Mainstreaming the green bond market:
pathways towards common standards

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KPMG Advisory N.V.
Mainstreaming the green bond market

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Editors
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Annex 43
We see green bonds as a major opportunity to connect the investors with the sustainability challenges the world faces. We are convinced that common green bond standards can build the bridge.

Wim Bartels
Partner, KPMG Sustainability, The Netherlands
Global Head of Sustainability Reporting & Assurance at KPMG
Foreword from KPMG

We are at a critical crossroads for the climate. COP21 saw nearly 200 countries agree that the rise in global temperature should be limited to 2 or even 1.5°C. Equally, as the Californian droughts reflect, access to clean water is becoming an urgent environmental issue and it will be a serious issue for 40% of the world’s population only 15 years from now.

But this is not the only reason we are at critical crossroads. We have also come to a point where environmental and social issues are becoming significant risks to investors – while being part of the effort to resolve these issues can create significant opportunities. For investors, it is time to decide: “Will we enter the green solution market and preserve the environment in the interest of ourselves and society at large – or should we stay out and focus solely on financial performance until the wheels come off?”

Green bonds can deliver both financial performance and environmental solutions, if designed properly. The words ‘if designed properly’ are crucial however. According to this study, the world needs mainstream investors to deliver funding. Meanwhile, investors need confidence in the credibility and integrity of the market, and to be able to trade green bonds as easily as other financial instruments. If not, they will not see a need to embrace this important instrument from a market point of view.

One thing is clear: for the desired efficiency: investors need standards that enable a liquid and harmonised market, based on easily accessible information on both the financial and environmental performance of green bonds.

More and better disclosures will also be needed for markets to work effectively. As the recent survey of corporate responsibility reporting has shown that carbon reporting from the world’s largest companies still lacks consistency, making it impossible for stakeholders to compare one company’s performance easily and accurately with another’s. Standards in this area will be critical.

If we want to act on climate change and its related risks, we need comparable data to steer investment flows to the most environmentally efficient projects. We are committed to helping lay out the pathways to green bond standards – with particular attention to their ‘greenness’, including robust disclosures. This is a critical condition for connecting sustainability challenges with investors. We believe that making that connection through an industry-led initiative bringing all market players together is the way to succeed in the shortest term while keeping pace with market developments.

We are at a critical crossroads – let’s make sure we take the right direction.
What is a green bond?

The term ‘green bond’ describes bonds that not only encompass financial obligations but also incorporate environmental benefits claimed by the green bond issuer. Green bonds are seen as promising, innovative financial instruments that could play an important role in accessing private capital at scale for the sustainable development of economies. The market for them has grown significantly over the past four years.

However, while guidelines and standards exist for issuing green bonds, there is not yet a definition of ‘green’ that can be applied to all sectors and asset categories.

Mainstream investors are needed to fund the transition to a sustainable global economy. With this upscaling comes the need to set standards for green bonds, whether on a short-term or long-term basis: investors will only have confidence in a market that is seen as credible and trustworthy. The development of green criteria will encourage convergence in market practice, resulting in decreasing transaction costs and increasing integrity. These are both required for high market liquidity.

At the same time, a credible market for green bonds needs to deliver on its green promises, meaning that green bonds need to demonstrate the delivery of actual environmental benefits. This will offer investors a further tool to manage downside environmental risk, and/or implement ‘decarbonisation’ and hedging strategies.

The current status of the market and standards

The green bond market grew at an impressive 50% compound growth rate, from close to zero at its inception in 2007 to US$91bn in 2015. Yet, this represents less than 0.1% of the total global market for debt securities. While diversification is developing, the green bond market remains dominated by investment grade issuers from the utility, energy and finance sectors. The issuers are either corporates or sovereign and supranational organisations, mostly from the US and Europe. Governments and municipalities are largely absent. Investors appear to be mainly ESG (Environmental Social Governance) investors, while the mainstream investment world has yet to enter the market.

Two sets of principles and standards have dominated to date: the industry-led Green Bond Principles convened by the International Capital Markets Association (ICMA) and the Climate Bonds Standards purveyed by the Climate Bonds Initiative (CBI), a UK-based NGO. Whereas the first focuses on relatively general process guidelines for green bond issuers (as opposed to climate bonds) the second adds a detailed taxonomy of investment areas and eligible criteria for a climate bonds certification scheme. In addition to these two schemes, market players have developed tailored green bond product, usually based on GBI criteria; “second opinion” providers each have their different assessment methodologies; issuers, underwriters and investors have developed their own frameworks and, more recently, credit-rating agencies have started to develop “green bond rating services.” Several governments in emerging markets (China, India) have also started to issue guidance for their domestic markets.

While there are many common characteristics across the variety of approaches, that variety reflects a level of confusion in the market about the appropriate standard(s) to use. Many appear to focus solely on the process of definition, without shedding light on the actual performance of the bond. Furthermore, most approaches address selected environmental impacts only, and do not take a long-term view. Where they do not provide a common methodology for determining the greenness of the bond, and do not connect environmental performance to financial performance, it is challenging for investors to assess the added value of green bonds. Finally, there are no common standards for monitoring and external assurance to support the credibility of the market.

The potential of the green bond market

To keep the global temperature increase below 2°C (or even 1.5°C) and adapt to the impacts of climate change, we need to urgently shift towards a more sustainable and resilient economy. An estimated annual
investment of about US$2tn over the next 15 years would be required to transform our energy system, preserve ecosystems and ensure sustainable water use. However, there is a large gap between current investment flows and capital needs.

Green bonds are one of several financial instruments that can ensure capital is used to finance these sustainable transitions. They could potentially raise a significant share of the capital needed. Among the key macro-economic drivers towards such growth are government policies (e.g. both tax benefits and domestic policies), unlocking the potential of emerging economies (China and India saw US$1bn of green bonds issued in 2015 alone), and increasing understanding of the value proposition of ESG investment among mainstream investors and asset managers.

Green bonds are particularly suitable for projects with long-term investment horizons, large capital costs and secured income streams, e.g. renewable energy infrastructures. But green bonds could also steer capital for other urgent environmental transitions, such as sustainable water management or ecosystem conservation. The development of credible and widely-accepted green bond standards would encourage greater participation and facilitate the growth of the market.

Market barriers

Whereas analysis shows that there is significant potential for the market to grow and involve mainstream investors, three barriers still exist to developing standards for ‘green’. First, the market is still too, diversified which makes it more burdensome and complex to develop standards effectively, with many different types of issuers, many potential categories of eligible projects, and a wide variety of related criteria and potential measures for the environmental impact of the bond. Second, bond issuers believe meeting such standards will lead to additional costs. Third, the relevant expertise, additional monitoring and reporting needed to meet the standards may be perceived by issuers as too big a burden to take on.

The critical elements of green bond standards

To date two standard schemes have been developed that capture a number of key ingredients and features and therefore should be further build on: the Climate Bond Standards and the Green Bond Principles. Without reflecting on these standards we have developed our views about critical elements of green bond standards in general.

In order to ensure market convergence while enabling market growth, we believe that standards should be rule-based but flexible in their application. They should contain minimum standards on a set of elements and essential features of the green bond, such as use and management of proceeds, comprehensive disclosure of information and independent assurance. However, they should encompass a broad field, and should avoid being fully normative. In other words, while minimum thresholds should be set for a bond to be green, room should be given to investors to decide whether the overall bond terms and conditions fit their individual investment criteria, including the ‘level of greenness’. In addition, we have identified nine elements of green bond standards. They should steer capital towards critical environmental impacts, and focus on achieving actual instead of ‘promised’ or ‘pledged’ benefits.

Standards should focus on allowing market access to as many green bonds as is reasonably acceptable, be long-term oriented and resilient, and create simplicity by building on the existing standards and frameworks as much as possible. Existing environmental standards, for example the Climate Bonds Standards purveyed by CBI as well as sector-specific standards that are committed to ISEAL codes of practice such as the Marine Stewardship Council (MSC) or the Aquaculture Stewardship Council (ASC) for marine based investments or the Standards for Sustainable and Resilient Infrastructure (SuRe ©) for infrastructure investments

Furthermore, the standards should apply a sector-by-sector approach to determine what is green, and make assurance an essential element to enhance the credibility of green bonds. Finally, they should require disclosure of risks relating to achieving environmental targets and related controls, and require reporting on outcomes and/or impacts according to simple and commonly-accepted frameworks so as to avoid reporting requirements that might be perceived as too onerous by issuers.

Pathways to green bond standards

It will not be straightforward to create standards of this kind, not least because of the complexity of both the green bond market as such and the dynamics between the key market actors. While there seems to be significant momentum to promote standards and initiatives such as the Climate Bond Standards are well-recognized, there is not yet any consensus on their scope, nature and timing. The market is also
far from achieving convergence on, for example, the performance metrics to be used. Most importantly, market players lack in-depth knowledge, experience and capacity on key aspects of green bonds.

This means that it may be too early to focus on the development of standards alone. Instead, we believe that a set of parallel pathways that mutually support and reinforce each other should be followed.

The first pathway is to improve understanding of green bonds among market players: issuers should be clear on the business case for green bonds, investors should communicate their expectations regarding green bonds, and underwriters should clarify their role. Industry bodies such as ICMA may be able to assist in bringing parties together to achieve these aims.

For the second pathway, institutions themselves must be adequately equipped to endorse and effectively apply any future standards. This would involve issuers understanding the total value of green bonds (financial and environmental), and should be mirrored on the investors’ side. Better integration of ESG considerations into investments and in the issuer acceptance process by underwriters would also contribute, as would their integration by public policymakers into the financial sector’s supervisory frameworks.

As to the third pathway, it is critical that market actors seek alignment to make the green bond market a credible one. Dialogues and working groups should address common disclosure policies by the issuers, aligning investors’ expectations of the investment management industry, harmonising disclosure requirements for the issuer when underwriting, and promoting the application of common standards by public policymakers. Other market players such as assurance providers and rating agencies, among others, should actively participate in the debate to drive market convergence.

These three pathways are preconditions for the effectiveness of the fourth, which is to establish which market actors should be involved in the actual process of standards development, including the creation of a proper governance structure. Cooperation between market players is of the essence.

Green bond standards can help underpin the trustworthiness of green claims, so that investors can be reasonably confident that the green bonds they invest in actually have a positive impact on the environment. Trust and confidence will be needed to increase deal-flow, streamline transactions and improvement liquidity of the market, making it more attractive for large mainstream investors such as pension funds.
About this report

Objective

This report has been written with the key objectives to contribute to the ongoing debate in the market on the necessity of green bond standards, noting that by no means it is the intention of the authors to suggest or propose new standards but rather to build on all existing work.

Scope

Taking into consideration the objective of this report the scope is limited to the topic of standardization and labelling of the green bond market. We are aware that the issue of standardization relates closely to other relevant topics and discussions in the market place, such as the drivers of the green bond market, the urgency of combatting climate change and other environmental challenges. We have taken these aspects as given facts.

The report seeks to address the following four key questions:

1. Is there a case for green bond standards from a market perspective, in other words is there a case for building a credible and qualitative market that might help encourage convergence in market practices and conventions (chapter 1)?

2. Which standards, guidelines and frameworks do issuers, underwriters and investors currently use to define, assess and evaluate the greenness of bonds? How are environmental benefits demonstrated to society (chapter 2)?

3. What is the potential of the green bond market to deliver measurable environmental benefits in the future? Does the market already deliver on the promise to provide capital for environmental transitions, and what is its potential for the future (chapter 3)?

4. What are the enabling conditions that need to be met for the green bond market to grow in both quality and quantity and what are the pathways towards meeting the enabling conditions and realizing the green bond market’s potential (chapter 4 and 5)?

Information gathering

The report is based on desk research of (mainly) publicly available information about the current and future green bond market, plus additional insights derived from KPMG’s and WWF’s experience in the green bond market itself. Furthermore, the ideas generated about the enabling conditions and pathways towards those future standards, and which as discussed in chapter 4 and 5 of this report, were tested and discussed in a workshop with over 25 market participants in London in January 2016. In this workshop, green bond issuers, investors, underwriters and service providers provided feedback and input on the potential elements of future green bond standards and pathways.

As a final step, a draft of this report was distributed among a selected group of market participants for external review.
The term ‘green bond’ is widely used, mostly by issuers and other stakeholders, to describe bonds that not only encompass financial obligations (e.g. the repayment of principal capital at a given maturity date, regular payments of coupons/interests, etc.), but also incorporate environmental benefits claimed by the green bond issuer.

