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Green bonds – What is inside the black box with the green label?

Green bonds – a new way to finance environmental protection and development?

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List of acronyms:

ABC –	Agricultural Bank of China
CBI –	Climate Bond Initiative (non-profit organisation)
CBS –	Climate Bonds Standard (standards for green bonds developed by the CBI)
CERES –	Certification of Environmental Standards (US non-profit coalition of sustainable companies and investors)
CIB –	China Industrial Bank
EDF –	Électricité de France / state-owned French electricity company
EIB –	European Investment Bank
EU –	European Union
Eurosif –	European Sustainable Investment Forum
FMO –	Entrepreneurial Development Bank (Dutch development bank)
GBA –	Green Bonds Assessment
GBP –	Green Bond Principles (basic principles for green bonds developed by banks and investors)
G20 –	the group of the 20 most important industrialised countries and emerging economies
HSBC –	Hongkong and Shanghai Banking Corporation
ICMA –	International Capital Market Association
ICO –	Instituto de Credito Oficial (Spanish development bank)
IFC –	International Finance Corporation (a member of the World Bank Group focusing exclusively on the private sector)
IFFIm –	International Financing Facility for Immunisation
ISEAL –	International Social and Environmental Accreditation and Labeling
KfW –	KfW Bankengrupp (KfW Banking Group)
NGO –	Non-governmental organisation
SDGs –	Sustainable Development Goals (adopted by the UN to be achieved by 2030)
SPD –	Shanghai Pudong Development Bank
SPO –	Second Party Opinion (second opinion on green bonds published pre-issuance)
WWF –	World Wildlife Fund

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www.suedwind-institut.de/en/publications/2016/

Green, social or sustainable bonds – what the different terms mean

Issuing bonds is a way for countries, businesses, banks or insurance companies to borrow huge sums of money on the international capital markets.

Until now little was known about how the capital generated in this way was used. As a general rule it was said that the money was used for the "general operations" of the bank or company in question. With green bonds all that has changed. When issuing green bonds the issuer provides information about the ecological project categories in which the money is to be invested. There is also a smaller category of bonds issued where the money goes to fund social projects, e.g. purchasing vaccines; these bonds are known as social bonds. It is estimated that about 10% of the sustainable bonds issued are used just to finance social projects, whilst the remaining 90% are mainly used for the benefit of environmental projects (expert interview, summer, 2016).

It is, however, very difficult to draw a line between bond proceeds that are used for green purposes and proceeds that are used for social purposes, especially in the case of development banks like the World Bank or the European Investment bank (EIB), because some of their projects have positive impacts in both an environmental and a social sense, for example, when they make it possible for households that were not connected to the grid at all to get their energy from renewable sources. The Dutch development bank FMO therefore uses the name "sustainability bonds" and uses them to finance both environmental projects and microfinance banks.

Until now the term "green bonds" has dominated discussions. This is a reflection of the real situation inasmuch as most bonds issued for a specific purpose are used to fund environmental projects. It is, however, conceivable that in future the term "sustainability bonds" will come to be used for bonds where the capital raised is to be used for environmental and social projects.

In the present study the term generally used is "green bonds". The terms "social bonds" and "sustainability bonds" will only be used for bonds that are specifically issued to raise funding for such projects.

1. INTRODUCTION

In 2015, crucial agreements were reached, setting the course for reducing poverty and environmental destruction over the next 15 years. In September, the Social Development Goals (SDGs) were adopted by the UN General Assembly at the conclusion of several years of negotiations. These 17 principles will guide all global efforts in pursuit of sustainable development and poverty alleviation in the years ahead. In December, at the global climate conference in Paris, the international community pledged to do whatever is necessary to keep global warming well below 2 degrees Celsius compared to pre-industrial levels.

For both of these future endeavours, high levels of investment in a wide range of areas, such as medical care, purifying drinking water, regenerative energies, energy efficiency and coastal protection will be necessary. It is estimated that several trillion euros will be needed.

It has been pointed out again and again that the funding that will be required cannot come from public spending alone. Institutional investors such as pension

funds, sovereign wealth funds, insurance companies and foundations, which together have global investments worth 100 trillion US dollars, will need to cover a share of the total (UNEP 2015[b]: 17). Since institutional investors are increasingly considering sustainability aspects and are looking for investment opportunities that meet their sustainability criteria, this scenario is certainly realistic.

The financing instrument of green bonds presented in this study could be an innovative instrument for channelling private investment into sustainable projects. The question still to be answered is whether green bonds as they now stand can do the job.

In chapter 2, we will take a look at how green bonds work. Chapter 3 explores the way green bonds are the link between discussions about sustainable financial markets on the one side and providing capital for sustainable projects on the other, showing the importance of green bonds for sustainable investors. In chapter 4, the existing self-regulation of green bonds, the first steps towards government regulation and reviews of green bonds by means of second party opinions are described in detail. Finally, we present a brief summary of the critical voices along with a list of demands that green bonds must meet if they are to become a credible and effective instrument for financing a sustainable economy.

2. HOW DO GREEN BONDS WORK?

For an investor, a green bond is a securitised loan that is comparable to a conventional government or corporate bond. The issuer of the bond, in other words the bank or the company, takes out a loan for an amount of millions or even billions with the assistance of an issuing bank. The bank makes the sum available (underwrites the bond), divides it up and offers portions of it to its customers in amounts of a few thousand euros or dollars. The currency, interest rate and maturity of the bond, among other things, are listed in a prospectus, which also describes the categories of project in which the capital raised will be used. Bond issuers generally have a credit rating, which helps investors to assess the level of risk associated with a bond, i.e. the likelihood that the principal and interest will be repaid. Only fairly small issuers, e.g. businesses from the regenerative energies sector, will tend not to have such ratings. The better the credit rating, the cheaper the rate of interest at which the issuer can expect to borrow money. Large-scale bond issues are traded on the so-called secondary market after the initial offering.

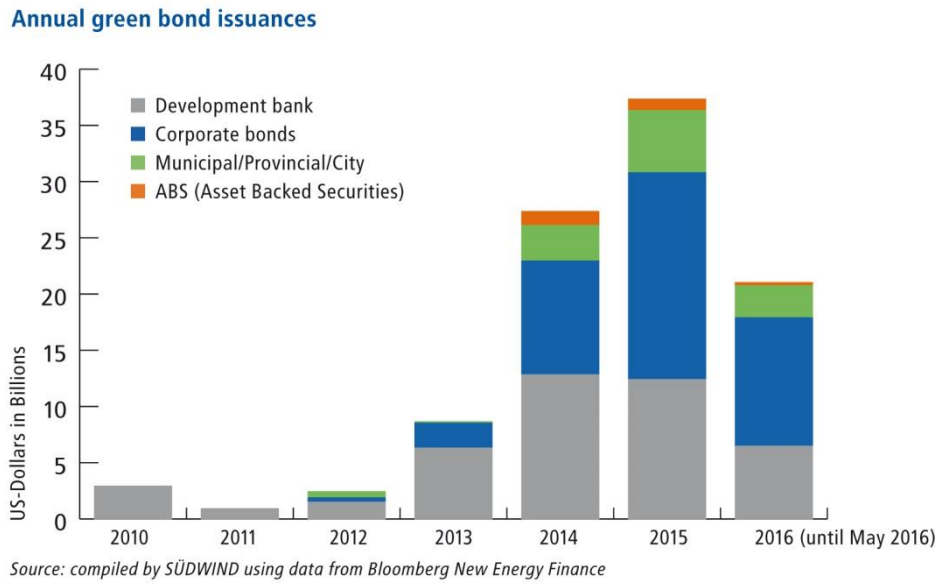
Green bonds are available with different maturities and in different currencies. There are green bonds in Brazilian reais or Chinese yuan, for example, or in euros or US dollars, with maturities from two to thirty years. Although there are examples of green bonds being heavily oversubscribed, so far the interest rate for green bonds at issuance does not deviate in any way from the interest rate

for comparable bonds from the same issuer. Apart from a few exceptions[1], experts have so far also seen few differences between the returns on green bonds and those for comparable conventional bonds on the secondary market. This means that companies and banks do not as yet have any direct economic advantage from offering green bonds rather than conventional bonds (expert interview, Wettlauffer and Latrouite, 2016). Nevertheless, they are hopeful that offering green bonds will prove to be advantageous. On the one hand, they hope it will benefit their reputations. By offering green bonds they will be perceived as a bank or company that is concerned about the environment and will have a positive marketing story. Furthermore, they are anticipating that offering such bonds will allow them to reach investors who would not be interested in their conventional bonds. This will broaden bond ownership, making it more stable, especially since sustainable investors tend to hold on to such bonds for a long time. Finally, issuing green bonds means that different departments within the company work together, the financial team with the sustainability team, for example (cf. CBI homepage n.d. b).

Who issues green bonds and social bonds?

Five categories of bond issuers are involved in green bonds. The biggest players are multi-lateral development banks like the World Bank, commercial banks and companies. A smaller number of green bonds and social bonds are issued by municipalities (e.g. the city of Oslo) and mortgage banks.

Abb. 1: Diagramm Volumen Green Bonds



Source: compiled by SÜDWIND using data from Bloomberg New Energy Finance

[1] HSBC's €500 million green bond, issued on the eve of the Paris climate summit (COP21), is one example. The bond's price tightened "significantly" due to its attractive green credentials, according to Ulrik Ross, global head of public sector and sustainable financing at the Bank (Environmental Finance 2016: 15).

