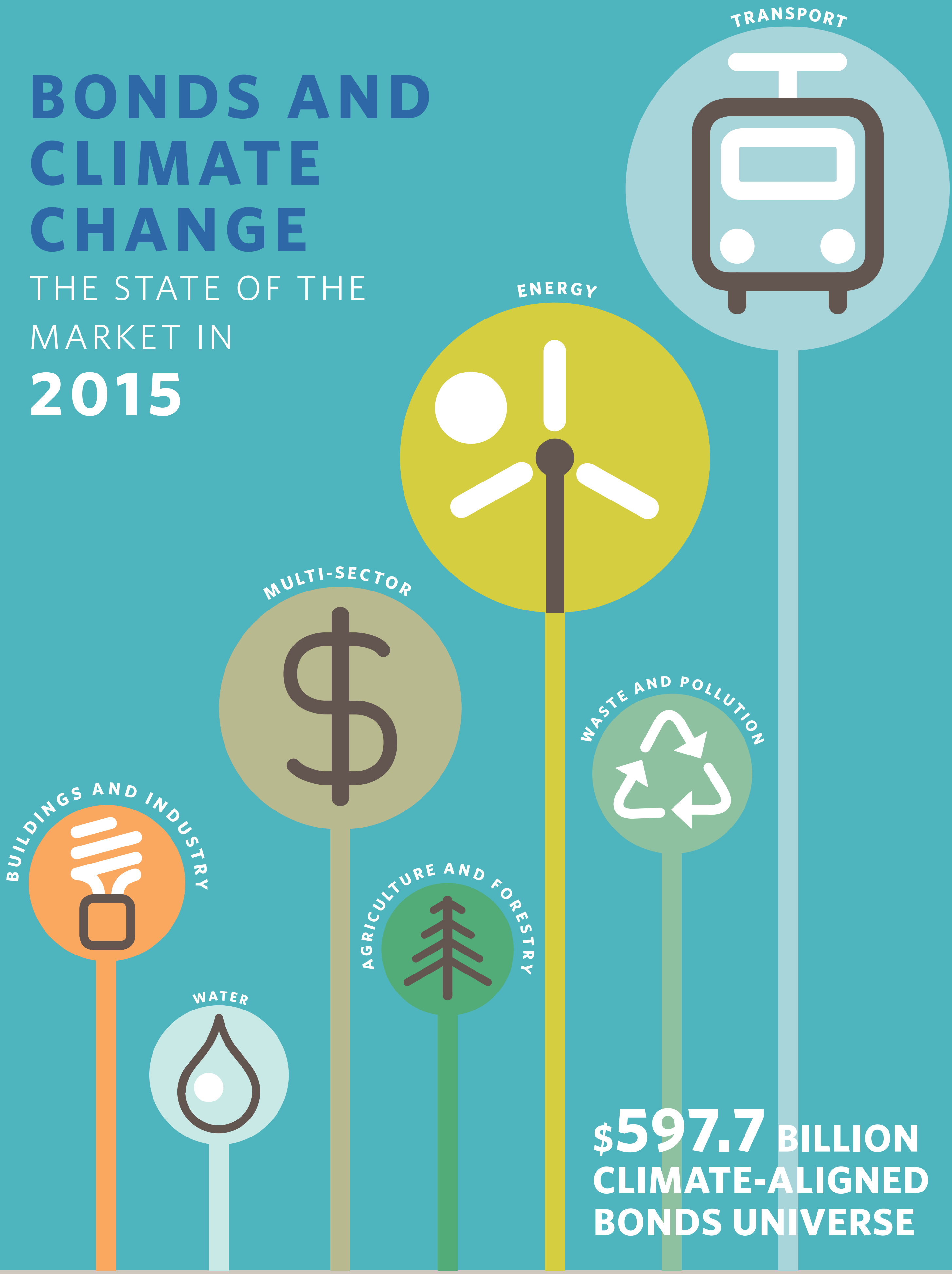
BONDS AND CLIMATE CHANGE

THE STATE OF THE MARKET IN 2015



$597.7 BILLION CLIMATE-ALIGNED BONDS UNIVERSE

Climate Bonds Initiative

HSBC

PLUS: Green Bond Market Update

Prepared by Climate Bonds Initiative.