Green bonds are seen as promising, innovative financial instruments that could play an important role in accessing private capital at scale for the sustainable development of economies. Green bonds could help mobilise the capital needed to achieve the environmental and social ambitions articulated in, for example, the Paris Climate Agreement and the Global Goals for Sustainable Development Goals.

Although the green bond market is still in its infancy, it has shown 50% compound growth rates since its inception in 2007. The availability of process-related guidance for the issuance of green bonds assisted investors in accessing information to make investment decisions, and thus helped the growth of the market. The financial industry-led Green Bond Principles, launched in 2014, have triggered significant market growth. The Climate Bond Initiative – a UK-based charity that promotes a science-based climate bond standard and certification system – has raised awareness of the importance of green bonds for the transition to a low-carbon economy, and has developed standards for specific asset classes that would qualify as green bonds.

As a typical young market, its growth goes hand in hand with discussions about how to protect and improve the credibility needed to strengthen this growth. Whatever other differences they may have, market players seem to agree that to maximise the contribution of the green bond market towards a more sustainable economy and society, it needs to mature in diversity, liquidity, quality and – most importantly – size.

1. The need for green bond standards

The need for green bond standards

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The opposite view is that a lack of standards or definitions causes unnecessary confusion and uncertainty in the market, acting as a barrier to growth. There will be reputational risks related to issuing bonds without proper standards, and the existing criticism that these bonds are not deemed sufficiently green could restrain potential issuers from entering the market and limit institutional investors’ appetite. Clearly a dilemma exists as to whether the next steps should be focused on developing “the standard” or on growing the size of the market. We will address
pathways to both, on the basis that standards are indeed needed. We believe that robust, credible and widely-accepted standards will ensure that the market can grow so that green bonds become mainstream financial instruments without impairing their credibility or integrity. For the green bond market to become stable and sustainable, it needs to grow not only in size, but also in quality and credibility. Standards around ‘green’ are key to enable this type of growth.

**The need to mainstream the green bond market**

Is there a need to mainstream the market? As chapter 2 indicates, the demand to date for green bonds has largely been driven by specialised socially responsible investors (or ESG-investors) and institutional investors with focused Environment, Social and Governance (ESG) mandates. Although assets under management invested in ESG products continue to grow steadily 5, they still represent a relatively small portion of the global investment sector 6. Although these ESG-oriented investors will remain very important for the future growth of the market, mainstream investors need to step into the green bond market to really drive market growth and increase liquidity. These would be institutional investors with a traditional view of their fiduciary duty, who look primarily for financially attractive and stable investments rather than the environmental benefits of a financial asset. There is also an increased interest in selling green bond-related funds to the public as a retail financial product, which might trigger additional requirements for consumer protection 7.

On the supply side, the green bond market needs a more diversified set of issuers operating in different industry sectors and geographies to guarantee future growth (see chapter 2 for more details). New issuers will only step into the green bond market if the extra costs of issuing a green bond are worth the investment – it is important that the market has a strong reputation, and that they can use standard approaches (e.g. to conduct environmental assessments) when issuing green bonds.

So how can standards around ‘green’ attract mainstream investors and more issuers to step into the green bond market? Looking at development of other financial markets in the past (e.g. swaps and commodities), standards to help determine if a given bond can be classified as ‘green’ could build trust and confidence between investors and issuers. For the green bond market, standards would confirm that green claims are trustworthy, meaning that investors in such products can be reasonably confident they are actually making a positive impact on the environment when investing. Increased trust and confidence in the green bond market by both investors and issuers could lead to larger capital flows, more transactions and improved liquidity, making the market more attractive for large mainstream investors such as pension funds.

In short, robust and widely-accepted green bond standards are needed to enable the market to grow in size, quality and credibility; in order to get mainstream investors and more issuers on board. This is also the key starting point of this report: developing standards

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**Box 1: Overview outcomes workshop June 2015 about the need for criteria for Green Bonds**

In June 2015, WWF, the Climate Bond Initiative (CBI) and ACTIAM co-organised a workshop to engage with ratings agencies, assurance providers and other market actors about the potentially adverse effects of ‘greenwashing’ and how to enhance the integrity of the green bond market. The workshop yielded the following results:

- **Green standards are needed**: Most workshop participants 8 agreed that credible, clear, fully-developed and widely-accepted industry standards are needed to ensure an orderly development of the market.

- **Criteria for greenness can be developed within the next two years**: The participants agreed that such criteria could be developed within a reasonably short period of time (one to two years), and were willing to join a coalition of like-minded organisations to advance this discussion.

- **Knowledge-sharing to drive convergence**: Knowledge-sharing, increased openness and transparency on the criteria that are currently applied might be a way to stimulate collective learning and, ultimately, convergence towards a shared understanding of how common criteria should be used in the future.
Mainstreaming the green bond market is not just about setting environmental criteria, it is about creating pathways to enable the mainstream, financially-oriented investor to step into the market. Only then can any green bond standard that is developed be truly successful and achieve its objective – to support the transition to a sustainable economy.

In the following sections, the reasons for standards regarding ‘green’ are explained in more detail from both a market and environmental perspective.

Market perspective: building a credible and qualitative market

Encourage convergence in market practices and conventions

As mentioned above, current market practices and conventions in the green bond market are highly diversified, on the side of both investors and issuers. Issuers, for example, each apply their own performance metrics to disclose the environmental impacts of their projects, and adopt different levels of transparency. Investors, on the other hand, apply their own assessment framework to determine whether a bond can be classified as green or not. This divergence in market practices and conventions could make the green bond market complex and difficult to understand for potential new investors and issuers, and have a negative impact on their confidence. Standards are an instrument to encourage convergence in practices and conventions.

Convergence makes markets more transparent and less complicated, giving greater confidence to mainstream investors and new issuers. For example, the Eurobond derivatives market took off only when standardised industry terms were made available through the publication of Credit Derivatives Definitions by the International Swaps and Derivatives Association (ISDA) in 19999. If history is any guide, convergence in the green bond market could also lead to greater capital flows, increased transactions and more liquidity.

Decreasing transaction costs for investors and issuers

Currently, green bond issuance and investment can involve relatively significant transaction costs for both investors and issuers. Investors, for example, need to undertake additional due diligence on the environmental impacts of the bond in a relatively short time to assess whether the bond’s green criteria and sustainability objectives fit within the investment mandate. Issuers, on the other hand, might perceive setting up the necessary internal processes and procedures – second reviews (also referred to as ‘second opinions’), additional reporting requirements etc. – to be too complex and costly. This becomes especially challenging in situations where the underlying projects, or the bonds themselves, are relatively small.

Standards around ‘green’ would improve the transparency and comparability of the green bond, which would make the due diligence and investment process more efficient for mainstream investors. A clear set of standards would also make it easier for a potential issuer to develop and issue a green bond. In both cases, standards would attract new entrants to the green bond market, leading to greater capital inflow and more transactions.

Increasing integrity of the market

The absence of standards around green raises the risk of greenwashing, where bonds are perceived as green but in reality have few or questionable environmental benefits. This could lead to a financial market where environmental claims are made without supporting evidence. Greenwashing could ultimately undermine the integrity and credibility of this young growing market – and, consequently, increase the reputational risks for both the investor as well as the issuer, or even open the door to litigation in some markets. Credibility and trust in the claims that are made – be they financial or non-financial (e.g. environmental) – are necessary conditions for growth for every financial market.

In fact, discussion about the need to create a dispute-resolution mechanism for the green bond market has recently started10. A market situation in which green bonds are issued and traded with a clear environmental promise but with little guarantee that the bond actually achieves environmental benefits will not attract mainstream investors or other potential issuers. Mainstream investors will be put off because of potential reputational risks and corporate issuers will hesitate to pay the additional costs. Commonly-applied standards around ‘green’ would reduce the reputational risks for both the investor and issuer of green bonds, and increase the integrity of the market.
Environmental perspective: ensuring real environmental benefits

Achieving actual environmental benefits needed to address environmental challenges and support sustainable development

The transition to a sustainable economy and society is urgently needed to avoid further degradation of our environment. The green bond market has the potential to make a significant contribution to this transition, where natural capital is preserved, restored and enhanced rather than destroyed. Standards around ‘green’ should be developed so that the most critical environmental challenges are addressed.

Green bonds represent a unique opportunity to channel private capital into the sectors where it is most needed – for example to support the ambitions and meet the targets agreed in international conventions like the Paris Accord at COP21, the Nationally Determined Contributions (NDCs) developed by countries within the UN Framework Convention on Climate Change (UNFCCC), or the Aïchi targets under the UN Convention for Biological Diversity (CBD).

Actual environmental benefits contain an economic value and upside risk that investors can grasp

Renewable and non-renewable environmental resources and processes that provide goods or services for an organisation contain an economic value – examples include water, land and biodiversity. They also provide essential services for societies such as food, fibre, health, energy, climate security and material inputs for companies’ production processes, among other things. As a consequence, degrading or improving the environment could decrease or increase future economic and investment costs and benefits, which might represent an upside risk for investors. This is particularly so in sectors with significant environmental regulatory risks (that fit-for-the future assets can nevertheless help anticipate).

Organisations issuing green bonds should disclose all relevant information about the promised and actual environmental impacts of their bonds to investors. This would enable investors to integrate ‘natural capital’ factors into their financial and environmental risk and opportunity assessments, and improve the investment decision-making process. Standards around ‘green’

Box 2: WWF’s vision, mission and level of ambition for the green bond market

WWF believes that green bonds — as a first step towards greening the overall bond markets — have the potential to make a unique contribution to a ‘One-Planet’ economy where natural capital is preserved, restored and enhanced rather than destroyed. In order to achieve this, science-based criteria should be developed through multi-stakeholder dialogue, and they should be consistent and compatible with WWF’s vision, mission and level of ambition for the green bond market.

Green bond standards for a One Planet economy

WWF’s vision: ‘One Living Planet’ economy: natural capital is preserved, restored and enhanced rather than destroyed.

WWF’s mission: WWF’s mission is to stop the degradation of the planet’s natural environment and to build a future in which humans live in harmony with nature; by conserving the world’s biological diversity, ensuring that the use of renewable natural resources is sustainable, and promoting the reduction of pollution and wasteful consumption.

WWF’s level of ambition: The green bond market has the potential to make a significant contribution to a One–Planet economy and the Sustainable Development Goals (SDGs). Only a bond for which the issuer can demonstrate measurable environmental benefits according to widely-accepted, fully developed criteria should qualify as a ‘green bond’.

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would provide a uniform framework to ensure this information was available.

Integrating these factors into decision-making will become increasingly important, and may become imperative in the near future. There is already a growing community of investors and stakeholders who question traditional views of fiduciary duty. In a more contemporary view, failing to consider long-term investment value drivers (which include environmental, social and governance issues) in investment practice is a failure of fiduciary duty.

**Green bonds have the potential to offer an investment opportunity for investors increasingly aware of downside environmental risk and who seek ‘decarbonisation’ and/or hedging strategies**

Investors are becoming increasingly aware of the potential environmental risks associated with their investments.

A recent study conducted by Moody’s sought to assess credit exposure to environmental risks; and the consequences of regulatory or policy initiatives that seek to reduce or prevent environmental hazards (e.g. policies to reduce carbon emissions). The study identified 11 sectors with around US$2tn in rated debt as “immediate, elevated risk” or “emerging, elevated risk.” According to Moody’s, material credit impacts are already being felt in these sectors, or are expected to become significant over the next three to five years. In addition, data from Carbon Tracker suggests significant ‘stranded assets risks’ in the fossil fuel sector.

Investors are therefore seeking ways to manage, mitigate or hedge these risks; and several investors are looking into ways to ‘decarbonise’ their fixed-income portfolios. Green bonds offer increased transparency on the underlying assets of fixed income products: they could, potentially, offer a solution for investors to manage and hedge these downside risks as they would enable investors to assess whether the assets are ‘fit-for the future’ or whether they are exposed to environmental risks. This is of course only true if the bond is tied to the underlying assets, rather than the balance sheet of the issuer.

However, due to a lack of clear definitions and reporting on environmental benefits of the underlying assets, this is not yet the case. For example, a green bond from energy utilities – one of the most-exposed sectors – currently would not necessarily address this issue, as the connection between environmental performance and financial performance is not clearly demonstrated.

Key conclusions for chapter 1:

**Is there a case for standards?**

- While guidelines and standards exist for issuing green bonds, there is not yet a common definition of ‘green’ that can be commonly applied to all sectors and asset categories.

- There are opposing views on whether the market in the short term needs commonly-accepted standards to determine whether a given bond classifies as a green bond. However, standards around ‘green’ are needed to upscale the market in size, quality and credibility.

- The entrance of mainstream investors is pivotal for the green bond market to be successful.