Development of the market since 2007

The first sustainability bond was a social bond. It was issued in November 2006 with a volume of 1 billion US dollars by the International Financing Facility for Immunisation (IFFIm) and was used to purchase vaccines and provide immunisation for underserved population groups in developing countries.
One year later, after the EU had set out its new climate goals, the EIB issued its first green bond for a volume of 600 million euros.
Since then the volume of this bond category has increased steadily each year, but only slowly.
It was not until seven years after the IFFIm bond was issued that the International Finance Corporation (IFC), a member of the World Bank Group which lends to the private sector, issued the first so-called benchmark bond in February 2013. That is the term used for a bond issue of one billion US dollars, a volume that is big enough for market observers to track the price of the bond on the stock exchange and the returns on the investment. When the volume is smaller than one billion dollars then investors anticipate that there will be too little trading after the bond has been issued. The price that emerges on the secondary market after the bond has been issued is then not regarded as a reflection of the value of the bond, since the ratio between supply and demand could not be balanced. The issuance of this particular green benchmark bond sent a signal, especially for institutional investors, for whom the tradability of a bond and a reliable indication of its price are essential. Together with the development of the Green Bond Principles (GBP), which are described in chapter 4.1, by a group of major banks at the start of 2014, this led to a strong increase in issuances.
Just as the issuance of the first green benchmark bond gave an indication of how the price of green bonds will develop on the secondary bond market, the GBP provided a framework for looking at the processes involved in issuing a green bond as far as selecting green projects is concerned. This led to a steep increase in bond issues. Whilst issuances of green bonds at the end of 2013 were still only 8.6 billion US dollars, in 2014 some 23.3 billion US dollars in green bonds were issued. Apart from the higher volume, the market also diversified with regard to currencies, maturities and issuing groups. In addition to the initially very present development banks, now companies, regional authorities and mortgage lenders were also starting to issue green bonds. Small and medium-sized enterprises, for example from the renewable energy sector, also issued green bonds with higher risk and higher interest rates.

A selection of green bonds issued between 2014 and 2016

Issuer	Rating* (Moodys)	Coupon	Maturity	Volume in millions
European Development bank (EIB)	AAA	0.5%	Jan. 2016-Jan. 2023	1,500 euros
World Bank	AAA	4.2%	Apr. 2015-Apr. 2020	348.5 Indian rupees
KfW	AAA	0.5%	Jan. 2016-Jan. 2021	1,000 Swedish krona
EDF, French electricity company	A1	3.625%	Oct. 2015-Oct. 2025	1,250 US dollars
Solar City, American solar company	No rating publically available	2%	Dec. 2015-Dec. 2025	10 US dollars
Goldwind, Chinese wind power company	A1	2.5%	July 2015-July 2018	300 US dollars
Arise, Swedish wind power company	No rating publically available	3.959%	Apr. 2014-Apr. 2019	350 Swedish krona
Unilever, food conglomerate	A1	2%	March 2014- Dec. 2018	250 British pounds
Toyota, car manufacturer	Aa3	0.3% - 1.74%	June 2015-July 2021	1,250 US dollars
Apple, IT company	Aa1	2.85%	Feb. 2016-Feb. 2023	1,500 US dollars
Agricultural Bank of China (ABC)	A1	2.75%	Oct. 2015-Oct. 2020	500 euros
HSBC Holding, British bank	A1	0.625%	Dec. 2015-Dec. 2020	500 euros
Region Île-de-France, French regional authority	S&P/AA	2.375%	Apr. 2015-Apr. 2027	600 US dollars
University of Virginia	AAA	5%	Apr. 2015-Apr. 2045	184.737 US dollars

Source: Homepages of the issuers

**Rating means the credit rating that a rating agency (e.g. Moodys, Standard & Poors (S&P) or Fitch) gives to companies or countries. Generally ratings range from AAA (the best) to –D (the worst).*

New requirements for bond issuers

Issuing green bonds leads to new procedures. The sales prospectus must state what project categories may be financed with the proceeds from the green bond. Furthermore, information about the projects financed with the bond should be made public. In addition, a separate account must be kept of the inflowing money, and the lending to the projects as well as the loan repayments from the projects must also be kept separate from other flows of money.

The Green Bond Principles (GBP) and the Climate Bonds Standards (CBS) are two frameworks for these new procedures. In view of the greater need for information and the resulting necessity for greater transparency, additional parties are involved in the issuing of green bonds or existing players are given additional tasks. For example, chartered accountants may check that the green bond proceeds are ring-fenced and specialised agencies attest that the project categories or projects have been selected in accordance with the ecological goals of the green bond. Altogether green bonds mean more work in terms of administering the funds and reporting.

A loan using a green bond can also mean changes for the projects financed. For instance, the reports that the issuer makes may mean that the financing arrangement becomes public and the projects may have to gather additional information, e.g. about CO_2 savings.

A distinction can be made between three different kinds of green bonds:

1. 'USE OF PROCEEDS' BONDS

This form of green bond has much in common with a conventional bond. The issuer is the debtor and is responsible for paying the interest and repaying the capital. The security of the bond thus corresponds to the creditworthiness of the issuer. However, unlike the situation in the case of conventional bonds, the issuer must restrict the use of the money raised to the financing of ecological projects and must report on the use of the money. This type of green bond accounts for the vast majority of green bonds issued. In this study they will mostly be synonymous with green bonds. They are generally traded on the stock market and can be sold daily as required. Some individual companies are also issuing so-called green promissory note loans. These are comparable to bonds. However, unlike bonds, they are not so-called bearer debentures that can be traded daily. Instead the investor receives a promissory note from the company. This promissory note is not freely negotiable.

2. COVERED BONDS

The issuer is also responsible for paying the interest and repaying the capital in the case of these green bonds, too. As an additional security, investors have a right of recourse to so-called cover funds. These are, for example, mortgages on energy-efficient buildings.

3. SPECIAL BOND ISSUES SUCH AS SUBORDINATED OR PROJECT BONDS

With this type of green bond, interest payments and the security for the capital are essentially tied to the economic success of a project. With subordinated bonds investors only get back their capital once the bond matures after all primary debts maturing at the same time (e.g. bonds or bank loans) have been serviced. This higher risk is generally rewarded by a higher interest coupon. With project bonds the issuer is a subsidiary especially set up at the project level, e.g. as the operator of a wind farm. Interest payments and repayments are covered by the revenues from a project.

3. GREEN BONDS AS AN INSTRUMENT FOR SUSTAINABLE INVESTMENT

Discussions are taking place at various levels about how financial markets must be changed so as to facilitate the financing of sustainable projects. Green bonds are generally mentioned in such discussions as one instrument among many that can be used to achieve this goal (UNEP 2015[a]: IV, UNEP 2015[b]: 46 f). The G20 Emerging Markets Dialogue on Finance also includes a work stream entitled 'Green Bonds' (Emerging Markets Dialogue on Finance, n.d.).

The attractiveness of a financing instrument does not just depend on how it is structured. The real economy and how it is regulated are also very important factors.

In the real market, subsidies on fossil fuels, for example, inevitably mean that those forms of energy make more attractive investments. On the other hand, a feed-in tariff for renewa-ble energy makes renewables more interesting for investors and favours the issuance of green bonds because it is then easier for these projects to be economically successful.

The same holds true for social topics. If a regulation existed that made it possible for victims of human rights violations within supply chains to claim compensation from the companies commissioning the goods, then many businesses would find themselves facing considerable risks. Investors would inform themselves about these risks and would question the companies about them, and they would tend to favour investments in companies that were able to minimise the risk of claims by having an effective human rights policy in place.

3.1 Green bonds as a means of making financial markets more sustainable

When the overall conditions for financing environmental projects are generally good, then green bonds can be a way to bring together investors seeking sustainable investment oppor-tunities and sustainable projects needing funds.
This is because most green bonds are structured in such a way that institutional investors, who must adhere to the rules of fiduciary duty, can buy them without problem. Secondly, they are a way for investors to participate in investments being made by large companies with a very long pay-off horizon without having to give up their short-term outlook, because they can sell the bonds whenever the stock exchange is trading. Furthermore, because of their good financial rating, large companies can finance projects using green bonds that would have far higher capital costs if implemented as independent projects, because they would not have the good financial rating of a big company or a major bank behind them.

3.2 Green bonds as an opportunity to finance sustainable projects

So far there are no completely convincing arguments to show how green bonds can contribute in this way. Here, however, are a few lines of argument showing the potential that green bonds could have in this regard.

In the discussion about sustainable financial markets, the following points are mentioned as significant barriers to investing considerable amounts of capital in sustainable projects.

1. The time horizon for most financial market actors is short. The negative or positive impacts of ecological or social risks and opportunities on returns,

however, usually only become evident in the long term or over a period of several years or decades. The short-termism of the world in which these actors operate is therefore a major hindrance when seeking to get investors to consider ecological or social topics when choosing their investments (UNEP 2015[b]: 19f).

2. The fiduciary duty for the administrators of institutional assets is limited to financial criteria such as which class of investment to choose and risk management issues. The implications for society or for the environment do not receive proper consideration. This makes it difficult for asset managers to look at investments through a social or ecological lens (UNEP 2015[b]:27f).

