pledged not to develop new projects in the coal industry and build massively in the renewable energy sector. In addition, several French banks (Crédit Agricole, BNP Paribas and Société Générale) have developed an expertise to support corporate companies in their issuance process. French management companies as Amundi, Natixis and Mirova, among others, have announced the launch of investment funds in projects related to energy transition and are committed to reduce the carbon footprint of their portfolios. In the insurance sector, AXA launched the AXA WF Planet Bond fund to encourage clients to invest in the low carbon economy. Agencies specialized in Environmental, Social and Governance (ESG) analysis and rating such as Vigéo or Novethic contribute to the dynamism of this ecosystem.

Meanwhile, the French Government has played a pro-active role in promoting green investment. It passed an Energy and Green Growth Act into law which aims to reduce final energy consumption by 50% in 2050 compared to 2012 and to reduce fossil fuel consumption by 30% in 2030 compared to 2012. In addition, Article 173 of this law introduces mandatory environmental reporting for institutional investors (asset managers, insurance companies, pension and social security funds). The French Government has also endorsed non-monetary incentives such as the creation of a public label called “Transition Energétique Climat” which excludes any support to fossil or nuclear energy and specifies positive investment areas that can be used by funds. The list of positive investment areas was based on the Climate Bonds Initiative Taxonomy.

2. Green Bond Guidelines and Standards

2.1. Background

The green bond market is underpinned by voluntary guidelines and standards, as well as more recently by rules and regulations in some jurisdictions such as China, India and France⁹. At the core, there are the Green Bond Principles (GBP), a set of voluntary guidelines elaborated by key market participants under coordination of the International Capital Markets Association (ICMA) acting as secretariat. This is complemented by the work of the Climate Bonds Initiative (CBI), as well as by the work of multilateral and other development finance and government institutions. A number of private and academic organisations provide assurance on alignment with the GBP and/or on Climate Bonds Certification, as well as on the eligibility of environmental projects. Some are also developing different types of green ratings.

2.2. Green Bond Principles

The GBP launched in January 2014 as voluntary process guidelines intended for broad use by the market that recommend transparency and disclosure, and promote integrity in the development of the green bond market. They are intended to provide the informational basis for the market to increase capital allocation to environmentally beneficial purposes through a self-regulatory framework. The GBP was updated in June of 2016¹⁰.

The GBP have achieved broad market acceptance and legitimacy, as well as growing official recognition by policy makers and regulators. As of August 2016, 122 green bond issuers, underwriters and investors have become members of the GBP and in excess of 75 organisations are observers. By extension this community is also referred to as the GBP and brings together the majority of participants and stakeholders in Green Bond market. It is coordinated by an Executive Committee of 24 members (see list in Appendix 1) constituting a representative group of key issuers, investors and intermediaries that oversee the annual update of the GBP. ICMA acts as Secretary to the GBP advising on governance and other matters, as well as providing organizational support. The importance of the GBP's membership, as well as its dedicated governance structure and organization, explain its market legitimacy and growing recognition by the official sector.

The GBP define green bonds as any type of bond instruments where the proceeds will be exclusively applied to finance or re-finance in part or in full new and/or existing eligible green projects and which follow the 4 green bond Principles which can be summarized as follows:

1. Use of Proceeds (which should be appropriately described in the legal documentation for the security and include designated green project categories)
2. Process for Project Evaluation and Selection (outlining the issuer's decision-making process in determining the eligibility of green projects)
3. Management of Proceeds (with the net proceeds of Green Bonds being credited to a sub-account, moved to a sub-portfolio or otherwise tracked by the issuer)
4. Reporting (on the use of proceeds and the temporary investment of unallocated proceeds)

The GBP also recommend that issuers use external reviewers to confirm their alignment with the key features of Green Bonds. External review providers include specialized consultancies, accountancy

firms, ESG analysts and academic organisations. The GBP furthermore recognizes the role of certification.

The 2016 version of the GBP includes important new recommendations on best practice on reporting and external reviews, including the use of templates by issuers and external reviewers, designed to be made available publicly to the market through a GBP Resource Centre¹¹ hosted by ICMA. It is expected that this will add significantly to market transparency and clarify further the process of green bond issuer alignment with the GBP.

Concerning the definition of green, the GBP explicitly lists several broad categories of potential eligible green projects aiming to address key areas of concern such as climate change, natural resources depletion, loss of biodiversity and/or pollution control. Updated in June 2016, these broad categories are:

- renewable energy (including production, transmission, appliances and products);
- energy efficiency (such as in new and refurbished buildings, energy storage, district heating, smart grids, appliances and products);
- pollution prevention and control (including waste water treatment, greenhouse gas control, soil remediation, recycling and waste to energy, value added products from waste and remanufacturing, and associated environmental monitoring analysis);
- sustainable management of living natural resources (including sustainable agriculture, fishery, aquaculture, forestry and climate smart farm inputs such as biological crop protection or drip-irrigation);
- terrestrial and aquatic biodiversity conservation, (including the protection of coastal, marine and watershed environments);
- clean transportation (such as electric, hybrid, public, rail, non-motorized, multi-modal transportation, infrastructure for clean energy vehicles and reduction of harmful emissions);
- sustainable water management (including sustainable infrastructure for clean and/or drinking water, sustainable urban drainage systems and river training and other forms of flooding mitigation);
- climate change adaptation (including information support systems, such as climate observation and early warning systems);
- eco-efficient products, production technologies and processes (such as development and introduction of environmentally friendlier, eco labelled or certified products, resource efficient packaging and distribution).

The GBP states that it will not provide detailed guidance on what is green, leaving this to either investors themselves or to other parties with special expertise. The GBP acknowledges a number of additional and complementary categories and sets of criteria defining eligible green projects in existence in the market and provides examples through links listed in the GBP Resource Centre¹².

2.3. Climate Bonds Standard

The Climate Bonds Standard and Certification scheme, developed by the Climate Bonds Initiative, aims to provide the green bond market with trust and assurance around the environmental credentials of the bonds by developing clear criteria for what qualifies as a green bond, and having approved external organisations (verifiers) check prospective green bonds' compliance against the standardised criteria. Verifiers also return after the bond has been issued to confirm that the proceeds have been allocated as expected and the issuer meets the Standard's requirements for reporting and use of unallocated proceeds. Annual reporting is then mandatory.

The Standard functions as a screening tool for investors and governments to more easily prioritize green bonds with confidence that projects funded are delivering concrete environmental benefits.

The Climate Bonds Standard fully incorporates the Green Bond Principles, so that any issuer that complies with its Standard automatically will be aligned with the GBP. The Standard differs from the GBP in that it provides more detailed criteria and requirements for issuers around use of proceeds, management of proceeds and reporting, in contrast with the GBP, which provides a set of guidelines and recommendations – but not requirements – in these areas.