- Clarity and conformity on the green criteria of a bond not only encourage convergence in market practices and conventions but also improve integrity and decrease transaction costs. This gives mainstream investors and new issuers more confidence in the green bond market, which will lead to increased capital flows and liquidity.

- Green criteria will also ensure that green bonds deliver on their green promises by focusing on actual environmental benefits. They then have the potential to offer an investment opportunity for investors who are increasingly becoming aware of downside environmental risk and are seeking ‘decarbonisation’ and/or hedging strategies.
2. Current status of the green bond market

Growth rates in the green bond market have been impressive in recent years: it has grown by more than 50% per year since 2007, reaching approximately US$91bn of green bonds outstanding at the end of 2015. The market is currently dominated by sovereign and supranational agencies (SSAs), corporations and municipalities.

Growth of ESG integration and ESG-themed investments in the bond market

Green bonds are still a niche product within the broader global debt-security market. With approximately US$91bn of outstanding green bonds, the green bond market currently only represents a very small portion (0.1%) of the total debt securities markets, where outstanding bonds stood at US$97tn in 2014. However, the changing approach of institutional investors towards their role in addressing environmental issues is driving the increased integration of ESG factors in fixed-income investment strategies – and this, in turn, is spurring growth in the green bond market.

Asset owners and investment managers increasingly acknowledge the importance of ESG considerations in managing the risks and opportunities of fixed income investments. According to a survey conducted by PRI in 2015, the number of asset owners considering ESG factors in the selection, appointment and monitoring of investment managers grew by 5% for corporate debt and by 8-10% for government, supranational, ABS and private debt. Some of the major institutional investors and asset managers interviewed went one step further and set new environmental targets. For instance PGGM and ABP, the two largest Dutch pension funds, committed to significantly reduce the carbon emissions of their investment portfolio by 2020 (by 50% and 25% respectively).

Besides these ESG integration activities, a multitude of new ESG-themed investment vehicles have also been developed within the fixed income market. This has anticipated investor demand for sustainable investments such as social impact bonds, sustainability bonds, climate bonds, blue bonds (funding the development of sustainable fisheries) and water bonds (see box 3 on page 16). Except for the first two types mentioned, all these bonds are part of the broader green bond family.

Last year, some specialist green bond funds and indices were also launched by investment managers (e.g. AXA, Barclays-MCSI, Mirova). The greening of the fixed-income market prepares the ground for the growth of the green bond market.
Box 3 – Innovative approaches to green bonds

Water (pollution-reduction) bonds: WWF and H&M are working with several industrial parks around Taihu Lake near Shanghai, China, to improve water quality and reduce water-related risks for SMEs by installing water treatment facilities. Individual investments (US$1-2 million per treatment facility) would be too small to justify issuance of green bonds, but with the IP as the main issuer the bond can reach a size of US$50 million.

Sustainable agriculture notes: Sustainable agriculture notes are debt securities that invest in grower cooperatives and agricultural enterprises promoting agricultural practices that improve environmental performance and build food systems while benefiting small-to-mid-sized farmers. They offer semi-annual contingent interest payments as well as targeting social and environmental returns aimed at alleviating poverty, increasing food production and environmental conservation. Several innovative investment firms have piloted this approach geared towards impact-oriented investors.

Ecosystem services bonds: It is possible to invest in ecosystem services using funds from a corporate green bond. Some companies operating at a larger scale have shown that bonds with multiple green uses of proceeds can include land-use enhancement or conservation.

A concentrated green bond market requiring greater inclusion for further growth

The growth rates of the green bond market have been impressive over past years. The amount of issuances multiplied threefold between 2013 and 2014, and increased by 13% from 2014 to 2015, to a total outstanding amount of US$91bn. Growth over the last two years was mainly driven by corporate issuance followed by financial services, bringing further diversification to a market that is still in its early stages of development.

The limited diversity of the issuer pool

Being first movers in the green bond market, Sovereign and Supranational Agencies (SSAs) are still responsible for a large share of the green bond issuances in 2015 in value terms (see figure 1 below); but the increasing number of corporate issuers is now leading the growth of the market.

Figure 1: Growth of the green bond market. Source: CBI 2016.
Encouraged by regulations on clean energy and the portfolio’s general suitability for bonds, corporate issuance has mostly been dominated by utilities and energy companies; but 2015 also saw the first strong increase in banking green bonds (see figure 2 below). With about 84% of total corporate issuance in 2015, these two sectors are far larger than other sectors, which include consumer products, industrials and technology. Greater sector diversity is therefore needed.

Led by the United States, municipal green bond issuances have increased significantly since they entered the market in 2012. They are now not only issued by cities, states and regions, but also by government agencies (e.g. Central Puget Sound Regional Transit) and state-owned universities (e.g. MIT). Nevertheless, considering the large share of the government sector in the overall debt securities market (46% of total issuance), the issuance of green municipal bonds remains relatively limited.

Finally, while several government agencies or government-owned entities have issued green bonds, no government has yet issued sovereign green bonds – although debt issued by central governments represents almost 20% of global debt capital markets.

Growing appetite from mainstream investors, but prevalence of ESG-focused investors

Investors’ appetite for green bonds is illustrated by the levels of oversubscription. For example, in 2015, the real estate company Unibail-Rodamco’s US$530m green bond was six times oversubscribed. In some cases, for equivalent price and yield, green bonds have even been more oversubscribed than regular bonds issued at the same time (e.g. US State of Massachusetts bonds in 2013 and NWB Bank bonds in 2015).

Demand for green bonds has initially been driven by specialised ESG-investors and institutional investors with focused ESG mandates (e.g. ACTIAM, Natixis/Mirova) and dedicated green bond funds (e.g. State Street Calvert). However, mainstream investors have recently also expressed interest in the green bond market, and several investors have publicly announced that they will ramp up their investments. On 17 December 2015, for instance, a coalition of global investors led by the Climate Bonds Initiative and managing over US$11tn of assets signed the Paris Green Bonds Statement, advocating for transparency, assurance, and the development of clear industry standards, in order to build a “large and robust market” in collaboration with all green bond players.

Moreover, in 2015, several institutional investors including KfW, Barclays Treasury, Deutsche Bank and HSBC made public pledges to purchase US$1bn of green bonds each, mostly held within mandatory liquidity reserve investments. However, it should be noted that the size of these commitments is still small compared to mainstream mandates.

Figure 2: Corporate issuance distribution per sector. Source: WWF/KPMG Sustainability completed from CBI-data including companies in the technology, waste management or recycling sectors.
The green bond market remains largely concentrated to a limited number of geographies and sectors

As the green bond market develops, the range of issuers, investors and currencies is widening. However to date, 58% of green bond issuances still come from Europe and the United States (see figure 3 below).

Large benchmark issuances from China during the first months of 2016, including from corporate issuers, may shift the geographical balance towards emerging markets. Country-specific material such as the Chinese Green Bond Guidelines and Green Bond Projects Catalogue, as well as the interest and momentum created around green bonds under the Chinese presidency of the G20, are likely to pave the way for further issuances from China and possibly other emerging markets.

Green bonds are mainly issued in the energy and buildings & industry sectors, which are particularly well suited to their features. Green bonds represented 66% of the green bonds use of proceeds for 2015 issuances and 75% in 2014 (see figure 4 below).

Figure 3: Distribution of green bond issuance per country for 2015. Source: WWF/KPMG Sustainability completed from CBI-data.

Figure 4: Green bonds use of proceeds per sector for 2014 (left) and 2015 (right) issuances. Source: CBI 2016
Greater inclusion to further grow the green bond market

To sum up, although the green bond market has diversified significantly over the last two years, it remains dominated by a limited number of issuers (e.g. corporate issuers in the financial and utilities sectors), concentrated in a few countries (US and Europe, and more recently China) and focused on renewable energy and energy efficiency projects. Further growth of the green bond market will require greater diversification of the profile of issuers and investors, the inclusion of various other types of projects, and public policies that create an enabling environment to support growth.

A limited number of standards exist alongside divergent frameworks to guide the market

Current practices to define green bonds can be categorized in already recognized standards on the one hand and a number of other frameworks that aim to guide the green bond market on the other hand.

Two standards already exist that set criteria for green or climate bonds:

- The Green Bond Principles convened by the International Capital Markets Association (ICMA) – a set of well-respected but rather broad process-focused guidelines. The Green Bond Principles, an industry-led initiative, offers a set of relatively broad and flexible voluntary process-oriented guidelines defining best practice in relation to transparency of the use of proceeds, processes for project evaluation and selection, management of proceeds, and reporting on use of proceeds. The principles enjoy impressive recognition and uptake in the market, with more than 95% of the US$63bn green bonds outstanding analysed in 2015 pledging alignment with the Green Bond Principles.
- The Climate Bonds Initiative – a climate-focused standard and certification scheme with performance-based minimum standards for a broad range of sectors. The Climate Bonds Initiative offers a certification system for climate bonds (as opposed to green bonds) with performance-based minimum standards defined by science-based eligibility criteria for a growing number of sectors within a predefined taxonomy (see table 1 on page 21 and 22). The Climate Bonds Initiative is committed to adherence to ISEAL codes. The market uptake of the CBI standard is currently relatively limited – with little over a dozen bonds currently certified – but is rapidly increasing and has significant potential: it is backed by a coalition of global investors associations managing over US$34tn of assets, and US$11tn of individual funds who signed the Paris Green Bonds Statement advocating transparency, assurance, and the development of clear industry standards, in order to build a large and robust market and make a real contribution to addressing climate change. In addition, investment banks who have committed to CBI as partner organisations – including HSBC, Citi, Barclays, Deutsche Bank, RBC and RBS and Standard Chartered – are among the leading underwriters of green bonds, representing almost 25% of the green bond market in 2015.
Other frameworks and conventions

Due to an absence of comprehensive standards for green bonds that cover environmental dimensions beyond climate change, several initiatives, guidelines and frameworks have been developed by issuers, investors, underwriters and other green bond market actors.

All these guidelines and frameworks have their own objectives and characteristics and are, consequently, difficult to compare. Table 1 on page 21 and 22 provides an overview and comparison between some key frameworks and guidelines that are currently applied in the market.

The number of guidelines and standards is still increasing (for example, the US-based rating agency Moody’s is currently developing a Green Bonds Assessment tool to evaluate issuers’ management, administration and reporting) and S&P Dow Jones in cooperation with Trucost is currently developing a process for rating the green impact of green bonds. The most relevant, mostly proprietary frameworks and guidelines currently include:

- **Green bond indices**: (e.g. S&P Dow Jones Green Bond Index and Green Project Bond Index, Barclays/MSCI Indices, Bank of America Merrill Lynch Green Bond Index, Mirova) developed by a number of financial institutions in order to help investors understand and benchmark green bonds’ performance by taking into account financial considerations such as credit quality, coupon type, amount outstanding and maturity, as well as external assessments of the environmental profile.

- **Second party review frameworks**: developed by several mostly European service providers (e.g. CICERO, Oekom Research, Vigeo, DNV GL, Sustainalytics) to assess the credibility of self-labelled green claims, based on a variety of approaches: by referring to the Green Bond Principles or the CBS, the issuer’s framework (sometimes developed by the reviewer themselves) or defining their own proprietary criteria, methodologies and procedures.

- **Issuers’ proprietary frameworks**: setting up their own approach to structure and issue a green bond, defining their own performance metrics to disclose the environmental impacts of their projects and showcasing different levels of transparency (e.g. HSBC’s Green Bond Framework).

- **Investors’ proprietary frameworks**: defining the investor’s performance, reporting and assurance requirements to assess whether a bond can be classified as green or not (e.g. Natixis/Mirova Green Bond Issue and Reporting Analysis Grid).

- **Sector- or country-specific guidelines**: such as the Global Real Estate Sustainability Benchmark (GRESB) guidelines which complement the Green Bond Principles with specific guidance for the real estate and construction sector; or the Green Bond Guidelines and Green Bond Projects Catalogue, the first country-specific green bond guidelines just released by the People’s Bank of China (PBoC), later followed by the Indian SEBI’s green bond regulations.

- **Other component-specific standards**: that can be used to develop or assess specific components of green bonds, such as the Harmonized Framework for Impact Reporting, developed in December 2015 by 11 international financial institutions, which offers guidelines and key metrics for impact reporting.