A further obstacle is that financial markets are not transparent. Financial market actors rarely provide any information about what exactly is to be done with the money they get from investors or about the ecological and social consequences of the investment. This makes it difficult for investors to invest in a sustainable way. Although investors are becoming more and more interested in receiving such information and although sustainability rating agencies are striving to meet the demand for such information, so far it has not been possible to establish a satisfactory level of transparency. Generally speaking, investors in the bond market in particular, which is very important because of its volume, do not know what the bond issuer intends to do with the proceeds from the bond.

The issuers of green bonds are able to avoid the first two of these obstacles. Some green bonds issued by companies are used very specifically to finance projects that initially involve higher costs but that, in the long run, will make economic and ecological sense. Such bonds include bonds issued by the company Unilever, which is using the bond proceeds to increase the energy efficiency of existing factories and also to build new, highly efficient factories. In the same way, Apple Inc. is putting the money raised with its green bond into the energy efficiency of its buildings and into developing the use of recycled materials in its products.

Furthermore, most green bond issuers have a good credit rating. Fiduciary duty and diligence is therefore generally not an obstacle.

Besides circumventing existing hindrances, green bonds have in addition the potential to change financial markets, because they are introducing more transparency, albeit in a small, niche sector, regarding what bond issuers do with the capital raised. This transparency is a prerequisite for making financial markets sustainable. Without it, the data needed to assess the sustainability of investments in the first place is missing. It may be that this additional transparency is the most valuable contribution that green bonds can make towards changing financial markets.

In the discussion about how exactly green bonds can make it easier to finance sustainable projects three possible answers are currently being offered. The Securities and Exchange Board of India (SEBI), for example, assumes that green bonds will bring down the cost of financing sustainable investments because the

high level of demand from investors will lead to lower interest rates for the issuance (SEBI 2015: n.p.). Other voices are saying that green bonds will only have an indirect impact. Although they will not make the initial financing of green projects any easier, they will facilitate refinancing, which will have a positive impact in the long term on the readiness to finance such projects in the start-up phase (Climate Bonds Initiative 2015[a]: 10). The third answer is that, without an issuer with a good credit rating, the projects financed via green bonds have a considerably higher level of risk and would therefore be considerably more expensive to finance.

The green bonds instrument is still too young for any valid assessments to be made about the contribution it can make towards promoting a sustainable economy. However, the examples given above show that green bonds have the potential to support this development. Whether or not this goal is achieved will depend on how the bonds are structured. It is important that the projects financed actually have verifiable ecological benefits in the long term and that investors are convinced about the selection processes used and the reporting, so that demand for such bonds remains high.

3.3 Green bonds as an opportunity for sustainable investors

Whilst it still remains to be seen what contribution green bonds will make towards changing the financial system and to what extent they will help make more money available for sustainable projects, it is already possible to see how they are helping to expand the investment options for sustainable investors.

The idea behind sustainable investments is an attempt to combine the goal of financial profit with social and ecological objectives. Even conventional investors nowadays include individual aspects of sustainable investment in their investment decisions, for example by shunning companies that produce landmines and cluster mines or by giving preference to shares in companies with good sustainability systems (best-in-class approach), whilst sectors like the coal industry are increasingly being squeezed out of their portfolios. Besides these more symbolic exclusions by major financial services providers, there is a growing number of institutional investors like churches, foundations and alternative banks that apply a comprehensive catalogue of sustainability criteria when making investment decisions.

Volume of investments with exclusions, engagement and themed investment in Europe

The European Sustainable Investment Forum (Eurosif) has calculated that, in 2014 in Europe, exclusions were applied in the case of 6.85 trillion euros of all capital invested, whilst in 2000 the amount was 184 billion euros. This means that, all in all, exclusions are now being applied to 40% of all capital invested in Europe (Eurosif 2014: 14).

In 2013, engagement and voting played a part in 3.27 trillion euros of all capital invested, whilst in 2001 the amount was just 118 billion euros (Eurosif 2014:19).

Targeted investment in projects and companies that are linked to either energy efficiency or renewable energy, for example, comes closest to green bonds. This is currently still the smallest category of sustainable investment in Europe. Investment in this category is currently 59 billion euros, whilst in 2005 it was about 7 billion euros (Eurosif 2014: 12).

In principle, there are three ways that investors indicate to companies that sustainable business practices are important to them (see box).

By using exclusions they can avoid investing in activities that cause environmental or social harm such as arms manufacturing and trade, child labour or coal mining. In critical dialogue with companies they try to encourage them to act in ways that are more sustainable. The third way they can support the move to a more sustainable way of doing business is by choosing shares offered by companies with particularly ecological and social business practices.

Green bonds fit in with this last-named option.

Until now it has been particularly difficult to pursue this third path. The number of sustainable projects and companies that are engaged exclusively in "green sectors" and that are also good investments is limited. It is likewise time-consuming to look for investment opportunities that involve financing activities which are beneficial to society, for example building and maintaining schools or projects to reduce unemployment.

Companies and organisations working in these areas are often niche operators or their business model is heavily dependent on favourable regulatory conditions. Companies with a broader economic base, on the other hand, often lack the firm commitment to ecological and social principles. Many such investment opportunities therefore only partially meet the brief of promoting environmental protection or serving a social purpose, or they are relatively small because of their focus on consistently doing business in an ecologically sound way and the risk is therefore greater. Many investors therefore have an unmet demand for investment opportunities that can guarantee that the capital raised will be used exclusively for green or social purposes whilst still meeting their requirements in terms of profit, security and availability.

Green bonds and social bonds are one answer. Most green bonds are bonds with a right of recourse to the issuer. They are generally issued by issuers with a good credit rating (investment grade) and a high presence in the financial markets, such as the World Bank, major enterprises like the French electricity company EDF or the Spanish development bank ICO and therefore offer a high level of security. At the same time, publicising which categories of project are financed using green or social bonds creates a certain degree of transparency and gives the investor a measure of assurance that the money invested will be used to finance environmental and/or social projects. This also enhances the credibility of the

sustainable investor in the eye of the public and provides protection from scandals.

Furthermore, with a value of about 100 trillion US dollars, the bond market is the biggest global capital market and is very important for institutional investors (UNEP 2015[a]: 6).

Investors looking to make sustainable investments therefore welcome this development. Often the demand for green bonds is much greater than the volume on offer.

Table 1: Examples of green bonds for which demand was high:

Company	Month: size of issue	Volume subscribed
Xingjiang Goldwind	July 2015: 300 mn US dollars	1.4 bn US dollars
Unibail Rodamco	April 2015: 500 mn euros	3 bn euros
EDF	November 2013: 1.4 bn euros	2.8 bn euros

Source: CBI Homepage; Goldwind: CBI 2015[c]

The multiple oversubscription of sustainable bonds shows that institutional investors prefer green investment opportunities as soon as they meet their financial requirements.

4. STRUCTURING AND REGULATING GREEN BONDS

Green bonds will only be able to meet the expectations of investors in the long term if they are credible. An important way of enhancing their credibility is by developing and establishing standards for green bonds.

A start has been made on developing standards for green bonds: the Green Bond Principles (GBP), and the Climate Bonds Standard (CBS) of the Climate Bonds Initiative (CBI).

Furthermore, in December 2015, a group of development banks issuing green bonds published guidelines for reporting on green bonds. Apart from these voluntary initiatives, three official initiatives have been launched to establish binding regulations for green bonds in the EU, China and India.

4.1 The Green Bond Principles (GBP)

The GBP are voluntary guidelines for the issuance of green bonds that have been drawn up and further developed by three groups of market actors: the issuers, the issuing banks and the investors. Currently (March 2016) the GBP have a total

of 111 members, including in-vestment companies, institutional investors and commercial banks from Europe and North America, plus some Japanese banks. Development banks are particularly heavily represent-ed. However, the African Development Bank and the Indian Yes Bank are the only issuers from the emerging market regions to participate in the GBP so far.

In addition to the 111 regular members there are 64 observers, including financial institutions, financial information services, consulting companies, academic institutes and a few non-governmental organisations (NGOs) like CERES and the WWF. These observers are consulted about the further development of the GBP.

The aim of the GBP is to develop a generally accepted standard for green bonds and thus increase the volume of capital available for activities to benefit the environment.

The International Capital Market Association (ICMA), a global association of capital market actors, serves as Secretariat for the Green Bond Principles.

The Principles make recommendations on the following:
1. Use of Proceeds
2. Process for Project Evaluation and Selection
3. Management of Proceeds
4. Reporting

The GBP recognise several broad categories of projects as potentially eligible for investment using the proceeds from green bonds:
1. Renewable energy
2. Energy efficiency (including efficient buildings)
3. Sustainable waste management
4. Sustainable land use (including sustainable forestry and agriculture)
5. Biodiversity conservation
6. Clean transportation
7. Sustainable water management (including clean and/or drinking water)
8. Climate change adaptation

The authors of the GBP make it clear that this list is not to be seen as exhaustive.Regardless of the categories chosen, issuers of green bonds are called upon to disclose the process for choosing projects for a green bond. To be precise, they must explain what criteria are used to select projects for a green bond and what environmental goals are being pursued with the investment. Furthermore, investors must be able to take into consideration the sustainability not only of the project but also of the issuers.

The Principles state that the proceeds from a green bond must be administered separately in a sub-account or a sub-portfolio from which moneys to finance the

green projects are disbursed until the bond matures and into which they flow back again. The investor shall be informed about which financing instruments are used for the moneys provisionally parked that have not yet been disbursed to projects.

The GBP recommend that a firm of chartered accountants should be employed to check that proper ring-fencing of proceeds has been carried out.