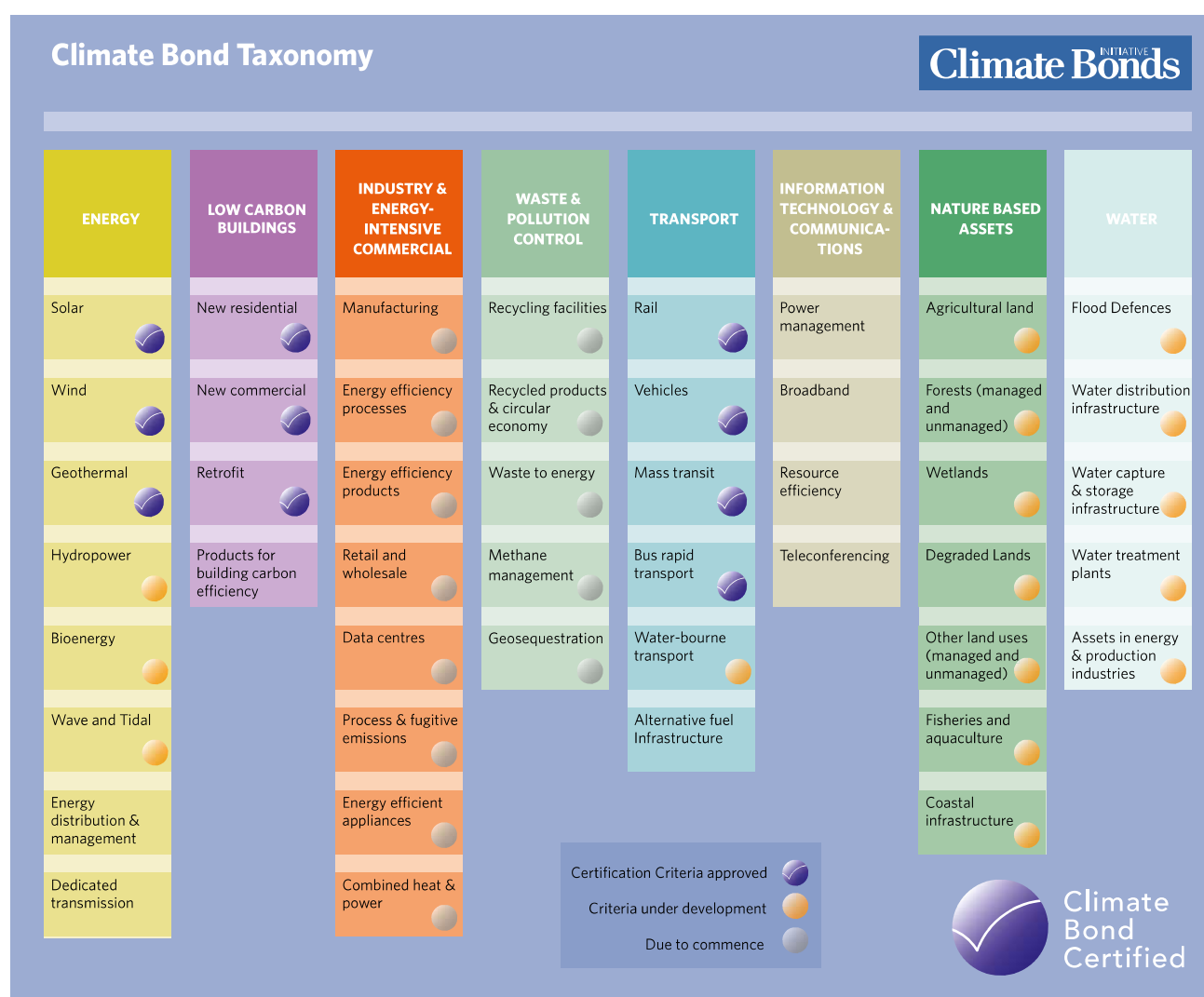
Another difference between the Climate Bonds Standard and the GBP is that it provides sector-specific criteria for what is green, while the GBP provide broad categories of what types of projects can be financed with green bonds as examples for issuers. For example, the GBP describe 'energy efficiency' as a category suitable for green bond issuance, while the Climate Bonds Standard sets out emissions performance criteria for buildings that defines what level of emission efficiency buildings must achieve to be considered low-carbon and eligible for green bond issuance.

Climate Bonds criteria are developed by sector specific international expert committees made up of academic experts, specialist institutes, development bank scientists, investor representatives and others. The scheme is supervised by an international Board of investor representatives.

The Climate Bond Taxonomy, which provides the green definitions under the Climate Bonds Standard, aims to encourage common definitions across global green bond markets. It is a public good resource that provides guidelines for prospective green bond and climate bond issuers and investors. As of June 2016, 16 green bonds amounting to USD6 billion in issuance have been certified against the Climate Bonds Standard, and 15% of the green bonds issued in 2016. There are many more certifications in the pipeline.

The GBP and the Climate Bonds Standard have already influenced and supported efforts in India and China to establish green bond market regulations and goals to help these countries best manage environmental degradation and finance green infrastructure. These cases are detailed in the next two sections: 2.4.1 and 2.4.2.

Figure 4: The Climate Bond Taxonomy underpins the CB Standard



Source: CBI <https://www.climatebonds.net/standards/taxonomy>

2.4. Local Currency Market Standards: The Cases of China and India

2.4.1. China

On December 22 2015 the People's Bank of China (PBOC, China's Central Bank) published its Green Financial Bond Guidelines¹³ for green bond issuance by financial institutions. Simultaneously, the Green Finance Committee (GFC) of China Society of Banking and Finance (supervised by the PBOC) issued "Green Bond Endorsed Project Catalogue [2015 edition]"¹⁴, the Chinese green bond definition. These two documents marked the official launch of China's domestic green domestic market. Similar guidelines were issued in early 2016 by Shanghai Securities Exchange and Shenzhen Securities Exchange for green bonds issued on these two exchanges. The initiatives taken by these guidelines make a number of important changes to the market including to:

1. Emphasize that the proceeds of green financial bonds can only be used for green assets and projects; the Green Bond Catalogue can be used for screening out green assets and projects.
2. Provide rules on the allocation of proceeds including ring-fencing, earmarking and investments allowed before the allocation.

3. Require robust environmental information disclosure regarding assets/projects type, decision-making process including standard used, and environmental performance target, etc.
4. Encourage issuers to arrange an independent party to review or to certify the bond in terms of use of proceeds and environmental performance.

According to the green definitions from Green Bond Endorsed Project Catalogue, green projects in China will cover the following sectors:

- Energy Conservation
- Pollution Control
- Resources Utilization
- Clean Transport
- Clean Energy
- Ecological Protection and Climate Change Adaption.

These announcements followed a consultative process conducted by China's Green Finance Committee designed to ensure the compatibility of Chinese green bond rules with international market practice represented especially by the GBP and CBI's Climate Bonds Standards.

Management of proceeds

In the international markets, the monitoring of use of proceeds is voluntary, and is largely performed by green bond certifiers and assurance providers (including accountancy firms, ESG analysts and academics); although it is mandatory for Climate Bonds Certification.

In China, the PBOC rule requires that the issuers of green financial bonds shall invest proceeds in green projects within the given timeframe prescribed in the prospectus, and unallocated proceeds can be invested in green bonds issued by non-financial business and money market instruments with good credit rating and market liquidity; for monitoring purposes, the issuer shall open a special account or establish a special ledger to manage and supervise the transfer, allocation and payback of green bond proceeds.

Reporting and disclosure

According to the Green Financial Bond Guidelines issued by PBOC on December 22, 2015, disclosure is a mandatory requirement. Chinese banks that issue green bonds have to submit a plan for the use of proceeds to the regulators before the issuance, and are required to disclose the use of proceeds to the market on a quarterly basis, and disclose in the annual report on use of proceeds and special auditor's report from last year.

In relation to the Climate Bonds Standard, several of the investment sectors identified by China's Green Bond Endorsed Project Catalogue are fully aligned with the Standard. The addition of pollution prevention and control as a green bond category under PBOC's Catalogue demonstrates the utility of government green bond regulations to target particular concerns in different countries. The Climate Bonds Standard has indicated it has plans to mirror the newer areas developed for the PBOC catalogue.

Third party verification

Most of Chinese issuers of green bonds obtained third party verification reports before submitting their bond issuance applications to regulators (such as PBOC's Market Department and the National Association of Financial Market Institutional Investors) or the securities exchanges. Currently, there are three domestic agencies and five foreign agencies that provide verification services in the Chinese on-shore market. These include Ernst & Young, PricewaterhouseCoopers, Deloitte & Touche, Klynveld Peat Marwick Goerdeler, DNV GL, Zhongcai Green Financing Consulting Co., Ltd., CECEP Consulting Co., Ltd. (a subsidiary of China Energy conservation and Environmental protection Group), and SynTao Green Finance Co., Ltd. Based on research, documents provided by issuers as well as the issuers' historical track records, these verifiers provide assurance to investors that the stated usages of the bond proceeds are in compliance with China's green bond catalogue, and the issuers have in place adequate internal control mechanism to ensure proper deployment of the funds and to meet the necessary disclosure requirement.