The table on the following pages presents an analysis of some of these existing standards, initiatives, frameworks and guidelines, focusing on factors effecting trust and credibility: objectives, ownership and governance, range of eligibility, type of standards, scope, level of transparency, and level of assurance.
<table>
<thead>
<tr>
<th>Name</th>
<th>Objectives</th>
<th>Ownership and governance</th>
<th>Range of eligibility</th>
<th>Type of standards/framework</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National standards</strong></td>
<td></td>
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<tr>
<td>SEBI’s Regulations</td>
<td>Help companies raise funds through GB and help investors make informed investment decisions</td>
<td>Developed by the Securities and Exchange Board of India (SEBI)</td>
<td>Based on eligible sectors/categories of Green Bond Principles including (but not restricted to) renewable energy, transport, water/waste management, adaptation, energy efficiency, land use, biodiversity</td>
<td>Process-based: procedures to track GB proceeds including use of proceeds, project evaluation, selection, management of proceeds, reporting</td>
</tr>
<tr>
<td>Green Bond Guidelines and Green Bond Endorsed Project Catalogue</td>
<td>Define standards for screening which assets/projects are eligible to be financed via green bonds in China</td>
<td>Government-sponsored and developed by the People’s Bank of China’s (PBoC) Green Finance Committee</td>
<td>Six eligible categories (energy efficiency, pollution control, resource efficiency and recycling, transport, energy, adaptation and conservation)</td>
<td>Process-based (aligned with GBP): definition of green projects, identification/approval, management/tracking, reporting/disclosure</td>
</tr>
<tr>
<td><strong>Issuer/underwriters/ investors frameworks</strong></td>
<td></td>
<td></td>
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<tr>
<td>Example of issuers’ framework: EIB’s Green Bond practice</td>
<td>Defined guidelines to select green bonds</td>
<td>Proprietary framework developed by EIB</td>
<td>Focus on renewable energy and energy efficiency, and additional conditions and exclusions for eligibility (e.g. nuclear energy not eligible)</td>
<td>Performance-based: financial, economic, technical, environmental and social project appraisal</td>
</tr>
<tr>
<td>Example of issuers’ framework: HSBC’s Green Bond Framework</td>
<td>Support investors to meet their objectives</td>
<td>Proprietary framework developed by HSBC (governed by HSBC Green Bond Committee)</td>
<td>Based on eligible sectors/categories proposed by the GBP (renewable energy, energy efficiency, buildings, waste/water management, sustainable land use, clean transportation, climate change adaptation), except biodiversity. Explicitly excludes certain sectors (e.g. nuclear)</td>
<td>Process-based (aligned with GBP): definition of green projects, identification/approval, management/ tracking, reporting/disclosure</td>
</tr>
<tr>
<td>Oekom’s Sustainability Bond Rating</td>
<td>Facilitate timely investment decisions</td>
<td>Proprietary framework developed and operated by Oekom Research</td>
<td>No specific types of projects defined: follows issuers’ own framework</td>
<td>Process- and performance-based: evaluate issuer, transparency and external assurance, sustainability quality/impact of the bond</td>
</tr>
<tr>
<td><strong>Green bond indices</strong></td>
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<tr>
<td>Bank of China’s (PBoC) Green Finance Committee</td>
<td>Help investors track green bond market’s performance</td>
<td>Proprietary framework operated by Bank of China’s (PBoC) on Bloomberg’s green tagging system</td>
<td>Bloomberg’s tagging system’s categories: renewables, clean water, pollution control, waste management, climate change adaptation/mitigation</td>
<td>Performance-based: includes bonds tagged as green by Bloomberg, i.e. which use proceeds within eligible categories</td>
</tr>
<tr>
<td>Barclays/MSCI Indices</td>
<td>Help investors benchmark green bond performance</td>
<td>Proprietary framework jointly developed and governed by Barclays and MSCI ESG Research</td>
<td>Five eligible categories: alternative energy, energy efficiency, pollution prevention and control, sustainable water, green buildings. Only projects targeting net environmental benefits (excl. ‘green’ by-products)</td>
<td>Process-based, MSCI independent assessment based on GBP: use of proceeds, project evaluation, proceeds management, reporting</td>
</tr>
<tr>
<td>S&amp;P Dow Jones Green Bond Index</td>
<td>Provide transparency and track the green bond market</td>
<td>Run by S&amp;P Dow Jones Indices (developed in partnership with Infrastruktur Credit Alpha Group LLC)</td>
<td>No specific types of projects defined: alignment with Thomson Reuters and CBI’s green tags</td>
<td>S&amp;P GB Index covers bonds tagged as green by Thomson Reuters and CBI and hence is process and performance-based. S&amp;P Green Project Bond Index is performance-based (bonds with environmental benefits but not always green label)</td>
</tr>
<tr>
<td>CICERO’s Shade of Green</td>
<td>Provide second opinion on issuers’ framework and guidance for assessing/selective eligible projects</td>
<td>Proprietary framework developed and run by CICERO (independent, not-for-profit research institute)</td>
<td>No specific types of projects defined: assesses issuers’ own procedures</td>
<td>Process- and performance-based: assess issuers’ framework and define shade of green based on time-horizon, use of best technologies, avoided fossil lock-in, sound governance and macro-impacts</td>
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<tr>
<td><strong>Second party providers</strong></td>
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<tr>
<td>Oekom Research</td>
<td>Proprietary framework developed and run by Oekom Research</td>
<td>Proprietary framework developed and operated by Oekom Research</td>
<td>No specific types of projects defined: follows issuers’ own framework</td>
<td>Process- and performance-based: evaluate issuer, transparency and external assurance, sustainability quality/impact of the bond</td>
</tr>
<tr>
<td>HSBC’s Green Bond Framework</td>
<td>Support investors to meet their objectives</td>
<td>Proprietary framework developed by HSBC (governed by HSBC Green Bond Committee)</td>
<td>Based on eligible sectors/categories proposed by the GBP (renewable energy, energy efficiency, buildings, waste/water management, sustainable land use, clean transportation, climate change adaptation), except biodiversity. Explicitly excludes certain sectors (e.g. nuclear)</td>
<td>Process-based (aligned with GBP): definition of green projects, identification/approval, management/ tracking, reporting/disclosure</td>
</tr>
<tr>
<td>Bank of America Merrill Lynch Green Bond Index</td>
<td>Help investors track green bond market’s performance</td>
<td>Proprietary framework operated by Bank of America Merrill Lynch, based on Bloomberg’s green tagging system</td>
<td>Bloomberg’s tagging system’s categories: renewables, energy efficiency, green buildings, agriculture/forestry, clean water, pollution control, waste management, climate change adaptation/mitigation</td>
<td>Performance-based: includes bonds tagged as green by Bloomberg, i.e. which use proceeds within eligible categories</td>
</tr>
<tr>
<td>S&amp;P Dow Jones Green Bond Index</td>
<td>Provide transparency and track the green bond market</td>
<td>Run by S&amp;P Dow Jones Indices (developed in partnership with Infrastruktur Credit Alpha Group LLC)</td>
<td>No specific types of projects defined: alignment with Thomson Reuters and CBI’s green tags</td>
<td>S&amp;P GB Index covers bonds tagged as green by Thomson Reuters and CBI and hence is process and performance-based. S&amp;P Green Project Bond Index is performance-based (bonds with environmental benefits but not always green label)</td>
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<td>Barclays/MSCI Indices</td>
<td>Help investors benchmark green bond performance</td>
<td>Proprietary framework jointly developed and governed by Barclays and MSCI ESG Research</td>
<td>Five eligible categories: alternative energy, energy efficiency, pollution prevention and control, sustainable water, green buildings. Only projects targeting net environmental benefits (excl. ‘green’ by-products)</td>
<td>Process-based, MSCI independent assessment based on GBP: use of proceeds, project evaluation, proceeds management, reporting</td>
</tr>
<tr>
<td>CICERO’s Shade of Green</td>
<td>Provide second opinion on issuers’ framework and guidance for assessing/selective eligible projects</td>
<td>Proprietary framework developed and run by CICERO (independent, not-for-profit research institute)</td>
<td>No specific types of projects defined: assesses issuers’ own procedures</td>
<td>Process- and performance-based: assess issuers’ framework and define shade of green based on time-horizon, use of best technologies, avoided fossil lock-in, sound governance and macro-impacts</td>
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<tr>
<td><strong>Standards</strong></td>
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<tr>
<td>Climate Bond Standards</td>
<td>Develop a large and liquid green and climate bond market</td>
<td>Standard developed by the Climate Bond Initiative (CBI), an international investor-focused not-for-profit organisation, and governed by the Climate Bonds Standards Board</td>
<td>Eight areas of inclusion but five sector-specific eligibility criteria available to date: wind, solar, geothermal, low carbon buildings, and BRT systems. Eligibility criteria for others under development</td>
<td>Standard composed of process- and performance-based certification scheme before and after issuance: process, controls, reporting (aligned with GBP) but also environmental benefits</td>
</tr>
<tr>
<td><strong>Principles</strong></td>
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<tr>
<td>Green Bond Principles</td>
<td>Define voluntary guidelines for the issuance of a green bond to ensure credibility of the green bond market</td>
<td>Developed by industry body ICMA and governed by an executive committee including issuers, investors and underwriters. Other stakeholders (e.g. NGOs) can participate as observers (no voting rights)</td>
<td>Eight categories of eligible projects: renewable energy, energy efficiency, sustainable land use, biodiversity conservation, transport, adaptation, water management, waste management</td>
<td>Process-based guidelines: use of proceeds; issuance evaluation/selection; management; reporting</td>
</tr>
</tbody>
</table>
Table 1: Selection of existing key green bond standards, frameworks and guidelines.

<table>
<thead>
<tr>
<th>Name</th>
<th>Level of transparency</th>
<th>Level of assurance</th>
<th>Examples good practices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>National standards</strong></td>
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</tr>
<tr>
<td>Green Bond Principles</td>
<td>Environmental considerations</td>
<td>Annual reporting recommended: amounts disbursed on proceeds, expected environmental impacts (quantitative if possible)</td>
<td>External assurance recommended (not mandatory) to confirm alignment with the GBP features</td>
</tr>
<tr>
<td><strong>Issuers/underwriters/ second party reviewers</strong></td>
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<td></td>
</tr>
<tr>
<td>Climate Bond Standards</td>
<td>Environmental considerations (with exclusive focus on climate-related impacts)</td>
<td>Mandatory annual reporting to CBI Standards Board for all certified Climate Bonds across the entire term of the bond</td>
<td>Pre/post-issuance certification granted based on approved third party verification (periodic certification is optional)</td>
</tr>
<tr>
<td>S&amp;P Dow Jones Green Bond Index and Green Project Bond Index</td>
<td>Environmental considerations and financial eligibility criteria (e.g. coupon type, maturity, investment grade; size and currency; security)</td>
<td>Public disclosure requirements on amounts disbursed on proceeds and expected environmental impacts is one of the eligibility criteria</td>
<td>No specific assurance requirements</td>
</tr>
<tr>
<td>Barclays/MSCI Indices</td>
<td>Environmental considerations and financial eligibility criteria (e.g. coupon type, maturity, investment grade; size and currency; security)</td>
<td>Annual reporting requirements: amounts disbursed per project and per category, and expected environmental impacts (quantitative if possible)</td>
<td>Third party verification is preferred but not mandatory</td>
</tr>
<tr>
<td>Bank of America Merrill Lynch Green Bond Index</td>
<td>Environmental considerations and financial eligibility criteria (e.g. coupon type, maturity, investment grade; size and currency; security)</td>
<td>No specific reporting requirements</td>
<td>No specific assurance requirements</td>
</tr>
<tr>
<td>CICERO’s Shade of Green</td>
<td>Environmental considerations, with a focus on climate-related issues</td>
<td>No specific reporting requirements in place: assess issuers’ own procedures</td>
<td>No specific assurance requirements in place: assess issuers’ own procedures</td>
</tr>
<tr>
<td>Oekom’s Sustainability Bond Rating</td>
<td>Environmental, Social and Governance (ESG) considerations</td>
<td>No specific reporting requirements in place</td>
<td>No specific assurance requirements in place</td>
</tr>
<tr>
<td>Example of investors’ framework: Natixis’ Green Bond Issue and Reporting Analysis Grid</td>
<td>Green Bond Issue Analysis includes financial characteristics (financial rating, coupon, oversubscription, etc.)</td>
<td>Specific detailed Reporting Analysis Grid, including assessment of relevance of impact indicators, accessibility of information, list of projects, amount disbursed, eligibility</td>
<td>External validation is one of the criteria assessed in the Green Bond Issue and Reporting Analysis Grid</td>
</tr>
<tr>
<td>Example of issuers’ framework: HSBC’s Green Bond Framework</td>
<td>Environmental considerations</td>
<td>Annual Green Progress Report (amounts allocated, projects funded, alignment with HSBC GB Framework) for each issuing entity and publicly available</td>
<td>External assurance provider to assure the Green Bond Progress Report provided by issuing entities</td>
</tr>
<tr>
<td>Example of issuers’ framework: EIB’s Green Bond practice</td>
<td>Environmental considerations</td>
<td>Reporting on list of projects in CAB Newsletter and annual Sustainability report</td>
<td>Internal tracking method, allocation of the proceeds and the GHG data are audited</td>
</tr>
<tr>
<td>Green Bond Guidelines and Green Bond Endorsed Project Catalogue</td>
<td>Environmental considerations</td>
<td>Mandatory quarterly disclosure: project type, green projects selection, use of other standards, environmental performance</td>
<td>Recommendation on independent review/certification on the use of proceeds and environmental performance</td>
</tr>
<tr>
<td>SEBI’s Regulations</td>
<td>Environmental considerations</td>
<td>Mandatory annual disclosure: use of proceeds, list of projects, environmental performance (quantitative if possible)</td>
<td>Optional independent third party review/certification for pre-issuance and post-issuance process</td>
</tr>
</tbody>
</table>
“Issuers need to address standards and accountability for green bonds to gain more credibility. Initiatives such as the Green Bond Principles have helped define the bonds for investors. However, compliance with these principles is voluntary and there are no enforcement mechanisms. This has relegated green labelling to a marketing strategy in the eyes of some market participants.”