Furthermore, once a year, provided confidentiality agreements do not stand in the way, the issuers of green bonds should disclose all projects in which proceeds from the bond issue have been invested; a description of the project is also recommended. The quality of the ecological impacts should be described and, where possible, the quantity should be measured. That way, reductions in greenhouse gas emissions, for example, or the number of people given access to renewable energy can be disclosed. Information should likewise be provided about how much of the project funding comes from the green bonds and whether it is being used to refinance an existing project.

Apart from these measures, the GBP recommend independent external assurance. One option is to have an external expert assess the ecological quality of the projects (Second Party Opinion, SPO).

Up to the beginning of 2016, from a total of 567 green bonds that had been issued, about 270 were issued by GBP members. However, not all GBP members follow the recommendations of the GBP. For example, neither the African Development Bank nor the French electricity company Engie (formerly GDF Suez) nor UnibailRodamco have made all their projects financed using green bonds public, although they are members of the GBP. In a second step, the GBP standards are to be expanded to cover social bonds (source: expert interview, Sommer, 2016).

Proposal for project categories for social bonds

The project categories for social bonds should be aligned with the UN Sustainable Development Goals (SDGs). The following topics are particularly suitable for this: reducing poverty (SDG 1), food security (SDG 2), health (SDG 3), education (SDG 4), gender (SDG 5), clean water (SDG 6) and work (SDG 7). It is important that the categories do not just mention specific areas, for example medical services; they should also cover improving access to these services. Categories for social bonds could therefore be outlined as follows:

- *Measures to create food security that strengthen local self-sufficiency*
- *Measures to create jobs that are in line with the ILO core labour standards and for which a decent wage is paid*
- *Drinking water supply, giving particular attention to access to clean water for disadvantaged population groups*

- *Medical care, paying special attention to access to appropriate health care for disadvantaged population groups*
- *Social housing, avoiding ghettos and promoting integrated living*
- *Improving access to fair financial services*
- *Education, building and running schools, with special attention paid to access to high-quality education and further education for disadvantaged population groups*
- *Supporting democratic processes and civil society engagement, promoting peace through social training and practising the use of non-violent dialogue strategies*
- *Issuers of social bonds should take into account exclusions for child labour and arms; banks that issue social bonds should make their activities in and links to offshore financial centres transparent*

International influence of the GBP

The GBP have a huge influence over green bonds. The approach whereby the use of proceeds, the process for selecting projects, ring-fencing of the funds and reporting are taken into consideration as structuring principles for issuances of green bonds has become widespread. Most issuers likewise define project categories in their issue prospectus based on the GBP, even if they are not members. For example, the Agricultural Bank of China (ABC) got the professional auditors Deloitte to certify that the green bond it issued in September 2015 takes into account the requirements of the GBP for the use of the capital raised without being a member (Deloitte 2015).

Furthermore, the principles are providing input in various contexts for the official regulation of green bonds. For example, they are mentioned in the European Commission's Capital Markets Union Action Plan, and various legislative bills in China and India make reference to the GBP.

The rating agency Moodys, which was the first such agency to circulate a proposal for assessing green bonds in January 2016 (Green Bonds Assessment, GBA) also makes reference to the GBP and bases its assessment structure very closely on them, but adds a point on "organisation". Moodys thus checks in addition whether the issuer has implemented a proper structure and whether it has sufficient, properly qualified staff for this purpose (Moodys Investors Service 2016: 3).

From the point of view of an NGO there are some questions the GBP leave unanswered

The GBP are a pragmatic instrument developed by actors from the financial sector. They provide a framework for the processes and content of green bonds and as such are helpful for actors involved in issuing green bonds. However, they do

not tell potential investors which investments if any are actually environmentally friendly. The project categories are so unspecific that even very controversial practices may be included. The GBP likewise have no possibility of enforcing their recommendations, e.g. ring-fencing proceeds from green bonds or publicising which projects have been financed with green bonds. However, such tasks are also outside the scope of the pure self-regulation of any sector. The necessary environmental qualities of projects suitable for green bonds would need to be developed in a multi-stakeholder process and it is legislative institutions that are responsible for enforcing some of the essential elements of green bonds.

It is also questionable that the sustainability credentials of the issuer play no role for the GBP. Even if there is no wish to require that the issuers adhere to strict sustainability criteria, because the focus is on the content of the green bond, for the credibility of a green bond and of the investor it is still important to show that the issuer is also following a sustainability agenda, and is working towards ending investments in problematic areas such as financing coal mines and instead developing operations in positive sectors. Issuing green bonds should be part of this strategy and not just an attempt to improve the issuer's image.

4.2 The Climate Bonds Initiative (CBI)

The non-profit organisation Climate Bonds Initiative (CBI) together with climate experts has compiled the Climate Bonds Standard (CBS). Unlike with the GBP, the CBI has developed a detailed list of project categories. In a second step, additional technical criteria are being developed for each sector, specifying exactly how projects must be designed in order to be suitable for a green bond. Criteria are currently available for wind energy, solar energy, geothermal energy, transport and energy efficient buildings. Criteria for other sectors are being drawn up. The standards seek to define criteria for green bonds in such a way that there is a very high probability that investments will contribute to creating a low-carbon, climate-resilient economy (CBI 2015[b]: 3). This means that, unlike with the GBP, the focus of the CBI is on climate impact, which constitutes a limitation in terms of the range of topics covered by green bonds.

The CBS can be divided into requirements prior to issuance of the bond and requirements after issuance. Prior to the issuance of the bond the issuer must provide information about which categories of projects will be chosen for the green bond and how the proceeds will be administered separately from the remaining assets. After issuance the processes put in place, the projects financed, the further selection of projects and how the funds not yet disbursed are to be invested are checked for compliance with the standards. This second stage of certification must be carried out not later than one year after the bond is issued. Other checks can be made on a voluntary basis at any time until the bond reaches maturity.

The CBI has a list of verifiers that have been approved by the Climate Bonds Standards Board. These verifiers analyse green bonds based on their criteria and either recommend or advise against certification. At the beginning of 2016, a to-

tal of 13 organisations were on the list of approved verifiers. Besides the major auditing companies, the list also includes some smaller institutes and agencies. In April 2016, out of about 230 issuances by commercial banks and private companies, given by the CBI as its target group, eight green bonds for a total volume of over 2.5 billion US dollars were certified as compliant with the CBS. One reason why this number is relatively small is that sector criteria are not yet available for all categories. This means that green bonds for financing projects outside these topics cannot be certified yet.

The taxonomy of the CBI

As with the GBP, the CBI identifies areas into which proceeds from green bonds can in principle be channelled, in this case seven:

1. Energy
2. Energy efficiency
3. Transport
4. Water
5. Waste management
6. Land use
7. Adaptation infrastructure

Besides solar and wind energy, and the infrastructure required for these forms of energy, the energy category also includes geothermal energy and small-scale hydropower stations, and bio-energy from renewable resources. The second category covers finance for buildings that adhere to certain ecological standards and energy-efficient industrial products and processes.

Waste management covers industrial recycling, recycling waste from end consumers and using filters to reduce harmful emissions. The sixth category, "Land use", covers the management of FSC-certified forests and agricultural projects if they can prove that they use less fertiliser and less artificial irrigation. The seventh and last category covers measures for adaptation to climate change, particularly to the expected rise in sea levels and includes raising the height of dams, developing ports and the efficient use of water.

Whilst the CBI taxonomy describes in general which sectors and areas of technology can be considered for green bonds, detailed technical criteria set out concrete requirements that the projects in the individual categories must meet. The sector criteria are developed by working groups, one for each sector. The work-

ing groups are made up of scientists, technical advisors, non-governmental organisations and representatives from the financial sector.

The sector criteria for solar and wind energy, buildings and transport have already been completed. The sector criteria for solar projects require, for example, that the additional use of fossil fuels in suitable solar projects must not exceed 15%. New buildings must be in the top 15% of their location in terms of CO2 emissions. Buildings that have been modernised to meet new energy standards must have CO2 emissions that are at least 30% to 50% lower than before. For geothermal projects, a maximum emissions level of 100 grams of CO2 per kilowatt hour is required (CBI, Geothermal Energy n.d. a: 4).

For the sustainable transport sector, the maximum values for CO2 emissions are expressed on a per passenger per kilometre basis, for passenger transport, or per tonne per kilometre, for freight. Public railways generally achieve these threshold values. Similarly, electric cars and hybrid vehicles or gas-driven cars will be below the threshold. Given the opportunities that the transition to electric cars offers, they are certainly seen as suitable, even if the power they use may come from coal-fired power stations (CBI 2016: 9).

The CBI specifications are thus far more detailed than the GBP; moreover, unlike the GBP, they also categorically exclude some areas of investment. These include uranium mining and all fossil fuels. Furthermore, according to the CBS, projects to increase efficiency in using oil, coal or gas to generate electricity, or transporting fossil fuels and timber may not be financed from green bonds. For the time being, large-scale dam projects, nuclear energy projects, and measures for carbon capture and storage may not be financed with CBI certified green bonds either (CBI Taxonomy n.d.[c]).

The CBI sector criteria pass through two rounds of public consultations before they are finally adopted. Suggestions and comments from outsiders are gathered during the consultations and included in the criteria if appropriate. This procedure is based on the specifications of the ISEAL Alliance, a leading association of international standard-setting organisations and international accreditation bodies, whose work is widely accepted as a reference standard for developing labels and seals.