2.4.2. India

Securities and Exchange Board of India (SEBI) published its official green bond requirements in January 2016 after going through a public consultation in December 2015. The key features of the new requirements cover the definition of green bonds, external review, tracking of proceeds, and disclosure requirements, and follow the general architecture of the GBP while turning some of its recommendations into requirements. More specifically:

Definition of green: The requirements do not include a definition of what is green. Instead, SEBI will make evaluations of this on a case-by-case basis: "green bonds may be as specified by SEBI from time to time". SEBI is planning to publish a fuller paper and add further guidance.

External review: Using a second party review or third party certification to review the green credentials of the bond is optional.

Management of proceeds: Issuers are required to disclose the procedures they will use to track green bond proceeds, "including the investments made and/or investments earmarked for eligible projects" and get this verified by external auditors. Placing proceeds in an escrow account is not mandatory.

Reporting and disclosure: Issuers are required to disclose use of proceeds and list of projects to which green bond proceeds have been allocated in the annual report/periodical filings made to the stock exchanges. It is not clear yet whether environmental impact reporting will be recommended as well.

Growth of the Indian green bond market

2015 was the year India entered the green bond market, with a total of USD 1.1 billion of green bonds issued from a handful of pioneer issuers (Yes Bank, Export-Import Bank of India, CLP Wind Farms and IDBI). SEBI's statement included an explicit mention that SEBI sees the green bond market as a key tool to help raise the finance needed to meet the ambitious targets of India's Intended Nationally Determined Contribution (INDC) as established for COP21 - essentially India's climate change action plan. Such a viewpoint from SEBI demonstrates the potential for other countries to utilize the green bond market in order to meet INDCs.

In addition to China and India, Brazil, Singapore, Hong Kong and a few other countries or regions are evaluating the potential of green bonds to facilitate green investments.

2.5. Harmonization Issues

The harmonisation of green bond market guidelines and standards is currently proceeding through a combination of public consultations along with industry and official sector initiatives. There is an active dialogue between market participants both within and outside of industry initiatives, through bilateral contacts, working groups, and their own consultations. This is illustrated by the annual consultation of GBP members and observers, and the one conducted by the CBI on its standard v2.0 during 2015 in which key market participants such as the GBP and assurance providers participated.

In the official sector, the development of the Chinese Green Bond Guidelines and the related Green Bond Endorsed Project Catalogue were conducted after extensive study, internal and external discussion with, among others, the GBP and CBI. This dialogue was largely channelled through the PBOC's Green Finance Committee and continues on an ongoing basis. Domestic GB guidelines issued in India (by SEBI) were previously the subject of an international public consultation to which key market participants responded. Earlier in the year, France also invited public comments on an "Transition Energétique Climat" label that helps identify investment funds contributing to the green economy. These green funds, in order to be awarded the label, are required to invest in particular in green bonds aligned with the GBP, with the list of qualifying projects based on the CBI Taxonomy. At the EU level, supporting green bond finance through convergence of green bond standards based on market-led initiatives is on the EU's policy agenda under the Capital Markets Union.

Specific guidelines for municipal issuances have been released (the Green Muni Bonds Playbook, from CBI and NRDC). Rules are also being promoted by financial exchanges, such as the London, Luxembourg, Mexico and Shanghai Stock Exchanges, that establish minimum requirements for listing of green bonds such as a second opinion or independent verification .

The depth of the dialogue within the green bond market and the efforts made to date by regulators and the official sector to develop rules based on, or with reference to, existing industry-led guidelines standards, and in consultation with the market, are positive developments for the market. There is, however, significant ongoing and potentially also necessary work on green bond taxonomies and green bond assessment criteria that could give rise to divergence, and will need further coordination. This further guidance is required especially (i) on eligible green projects and categories, and (ii) on green bond processes and alignment.

A growing number of sources are available or are being developed that define eligible green projects and categories. The sources are, amongst others, but not limited to:

1. The GBP project categories updated in June 2016;
2. Climate Bonds Standard, providing currently specific criteria for wind, solar, low carbon buildings, low-emissions transport, geothermal energy, water, and land-use;
3. The "Green Bond Endorsed Project Catalogue" released by the China's Green Finance Committee;
4. Industry standards e.g. those for real estate proposed by the Global Real Estate Sustainability Benchmark (GRESB);

5. Accepted investment categories under the French “Transition Energétique Climat” label, based on the Climate Bonds Taxonomy.

This multiplication of taxonomies from industry and official sector sources is welcome as it can clarify for issuers and investors the scope of acceptable use of proceeds for green bonds, but it could over time lead to overlap, possible divergence and uncertainty. The GBP has created a working group that aims among others to identify the most reputable and comprehensive taxonomies in order to help further publicise them to the market.

Both GBP and the Climate Bonds Standard released by CBI and others give guidance on matters of green bond processes and alignment. This provides options for the market, but can also lead to possible confusion. This is a matter which is being considered for review by ICMA and CBI.

The rules and regulations described earlier in China, France and India, have created precedents where the GBP serves either explicitly or implicitly as the basis for official recognition of GBs. This is very positive as it promotes the compatibility of such national rules with the global voluntary practices elaborated by market participants for the growing international green bond market. Nonetheless, issues can potentially arise from misunderstandings on the voluntary nature of the GBP and related standards, and the level of compliance that official regulations may require or expect.

This can be illustrated, for example, when the GBP gives an issuer the flexibility of using an in-house specialist or an external assurance provider, while a regulation may require the latter; or alternatively, when the GBP encourages the use of a summary reflecting the main characteristics of a green bond in relation to the four components of the GBP while a country’s regulation may make it obligatory.

The use of the GBP as the basis for official recognition of green bonds promotes the practices developed in the international green bond market and their voluntary nature. It also mitigates the risk of a multiplication of incompatible national rules and regulations. The GBP does not prevent countries from making certain requirements mandatory if compliance with voluntary rules is not considered sufficient.

Green Sukuk – Combining the Momentum of Islamic Finance Growth and Green Bond Expansion

The concept of green sukuk is gaining more attention in the financial community. Sukuk are fixed income instruments issued based on the principles of Islamic law and represent an ownership in underlying assets or earnings from those assets. While sukuk are often described as Islamic bonds, there are also types of sukuk that have equity-type risk-sharing structures. Similar to green bond, proceeds from green sukuk will be utilised to finance green projects that include supporting the preservation or protection of environmental and natural resources; conservation and renewable of energy; and climate change. Sukuk which by nature is asset-focused and linked to the real economy has close affinity to responsible finance that also seeks to maximize financial returns and social good.

Given its sustainable and responsible features, sukuk is a natural fit to be used to finance a green project. Green sukuk combines the momentum of sukuk and green bond market growth. In addition to offering the same benefits as those of green bond, green sukuk would bring opportunities that include:

1. providing an alternative source of long term fund raising solution to address funding gap that may not be able to be met by conventional financing alone;
2. offering a new asset class for risk and investment diversification targeting investors with strong appetite for ethical and socially responsible investing;
3. providing access to Islamic investors with appetite for socially responsible investments who were not able to invest in green bond; and
4. raising the profile of issuer's corporate image as a forward thinking and innovative organisation that support sustainable social agenda.

Green sukuk target a wider investor base that include both Islamic and conventional investors, thus, creating a higher demand – hence potentially yielding a more competitive pricing. Taking Malaysia as an example, Ringgit sukuk issuance attracts lower yield than bonds with a saving difference of about 4 to 7 basis points.