*Moody’s Investor Services, Green Bonds Start to Bloom, May 2015*

Our analysis of the existing principles, standards, initiatives, frameworks and guidelines reveals the following issues:

- There is currently no widely-accepted rule-based approach to create consensus around green bond issuance. While the Green Bond Principles enjoys by far the strongest uptake by market participants – more than 96% of the US$63bn green bonds outstanding analysed in 2015 are aligned with the initiative – it defines only voluntary guidelines which are neither rule-based nor binding, and it doesn’t position itself as a standard.

- The **Climate Bonds Initiative** is currently the only rule-based standard. However, it is focussed on delivering a rapid transition to a low-carbon and climate-resilient future, and it does not address other environmental issues such as biodiversity and ecosystem services. CBI has developed a detailed taxonomy for climate bonds but has not yet produced a widely accepted definition of a ‘green’ bond. The standard and certification proposed by CBI has so far been used in a number of issuances. However, the CBI standard is supported by a large number of partner organisations. These include investors representing asset owners, investment managers and individual funds managing a combined US$11.2tn of assets as well as underwriters representing almost 25% of the green bond market in 2015.

- Overall, the existing standards, frameworks and guidelines are mostly **process-based.** They set up requirements on the green bond issuance process (e.g. use of proceeds, issuance evaluation/selection, management, reporting, issuer’s transparency), instead of defining specific financial and environmental performance criteria. However, by definition, a green bond should create environmental benefits and financial returns. These process-based approaches make it impossible for investors to assess the performance and attractiveness of an investment.

- Almost all existing standards, frameworks and guidelines only look at the **potential** environmental impacts prior to issuing a bond, instead of assessing the **actual** environmental benefits of projects throughout the lifetime of the bond. Yet, the purpose and added value of a ‘green’ bond is to create environmental benefits. Focussing on promised environmental impacts rather than actual performance raises the risk of greenwashing if bonds are issued and perceived as green, while only achieving little or in fact no actual environmental benefits.
Overall, the proliferation of standards, frameworks and guidelines and the diversity of market practices in terms of definitions and requirements create complexity and confusion among issuers and investors, which could hamper the confidence needed for the green bond market to thrive in the long term.

• While they usually consider numerous categories of eligible projects (from renewable energy to waste and water management or climate change adaptation), most of the standards, frameworks and guidelines focus on specific environmental benefits (such as carbon emissions) and do not take into consideration wider environmental or social impacts. However, green bond financing for a project having environmental or social downsides (e.g. wind or solar farms in or around protected areas or UNESCO World Heritage sites, etc.) could raise reputational risks and hamper the credibility and trust of investors in the green bond market; and it would thus not be aligned with the overall objective of transitioning towards a sustainable economy.

• In addition, most existing standards, frameworks and guidelines are not long-term oriented, with the exception of CICERO, which defines its ‘Shades of Green’ based on a time horizon of 50 years. However, most initiatives foresee periodical revisions. As the market is still in its early stages, this is an important factor for long-term investments, because technologies that are state-of-the art environmental technology today might become obsolete in the future as innovation and technological progress advances and regulatory requirements catch up.

• Usually standards and frameworks mainly focus on the environmental aspects of the use of proceeds, but besides indices, none of the standards or frameworks establishes a connection between the environmental and financial performance of a bond. This makes it difficult for investors to have the complete picture when assessing risks and opportunities and the overall performance of an investment, and it does not emphasise the ‘additionality’ of green bonds in their decision-making processes.

• Most of the standards, guidelines and frameworks define relatively loose instructions on annual reporting and public disclosure (projects, amounts disbursed, expected environmental impact). However, reporting and disclosure are rarely mandatory in current frameworks and standards. Moreover, there is no common reporting guidance on methodology and content, and there are large differences in the expected level of transparency. For example, GBP requires the issuer to disclose the amounts disbursed on proceeds and the expected environmental impacts (quantitative if possible), while Natixis set up a specific detailed Reporting Analysis Grid, including criteria such as assessment of the relevance of impact indicators or accessibility of information. This creates divergence on the level of transparency which impedes the comparability of the bonds.

• Only a limited number of standards and frameworks explicitly require verification or certification by an independent third party (e.g. CBI, Natixis’ Green Bond Issue and Reporting Analysis Grid, HSBC’s Green Bond Framework) and there is no clear definition of monitoring or requirements for independent assurance, which could bring into question the reliability of the disclosed information.

Overall, the proliferation of standards, frameworks and guidelines and the diversity of market practices in terms of definitions and requirements create complexity and confusion among issuers and investors, which could hamper the confidence needed for the green bond market to thrive in the long term.
Credible and widely-accepted standards could create simplicity and clarity and establish the trust and confidence investors, issuers, and other green bond market participants need, helping the market to grow in size, quality and credibility.

**Existing environmental standards can help close the existing gaps**

Issuers could also make use of other, more detailed, sector-specific environmental standards in their use of proceeds. WWF considers standards that are ISEAL member or associate member, such as the Forest Stewardship Council (FSC) or the Marine Stewardship Council (MSC), as the most credible in their respective sectors. They could be used for green bonds that include underlying assets in those sectors.

**Key conclusions for chapter 2:**

**Taking stock of the standards landscape**

- The green bond market grew significantly over the last two years, but it is still very small (<0.1%) compared to the total size of the debt securities market. The green bond market is progressively diversifying, but remains largely dominated by a small number of issuers and sectors focused on renewable energy and energy efficiency projects.

- The Green Bond Principles, an industry-led set of relatively broad principles and guidelines, enjoy impressive recognition and uptake in the market.

- The development of standards focusing on climate-related environmental challenges is by far the most advanced, notably guided by the Climate Bonds Initiative that offers a certification system for climate bonds – with performance-based minimum standards defined by science-based eligibility criteria – for a growing number of sector. However, other environmental challenges with significant impact on natural capital – such as depletion of natural resources (other than energy), pollution prevention, waste reduction and conservation of biodiversity – remain largely unaddressed in most standards, frameworks and guidelines. Significant standard-setting efforts will be required to close this gap.

- A large number of organisations have developed standards, initiatives, frameworks and guidelines to assess the green credentials of bonds. Yet, the multiplicity and proliferation of the approaches and definitions, coupled with a lack of common language, creates confusion which could hamper market development.

- The market would benefit from commonly-accepted standards that ensure credibility and enable fast, low-cost investment and trading in green bonds.
3. The market potential of green bonds

Large amounts of capital needed for the transition to a more sustainable world

If we are to keep global warming below 2°C, or even 1.5°C as recently agreed at COP21 in Paris, while adapting to the impacts of climate change, a fundamental transformation of our development patterns is needed. We must shift to a long term perspective to ensure the transition towards a more sustainable and resilient economy and society.

In 2015, UN member states unanimously adopted a universal framework that provides direction for the next 15 years by defining 17 Global Goals for Sustainable Development to stimulate action for people, planet and prosperity. These goals include universal challenges such as ending poverty, food security, education, gender equality, resilient cities, sustainable consumption and production, and access to justice.

WWF global priority areas, which support and are aligned with the Global Goals (see box 4 on page 27), focus on some of the most relevant and urgent transitions towards a One Living Planet economy. These include:

- **Low-carbon and efficient energy system** – Moving towards a decarbonized economy, a fundamental transformation of our energy system is needed in order to shift from fossil fuels to clean energy production and efficient energy use. Over the last few years, technological improvements have fostered the development and lowered the costs of renewable energies. Yet, according to the IEAs 450 Scenario, US$15tn is required between 2014 and 2035 (i.e. an average of US$670bn per year, more than twice the investment of US$260bn in 2013) to finance renewable energy infrastructure and scale up low carbon technologies such as wind, photo voltaic (PV) and concentrated solar power (CSP), nuclear, carbon capture and carbon storage (CC&S), or electric vehicles. Energy efficiency is also an essential and major potential transition for a low-carbon economy – and the IEA estimates that more than US$13.5tn is needed to improve energy efficiency in the industry, transport and building sectors via technologies such as LED lighting, insulation, smart-grids, fuel-efficient equipment, or aerodynamic and light vehicles (i.e. an average investment of US$615bn per year between 2014 and 2035, more than four times the 2013 investment level of US$130bn).

- **Ecosystem conservation** – With climate change, population growth and urbanization, ecosystems are increasingly under pressure. Yet it is crucial to limit the rapid degradation and depletion of our ecosystems as they provide key services for our society and economy (e.g. food and raw materials supply, erosion prevention and climate regulation). WWF, Credit Suisse and McKinsey estimated that the investment needed to preserve biodiversity and

US$670bn per year on average between 2014 and 2035, more than twice the investment in 2013, will be needed to finance renewable energy infrastructure and scale up low carbon technologies.

ecosystems at a global scale would amount to about US$300 to US$400bn per year\textsuperscript{46}, which is six to eight times the 2012 conservation finance level of US$52bn.

- **Sustainable water use** – Considering population and development trends, and the effects of climate change, water is going to be one of the key environmental, social and economic challenges of the next decade. Under business as usual, global water demand is estimated to reach 6,900bn m\textsuperscript{3} by 2030, which is 40% above current accessible and reliable supply, and one-third of the world’s population would live in regions that suffer from a water deficit of above 50%\textsuperscript{49}. To carefully manage global water resources, an estimated annual investment of about US$425-515bn would be required until 2030\textsuperscript{50,51} to improve water resource management (e.g. irrigation, industrial water efficiency, reuse of waste water, municipal leakage reduction).

Based on these rough assessments, an estimated annual investment of about US$2tn per year will be required over the next 15 years to transform our low carbon and efficient energy system, preserve ecosystems and ensure sustainable water use. Of course, such estimates are based on assumptions and simplifications and entail significant uncertainties; but it is clear that – while investments for sustainable development have increased over the last few years – there is a large gap between current investment flows and capital needs to ensure the transition to a sustainable, one-living-planet economy.

The investment needed to preserve biodiversity and ecosystems at a global scale would amount to about US$300 to US$400bn per year.

*CREDIT SUISSE, WWF, MCKINSEY (2014)*

**Box 4 – WWF’s Global Goals 2015-2025\textsuperscript{52}**:

In 2015, the WWF network revised its global conservation strategy, taking into account the recently adopted Sustainable Development Goals (SDGs). For the next decade it will focus on six Global Goals:

- **Climate**: A global shift towards a low-carbon and climate-resilient future is achieved.
- **Forests**: The integrity of the world’s most important forests, including their benefits to human well-being, is enhanced and maintained.
- **Oceans**: The world’s most important fisheries and ocean ecosystems are productive and resilient, and improve livelihoods and biodiversity.
- **Wildlife**: The world’s most iconic and endangered species are secured and recovering in the wild.
- **Water**: Freshwater ecosystems and flow regimes in key river basins provide water for people and nature.
- **Food**: Sustainable food systems conserve nature and maintain food security.

WWF has also identified three global drivers of change – governance, finance and markets – that are fundamental to environmental degradation worldwide, and yet could also be powerful positive forces for sustainable development at scale.
Bonds could provide a significant part of the capital needed from private sources

The estimated US$2tn annual investment needed for these sustainable transitions can be driven from public and, more importantly, private pools of capital. As with current financing structures, investment for sustainable transitions will be mobilised through a combination of financial instruments – such as private equity or venture capital, YieldCo, loans, or bonds (see figure 5 below) – in order to meet risk, return, liquidity and other financial market needs.