An external committee oversees compliance with the criteria and develops them further. This includes further shaping specific criteria for each sector. This committee is made up of sustainable institutional investors from the US, like the Californian public sector pension fund CalPERS, and alliances of sustainable investors like the Investors Group on Climate Change that operate on a sustainable basis. The Natural Resource Defense Council, an American non-governmental organisation from the environmental sector, is also a member. The CBS is mainly financed via foundations, including two foundations belonging to the major banks Hong Kong and Shanghai Banking Corporation (HSBC), and Bank of America.

Neither the GBP nor the CBI takes into account social impacts such as violations of human rights as a consequence of financing through green bonds. Similarly, for both systems of regulation, the sustainability of the issuer outside of its function as the issuer of a green bond plays no part in their assessment.

4.3 Second Party Opinions (SPOs)

The GBP and CBS offer a framework within which green bonds can be positioned. Sustainable investors need considerably more than that, however. They need to decide quickly whether a green bond lives up to its claims of sustainability and whether or not they can participate in this bond issue. For this they need information about the anticipated environmental protection and climate outcomes of the projects, about exclusions for the bond and about the sustainability of the issuer. Furthermore, there must of course be a way to make sure that the proceeds are used exclusively for the intended project categories. Since about 2013, in order to provide this information, issuers of green bonds have been publishing second party opinions (SPOs) on green bonds. The issuers pay for these opinions to be produced and publish them before the bonds are issued. The authors are firms of chartered accountants, environmental institutes or sustainability rating agencies. It is estimated that, at the end of 2015, SPOs were available for about 60% of the green bonds on the market (Eurosif 2015: 3). The content of the SPOs varies greatly, with only a few of them addressing all the questions about green bonds that sustainable investors want answered.

An analysis of 32 SPOs revealed that they basically comment on the following topics:

Project categories and assessments of project categories, project selection, ring-fencing, the sustainability of the issuer and exclusions for the green bond. Some SPOs also comment on the proportion refinancing.

List of project categories in which the green bond may invest and assessment if available.

All SPOs contain information about the project categories for which the proceeds of the green bonds will be used. Often these categories are based on those used by the GBP and are therefore very broad.

Some SPOs, on the other hand, give precise information about the areas in which the pro-ceeds will be invested. Some SPOs also include criteria that a project must fulfil in order to be suitable for a category. For example, mortgage banks state that buildings financed or refinanced via green bonds must at least reach a certain minimum energy efficiency stand-ard. Some SPOs (eleven out of 32) assess these criteria. However, it is often not clear who has laid down the criteria,

the authors of the SPO or the issuer, or if they are the result of consultations between the authors and the issuer. In the SPO published in May 2015 by Sustainalytics for a green bond issued by the Brazilian company BRF, for example, it says that Sustainalytics was engaged to "give an opinion and support efforts to formulate a framework that can be used to issue a green bond" (Sustainalytics 2015: 2). At the end of the SPO it says that "BRF's green bond framework is in alignment with market best practices and norms such as the Green Bond Principles" (Sustainalytics 2015: 6).

This kind of support for the formulation of the framework also appears to have been given for the drafting of the second party opinions of the African Development Bank (AfDB). In this case the task was to "consider the framework for the Green project portfolio of the African Development Bank (AfDB) with respect to their likely impact on climate change" (CICERO 2013: 2). Later on in the document it says: "We had some critical remarks in particular to some specific elements in document no. 1, which after discussions was updated to document no. 12. In this new document the eligibility criteria and administrative procedures for selection of green projects was much clarified" (CICERO 2013: 5). This is a critical issue because in these SPOs the drafting and the assessment of the framework are not clearly separated from one another and there is a danger that the authors of the SPO are assessing a frame-work that they have had a hand in drafting.

Oekom research, on the other hand, makes it clear in many of its SPOs that they draft the framework and only assess the projects that are financed with the green bond based on the framework.

Information about the internal decision-making process of project selection

A very few SPOs give information about which departments are involved in the decision-making process, for example whether the sustainability department is involved or has a right to veto the inclusion of a project, others mention that external consultants are engaged for the selection.

Internal processes for ring-fencing the proceeds of green bonds

In 16 of the 32 SPOs that were looked at, an explanation is provided to show how the issuer ring-fences the proceeds of the green bonds. Only occasionally is information provided about proceeds being used for projects other than green projects. It is even more rarely that the SPOs give information about how the return flows of cash from the projects financed are used.

Transparency

Eight of the SPOs investigated list all the projects financed via the green bond or promise to supply a complete list of all projects during the entire lifetime of the bond. Two other SPOs give aggregated information about the environmental impacts of all the projects financed. Apart from a very few exceptions, for the rest of the green bonds a report is published at least once a year with examples of projects. Although it is recommended by the GBP and the development banks, this means that it is only for a small minority of green bonds that inves-tors receive a complete list of the projects financed.

Yet it is absolutely essential for investors that they not only know the project categories, but that they also have information down to the project level. The example of the Brazilian food producer BRF makes this clear. BRF states that the green bond proceeds will be used to in-vest in the project category sustainable forest management. The SPO shows that the com-pany includes in this category investing in eucalyptus plantations, although many experts regard this type of forest management as not sustainable because eucalyptus trees have a high demand for water (Sustainalytics 2015: 2).

Just about half of the SPOs actually state that the information from the issuers about the environmental impact of the green bond projects is made public, e.g. information about how much CO2 has been saved or how many kilowatt hours of energy were generated from re-newable sources.

Although, as stated above, all SPOs give information about project categories and in just about half of the SPOs the criteria for the selection of projects from the project categories are at least assessed, only five SPOs assess the actual projects financed. In those cases, although the investor does not have a complete list of projects, inasmuch as they were known at the time of issuance all projects were checked and assessed in terms of their envi-ronmental impact as part of the SPO process. SPOs drafted by oekom research and SPOs completed on the basis of the CBS are distinguished by this depth of information.

Sustainability of the issuer and exclusions

The importance of information about the sustainability of the issuer of green bonds has al-ready been demonstrated above. However, ten of the 32 SPOs investigated offer no information at all in this regard, whilst another 13 offer a little information and only nine SPOs give comprehensive information about the sustainability of the issuer. For investors it would be helpful if, in every case, they at least had access to information pre-issuance about whether the issuer is linked to any of the common exclusions such as armaments, child la-bour, nuclear energy or coal.

Especially when this kind of information about the issuer is not available, it is important for sustainable investors to know if exclusions apply for a green bond. However, only ten of the SPOs investigated provide such information.

The information provided by SPOs with regard to proposals for improvements and the pro-portion of refinancing from the proceeds of the green bond are just as diverse.

A detailed list with the exclusions (SPOs) for green bonds can be found on the Südwind web-site at: www.suedwind-institut.de/publikationen/2016.

SPOs not yet fully developed

SPOs serve as decision-making aids for investors. Similar to the way that credit ratings sum up the creditworthiness of an issuer, SPOs are meant to allow investors to quickly get an idea of the environmental quality of an offering. If an evaluation or disclosure of the projects, the exclusions for the green bond, the sustainability of the issuer and ring-fencing of the proceeds are deemed to be absolutely necessary information for sustainable investors, then a mere five of the 32 SPOs do the job of informing sustainable investors properly about the quality of a green bond. Even if sustainable investors are satisfied with an assessment of the criteria for project selection, adequate information is still only available for eleven issuers.

Therefore, it can be said that, so far, SPOs are only doing their job to a degree. It is, how-ever, encouraging that the quality of the SPOs is improving all the time. For example, they are now more likely to contain an assessment of selection criteria and an outline of project content. All the newer SPOs from the agency CICERO describe and assess project categories, for example. We learn, for instance, that the green bond issued by HSBC in November 2015 is investing in energy efficiency projects and this is understood to include reducing energy consumption in capital assets, e.g. more efficient cooling, energy-saving lighting, and reduced energy consumption in manufacturing processes. Oekom research gives information in its SPO for the green bond issued by the Dutch bank ING about how much of the proceeds from the green bond will go into the various project categories and also the share per project.

However, there are also SPOs published in 2016 with completely inadequate information. The SPO produced by Deloitte for the green bond issued by ABC in September 2015 merely says, for example, that the selected project categories conform to the Green Bond Principles (GBP), but the SPO gives no insight into the ecological quality of the projects financed or the criteria for selecting them (Deloitte 2015).

There also seems to be a trend towards giving information about the environmental benefits of the projects rather than disclosing which projects the investments have been used for. On the one hand, it is very much to be welcomed that companies are measuring and publicising quantitative environmental impacts when they issue a green bond. However, this is no sub-stitute for disclosing the individual projects, because quantitative methods generally only measure an often very limited aspect of the project. It is therefore conceivable that, in the case of the eucalyptus plantation mentioned above in which the company BRF is investing, a reduction in CO2 can be calculated. However, the deterioration in the groundwater situation in the region because of the plantation is not covered by this information and remains invisible for investors.

Whether SPOs actually serve as a decision-making aid thus depends on how good they are. However, the quality of the SPO is very much determined by the issuer, who selects the agency, decides what information will be made available and ultimately pays for the SPO. A shortcoming that even good SPOs also have is that they are produced pre-issuance and are therefore not able to take into account all the projects financed throughout the lifetime of the bond. Existing SPOs do not make any provision for continuous assessments.