In accessing an even bigger pool of investor base, green sukuk have the ability to capture retail investors seeking responsible investments. Malaysia's Danainfra pioneered the first exchange traded sukuk issuance of 10 years, creating a new asset class for retail investors in this market. Danainfra constructs and operates Mass Rapid Transit (MRT) to boost rail-based public transportation to alleviate traffic congestion that contribute to reduction in carbon emission by motor vehicles; hence, potentially could fall under a green initiative.

The advent of a green sukuk issuance is imminent. The Islamic Declaration on Global Climate Change, published in August 2015, called for action on climate change from governments, business, investors and Muslims around the world. The annual World Islamic Economic Forum held in November 2015 also dedicated a session exclusively to Islamic Finance for Green Technologies. These efforts have garnered new interest on Islamic finance particularly from traditional markets looking for ethical and SRI investing.

Source: Bank Negara Malaysia

3. External Reviews and Ratings

Throughout the growth of the green bond market, there has been a strong focus on the integrity of the green label. Investors primarily articulate this as a need for confidence in the green credentials of projects and assets financed by green bonds. Beyond that primary concern, there can be concerns around reporting arrangements, management of proceeds, and independent assurance/certification.

There are a range of mechanisms to verify that green bonds finance qualifying green assets

The most common mechanism is for green bond issuers to use some sort of external review to assure investors of the green credentials of the bond pre-issuance and post-issuance (section 3.1). Green bond ratings could also guide the market going forward (section 3.2)

3.1. Green Bond Reviews

External reviews of green bonds are intended to provide investors with confidence in the issuer's claims for the environmental credentials of the bonds both before and after issuance:

Pre-issuance: External reviews are used pre-issuance to provide investors with information, particularly on what types of green projects the bond will fund and what management processes the issuer has in place to ensure the funds are allocated only to these green projects. This can be done through a 'second opinion' or through third party certification under the Climate Bonds Standard.

Post-issuance: Post-issuance, external reviews are used to assure investors that the funds are allocated as was promised pre-issuance, and provide more information on the environmental impacts of the bonds. This can be done through an auditor statement or under the third party certification process of the Climate Bonds Standard.

According to Bloomberg, as of mid-2016 some 80% of green bonds use a second opinion or third party certification.

External reviews are an important improvement on issuer disclosure (first party review), as it provides an additional check on the validity of the issuers' claims for the environmental credentials of green bonds.

Another benefit of external reviews is to help educate new green bond issuers on what information investors are looking for to be confident of the environmental credentials of a green bond, both during pre-and post-issuance.

3.1.1. Second Party Reviews

Second party reviews are assessments of the credentials of green bonds that are provided for prospective green bond issuers by an external organisation with environmental expertise. Organisations that provide second party reviews for green bonds include CICERO, Vigeo, DNV GL, Oekom, Sustainalytics and KPMG. Second party review is the most common type of external green bond review to date.

The process of second party reviews pre-issuance

Second party reviewers are approached and commissioned by prospective green bond issuers to review their issuance framework – what proceeds will be used for, how the green projects will be

selected, management processes for the proceeds and how issuers will report (i.e. the four pillars of the GBP). Methodologies used vary among different reviewers. Some also provide a more in-depth review of the environmental credentials of the green projects to be funded by the bond.

Often the second party is engaged even earlier in the process, and works with the issuers to help them with the initial development of a green bond framework, before the second party provider then evaluates the framework.

The second party review of the green bond is summarized in a short report. The report is provided to investors, and best practice is that the report is also disclosed publically through venues such as an organisation's website and now the online GBP Resource Centre¹⁵ hosted by ICMA.

Second party reviews are also provided post-issuance to update investors of what the funds are allocated to in practice

Second party reviewers can also be engaged by issuers to subsequently provide additional reviews of the green bond post-issuance. Post-issuance review includes reviewing the allocation of proceeds to the categories of green projects that were defined as eligible pre-issuance, and reporting of key performance indicators (which can include environmental impact).

Advantages of second party reviews

- A second party review is a valuable improvement on issuer disclosure, as the second party provides some additional comfort to investors on the validity of the issuers' claims.
- The second party providers can work with the issuer to ensure the information investors are looking for is disclosed.

Limitations of the second party review model

- *Relatively high transaction costs for investors, limiting scaling of the market:* The reviews can lack standardisation across different providers and even within the same provider. This means investors have to evaluate the green credentials of each individual green bond issuance, which can make their transaction costs relatively high.
- *Reviews can lack independence:* Second party providers can be involved in helping the issuer develop the green bond framework as well as checking it, similar to the case for credit rating agencies.
- *Reviews often provide limited disclosure of environmental performance criteria:* Many reviews simply disclose the broad types of green projects to be funded (e.g. energy efficiency projects), but do not provide further details on environmental performance required within these broad categories (e.g. energy efficiency projects funded must reduce emissions intensity by a minimum of 30%). This makes it difficult for investors to evaluate the environmental impact of *the bond*. Reviewers generally don't go back after issuance of the bond to check whether the proceeds have flowed as expected.

Suggested improvements on current practice

- Increased consistency and detail in disclosure for second party reviews would be an important improvement going forward.

- Second party reviews should disclose the adherence to each of the pillars of the Green Bond Principles, as well as more detailed information on the green credentials to include disclosure on adherence with selection criteria for green projects within each of the high level categories provided by the Principles and green bond taxonomies such as the Climate Bonds taxonomy and those of the MDBs.

3.1.2. Independent Third Party Post-issuance Assurance

Current practice

As recommended by the GBP, an increasing number of green bond issuers commit to annual post-issuance auditing of green bond proceeds. Audit firms then provide assurance of allocation of proceeds to eligible green projects. This differs from post-issuance second party reviews in that audit firms provide it, and the focus is generally on the financial allocations to green projects – it does not normally include a review of the environmental impact.

Advantages of post-issuance auditing

- Transaction costs can be lower, as the assurance can be integrated with general financial audits for the issuer
- More independence than the second party review; adherence to international assurance standards

Challenges of post-issuance auditing

- Assurance does not cover the environmental impacts of the projects funded by the bond;
- Post-issuance auditing might result in a requalification of the green bonds and the risk for investors to see their investments classified as not green.

3.1.3. Third Party Pre-issuance Certification and Post-issuance Verification

A smaller number of green bonds use third party assurance to certify their bonds against standards using independent, approved verifiers.¹⁶ Currently, the Climate Bonds Standard is the only tool in the market offering this certification model. As of March 2016, certification is used by USD 5.5 billion of green bonds – although this is fast growing - and an additional approximate USD 8 billion of green bonds in the Chinese market has followed the certification methodology without being directly certified by the Climate Bonds scheme.¹⁷ Regarding process, the verifier, who is arranged by the issuer, will review pre-issuance the bond against relevant sector-specific criteria for the environmental impact of projects and assets, as well as the standard's criteria for management of proceeds and reporting. Issuer compliance is then checked post issuance by the verifier.

Advantages of a standardised certification model

- *Reducing transaction costs through standardisation:* Standardising the evaluation of green credentials of the bonds reduces transaction costs for investors, issuers and policy makers, as they can evaluate the green credentials of the Standard once, instead of for each individual bond issuance.

- *Verifiers are less reliant on internal environmental expertise:* Market scalability is enhanced because a standards-based approach can be verified by a much wider group of consultants, notably global audit firms with worldwide reach.
- *Independence from issuer increased compared to second party review model:* Verifiers are independent reviewers, as they did not develop the framework they are reviewing issuers' against.
- *Science-based criteria:* The sector-specific criteria for the environmental impact of the assets can be created with a base in science and international policy targets.