Bonds, and more specifically green bonds, will only finance part of these sustainable transitions. Bonds can provide access to long-term debt at a relatively low cost of capital. With a diverse base of investors, they are especially suitable for projects with a long-term investment horizon, large capital costs and secured income streams, such as renewable energy infrastructures. Bonds are more liquid than loan instruments. They are positioned higher in the capital structure and therefore provide less risky investment options than equity. This combination of capital protection and liquidity can help attract a broader range of investors than other less liquid or more subordinated instruments such as alternative investments or other debt instruments arranged through private placements. The suitability of green bond finance also depends on the maturity level of the domestic bond market.

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<tr>
<th>Asset category</th>
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<td>Public-private partnerships</td>
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Figure 5: Overview of types of capital to finance sustainable transitions: Source: OECD53, Bank of America54
Strong growth drivers of green bond market can be identified

The rapid growth of the green bond market is showing that the bond markets provide a promising channel to finance environment-related investments. The speed and size at which the green bond market will develop over the next few years will to a large extent depend on macro-level market developments, which will impact supply and demand.

The most relevant growth-drivers at the macro level are:

- **Growing government support** – Several governments, from both developed and developing countries, have set up measures and incentives to foster the green bond market in support of their respective public policy agendas. The Chinese Government, for instance, has committed to develop financial products including green bonds to meet its pollution, clean energy and GHG emissions targets; and has supported the People’s Bank of China (PBoC) in establishing national green bond guidelines. Similarly, in its Roadmap for Sustainable Finance, Indonesia engages to support institutions and industries in the issuance of green bonds. Other examples include the Netherlands and the US, which have both set up tax incentives to support green bond issuance and investment. In addition, government interventions to increase transparency and disclosure of information related to green bonds can further stimulate demand.

- **Unlocking the potential of emerging economies** – While green bond issuance and investment are currently dominated by Europe and the US, the market is gaining momentum in the developing world. Green bonds represent a win-win opportunity for emerging economies, fostering the growth and the independence of domestic capital markets while attracting investments to mitigate environmental challenges and ensure compliance with global environmental targets. China and India took the lead in 2015, with the Agricultural Bank of China issuing a US$996 million bond and India entering the market with issuances for a total of US$1.1bn. South America’s interest in green bonds is also taking off, notably in Peru, Brazil and Mexico. Large pools of capital are available in emerging markets (excluding China, up to US$5tn of assets are estimated to be under management) and could be leveraged for long-term green investing. The increased interest and involvement of emerging economies will drive future growth in the green bond market.

- **Rising interest in ESG investment** – There is a growing awareness of ESG issues and an increasing interest in sustainable investment within the investor community. In November 2015, the PRI Initiative gathered 1,380 signatories, in charge of a total of US$59tn of assets under management. Similarly, SRI strategies represent about 35% of the total value of professionally managed assets worldwide, and green bonds are classified under SRI impact investing.

Today, interest in green bonds goes beyond ESG specialists and SRI investors, reaching mainstream asset owners and managers who are increasingly seeking ESG-themed diversification options with long-term liability. Institutional investors currently allocate a very low percentage of their assets to green projects, but they represent an essential source of potential green funding. Their enthusiasm will be a game-changer for the green bond market, driving green issuances mainstream.

Future expansion of the green bond market

2015 was a record year for the labelled green bond market, with more than US$42bn of new issuances – up from US$36.6bn in 2014 and US$11bn in 2013. Also in 2016 the growth rates of the labelled green bond market look promising. More than US$34 billion of labelled green bonds were already issued in the first six months of 2016 and, according to a survey, the green bond market will reach between $50 billion and $75 billion of new issuance at the end of the year. The size of the green bond market is expected to continue to increase over the next few years, mainly driven by the macro-level market developments mentioned in previous paragraph. It is expected that especially new issuances from China will drive the green bond market. China alone is expected to issue RMB 300bn (US$45.6bn) of green bonds annually in 2020.

Besides the promising growth rates of the labelled green bond market in recent years and the strong growth drivers, there are still some uncertainties in this nascent market that could potentially limit the growth of the market in the coming years. A first major
uncertainty relates to the topic of this report, the lack of a common green bond definition and standard. Labelling of green bonds is essential to green the fixed income market, especially in Asia where a lack of a common definition could undermine the credibility of some green bonds and thus its growth potential. Secondly, the lack of interest from corporations could slow down the market growth as well. To date the labelled green bond market is mainly driven by financial institutions and development agencies, also in Asia.

Taking into consideration the current growth rates, market drivers and uncertainties, several studies estimate that the current labelled green bond market could grow to over US$300bn of new issuances by 2020 with a potential annual run rate of US$80-140bn\(^1,62\). This growth rate of labelled green bond issuances excludes the larger universe of bonds financing climate and environment-related assets that do not carry a green label. Therefore, it does not show the full potential for future labelled green bond growth.

Where are the needs and what is the potential?

- **To keep the global temperature increase below 2 C, or even 1.5 C, and adapt to the impacts of climate change, a transformation of our development patterns is needed in order to shift towards a more sustainable and resilient economy.** An estimated investment of about US$2tn per year would be required over the next 15 years to transform our low carbon and efficient energy system, dramatically reduce global emissions adapt climate adaptation and resilience, preserve ecosystems and ensure sustainable water use. However, there is a large gap between current investment flows and capital needs.

- **Green bonds are one of the several financial instruments that could be used to finance these sustainable transitions.** Green bonds are particularly suitable for projects with long-term investment horizons, large capital costs and secured income streams, such as renewable energy infrastructures. But green bonds could also steer capital for other urgent environmental transitions such as sustainable water management or ecosystem conservation. It is estimated that the labelled green bond market could grow to over US$300bn of new issuances in 2020 and thus could significantly contribute to the capital needed for the transitions towards a more sustainable and environmental-friendly economy.

- **The development of credible and widely-accepted green bond standards could encourage greater participation and facilitate the growth of the market.** The speed and size at which the market will develop over the next few years will largely depend on macro-level drivers such as government support (incentives including tax benefits, domestic policies, national standards and guidelines, increased transparency and disclosures of information related to green bonds, sovereign green bond issuances, etc.) which can significantly impact the supply and demand of green bonds.

**Key conclusions for chapter 3:**

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In chapter 1 of this report we stated that opposite views currently exist in the market as to whether green bond standards are needed to further grow the market. In the following chapters we made the case for why they are: to drive environmental progress in light of the state of the planet today, and to underpin market growth through the involvement of mainstream investors and new issuers who will enter once certain conditions are met.

However, barriers in the market currently hinder significant progress on standards. We address these below, by asking two fundamental questions:

1. **What type of standards for ‘green’ are needed, to achieve the full market potential of green bonds?**
2. **Which elements or essential features should the standards have to be widely accepted and to allow green bonds to deliver their market potential as well as significant environmental benefits?**

To determine what type of standards for ‘green’ are needed and which elements these standards should contain the following sources were used:

- The strengths of existing green bond standards and frameworks (see chapter 2 of report)
- The gaps and limitations of existing green bond standards and frameworks (see chapter 2 of report)
- Market potential of green bonds and underlying growth drivers (see chapter 3 of report)
- Existing market barriers for development green bond standards (see paragraph below)

### Several market barriers exist for developing green bond standards

The market is still in the early stages of developing green bond standards. It is useful to examine why a significant group of market participants consider standards or stringent criteria as a potential threat that could inhibit or slow down the growth of the green bond market.

We have identified three critical barriers that standards need to acknowledge and to overcome:

**Overly-stringent standards are perceived as leading to additional costs for issuers**

Overly-stringent criteria or excessively-burdensome reporting standards are perceived as additional cost barriers for issuers, and might deter some issuers (such as corporations and municipalities) from issuing green bonds. These additional costs might stem from setting up internal administrative processes, as well as the reporting, verification and monitoring requirements of the standards. As there is currently no premium in the
primary market to recover these expenses, the investor reaps all the benefits of increased accountability while the issuer must cover all the costs. This could deter issuers, especially corporations, from stepping into the green bond market. In addition, the perceived extra costs that standards might entail could prevent the issuance of small-scale green bonds of US$100 to 300 million – and these will also be required to meet the total financing needs of the future. Reversely, due to shortage of supply, some studies have shown that green bonds have traded at a slight premium on the secondary market, which might deter some investors.

The green bond market is too diverse for standards

The green bond market is potentially highly diverse, with many different types of issuers, many categories of eligible projects and a wide variety of criteria and measures for the environmental impact of the bond. Furthermore, green bonds are multidimensional. It is not only a question of the use of proceeds and the environmental outcomes, but also of the process and work behind a green bond. All these dimensions need to be considered when determining whether a given bond can be classified as ‘green’. This broad diversity makes it challenging to produce a common set of standards and criteria.

Issuing green bonds that comply with standards might be perceived as too difficult by issuers

Green bond standards could lead not only to additional costs, but might also be perceived as being more difficult and complex. Actually setting up and issuing a green bond would mean additional reporting, verification, administration and monitoring for the issuer, which would demand more expertise and capabilities. This could be a particular problem for smaller corporate issuers or municipalities, and issuers with green investments of less than US$250-300 million might not be sufficiently equipped to issue a green bond in line with the additional requirements. In this case, green bond standards could ‘exclude’ issuers from the market, with a related negative impact on its growth.

As a general issue, the extra requirements of meeting green bond standards would mean longer time-to-market periods for bonds; which could limit the potential for acting as quickly as issuers desire in some cases.

Types of standards the green bond market needs

These barriers show the size of the challenge facing the green bond market: how can it achieve standards that facilitate and stimulate its further growth, instead of slowing it down through the additional costs and complexity the standards might entail? To avoid negative impacts on the growth of the green bond market, we must have a clear understanding of what type of standards it needs to unlock its market and environmental potential. To encourage convergence of market practices, decrease transaction costs and increase its integrity, the green bond market needs standards that are rule-based but flexible in their application. They should contain minimum standards on a set of elements of the green bond, such as disclosure of information and independent assurance. However, the minimum standards must retain enough flexibility to reflect the broad diversity of the market, facilitating smaller projects along with larger ones, as well as meeting the different needs of investors.

Green bond standards should be broad enough to address all major environmental and sustainability challenges, not only climate change. They should provide issuers with robust with robust frameworks for providing finance to environmental challenges such as ecosystem conservation, sustainable water use and pollution prevention through use of green bonds.
Firstly, this means that the standards should not be fully normative or too prescriptive on what is green or not. Guidance should be provided, rather than imposing predetermined environmental performance thresholds on the green aspects of the bond.

Secondly, the starting point of the minimum standards should be that bonds can be ‘green’ unless the standards are not fulfilled, which is the opposite of setting standards for the bond to classify as ‘green’. Furthermore, no widely-accepted definition of ‘green’ is currently available, while every market player applies its own definition to potential investments. Given this flexibility, there should be room for investors to decide whether the overall package offered fits their individual investment criteria and mandates. Essentially, it should be left to the investor to evaluate and assess the ‘level of greenness’.

Nine key elements of green bond standards

Taking into consideration the previous sections of this report, we believe nine key elements for future green standards can be identified. We note again that this should take into account the elements already included in current standards, specifically CBI and GBP. The below should be seen as general elements for the standards of the future and therefore does not intend to evaluate these standards on the below elements.

1. Standard scope: green bond standards should steer capital towards all critical environmental impacts

Currently existing green bond standards are largely focused on climate change. But human society faces many other critical environmental and sustainability challenges. For example, more than two-thirds of the annual value of the ocean relies on healthy conditions to maintain its annual economic output. Collapsing fisheries, mangrove deforestation as well as disappearing corals and seagrass are threatening the marine economic engine that secures lives and livelihoods around the world. To fully unlock the potential of green bonds, it is essential that future standards address all key environmental challenges that societies are facing, including (but not limited to) the depletion of natural resources other than energy, pollution prevention and waste reduction, as well as conservation of biodiversity, which currently are not fully addressed in existing climate bond standards and guidelines.

2. Standard focus: focus on achieving verifiable ‘actual’ instead of ‘promised’ or ‘pledged’ environmental benefits

The critical criteria to assess green bond performance should concern real, actual change – rather than promised improvements. The actual environmental benefits by the underlying projects/assets should for obvious reasons not be to the detriment of other environmental or social challenges. Bonds therefore should be able to demonstrate the underlying assets’ net positive impact on the environment, and any potential negative environmental and social impacts (current or foreseeable) should be identified and mitigated. Consistent insight into these environmental benefits will allow investors to start differentiating the pricing of various types of green bonds.