Furthermore, some organisations that produce SPOs are engaged and paid by companies that they evaluate in other contexts. This means that a sustainability agency can assess a green bond for a bank, for example, and in another context can assess the sustainability of the same bank. Since SPOs are an important instrument for the credibility of green bonds, the role of their authors should be clarified and it should be made clear how the organisation deals with a possible conflict of interests.

Insufficient attention is paid to lock-in and rebound effects

The two project categories "energy-saving measures" and the "use of clean energy" do not currently allow for any conclusions to be drawn about the extent to which lock-in or rebound effects are taken into account when selecting projects. Lock–in effects can arise when an existing technology with high CO2 values is replaced by another technology with slightly lower CO2 values and the replacement technology is then used for decades because of the new investment in it. For years this prevents a move to technologies that drastically reduce CO2 emissions, e.g. by using renewable energy. It could be that a highly efficient coal-fired power station that has been fitted with filters is financed via a green bond, but this investment hinders the move to a non-fossil fuel source.

Rebound effects arise when products or services become cheaper due to measures that are more energy efficient and increased consumption then negates the savings that have been made. An example of this is the increase in

greenhouse gas emissions in the automotive sector: although cars today are using far less fuel than in 1990, the number of cars on the roads has grown so much that CO2 emissions have still continued to rise. Such effects can arise when drivers change to vehicles with lower energy consumption or to electric cars. This effect has also been observed in connection with the development of electrical equipment that uses less electricity: increased use means that energy consumption still rises.

For the investor it is not clear how much these effects flow into the assessment of a green bond. Certainly some SPOs mention them as a possible danger that issuers must watch out for, and the technical guidelines of the CBI also take account of these effects. However, the conclusions that must be drawn from this warning are not currently transparent.

Given that SPOs are only available for about 60% of the green bonds issued, that only a very few issuers completely disclose their projects and that many SPOs leave questions un-answered, there is currently a great deal of room for improvement as regards the infor-mation available about green bonds.

Development banks recommend transparency

In their paper "Green bonds – Working towards a harmonized framework for impact reporting", eleven development banks, including the major European institutes and the World Bank with its regional subsidiaries, call for green bond reporting to be standardised. In 16 points they list the most important requirements for such a standard for the sectors energy efficiency and renewable energy.

They say that the reporting should cover not only the use of the capital raised with a green bond but also the impact achieved by the projects financed. The report should disclose how projects to be financed with the funds raised with a green bond are selected, the period of time that these funds were available for specific projects and what volume of funding was made available.

Issuers should either publish a list with all projects or submit a summary report on the projects financed. The summary is a good option if confidentiality or the number of projects financed mean that it is not possible to provide a detailed report. Furthermore, there should be a report on the anticipated impacts over the lifetime of the project.

For green bonds that are used to finance projects involving energy efficiency and renewable energy, the following information should be standard for the reporting:

- the annual amounts of greenhouse gas emissions saved or avoided,
- the annual amount of energy saved,
- the annual amount of renewable energy generated, and

- the installed capacity for renewable energy from the plants built or renovated.

The paper points to the existing problems when it comes to calculating avoided greenhouse gas emissions and, because of this, calls for the methods used to be disclosed.

Issuers should also report transparently when projects are only partially suitable for the proceeds from a green bond (AfDB et al. 2015).

4.4 Regulatory approaches: EU, China, India

Given this potential, it is all the more important to ensure that the design of this new instrument is such that it makes a proven contribution to financing sustainable projects. As shown above, because of the lack of transparency and controls, this is not the case. That is why government regulation of green bonds, which will strengthen the potential of this financial market instrument, is absolutely essential.

There are currently three approaches for regulating green bonds. The EU is discussing possible regulation in its Green Paper on Capital Markets Union, the Chinese central bank published a guideline following a lengthy process of consultation with experts, which is to be used for Chinese green bond issues, and the Securities and Exchange Board of India adopted guidelines at the start of 2016 for green bond issues. All three initiatives are based on the GBP.

The EU Commission's Green Paper

In its Green Paper on Capital Markets Union, the EU recognises the importance that green bonds can have for financing economic transformation towards climate-friendly and ecologically sound ways of doing business, and underlines the role that the EIB has played in the development of this financial product. It mentions the approaches for the necessary standardisation of green bonds and related processes via the GBP, but also points out that this can only be a first approach and that there is a lack of harmonisation and transparency in this sector. However, the answers within the framework of the public consultation for the paper support the Commission in putting its faith in the further development of self-regulation. At least the EU is not currently planning to regulate green bonds itself. The development of self-regulation, according to the majority of respondents, is currently to be preferred and regulatory intervention may be necessary at a later stage in order to rule out "greenwashing" (European Commission 2015[a]: 47, 2015[b]: 6).

Initial regulation of green bonds in China

The Chinese central bank is aware of the country's huge environmental problems and sees green bonds as a possibility to generate funding, especially from abroad, with which to put a stop to the problems. At the end of 2015, after in-

tensive consultation, the bank published a paper for the development of a project catalogue listing the projects eligible for Chinese green bonds. In addition to numerous Chinese authorities, foreign banks such as HSBC, the South African Standard Chartered Bank, the World Bank subsidiary IFC, Chinese financial services providers and the solar company Yingly also took part in the consultations. The North American Energy Foundation was the sole NGO involved in the process.

The Chinese catalogue lists six categories and 31 sub-categories of projects that can be financed via a Chinese green bond:

1. Energy saving
    - Industrial energy saving; energy management; infrastructure projects, e.g. district heating
2. Pollution prevention and control
    - Treatment of waste and wastewater; improving water quality and decontaminating water and remediation of soil pollution, e.g. in mining areas; clean utilisation of coal, e.g. removing impurities in coal washing facilities
3. Resource conservation and recycling
    - Saving water in industry and in agriculture; re-using wastewater in mining; recycling industrial waste, wastewater and waste gases; recycling facilities; using biomass
4. Clean transportation
    - Construction of rail lines; public transport; shipping; producing diesel and gasoline with additives that make burning these fuels less damaging to the environment; manufacturing electric or natural-gas cars; internet applications to facilitate more efficient transport logistics
5. Clean energy
    - Wind power; photovoltaics (photovoltaic systems must achieve a minimum level of effectiveness); solar thermal plants; hydropower; smart grid construction and operation
6. Ecological protection and climate change adaptation
    - Renaturing; landscape protection; ecological farming; reafforestation; flood protection, e.g. building dykes; disaster prevention

(Source: Green Finance Committee of China Society of Finance and Banking 2015)

The project categories listed by the Chinese central bank make the size of the environmental problems in China very clear. However, they also make it clear that the task of overcoming these problems is only being tackled in part using

technologies that are sustainable in the long term. Whilst the project category "clean energy" is largely unproblematic, financing coal-washing plants or additives for fossil fuels appears to carry the danger of lock-in effects.

Five Chinese bond issuers have meanwhile issued green bonds: the Agricultural Bank of China (ABC), the China Industrial Bank (CIB), the Shanghai Pudong Development Bank (SPD), the wind power company Goldwind and the wind and nuclear power company CGN.

Guidelines of the Securities and Exchange Board of India (SEBI)

At the end of 2015, the Securities and Exchange Board of India presented a proposal for regulating the admission of green bonds for listing on the stock market. The document refers to the government's ambitious goal of spending a total of 200 billion US dollars on developing renewable energies in India in the period up to 2022. The document sees in green bonds a possibility not only for making the necessary capital available, but also for lowering the capital costs for green projects, since it is anticipated that demand for such bonds will be high.

SEBI decided, after a consultation process, to draw up the following disclosure requirements for the issuance and listing of green bonds:

1. The issuer shall outline broad project categories, define and disclose the criteria for identification as 'green', and provide details of decision-making processes and the associated environmental goals.
2. The list of eligible categories can fall within the framework of the categories named in the GBP, but can also go beyond these categories.
3. The issuer shall publish details of projects identified for refinancing if a proportion of the proceeds will be used for refinancing.
4. Assurance that the proceeds are earmarked for eligible projects and tracking of the funds via a formalised internal process shall be verified by external auditors.
5. Issuers shall also provide, at least on an annual basis, a list of projects to which green bond proceeds have been allocated.
6. This may also include the details of the expected environmental impacts of such projects.

(SEBI 2015; SEBI 2016)

So far, four Indian issuers have launched green bonds. They are the wind power company CLP Windfarms; the Indian Exim Bank, which is financing environmental projects in Bangladesh and Sri Lanka via its green bond; the Yes Bank, whose green bonds are financing wind, solar and biomass energy; and the Indian development bank IDBI, which is supporting solar and wind energy, small-scale hydropower plants up to 15 MW, waste incineration plants, biomass power plants and renewable energy power lines with its green bond.

5. QUESTIONS STILL TO BE ANSWERED BY GREEN BONDS

Green or social bonds are an instrument that, as described above, aims on the one hand to meet the demand from sustainable investors for financial products that are used specifically to finance projects concerned with environmental protection, climate protection and sustainable development. Furthermore, under certain circumstances they have the potential to mobilise additional funds for sustainable projects.

Given the practice described above when issuing green bonds, the first question that must be answered is whether these two goals can be achieved within the current framework conditions. For investors, obstacles to investing in green bonds are incomplete and inconsistent categorisation of suitable projects and, in particular, the often unanswered question about exclusions.

Another obstacle is the lack of transparency in the case of the vast majority of green bonds, which is often not adequately addressed by SPOs.