Challenges of a standardised certification model

- It is time-consuming and resource intensive to develop robust sector-specific criteria. The limited availability of criteria in different sectors has limited the use of standards in the early stages of the market. However, increasing availability of sector-specific criteria is reducing this barrier.
- Issuers may be under the perception that undertaking third party assurance is costlier, in effort and money than a second party review, although the reverse can be the case in practice.
- Post issuance verification can give rise to confidential price sensitive information that must be managed with due consideration to its market sensitivity as well as to legal and regulatory implications.

Suggested improvements on current practice

Co-opting existing infrastructure is a tool to enforce verification processes in the green bond market in advanced economies. Proposed actions are:

- Engaging the “big 4” professional services firms internationally (KPMG, PwC, EY and Deloitte), tapping into their expertise in auditing and assurance. Three of these firms are already active participants in developing the Climate Bonds Standard, serving on its Assurance Committee.
- Engaging local auditing firms, while requiring them to apply a standardized approach to enable scale and improved access to international investors.

3.1.4. GBP 2016 Recommendations on External Reviews

The 2016 edition of the GBP makes important recommendations on the standardisation and public disclosure of external reviews including by making them and/or a recommended template available online on the GBP Resource Centre¹⁸. Overtime this database is expected to become a key resource for market participants to publicly confirm alignment with the GBP, and to represent a significant step forward in promoting market transparency.

3.2. Green Bond Ratings

Current practice

Rating agencies are potential players for providing external reviews of green bonds. Certain rating agencies are exploring providing a rating of disclosure and transparency of green bonds. Such

disclosure-focused ratings would differ from ratings of environmental credentials, such as provided by second party reviewer CICERO with their “Shades of Green” rating methodology.

The international ratings agency Moody’s launched a green bond rating methodology and service in 2016 – the first from a ratings agency. The Moody’s Green Bond Assessment product is an evaluation focused on the issuer’s adherence to best practice process – use of proceeds, management of proceeds and reporting rather than a direct evaluation of the relative level of green of assets and projects financed by the bond. For that aspect Moody’s scores a bond based on the green criteria resource that has been used to justify its green status, such as GBP, GFC or CBI. There is also room in the methodology for ongoing environmental impact assessment.¹⁹

Advantages

- Rating agencies could integrate the offering with their credit rating services. A robust and effective green bond product will help expand the labelling and certification of green bonds into the much broader and deeper mainstream debt capital markets.
- The green bond reviews could benefit from rating agencies’ credibility in the mainstream financial markets. Moody’s proposed Green Bond Assessment in particular can help to push external reviews of green bonds in the US market, as Moody’s has significant footprint and credibility there.

Challenges

- Certain rating agencies are currently exploring green bond assessments that are focused on rating the process (management of proceeds, disclosure and reporting), rather than providing detailed rating on how green the projects funded by the green bonds are.
- Investors may want more on green asset quality, which Moody’s do not directly have the expertise to assess
- As for second party providers, rating agencies might face lack of independence issues.

Suggested improvements on current practice

- Adapt methodologies to ensure that a green bond cannot get a high green bond rating based on good management of proceeds and reporting processes alone if the bond is not funding sound green projects.
- Evaluate the green credentials of the bond against more detailed definitions of green than the high level categories proposed by the GBP.

4. Indices and Listings

4.1. Green Bond Indices

An overview of the green bond indices in the market and their inclusion criteria is set out in the figure below.

Figure 5: Green Bond Indices Available in the Market

	Min Size	Investment Grade only	Bond types	Coupon	Maturity	Green criteria
Solactive	\$100m	Mixed (non-investment grade and unrated included)	Corporate, Bank, Development Bank,	Fixed only	>6 months	Complies with the Climate Bonds taxonomy
S&P Dow Jones	n/a	Mixed (non-investment grade and unrated included)	Corporate, Bank, Development Bank, Municipal (ex US)	Fixed, zero, step-up, fixed to float, floaters	>1 year	Complies with the Climate Bonds taxonomy Separate unlabelled climate project bond index
Barclays & MSCI	\$250m	YES	Corporate, Bank, Development Bank, Municipal (ex US), ABS	Fixed only	Matures in index	Complies with the Climate Bonds taxonomy MSCI environmental assessment, unlabelled climate bonds are eligible
Bank of America Merrill Lynch	\$250m	YES	Corporate, Bank, Development Bank, Municipal (ex US)	n/a	>1 month	Complies with Bloomberg green bond definition

Source: CBI

Advantages of green bond indices

- As the bulk of assets under management globally are passive investments tracking indices, green bond indices are an important mechanism to ensure green bond investment is accessible to the mainstream, passive funds. This facilitates the green bond market to be scalable, and avoid remaining a niche market
- Development of a range of green bond indices allows a range of green bond funds to be launched tracking the different indices.
- Another important role for green bond indices is building a performance history for the financial performance of green bonds.

Challenges for developing green bond indices

- Potential lack of agreement of a qualifying definition for what is green is a barrier to green bond indices, as an index has to use set criteria for what qualifies as a green bond and therefore inclusion in the index. At present CBI provides base data for the Solactive, S&P and Barclays MSCI indices, and synchronises with Bloomberg, the data provider for the Bank of America index. CBI is also now working CECEP/CCDC on base data for the new CCDC climate bonds index.

- In emerging markets, there are additional challenges to building green bond indices. This includes a smaller scale of the market, liquidity, and a less developed investor-base.

Suggested improvements on current practice

- Technical assistance could be provided in emerging economies to encourage the development and use of green bond indices in line with local green bond market regulation.

4.2. Green Bond Stock Exchange Lists

As of June 2016, Oslo, Stockholm, Luxembourg, Mexico, Shanghai and London have launched green bond lists.

Advantages:

- The green bond lists on stock exchanges are useful in improving the visibility of green bonds to investors, and encourage secondary market trading.
- The lists are playing a role in pushing the market to use external reviews of the green credentials of the bond – which is important to ensure the environmental integrity of the market - as this is a condition the stock exchanges require to include green bonds on their lists.
- The green bond lists can also help push the market to common definitions around what is green in the green bond market, and therefore reduce transaction costs and facilitate trading. In the future, the stock exchanges can make inclusion in the lists conditional on meeting certain green criteria.

Challenges:

- Green bond lists can only play a role in defining what is green by making inclusion in the list conditional on meeting certain environmental criteria when more standardised bonds are available in the market; the stock exchanges are not well placed to be the initial developer of standardised green definitions.

Suggested improvements on current practice:

- Green bond lists should be established also in emerging economies entering the bond market, such as China and India. Mexico's adoption is a welcome step.

5. Barriers to Scaling-up the Green Bond Market

Many medium- and long-term green projects with steady cash flows are good candidates for financing by the bond market. However, the bond market, which currently provides about one third of total financing for corporates globally, has yet to play a comparable role in green financing.

The potential for scaling-up the green bond market is tremendous. In the short term this will depend on policy, market and institutional barriers constraining its development being addressed; in the longer term the primary constraint is the slow pace of development of climate change mitigation and adaptation investments by governments. This section identifies several challenges to the growth of the green bond market recognizing that their importance may vary for different markets.

The selection of these challenges is supported by the results of a GFSG survey on “barriers to scaling up the green bond market”. This GFSG survey received responses from a group of 24 key investors, issuers and intermediaries in the green bond market. According to the survey results, respondents confirmed as important barriers by 74% “lack of awareness of green bond benefits”, by 43% “lack of local definition of green bonds”, by 41% “high cost of meeting green bond requirements”, by 56% “lack of ratings, indices and listings”, by 55% “lack of targeted incentives for green bond issuers”, by 67% “difficulties for international investors to access local green bond markets”, and by 59% “lack of domestic green investors”.