Just as importantly, these net actual impacts should be verifiable by a third party. Only a bond for which the issuer can demonstrate measurable environmental benefits over its lifetime, certified by an independent party according to widely-accepted, fully developed standards, should qualify as a green bond.

This means that through use-of-proceeds procedures and processes, a clear relationship should be established between the underlying eligible projects of a green bond and a measurable positive environmental outcome. In addition, the type of project(s) that are funded by the bond should be clearly defined; and potential negative environmental and social impacts of the project(s) should be identified, assessed, monitored – and mitigated.

Standards should enable issuers to demonstrate environmental impacts that have been actually achieved, rather than those simply promised. This means that standards should include commonly-accepted outcome-oriented performance metrics and robust methodologies for reporting actual environmental impact. Issuers will apply these outcome-oriented performance metrics to their specific circumstances, and investors will use them to assess and monitor the environmental performance of bonds in their portfolio.

These outcome-oriented performance metrics still need to be developed. Potential guidance is available from corporate reporting standards-setting bodies such as the Global Reporting Initiative (GRI) or the US-based Sustainable Assurance Standards Board (SASB).
3. Standard objective: focus on inclusion

In order to achieve critical mass and uptake by mainstream investors, as many green bonds should be allowed into the market as is reasonably acceptable. The future standards around ‘green’ should therefore be focused on inclusion, without losing sight of the quality, accountability and integrity of the market. The standards should not be too prescriptive or costly to comply with, and they should reward more than environmental excellence. In addition, future standards should be focused on the process and work behind the green bond, aimed at standardisation of approach, and not simply the bond itself.

4. Standard time-horizon: standards should be long-term oriented and resilient

The meaning of ‘green’ changes over time, due to evolving societal expectations and circumstances as well as technological progress. This means that any future standard should not be restricted to the state of green in a certain timeframe. Rather, future standards should be long-term oriented and resilient over time: what could be labelled as an eligible project now should remain so in three, five or ten years, in particular in cases where maturities of green bonds are very long.

5. Standard focus: create simplicity by building on existing frameworks and standards

To reduce confusion and duplication of work, green bond standards should build as much as possible on existing sector standards, such as Climate Bonds Standards and Green Bond Principles.

In sectors where sector-specific standards have yet to be fully developed for the bond market, effective and credible sector-specific sustainability standards – e.g. standards that are ISEAL members or associate members – should be used when and where they exist. They could be used as ‘proxy-standards’ for underlying assets of green bonds while robust and credible eligibility criteria for green bonds with underlying assets in these sectors are being developed.

For example, for investments in marine and coastal assets for which standards have yet to be developed, issuers could use certification from the Marine Stewardship Council (MSC) or the Aquaculture Stewardship Council (ASC), both ISEAL members that have committed to ISEAL’s standard-setting codes. Investments in infrastructure assets could use the Standards for Sustainable and Resilient Infrastructure (SuRe©) conveyed by Global Infrastructure Basel (GIB). Future sector standards for hydropower, currently under development by CBI, could be based on the Hydropower Sustainability Assessment Protocol and other standards supported by WWF, including the Alliance for Water Stewardship (AWS) Standard.

Some of these standards have gained significant market share in their respective sectors and have moved from niche to mainstream (see figure 6 below). Where these standards have committed to ISEAL Impact Codes to build a monitoring and evaluation framework.

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**Figure 6:** Sustainability standards for agricultural commodities moving from niche to mainstream: increase of market share for selected ISEAL sustainability standards between 2009 and 2015.
system examining both short-term and long-term outcomes, certification of assets against them could be used as a ‘proxy’ for superior environmental performance, which would help simplify reporting requirements, thus reducing transaction costs.


It appears to be nearly impossible to formulate a common definition of ‘green’ for all green bonds and all sectors. Nevertheless, standards should provide guidance to encourage more converging practices and conventions in the market.

We believe standards could set green criteria at (sub-)sector level. At this level, it is easier to develop criteria that can be applied to the majority of organizations in each sector. The criteria should contain detailed green taxonomies, performance metrics and assessments methods. They should also include potential exclusion criteria. The Climate Bonds Initiative has successfully applied this approach, and we would encourage CBI to accelerate this process and expand to a broader range of sectors. Several issuers (e.g. HSBC’s green bond framework, which defines sector-specific exclusions and policies) and second review providers already use similar approaches. The sector-specific standards should also be adaptable to national/regional conditions and needs.

The sector standards should be developed with a broad range of relevant market actors and allow meaningful and equitable stakeholder participation. These industry groups should make use of environmental criteria already commonly applied in their sector and use existing codes on environmental standard-setting (for example ISEAL’s Code of Good Practice for Setting Social and Environmental Standards).

7. Assurance: make independent third-party assurance and accreditation as an essential element to enhance credibility

In order to control the integrity and credibility of the market, issuers of a green bond should use third-party assurance to confirm their alignment with the key parameters of the (sector-specific) standards. Issuers should be able to decide themselves which type of independent assurance best fits the ambition and purpose of the green bonds, but such assurance should be mandatory, not optional. The two most commonly applied types of assurance are second-party reviews and audits by external auditors such as PwC, EY, KPMG and Deloitte. The main difference between the two types of assurance is that second-party reviews are carried out by experts who give an ‘opinion’ on whether a green bond meets (their) green criteria; while audit firms provide an independent ‘verification’ that certain green bond information complies with specific third party criteria, which have been agreed through multi-stakeholder dialogue. The Climate Bonds Standard already provides a list of approved verifiers that can offer independent assurance based on geography and sector expertise.
8. Transparency: require disclosure of risks relating to achieving environmental targets and related controls

It is common in corporate financial disclosure to report on the risks of not achieving the targets set by the company. Similarly, with green bond information on the risk of not achieving the environmental targets set for the underlying projects or assets should be reported, both at issuance and during the term of the bond. Potential risk categories could include operational risk (e.g. technical problems with wind parks, decreasing the capacity utilization) and legal risk (e.g. changes in subsidies, tax incentives or other relevant public policies). We believe future standards should address this aspect separately.

9. Transparency: require impact reporting according to commonly-accepted frameworks

Impact reporting should also become one of the key elements of the future standards around ‘green’. This would enable issuers to focus on the outcomes and impacts of the green investments of the bond, instead of on its intention or the aspiration. Again, this could improve the quality of green bonds and their attractiveness for investors.

Increasingly, investors report on the sustainability impacts – such as carbon reduction – of their portfolios. The French asset manager Humanis, for example, reports in its official documentation on what greenhouse gas emissions its green bond fund avoids. Innovative regulatory approaches such as Article 173 of the energy transition law adopted by the French government in 2015 as well as voluntary guidelines for disclosure currently being developed by the Task Force on Climate-related Financial Disclosures (TCFD) convened by the Financial Stability Board (FSB) are likely to accelerate this trend towards more and better disclosure.

Of course, this can only be done if specific, environmental use-of-proceeds information on the underlying bonds is publicly available in a consistent and comparable format.

The future standards should promote periodic reporting (e.g. annually) about the environmental effectiveness of the projects funded by the green bond. This should include the actual environmental impacts of the projects, the financial consequences of these environmental impacts for the issuer (see also key element 5 above), and the method it applies to measure and monitor them. Over time the frameworks developed should gain common acceptance.

The uniqueness of green bonds lies in their dual purpose – both generating financial returns and achieving environmental targets, thus creating natural capital. The current market does not price the societal return of the latter, partly because of the different measuring units for environmental performance. This is why we believe it is important to disclose the full financial implications of a green bond: it is a way to demonstrate to mainstream investors its overall return. This could be done in qualitative terms, but preferably (where possible) by monetising the external environmental benefits, which would create a uniform approach for comparing the ‘total return’ of green bonds.

Such information would allow potential investors to consider how much scope a bond has to provide greater economic value than simply its monetary returns – such as its environmental benefits, reputational benefits, reduced regulatory risk, etc.

Methodologies that enable issuers to (roughly) estimate natural capital already exist and can be easily applied to green bonds. The Natural Capital Coalition - a global platform which brings together the many different initiatives and organizations working in natural capital under a common vision - has members that include many green bond issuers and other market participants including reputable auditing firms. The Natural Capital Coalition has developed the Natural Capital Protocol – a standardized framework to identify measure and value direct and indirect impacts (positive and negative) and/or dependencies on natural capital. A hypothetical example of how such a natural capital framework could be applied to a bond issued by an international energy company is presented in the boxed text on the following page.

By connecting a green bond’s financial performance (i.e. annual interest paid between issuance and maturity) and the natural capital it preserved, restored or enhanced for society (e.g. monetised value of financing and capitalising the transition towards a 2°C world), its total benefits to the investor and society become clearer and more harmonised. This will potentially lead to further participation in the market and better pricing of green bonds. Therefore standards should incorporate guidance on how to report on the financial effects of the environmental performance improvements achieved, and offer methodological guidance to do so, drawing on frameworks that are currently being tested.
Box 5 – Natural capital accounting – Reporting on natural capital and environmental returns for society

Financial characteristics of the bond:
- Total issuance: €1.4bn (US$1.52bn)
- Date: November 2013
- Annual coupon: 2.25% (US$ 34 million)
- Expected yield: 2.316%/year
- Maturity: 7.5 years

Actual allocation of the use-of-proceeds (as of Feb 2016):
- 13 renewable energy projects: wind, solar PV, biomass
- Total capacity of 1.8 GW and total potential of 7 TWh
- Over the 13 projects financed, wind infrastructure represents 1724 MW (96% of total capacity)

Natural capital preserved, restored and enhanced by the green bond
- Estimated avoided CO2 emissions as reported by the issuer*: 3.3 Mt/year (gross) / 1.8 Mt/year
- Natural capital preserved (net)*: US$ 330 million/year (gross) / US$ 180 million/year (net)

This assumes that the CO2 emissions avoided are the most important environmental impact and that the natural capital preserved, restored and enhanced by the bond each year can be estimated by calculating the total gross/net value of these avoided emissions, valued at their cost to society*.

In conclusion, the monetised value of the natural capital preserved (i.e. CO2 emissions avoided per year) exceeds the annual financial interest payment generated by green bond (US$34 million) by an order of magnitude.

* The natural capital was estimated by monetising avoided CO2 emissions at a flat rate of US$100 per ton (a conservative assumption used by several companies and in line with the predictions of the French law on energy transition on the carbon tax in 2030[71]).

Source: KPMG calculations, based on publicly available information

Key conclusions for chapter 4:

Market barriers vs. enabling conditions?

Three fundamental market barriers exist for developing standards around ‘green’:

- Standards are perceived as leading to additional costs for issuers;
- The market is too diversified for standards; and
- Standards are perceived as making it ‘too difficult to issue a green bond’.

Looking at the type of standards the green bond market needs, we consider flexibility of application to be critical. Standards that contain detailed predetermined environmental criteria alone might be too rigid at this stage of market development.

However, the market also needs a set of objective minimum standards related to key components of the green bond to encourage convergence in market practices and conventions.

Taking into consideration the outcomes of our analyses in previous chapters, nine fundamental elements for effective future standards around ‘green’ have been identified.
5. Pathways towards green bond standards

An agenda for change

Based on the main conclusions from chapters 2 to 4, in our view it will not be straightforward to put the necessary fundamental elements of green bonds into operation, not least because both the green bond market as such and the dynamics between the key market actors are complex. The pathways discussed below are therefore by no means the only routes towards green bond standards. Rather, they show potential actions that different market players could and should take to drive the market towards further development.

Given the current nascent state of the green bond market, action on multiple fronts will be essential. The underlying market dynamics mean that treating standards as the only way ahead will probably not result in effective and widely-accepted green bond standards.

The following issues, among others, are particularly apparent:

- While there seems to be significant momentum in the market to promote standards and initiatives such as the Climate Bond Standards are well-recognized, there doesn’t yet seem to be consensus on whether we need to define thresholds, or minimum standards, for the ‘greenness’ of the bond. Also opinions on what type of green bond standards the market needs are highly divergent;
- There seems to be insufficient convergence in market practices related to individual aspects of a green bond, such as performance metrics used to report on environmental impacts, the structure and content of impact reports, and the level of transparency on use-of-proceeds; and
- In-depth knowledge, experience and capacity is lacking in some parts of the market on key aspects of the green bond, for example:
  - How to assess the environmental impacts of the green bond? Which methods to apply?
  - How to disclose the environmental benefits of the green bond to the capital markets? Which metrics should be used, and what are the investor expectations?
  - How to define what is ‘green’ for an individual organization or an asset?