A third problem is that the question of whether and, if yes, then under which conditions, green bonds can contribute to better financing of sustainable projects has so far not been answered. It is crucial for the future of this instrument that the conditions that can make such financing easier are understood and that any changes that may be necessary are carried out.

Finally, it is noticeable that it is only as an exception that the topic of human rights plays a role in the categorisation and assessment of projects. This means that there is a danger of this financial instrument being directed too one-sidedly towards environmental protection or CO_2 reductions, whilst human rights issues are neglected. However, as the number of social or sustainable bond issues increases, human rights are going to become more and more important. An issuer like Starbucks, which launched a sustainability bond in mid-May 2016, should be able to show, for example, that its activities conform to UN guiding principles for business and human rights. Issuers that neglect this topic damage the image of green bonds. It is to be hoped that the separate approaches for green bonds and social bonds until now will converge in the end and that sustainability bonds will increasingly be issued that, whilst putting a focus on either social or environmental topics, will nevertheless take both aspects into account in their criteria for project selection.

Since mobilising private funds is indispensable for the success of sustainable development and for preventing catastrophic climate change, investors are prepared to engage in those kinds of investments and since bonds are an essential financing and investment tool, the present processes urgently need to be improved, with answers being found for all these unanswered questions.

5.1 Problematic categories and exclusions

The existing categorisation of suitable projects for green bonds, which the GBP made very broad and the authors purposely left incomplete, leaves questions

open in the fields of renewable energy, energy efficiency and transport in particular.

Hydropower

Various discussions are going on about whether and, if yes, then what kind of hydropower may be financed using green bonds. Whilst some issuers exclude large-scale hydropower plants with dams, the environmental organisation Friends of the Earth (FoE) discovered evidence that the energy company Engie (formerly: GDF Suez) had listed the large-scale dam project Jirau in Brazil as a possible investment for its green bond, although the dam has contributed to deforestation of the Amazon and threatens the habitat of indigenous peoples (Friends of the Earth et al. n.d.: 3). Information about a green bond issued by the Korean Eximbank likewise shows that it is using a green bond to finance a hydropower plant in Pakistan that has led to more than 7,000 people being resettled (Korea Eximbank 2014: 2; Star Hydropower Ltd 2012: ES 2). In the information published about projects financed by the World Bank Group and its member institutes and by the EIB using green bonds, however, there are no large-scale dam projects. Other issuers like the Dutch commercial bank ING explicitly only finance small-scale run-of-river hydropower stations via their green bonds (Oekom 2015: 2) and the taxonomy of the CBI only allows for the financing of small hydropower plants up to 20 megawatts in size (CBI Taxonomy n.d. c: 4).

It is unclear what happens in practice in the case of that majority of green bonds which involve issuers that do not publish complete lists of projects, do not exclude major dam projects and have not signed up to the CBI Standard.

Energy efficiency

In the field of energy efficiency and clean transport there is a danger that projects promising only relatively small improvements will be financed via a green bond.

In the case of bonds financing energy efficient buildings, for example, you often find objects that merely achieve the second-best or third-best scores based on recognised standards like the LEED Basic Standard for buildings (CBI Homepage n.d. b; CICERO 2014: 2). It is, however, important that buildings with the highest possible levels of energy efficiency are financed in order to avoid cementing an energy consumption that is higher than it needs to be.

Transport and solid waste management

The field of transport offers a similar picture. Here, too, the continued use of private cars powered by fossil fuels means that, even though energy consumption has been reduced, efforts to find better solutions for the long term are hindered. However, some green bonds, like the bond issued by Toyota, are above all aimed

at financing hybrid vehicles, which means low-emission, fossil-fuelled private cars (Global Newswire 2015).

Another problem is the possible financing of agro-fuels using green bonds. The question of what kinds of bio-energy should be financed via green bonds is being looked at by the CBI in its technical criteria. These criteria, which have not yet been completely finalised, also include the topic of fuel crops competing with food crops. The GBP, on the other hand, do not comment on this topic, so that it is completely possible that green bonds operating within this framework may finance every kind of agro-fuel, including those that can be highly problematic, whether because of ecological reasons (no reduction in greenhouse gases or even higher emissions of greenhouse gases due to logging, transport and industrialised agriculture) or because of social reasons (changes in land use, competition with food production).

Another question that is often asked is whether the financing of electric vehicles can definitely be called climate-friendly. The sustainability rating agency Vigeo argues that whether or not an electric car is climate-friendly depends on how the power it uses has been generated, so that admission for a green bond would also depend on the region in which the car is used (Dahioui et al. 2015: 2).

The environmental protection organisation Friends of the Earth draws attention with regard to solid waste management to another case where the regional aspect is crucial for the assessment of a green bond project. The EIB is financing a solid waste incineration plant in Estonia via a green bond. The incinerator can burn 60% of the waste generated in Estonia. This means that there is no further incentive for this country to raise its recycling above 40%, although a target of 50% recycling by 2020 has been agreed for the whole of the EU (Friends of the Earth et al. n.d.: 2).

For those transparent green bonds for which the complete list of projects financed is available, such problematic financing situations are very much the exception. The problems around hydropower and agro-fuels described above show, however, that the intentionally open wording used for the GBP means that it is currently admissible for problematic projects to be financed via a green bond. In extreme cases, as demonstrated by the Green Finance Committee of China Society of Finance and Banking, "clean coal" and fuel additives may even be financed via green bonds. The CBI is closing a gap left here by the GBP by drawing up a sound facts-based system of rules for the project categories listed by the GBP. So far, however, little heed has been paid to these detailed standards when issuing green bonds.

Another question that is also open is whether, for some financing arrangements, in addition to the technology being assessed, the regional circumstances also need to play a role. The solid waste incineration plant in Estonia and the electric cars show that this aspect may need to be taken into account in certain circumstances.

5.2 Transparency

Green bonds are also a way of making financial services more transparent. Whilst bond issuers have so far not been in any way accountable for the use made of the proceeds from bonds, when they issue a green bond they must provide information about the use of the proceeds in their prospectus. Instead of "general business" they must at least list project categories in which the funds will be used, even if these categories are sometimes only vague. This is progress in the direction of greater transparency on the financial markets. However, this willingness to provide information generally begins and ends with lists of project categories and project examples.

The reasons for this are many and varied and some of them are understandable. When a green bond is issued, for example, all the projects to be financed have not yet been decided and the issuer is merely able to say what project categories will be considered in the future. Secondly, the borrowers must agree to information being published and thirdly, in some cases, the financing is a bunch of small-scale loans, e.g. for energy modernisations of private houses that cannot be listed individually.

Even given these restrictions, however, significantly greater transparency than is currently practised by most issuers of green bonds is possible. The name green bond and the listing of certain project categories in the prospectus suggest that the funds will be used in a sustainable way and investors must be given proof of that. Only a list showing all projects financed, with just a few justified exceptions, can provide that proof. And only such a list can secure the credibility of the issuer and of the instrument as such.

Furthermore, it is desirable that investors are informed about the share of green bonds proceeds that flows into a certain project, whether refinancing is involved, how any funds not used will be invested and what will happen with return flows.

Information about CO_2 emissions saved in the projects and installed regenerative capacity is important additional information about the actual impacts of the projects financed. However, this information cannot replace the complete disclosure of projects. Only complete disclosure lets investors assess green bonds based on their specific sustainability criteria.

The EIB is exemplary in this regard. It publishes information about all projects financed via green bonds and lists the bond and the quarter of the financing for each project. Many development banks fail to achieve that standard of information.

Apart from extensive transparency regarding the use of funds, an expert opinion (SPO) is often vital for assessing green bonds, so that the impacts of the financing on the environment can be adequately judged. This expert opinion plays an important role at the time of issue in particular, because often at this point all the projects are not known and the credibility of the bond must be determined above all on the basis of the processes that are in place.

In this situation the SPO has the task of reliably informing potential investors about the environmental quality of a green bond. The wide variety of procedures described above and of aspects covered in the SPOs mean, however, that they often fail in this task.

Furthermore, for 40% of green bonds there is no SPO. Sustainable investors who are obliged to adhere to a fixed list of criteria are faced with an insoluble problem in this situation. That is why a considerable number of investors refrain from specifically seeking to purchase green or social bonds.

This situation can only be resolved through regulation specifying that issuers of green bonds, apart from a few justified exceptions, must disclose all the projects financed via a green bond. So far only the guideline of the Securities and Exchange Board of India includes such a provision for green bond issues. Furthermore, there should also be a provision saying that, for every green bond, a second opinion from a competent, independent expert must be available that covers certain set aspects.

Until such legislation is in place, there will be no uniform information for green bonds, which means that the majority of these bonds will continue to be a black box with a green label, lacking transparency, with no one able to verify their credibility or say what is going on inside the box. Whether the purchase of such bonds then really constitutes a contribution towards protecting the environment or the climate is something that no investor is able to judge.

5.3 Sustainability of the issuer

The issuers of green bonds are very varied. At one end of the spectrum are so-called "pure play" green bonds, which are mostly issued by companies that operate sustainably such as wind or solar power companies. All the business activities of the issuer are sustainable. At the other end are companies whose sustainability is considered very problematic by investors, e.g. companies that operate nuclear power stations.