5.1. General Challenges to Bond Market Development

Underlying challenges include the underdevelopment of a domestic institutional investor base; underdevelopment of the credit rating system; lack of benchmark yield curves; lack of risk-hedging instruments and insufficient market liquidity. Many of these fundamental challenges, if addressed in a synchronized way, can be immediately beneficial to the development of local currency green bond markets.

5.2. Lack of Awareness of the Benefits of Green Bonds and Existing International Guidelines and Standards

For some countries a lack of knowledge of existing international standards is an important barrier. In addition, in some countries there is a lack of understanding of the potential benefits of the green bond market amongst policy makers, regulators, as well as potential bond issuers and investors. Some finance professionals may simply not have heard of green bonds. In these cases global green bond market participants, for example supranational organizations and MDBs, can communicate the benefits of green bonds to these various groups.

5.3. Lack of Local Green Bond Guidelines

For a variety of reasons, some countries may need to develop their local currency green bond markets. For example, in countries where capital investment is not fully open, the local green bond markets will rely on local investors. In other countries, the priorities of their environmental challenges (e.g., air and water pollution being the top priorities) are somewhat different from other countries that focus on controlling greenhouse gas emissions, such as the case is in China with regards to air pollution. In such countries policy incentives may be used to support the local green bond market. In some of these markets they may require additional definitions and disclosure than the Green Bond Principles require for particular categories. For these countries, the first barrier is the lack of local definitions and disclosure requirement for green bonds.

5.4. Costs of Meeting Green Bond Requirements

The verification of the “green bond” status and the monitoring of use of proceeds by issuers for green purposes are performed mainly by second opinion or third party assurance providers (such as accountancy firms and specialized research agencies). However, many potential issuers still do not have the knowledge of how such a verification process may work. In some markets, the relatively high cost of obtaining a second opinion or third party assurance (ranging from USD 10-100k) is also a barrier for some small issuers. Some issuers have also complained about the high costs of managing disclosure requirements.

5.5. Lack of Green Bond Ratings, Indices, and Listings

Green credit ratings, which incorporate environmental information in the ratings of the bonds, can help the market evaluate the alignment of green bonds with international guidelines and standards such as the GBP and the CBI Standard, and may also help investors understand the impact of environmental factors in the overall risk profile of issuers. Green bond indices can guide bond investors to invest in green bonds that meet their criteria. This can result in increased fund flows that can also help reduce funding costs for green issuers. Green Bond listing criteria implemented by stock exchanges can have similar benefits. However, as of now, only a relatively small number of rating agencies, index companies and stock exchanges have promoted such green products and policies.

5.6. Lack of Supply of Labelled Green Bonds

In some markets, investor appetite for green bonds is relatively strong, as evidenced by significant oversubscriptions of recent issuances. For such markets, the lack of supply of “labelled” green bonds is a major constraint. At a higher level this reflects the lack of bankable green projects in some markets that can be financed or re-financed through green bonds. This focuses attention on the need to foster robust enabling policy environments necessary for pipelines of green projects to emerge at scale. In addition to the lack of issuance of bonds whose proceeds are spent on green projects, there is also the issue of how many potentially qualifying bonds are actually labelled as “green”. The number of bonds that meet one of the existing standards (ICMA, CBI, or China definitions) and could potentially qualify for a green label could be many times larger than the number of “green bonds” that are already labelled as such.

5.7. Difficulties for International Investors to Access Local Markets

While global green investors exist, they sometimes find it difficult to access certain local markets. One problem here is that green bond definitions and disclosure requirements differ across markets. These differences increase transaction costs as bonds recognized as green in one market need to be re-labelled or re-certified in another market. Another barrier to cross-border green bond investing is the lack of risk hedging products (e.g., against currency risks).

5.8. Lack of Domestic Green Investors

In markets where green bonds are mostly bought by local investors due either to capital controls or definitional barriers, the existence of institutional investors that have a preference for green assets is important to ensure there is sufficient demand. However, due to factors such as the lack of disclosure requirements for institutional investors to reveal environmental information of their asset holdings and the lack of capacity to quantify the environmental costs and benefits of their investments, many investors do not have the tools to distinguish between green and non-green assets.

6. Emerging Options

In line with the G20 Green Finance Synthesis Report, this section discusses options for developing green bond markets, drawing on current actions that are being taken, that governments can consider on a voluntary basis. Due to differences in local conditions, some options that are considered as good practices in one country may not be suitable for another country. This report therefore has focused on stocktaking, knowledge sharing, and developing voluntary options for countries to choose from and for bilateral/multilateral collaboration.

6.1. Promoting the Integrity of Green Bonds and Raising International Awareness of their Benefits

Green bonds have developed to date largely thanks to market-led initiatives that have produced international guidelines and standards represented in particular by the GBP and the CBI Standard that aim to promote and protect the integrity of the green bond market. As a result, they have been recognised by the official sector and have served as a key reference for countries such as China and India. The key to green bond market development is effective market education on the benefits of green bonds (for sustainable development, for issuers, and for investors) as well as the awareness of international green bond standards and disclosure requirements. Promotional efforts can be organized by government agencies, regulators, market associations, financial institutions, development agencies, rating agencies, second opinion and third party assurance providers. MDBs and international organizations with a mandate for sustainable investment should also organize dissemination events in countries that they cover. Demonstration issuances (e.g., by national or local governments, development banks, large commercial banks and corporates) have played a critical role in educating potential issuers and investors, setting best practices, and expanding issuance to markets that do not yet have experience with green bonds.

6.2. Providing Technical Assistance for Developing Local Green Bond Guidelines

As previously described, due to reasons ranging from capital controls to domestic environmental considerations and other policy preferences, some countries may choose to develop their local currency green bond markets. In these cases, it is important that international lessons and experiences are made available and fully studied in developing their local green bond definitions, taxonomies, and disclosure requirements. International organizations with green finance specialisation or capabilities should assist in capacity building for the drafting of key documents as the basis for operating the local currency green bond markets.

The objective of local green bond standards should be to ensure that while the national agenda is met, these local green bond rules do not create unnecessary barriers to or transaction costs for cross-border green capital flows. Local currency green bond taxonomies should reflect where necessary the countries' demands for combating its domestic environmental challenges, while remaining as consistent as possible with international guidelines and standards (such as the GBP and the CBI Standard). They should also be simple enough to enable most market actors, who are not specialists in the environmental areas, to comprehend. In such cases where taxonomies will be used by authorities or regulators to approve green bond issuance and to grant favourable policy support (such as interest subsidies and guarantees), these definitions need to be sufficiently specific so that they can form the basis for decision making.

6.3. Providing Technical Assistance for Local Currency Bond Market Development

Technical assistance for developing local currency bond markets, in areas such as the development of benchmark yield curves, ratings, risk mitigation mechanisms, and FX hedging products can also be helpful for growing the green bond market. Such efforts should occur in collaboration with any green bond market participants already active in a country. As a considerable amount of the green bond market's growth has occurred as a result of private sector development and innovation, governments should work to support such efforts. Thus, these suggestions are only for members' consideration on a voluntary basis.

6.4. Reducing Costs of Green Bond Issuance and Reporting

Standardisation of methodologies, as GBP is doing with reporting templates and CBI is doing with green definitions, are designed to lower the cost and effort of verification. Governments, international organisations and NGOs can sponsor the development and dissemination of tools to support cost-effective analysis of the environmental benefits of green bond-supported projects. Such efforts can contribute to mitigating global market inefficiencies whereby environmental benefits are not adequately priced.

The public sector and MDBs can also consider measures to reduce the costs of green bond verification in early stage markets (e.g., by covering part of the costs). The IFC has already indicated it is exploring measures to do this in relation to commercial bank green bond issuance in emerging markets.