In summary, it seems too early to focus on standard development alone. Instead we believe that a set of parallel pathways that mutually support each other should be followed. These can be executed simultaneously:

A. Improving understanding
B. Building capacity
C. Aligning market actors
D. Setting standards

Under the guidance of existing initiatives such as the Green Bond Principles and the Climate Bonds Initiative, and with the right level of commitment and collaboration among stakeholders, it should be possible to achieve standards for green bonds that suit market needs and ensure the right level of credibility.
Investors, issuers, underwriters and other market actors all have a role to play on each of these four pathways. We have identified key actions that each can take in order to overcome the challenges of developing robust, effective and widely-accepted green bond standards. These actions are summarised below and serve as a starting point for discussion on bringing the outlines of the standards, as presented in chapter 4, into practice.

**Recommended actions: driving change towards standards around ‘green’**

**A. Improving understanding**
Investing in awareness-raising and education within individual organizations and between market actors will assist in developing understanding, and ultimately market practices, that make it easier to effectively implement the future standards.

First, the general acceptance and successful implementation of the standards depends on the level of knowledge within individual institutions. For example, more insight by CFOs and treasury departments into the business case of issuing a green bond will not only help to grow the market, but will also help to get the future standards accepted by the issuers.

Second, through raising awareness and education, key market actors can better articulate mutual expectations around the green aspect of a green bond. This will also make the standard-setting process more efficient and effective. Clear communication of the business case by issuers, and the criteria applied by investors, are both important. Investors disclosing the environmental impact of green bonds will assist in educating the market, while underwriters should define a vision of their role also. Finally, knowledge platforms can be developed by NGOs and industry bodies to further improve understanding.

**B. Building capacity**
It is also important that the institutions themselves are adequately equipped to endorse and effectively apply the future standards. This includes, for example, the implementation of strategies and policies on green bonds. Furthermore, processes such as building capacity

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**Figure 6: Pathways and actions towards green bond standards**
to conduct environmental impact assessments of the underlying projects of a green bond would contribute to ability to issue and invest in green bonds. This pathway would involve an understanding by the issuers of the total value of green bonds (financial and environmental), which should be mirrored on the investors’ side. Better integration of ESG considerations into investments and the issuer acceptance process by underwriters would also help, as would their integration into the supervisory instruments of the financial sector by public policymakers.

C. Aligning market actors

Effective and widely-accepted standards require a certain degree of consensus among key market actors, for example on the level of transparency around the use-of-proceeds and the nature of impact reporting. Consensus is an important step towards standard-setting. Market actors need to enter into dialogue about their mutual expectations and visions on the green aspects of a bond. Ideally this type of engagement should not only take place between issuers and investors, or underwriters and issuers, but it would also include other stakeholders such as NGOs, public policymakers and other market actors.

Dialogue should address common disclosure policies by issuers, align investors’ expectations of the investment management industry, and promote convergence by public policymakers through applying standards. Other market players such as assurance providers, rating agencies, information or other service providers as well as NGOs should participate in the debate to help drive market convergence.

D. Setting standards

The other pathways could be considered as preconditions for the effectiveness of the standard-setting pathway itself. That does not mean that the standard-setting process cannot begin without them: the pathways described above are continuous processes to make markets function effectively. But timing is critical. Starting this pathway by formulating minimum standards for independent assurance, impact reporting or levels of transparency might be ineffective. It would be better to start this fourth pathway with discussions about, for example, which market actors should be involved in the process of standards development.

For this pathway, cooperation between market players is of the essence. Effective standards can only be developed when issuers, investors, public policymakers, industry bodies and assurance providers work together both within their peer groups and with other market players – and every player should actively participate in such initiatives.

Recommendations for market actors

As outlined above, the pathways will not be completed in sequential order. Neither can market actors follow a linear process to fulfil their role. Below we have outlined our recommendations for the various market actors in the pathways as we have defined them above.

### RECOMMENDATIONS TO BOND ISSUERS

| A | Improving understanding | 1 | Communicating the business case for green bonds. Further issuances are critical for growth in the market. Green bond issuers should communicate openly to the market about the business case for issuing a green bond, both from the perspective of the organisation and the investor, and explain to what extent it helps the organisation to create value from intangibles. |
| B | Building capacity | 2 | Connect environmental and company value. Improve the understanding of the relationship between environmental and company value so the issuer can communicate it more effectively to investors and develop a better quality green bond in terms of environmental and financial performance. |
| C | Aligning market actors | 3 | Develop industry response on critical green aspects. Enter into dialogue (e.g. by establishing working groups) with comparable issuers operating in the same (sub-)sector, to discuss industry response on the key green aspects. |
| D | Setting standards | 4 | Define metrics, impact reporting guidance, assessment methods and definitions of green. Enter into dialogue with comparable issuers in the same (sub-)sector and search for consensus on aspects such as performance metrics, impact reporting, assessment methods and definitions of green. Involve issuers from different geographies for these dialogues as much as possible. |
### RECOMMENDATIONS TO UNDERWRITERS

<table>
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<tr>
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<th>Improving understanding</th>
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<th>Building capacity</th>
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<th>Aligning market actors</th>
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<tbody>
<tr>
<td>A</td>
<td>Create a common understanding and vision of underwriters’ roles and responsibilities. Create a common understanding and vision about the role an underwriter could play to improve the quality and integrity of the green bonds market via engagement with issuers.</td>
<td>B</td>
<td>Integrate ESG considerations into issuer client acceptance processes by applying environmental and social risk management policies to green bond underwriting clients, to improve dialogue with the client on the green aspects of the bond.</td>
<td>C</td>
<td>Advise issuing clients on environmental-related disclosures. Provide guidance to issuing clients – and potentially set requirements – with regard to environmental-related disclosures in the prospectus or offering memorandum of the green bond.</td>
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<td>9</td>
<td>Develop industry-wide disclosure requirements and documentation frameworks. Openly share potential disclosure requirements and documentation frameworks for issuers with other underwriters, and develop an industry-wide consensus on those market practices (e.g. by building upon and leveraging experience acquired in project finance markets, where dialogue resulted in the development of the Equator Principles).</td>
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## RECOMMENDATIONS TO PUBLIC POLICYMAKERS

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<td>B</td>
<td>19</td>
<td><strong>Integrate ESG factors in supervisory instruments of the financial sector</strong>, facilitating their further integration in the mandates of public funds such as pension funds and sovereign wealth funds.</td>
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<td>C</td>
<td>20</td>
<td><strong>Use existing standards in strategic issuances.</strong> Promote convergence of market practices and enhance credibility of the standards by applying existing and emerging standards in their strategic issuance (by public or para-public entities, local or regional governments, central banks, and through sovereign green bonds) and purchase of green bonds by municipalities, development and central banks and other public agencies.</td>
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<td>D</td>
<td>21</td>
<td><strong>Stimulate global cooperation between relevant national governments.</strong> Stimulate and arrange global cooperation between relevant national governments (e.g. China, India, US, Europe) to ensure alignment among green bond standards applied in regional markets for international comparability and consistency, avoidance of market fragmentation and underpinning of liquidity.</td>
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## RECOMMENDATIONS TO ASSURANCE PROVIDERS

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<td>A</td>
<td>22</td>
<td><strong>Develop guidelines and thought leadership on accounting-related topics.</strong> Verification providers should develop thought leadership on accounting-related topics (e.g. definitions of green aspects of green bonds) to support the market with developing standards.</td>
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<td>C</td>
<td>23</td>
<td><strong>Align practices and methodologies for second reviews.</strong> Second-party reviewers should look for opportunities to better align their methodologies to promote transparency, both at industry and issuer level.</td>
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<td>D</td>
<td>24</td>
<td><strong>Ensure that compliance with standards and principles is verifiable.</strong> Verification providers should participate in working groups/committees at (sub-)sector level that define standards for &quot;green,&quot; and should provide expertise and experience on forming definitions and principles to ensure the standards become verifiable.</td>
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Annex

Endnotes

1. Green Bonds are 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 follows the four Green Bond Principles. Green Projects are defined as projects and activities that will promote progress on environmentally sustainable activities as defined by the issuer (see Green Bond Principle 1.) and in line with the issuer’s project process for evaluation and selection (see Green Bond Principle 2.). The management of Green Bond proceeds should be traceable within the issuing organisation (see Green Bond Principle 3.) and issuers should report at least annually on use of proceeds (see Green Bond Principle 4.). Different types of Green Bonds exist in the market. Source: Green Bond Principles, March 2015 edition, see: www.icmagroup.org/Regulatory-Policy-and-Market-Practice/green-bonds/green-bond-principles/

2. Source: Climate Bonds Initiative


8. The workshop was specifically intended for advisors, rating agencies, verifiers and/or third-party assurance providers, which represented almost half (45%) of the approximately 30 workshop participants. A broad range of other stakeholders also attended, including not only active market participants such as investors/green bond buyers and holders (21%) or underwriters (21%), but also other organisations (13%) that have significant experience in using or developing criteria, such as representatives from the financial services industry, scientists, environmental non-governmental organisations, as well as the workshop organisers.


11. The Natural Capital Coalition is a global platform which brings together the many different organisations and initiatives working on natural capital under a common vision – where a world where business enhances and restores natural capital. The Natural Capital Protocol is a standardized framework to identify measure and value direct and indirect impacts (positive and negative) and/or dependencies on natural capital. It defines natural capital as “the stock of renewable and non-renewable natural resources (e.g. plants, animals, air, water, soil, minerals) that combine to yield a flow of benefits to people (adapted from Atkinson & Pearce 1995, Jansson et al. 1994). The Natural Capital Declaration, signed by WWF and many financial institutions, is a global statement demonstrating the commitment of the financial sector to work towards integrating natural capital criteria into financial products and services. From the perspective of the financial sector, natural capital is a subset of environmental, social and governance (ESG) factors that can be material to financial institutions, mainly through their allocations of capital to companies through loans and investments or premiums as part of insurance contracts. Source: http://www.naturalcapitaldeclaration.org/about-natural-capital-and-the-finance-sector/


14. Environmental risks including the adverse effects of direct environmental hazards, such as pollution, drought and severe natural and man-made disasters (source: Moody’s)


28. As of April 6, 2016. Source: https://www.climatebonds.net/standards/bonds-certified-date

29. WWF/KPMG calculation based on CBI 2015 league table data.

30. Moody’s (January 2016). Moody’s requests comment on proposed approach and methodology for assessing green bonds, https://www.moodys.com/research/Moody%E2%80%99s-requests-comment-on-proposed-approach-and-methodology-for-assessing--PR_342351?mkt_tok=3RkMMJWWfF9wsRouiaXBC%2B%2FhmiTEU5z16u4kXKG0qYkz2EFye%2B1HETFpodcM5M7HYDcDceE_qxQJvR3MKtENodZ3RN:AA%3D%3D


37. However, CBI intends to explore other environmental impacts for their importance in building climate resilience in the course of the year 2016.

38. Less than 10 certified bonds issued as of March 21, 2016: https://www.climatebonds.net/standards/bonds-certified-date


40. WWF/KPMG calculation based on CBI 2015 league table data.


42. Note: WWF has established its own principles for setting and implementing credible sustainability standards and on the internet: http://assets.panda.org/downloads/wwf_principles_for_standards_and_certification_schemes_external_version.pdf


45. WWF: Sustainable development plan gives the globe a chance, http://www.panda.org/what_we_do/how_we_work/policy/post_2015/


56. SE4All (2015). Scaling up finance for sustainable energy investments


58. Labelled green bonds are bonds with use of proceeds earmarked (e.g. GBP, CBI) to finance new and existing projects with environmental benefits. Unlabelled green bonds are a larger universe of bonds financing climate/environment-aligned assets that do not carry a green label.

59. Environmental Finance (2016), Survey conducted at Environmental Finance’s annual Green Bonds Europe conference in June 2016


61. SE4All (2015). Scaling up finance for sustainable energy investments


65. WWF supports the application of strategic basin hydropower planning such as, for example Rapid Basin-wide Hydropower Sustainability Assessment Tool (RSAT) or the Guiding Principles on Sustainable Hydropower by the International Commission for Protection of Danube River, water stewardship approaches and standards (such as the Alliance for Water Stewardship Standard). WWF supports the wide-spread application of the Hydro Sustainability Assessment Protocol (HSAP), and its integrity and independence. WWF will undertake periodic assessments of such practices and protocols to enhance their effectiveness. WWF’s global network position on dams, developed in 2014, is available on the internet: http://d2ouvy99p0dg6k.cloudfront.net/downloads/141205_wwf_dams_position.pdf

66. The AWS Standard is an international standard that defines a set of water stewardship criteria and indicators for how water should be stewarded at a site and catchment level in a way that is environmentally, socially, and economically beneficial. See: http://www.allianceforwaterstewardship.org/about-aws.html#what-is-water-stewardship


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