The difficulties faced by sustainable investors are shown in Table 3[2], which con 2016. From a total of 17 commercial banks that issued green bonds between 2013 and 2016, only three (BPCE, ING, NIB) were consistent in ruling out any financing of coal mines or the use of coal to generate electricity and are no longer linked with financing for coal by NGOs. Six of the others (ANZ, Bank of America, Credit Agricole, HSBC, Societé General and Morgan Stanley) have published policies on financing coal whose quality varies very greatly and in 2014 were still financing coal mines or coal-fired power stations. Eight more issuers of green bonds have not made any undertakings to reduce coal financing. Reports published by NGOs show that, in addition to financing green projects via such bonds, they are in some cases very heavily involved in financing coal mining and coal

[2] Table 3 "Green Bonds Emissions and Coal Financing" is available exclusively online at: www.suedwind-institut.de/publikationen/2016

energy. Two of these banks (ABC and Bank of America) put more than twice as much money into financing coal in 2014 alone as they raised from green bonds.

In fact, green bonds can never be completely separated from the business operations of the entire company. Amendt and Vögtle show quite rightly that it is very possible that the interest payments on a green bond initially originate from other areas of the bank or company, since a new green project that is still in the construction phase will not yield any revenue. It is therefore possible that the moneys may flow into clean energy but the revenues actually come from coal or nuclear power (Amendt and Vögtle, 2015: 29).

Furthermore, it is possible that the revenues generated from projects financed via green bonds may benefit the entire company and thus also support areas of the company that are not sustainable. A successful wind farm can support a coal mine that is operating at a deficit.

In view of this situation, it is clear just how important it is to have information about the sustainability of the whole company. Sustainable investors will consider it important not just because of this that the issuer of green bonds works in a sustainable way overall. Only then will it be less of a problem for sustainable investors that initially the returns on their investment are coming from the normal business operations and that the projects financed are contributing to the success of the whole company. Investors will also take into account the direction in which the company is going. They will be more likely to buy a green bond from a bank that is pursuing a credible strategy towards limiting investments in fossil fuels and is clearly increasing its financing of renewable energy than from a bank where it is not possible to see if it is pursuing such a strategy.

Should investors decide not to take the operations of the issuer into account because the intended investment in sustainable projects has a higher priority for them, then these cases in particular show just how important it is to have transparency about the use of proceeds from green bonds. Only if a bank or a company can convincingly show that the proceeds from the green bonds are used exclusively for environmentally meaningful projects will sustainable investors be more likely to purchase them, although the issuer does not comply with (other) exclusion criteria.

The bond issued by the nuclear power operator EDF is a positive example of such a case. EDF uses the returns on its green bonds to finance wind farms, a solar farm and a biogas plant. The company published a complete list of all projects and arranged for a credible SPO to be produced that was also published. This was able to convince investors that are other-wise critical of nuclear power. However, that kind of transparency is an exception among green bonds issued by companies.

Investors should also take the following into account with regard to the issuers of green bonds: issuers of green bonds assign their sustainable projects to these bonds. However, as a general rule they also finance less sustainable projects. The EIB and the World Bank, for example, also finance road construction. If these organisations issue green bonds then it automatically means that, as long

as the bank as a whole does not refrain from financing problematic projects, the share of less sustainable projects financed via its conventional bonds will grow. The sustainability characteristics of conventional bonds therefore worsen with the issue of green bonds as long as the business operations of the issuer as a whole do not become more sustainable. Sustainable investors should therefore examine how the issuer is developing as regards sustainability. If the issuer is not becoming more sustainable as a whole, then they should look very carefully to see whether the conventional bonds are still acceptable and wherever possible should give preference to the green bonds of the issuer.

5.4 Additionality

Probably the weightiest argument in favour of green bonds is that they facilitate the financing of environmental protection projects and help to get more environmental protection projects in total implemented. At the start of this study three arguments were outlined regarding how green bonds could contribute to additional funds being made available for environmental protection. We should now take a closer look at these arguments.

One way that green bond issues could boost funding for green projects is if the bank or the company is able to arrange finance more cheaply via a green bond and then passes these more favourable conditions on to the project. Despite great demand for green bonds when they are issued, this phenomenon has rarely been seen until now. Green bonds have the same interest rate when they are issued as comparable bond issues and are generally listed on the secondary market in parallel to them. Nevertheless, some actors such as the Securities and Exchange Board of India expect that they will prove to be a cheaper way of financing environmental protection projects. It remains to be seen whether this effect will be seen more with green bonds from developing and emerging countries than with green bonds originating in industrialised countries.

A second argument is that, although the issuer is not able to borrow money more cheaply with the green bond, the individual project would have far higher debt costs if a financially strong issuer did not take out the loan and pass it on to the project (Eurosif 2015). This argument must be considered separately for each group of issuers. For companies it is the case that – like EDF for example – they could either build a nuclear power station with the revenue from the bond or a wind farm; the credit costs are the same for both. Is the possibility of issuing a green bond the reason that EDF is building a wind farm instead of a nuclear power station? Given that the financing costs are identical, this is unlikely. The reason will be company policy based on considerations of economic viability which says that, in addition to nuclear power stations, the company should also generate power via renewable energy. It is, however, completely possible that, because of its better credit rating, EDF can finance this wind farm more cheaply than a small wind power company could.

Development banks work on the basis that they can borrow cheaply and that means they can also support projects in developing countries based on aspects that fall outside of purely commercial considerations. However, for the vast majority of the loans their support consists of financing projects at market conditions which are either too risky or too complicated for commercial banks. Development banks thus help in getting environmentally friendly or social projects implemented that would not otherwise be carried out. However, this is true for all the projects supported by development banks, whether or not they are financed via green bonds.

Since the conditions for green bonds are the same as those for conventional bonds, they do not help the banks expand their support for environmental projects. The data published by KfW even suggest that KfW is financing far more climate protection measures than it is issuing green bonds. Its green bond issues from 2014 to 2015 amounted to 6.3 billion euros, whilst its 2015 Sustainability Report states that new commitments for climate protection in the period from 2012 to 2014 amounted to 26.6 billion euros (KfW 2015: 2).

It seems that politics are more important here than the financial instrument of green bonds. If politicians are keen to finance climate protection projects, then because of their mandate development banks will invest in such projects – with or without green bonds.

Commercial banks issue green bonds and use them to finance and refinance green projects. The volume of their green bonds will be aligned with the existing and expected volume of loan requests from this sector. Only if they have overestimated this demand could they be obliged to provide funds for projects that they would not otherwise have financed. The conditions for the loans will be the same as for loans refinanced via other instruments.

A third argument for additionality through green bonds is that bonds are mostly used for refinancing projects and not for the initial financing. Green bonds thus signal that new projects which are initially financed with loans, for example, will find it easier to get refinancing via green bonds because banks that issue green bonds are now forced to support more green projects (CBI 2015 c: 36).

This kind of effect could arise, but has not yet been scientifically investigated or actually proven. Ultimately, however, refinancing will always depend on the economic viability of the project. The viability of green projects in turn depends very much on the regulatory environment.

The reasons listed so far to show why green bonds can help to generate more money for sustainable projects raise questions. It is quite possible that green bonds and the high demand for them will ultimately draw greater attention towards environmental protection projects and that, as a result, there will be more financing. Initial investors could also actually feel more secure and be more likely to take a risk on an investment because they know there is a pool of money from green bonds worth billions that must be used to finance green projects and that the chance of refinancing is therefore good. This can indeed make it easier to

finance wind farms and solar installations. However, these questions have not yet been investigated.

All three hypotheses about how green bonds will lead to more capital for environmental protection projects assume that the proceeds from green bonds are actually consistently used in projects with a high environmental benefit and that this benefit is made transparent and is measured. The effectiveness of this instrument thus depends substantially on an external investigation of the use of the proceeds and on comprehensive and extensive transparency.

6. CONCLUSION AND DEMANDS

Since 2012, the volume of green bonds issued has increased each year by between 2 and 20 billion euros. Although the increase of almost 20 billion euros between 2013 and 2014 was not repeated in 2015, it is to be expected that the volume of green bonds issued will increase further in 2016 and in the years thereafter. It is also encouraging to see how seriously emerging countries like India and China are taking this development and that green bonds are increasingly being issued in Latin America as well. There will also continue to be a need for private capital to finance sustainable projects. At the same time it is clear that the structures for green bonds are not yet fully developed. Action is needed here and it should not just be a matter of increasing the volume of green bonds. Fewer green bonds that are, however, consistently and transparently used to promote green projects could be better for this instrument in the long term than a high volume together with uncertainty about whether the capital is actually being invested in a sustainable way.

It is also important that green bonds can never be considered in isolation. The economic environment in which the projects are carried out plays a crucial role in determining their profitability and thus also their success. Finally, investors will also always look at issuers as a whole and expect that, apart from issuing green bonds, they can also demonstrate a positive balance in terms of sustainability. With that in mind, the following demands may be formulated, which could be considered crucial for the lasting success of green bonds:

Demands for improved conditions for green bonds

1. Government regulation that improves the profitability of sustainable projects
2. Government regulation of green bonds that covers the following points:
    a. Disclosure of all projects financed by green bonds
    b. Uniform SPOs that must at least contain the following information:
        i. Formulation of project categories
        ii. Information about how proceeds are managed

iii. Assessment of projects already financed
iv. Information about reporting
v. Share of refinancing
vi. Sustainability of the issuer
vii. Exclusions for green bonds

3. Much stronger participation by civil society in shaping green bonds, especially the project categories

4. Scientific investigation of additionality through green bonds and taking account of the results in the further development of this financing instrument

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