6.5. Developing Green Bond Indices, Ratings, and Stock Exchange Lists

Index companies and other financial institutions can develop green bond indices as a basis for green bond ETFs and other fund products. Rating agencies could further develop or acquire the technical expertise needed to launch green bond ratings that cover the full spectrum of bonds. Securities exchanges could consider green bond listings as a future business driver.

International organizations, public research institutions, and NGOs can provide further support group share tools and systems to make it easier (and less costly) for issuers to manage their green assets, and for second opinion providers, rating companies, and index companies to assess the green impact of the bond-financed projects. These include various analytical tools (such as open source solutions for quantifying the environmental benefits e.g. emission reductions, energy savings, and water savings) and related reporting tools (such as data aggregators that reduce the reporting cost of individual institutions).

6.6. Labelling qualified "green bonds"

For bonds that qualify as "green" but are not yet self-labelled or verified by third party assurance, financial service providers and NGOs can consider labelling them as "green bonds". Subject to being consistent with accepted practice for new green bonds such as the GBP and the Climate Bonds Standard, such labelling exercise can substantially increase the availability of green assets, thereby easing supply-side constraints on some markets.

6.7. Promoting international collaboration to facilitate cross-border green capital flows

Different markets could collaborate to facilitate the harmonization of definitions and verification process of green bonds and development of green-asset backed securities acceptable by foreign investors. These efforts can take the form of bilateral collaboration between markets, to demonstrate

their effect of enhancing cross-border green bond investment flows. In such bilateral collaborations, a mutually-accepted, standardized “green bond term sheet” that incorporates best practice terms and conditions and applies leading green bond guidelines such as the GBP and the Climate Bonds Standard could be adopted. A sample term sheet, prepared and contributed by the Bank of England, will be presented as an annex to one of the green bond background reports.

6.8. Incubating Local Green Investors

For markets that rely mostly on local investors, efforts can be made to “incubate” domestic green institutional investors, via building capacity for them to identify green assets, to improve transparency of holdings, and to adopt ESG principles in investment decision-making. Steps that can help incubate a local green investor base include:

- Strong government signals in support of green investment;
- Green finance associations that help raise awareness and provide training for green investment practices;
- Encouragement for institutional investors to examine the environmental performance of their asset holdings;
- International collaboration on capacity building are necessary steps in “greening” local investors; and
- Giving strategic investment mandates for green bonds by public entities (e.g. public pension funds, sovereign wealth funds and development banks). One case in point is that KfW is an anchor investor for green bonds (see Appendix 2 for the case study). Brazil’s BNDES state development bank is another example of a public entity that supports green bonds.

6.9. Enhancing the Role of MDBs/DFIs and Public Entities in Developing Green Bond Markets

One of the low-cost approaches to developing the green bond market, and leveraging the substantial experiences that have been accumulated by many multilateral development banks (MDBs), development financial institutions (DFIs) and public sector entities (such as local governments) is to have them play a more important role in green bond market development. Possible areas that MDBs and DFIs can contribute to significantly include:

- Demonstration issuance, including issuance in local currency green bond markets;
- Providing credit enhancements (such as IFC’s green bond guarantee program);
- Providing analytics and tools for environmental impact analysis for green-bond supported projects;
- Setting up vehicles to aggregate investor demand for emerging markets green bonds (see case study from Sweden in Appendix 3);
- Serving as an anchor investor for green bonds.
- Providing means to support premiums (e.g., by offering credit guarantees on green projects),

Through developing green bond markets, MDBs and DFIs can also kick-start the overall growth of a country's bond market. For example, credit enhancement for municipal green bonds can grow a local municipal bond market more broadly. The growth of India's bond market in response to public sector support for infrastructure bond issuance is an example of such an effect.

Appendix 1: GBP Executive Committee (June 2016)

<u>Investors:</u>	<u>Issuers</u>	<u>Underwriters</u>
<ul style="list-style-type: none"> - Actiam - Blackrock, Inc. - California State Teacher's Retirement System (CalSTRS) - KfW - Natixis Asset Management/Mirova - Standish Melon Asset Management Company LLC - TIAA-CREF Asset Management - Zurich Insurance Group 	<ul style="list-style-type: none"> - NIB - Engie - European Bank for Reconstruction and Development (EBRD) - European Investment Bank (EIB) - International Finance Corporation (IFC) - Unibail-Rodamco - Unilever - World Bank 	<ul style="list-style-type: none"> - Bank of America - Merrill Lynch - BNP Paribas - Crédit Agricole CIB - HSBC - JPMorgan Chase & Co. - Morgan Stanley - Rabobank - Skandinaviska Enskilda Banken AB (SEB)

Appendix 2: KfW as Anchor Investor For Green Bonds

Discussions in the “green bond” work stream have flagged the option of public agencies acting as issuer or an anchor investor for green bonds as one of several options to encourage the development of green bond market. As an illustration, the German KfW might serve as an example of the role anchor investors can play in promoting the green bond market’s growth. This note gives a short overview of KfW’s activities as an active market player in the green bond market.

KfW, a public-law institution based in Germany, is a promotional bank that is owned by the federal government (80%) and the federal Länder (20%). KfW primarily focuses on providing loans with regard to mega trends such as climate change/environment, globalization/technological progress, demographic development as well as non-trend-related promotional issues. In 2015 KfW started to build up a Green Bond Portfolio.

Motivation

With the acquisition of green bonds, KfW complements its lending activities for environmental and climate protection measures with a capital market instrument. In addition, KfW extends its sustainable investment strategy by incorporating impact investment and thereby fulfils its obligation as a sustainable investor under the United Nations-backed Principles for Responsible Investment (PRI), which KfW signed in 2006. KfW wants the capital market to become more committed to climate and environmental protection issues. It sees the potential of the green bond market as an alternative capital market-based source of finance for green projects. Green bonds establish a link between the investment and the green project(s). This allows fixed income investors easy access to the financing of green projects enabling them to implement sustainability strategies via this instrument.

KfW sees green bonds as a suitable and transparent instrument to intensify its strategic dialogue on environmental issues with market participants. KfW seeks to acquire green bonds with a total value of up to EUR 1 billion. over a period of 3 to 5 years.

Investments started in April 2015 and by the end of 2015 the KfW Green Bond Portfolio amounted to around EUR 281 m. Furthermore, KfW intends to promote the quality-based development of the green bond market to strengthen market participant’s trust in this instrument.

KfW’s Green Bond Portfolio is supported by the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, which has mandated KfW accordingly.

Approach

KfW is building up a diversified and global portfolio investing in green bonds from a broad spectrum of issuers at market price. Green bonds issued by public households, supranationals, agencies and other state-owned or partially state-owned institutions, financials, corporates or green covered bonds/Pfandbriefe as well as green ABS can be acquired. KfW has defined minimum criteria for its green bond portfolio. These minimum criteria are based on the green bond principles (GBP) and are intended to ensure a sufficient level of transparency and quality with regard to the use of proceeds for environmental and climate protection projects, selections process of specific projects, management of proceeds, reporting and external assurance.

Along with the further development of the market it will be adapted to gradually meet higher quality standards. With its minimum criteria, KfW intends to set a quality standard for green bonds which implies discussions with issuers during their preparation and/or marketing of a green bond.

Furthermore, KfW's qualitative requirements and goals are communicated for example at conferences, forums or in individual discussions in order to establish a best practice in the green bond market. They serve as a basis to intensify the dialogue with business partners and to start a strategic dialogue on environmental and climate protection with potential green bond issuers and investors as well as other market participants (intermediaries NGOs etc.).

Furthermore, KfW takes part in committees and initiatives such as for example the GBP. Those initiatives pursue the goal to increase transparency, ensure minimum quality standards and work towards a level of harmonization to facilitate market entry and create/uphold long-term trust in green bonds. Being an active market player, both as an issuer of green bonds and as an investor in green bonds, KfW enjoys high credibility in the market.

Although the green bond market has developed very dynamically and was given a lot of attention in the periphery of COP21, KfW considers it still to be at an early stage. We experienced lively interest in KfW green bond and sustainability activities and positions by diverse market participants. At this point in time it is very important to reach as many market participants as possible in order to develop the green bond market. Therefore, a reasonable balance of increasing expectation/requirements concerning the issuers and the necessity not to deter issuers from the green bond segment needs to be achieved, given that for the time being no significant difference in pricing between a green and a regular bond can be realized.

Appendix 3: Green Bonds as Aggregator for Green Projects: The Case of Sweden

Kommuninvest's role as an aggregator and conduit issuer for cost-efficient public investments

Kommuninvest, the Swedish local government debt office, was established in the mid- 1980s and is today the largest lender to Swedish local and regional governments (LRGs). It was established to provide Swedish local governments with more cost-efficient funding than commercial banks, which was at the time the only available source for external funding.²⁰ The approach was for Kommuninvest to **obtain economies of scale by aggregating local government funding needs through a joint funding vehicle**, supported by an unlimited, joint and several guarantee from the owners (Swedish local governments with tax-raising capabilities).

Kommuninvest's green bonds - framework and issuance

Kommuninvest started to provide Green Loans to its clients in June 2015. Green Loans can be approved for Swedish local government investment projects that promote the transition to a more sustainable society. Eight eligible project categories include **Renewable energy, Energy efficiency, Green buildings, Public transportation, Waste management, Water management, Adaptation to climate change and Environmental management in areas other than climate change** (such as nature conservation, biodiversity measures, sustainable agriculture, improving eco-system services). All projects must meet pre-determined sustainability criteria as set out in the Green Bonds Framework, including:

- i. Promote the transition to sustainable society
- ii. Be part of the systematic environmental work in the applicant municipality or county council/region
- iii. Be related to Sweden's national environmental objectives, or to regional environmental goals
- iv. Target either mitigation of climate change, adaptation to climate change, or be a project related to environmental management in other areas than climate change

On 15 March 2016, Kommuninvest issued its inaugural Green Bond. With a size of USD 600 million, from both dedicated green investors (67%) and mainstream investors (33%), it was the largest green bond to date from a Nordic issuer. Kommuninvest expects its Green Loan portfolio to grow to 15-20% of all lending in the near future and to issue Green bonds regularly, in multiple currencies. This is an effect of the large investment needs in the Swedish LRG sector, and the strong focus on climate and environmental benefits in LRG investment decisions. For instance, Sweden aims to be one of the world's first fossil free welfare nations and Swedish LRGs are instrumental to achieving this target, as they account for more than half of all public sector investments, are large buyers of goods & services, implement regulatory supervision, and are responsible for city planning and local infrastructure. More than 90% of municipalities have green targets or have adopted national or regional goals.

By early March 2016, Kommuninvest's Green Loan portfolio was USD 1.1 billion, committing funds to 25 investment projects in 18 Swedish municipalities.

Aggregator for green investment projects

The Kommuninvest Green Bonds framework aggregates funding needs in a similar fashion to Kommuninvest's normal operations – having the main difference that Green Loan applications must be approved according to both sustainability and credit criteria, and that Green Loans are approved for specific projects, rather than for general investment purposes.

By **combining single Green Loans into an aggregated Portfolio of Green Loans**, Kommuninvest can enable and empower the smaller municipalities with green financing opportunities. This would otherwise not be feasible for a number of reasons, primarily due to insufficient volume and lack of skills and resources. The smallest project funded by Kommuninvest has a Green Loan amounting to SEK 5 million (USD 0.6 million). The largest project is for SEK 2.5 billion (USD 300 million).

Aggregation process

- i. Investment projects are initially selected and verified by the environmental and treasury functions of Kommuninvest's member municipalities/county councils.
- ii. Projects are screened and initially approved by Kommuninvest's Lending department from a credit perspective. They are not yet Green Loans, however.
- iii. On a quarterly basis, each loan application is reviewed and finally approved by consensus vote in the Kommuninvest Green Bonds Environmental Committee for compliance with sustainability requirements as set out in the Kommuninvest Green Bonds Framework. The Committee, whose members include climate experts from Sweden's local government sector, shall ensure that projects approved for Green Loans can stand up to external scrutiny.
- iv. Green Bonds are issued with a commitment to allocate bond proceeds to the portfolio of Eligible Loans. According to Kommuninvest internal guidelines, total amounts raised from Green Bonds shall not exceed 75 percent of the volume of committed Green Loans. This is to ensure that: a) a maximum amount of bond proceeds can match actual disbursements to projects; and b) there is a buffer for possible loan prepayments or loans losing their green credentials.

Unique benefits to investors with the combined "aggregator" approach and "bottom-up" approach

- **The green bonds are linked to local government lending – rather than specific projects** - investors are not required to take on direct project credit risk. The triple-A credit quality of the Green Bonds is the same as for any other Kommuninvest bonds, with standard documentation and a 2nd party opinion from Cicero, the climate and environmental research institute.
- **The "bottom-up" approach of the Green Bond Framework**, whereby Kommuninvest Green Loan approval precedes Green Bond funding, provides investors with assurance on which type of projects that Green Bonds will finance, based on robust and well defined eligibility criteria.

References

- ¹ In addition to the USD 42 billion of green bonds issued throughout the course of 2015, Bloomberg/BNEF identified an extra USD 6 billion of such bonds (wind and solar project bonds and asset backed securities) and designated them as green bonds via a tag on the Bloomberg Terminal.
- ² New Climate Economy (2015). "Seizing the Global Opportunity." <http://2015.newclimateeconomy.report/misc/downloads/>.
- ³ IEA, World Energy Outlook Special Report 2015: Energy and Climate Change: <https://www.iea.org/publications/freepublications/publication/weo-2015-special-report-energy-climate-change.html>
- ⁴ Estimate based on market data from the US, Europe and China.
- ⁵ OECD. (2016 forthcoming). "A Quantitative Framework for Analysing Potential Bond Contributions in a Low-Carbon Transition." Input report prepared for G20 GFSG
- ⁶ The average maturity of major banks' liability is about 3-6 months, which make it difficult to finance a large number of long-term green projects, as banks need to control their duration gaps and meet the liquidity coverage ratio requirement. This is especially a problem in developing countries where the interest rate swap market is less developed.
- ⁷ Source: CBI
- ⁸ Data sources: GFC and CBI.
- ⁹ France used the Climate Bonds Taxonomy for its green definitions
- ¹⁰ Available at: <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/>
- ¹¹ Available at: <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/gbp-resource-centre/>
- ¹² Available at www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/gbp-resource-centre/
- ¹³ The weblink to the English version of China's Green Bond Catalogue is: <http://www.greenfinance.org.cn/displaynews.php?cid=79&id=531>. The weblink to its Chinese version is: <http://www.greenfinance.org.cn/displaynews.php?id=453>.
- ¹⁴ The weblink to the English version of China's Green Bond Catalogue is: <http://www.greenfinance.org.cn/displaynews.php?cid=79&id=468>. The weblink to its Chinese version is: <http://www.greenfinance.org.cn/displaynews.php?cid=79&id=450>.
- ¹⁵ www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/gbp-resource-centre/
- ¹⁶ A full list of approved verifiers under the Climate Bonds Standard is available online: www.climatebonds.net.
- ¹⁷ Including bonds issued, as well as pipeline soon to be issued, per March 2016.
- ¹⁸ Available at: <http://www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/gbp-resource-centre/>
- ¹⁹ Moody's Investors Service. (2016). "Green Bonds Assessment (GBA) Proposed Approach and Methodology."
- ²⁰ Swedish local governments are allowed to borrow externally in order to fund investments. On-going activities are primarily funded by taxes, state grants and fees.