Commissioned by HSBC.

Climate-aligned bonds total $597.7bn

Large liquid universe of climate mitigation and climate resilience investments exist today

Climate investment opportunity

1. Grabbing the upside: the investment opportunities in low carbon and climate resilient infrastructure are enormous. The International Energy Agency estimates that the cumulative investment in energy supply and efficiency to get the world on a 2 degree track is $53trn[1].

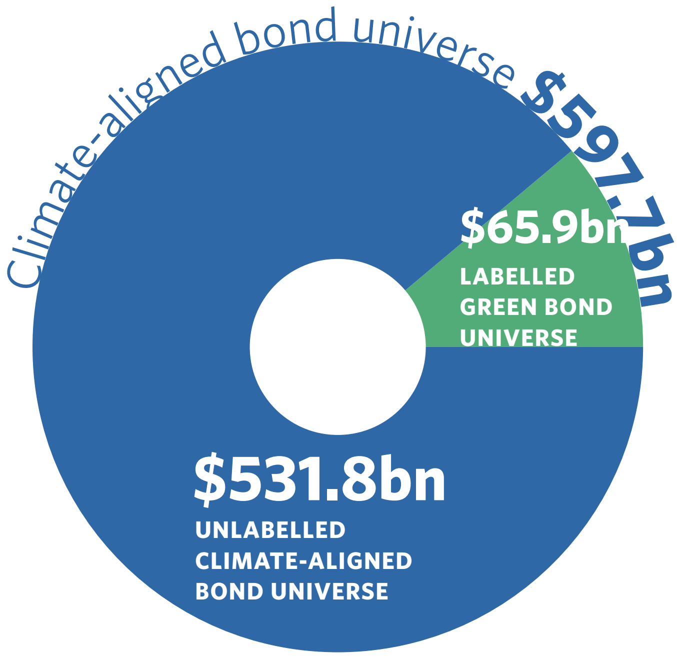
When you add needed investments in climate resilience it is clear there are investment opportunities in all asset classes, sectors, industries, countries and currencies. The good news is that it is not a choice between investing for growth and investing for climate. Irrespective of the climate challenge, the next 15 years will not be business-as-usual: it is expected that the global economy will increase by 50%, a billion people will move to cities, mainly in emerging markets, and technology will continue to disrupt[2].

2. Avoiding the downside: climate risks
We must grab low carbon investment opportunities, not just because they are financial opportunities, but to avoid the alternative scenario of 4 degree warming by 2100.

For investors, climate change is no longer an uncertainty they are not equipped to deal with, but a risk they can and should address.

3. Urgency of investment
The cumulative nature of the climate problem means investing now is crucial: the longer we wait to invest, the longer before emission reducing projects are on the ground, the more likely that we are not able to avoid the downside of climate risks.
We will then face natural tipping points, where changes in the climate system lead to further increases in emissions or temperature. This adds to the urgency.

1. IEA. (2014). World Energy Investment Outlook. www.worldenergyoutlook.org/investment.
2. The New Climate Economy Report, (2014), www.newclimateeconomy.report



This fourth edition of the report continues to focus on sizing the climate investment opportunity in the $100trn[3] global bond market.

Since the first *Bonds and Climate Change: State of the Market* report in 2012 there has been a huge growth in labelled green bonds. Equally there remains a large unlabelled universe of climate-aligned bonds available for investment now. For the purposes of this report the total climate-aligned bonds are both labelled green bonds (with defined use of proceeds) and unlabelled bonds issued by climate-aligned entities.

We estimate the universe of climate-aligned bonds outstanding to be $597.7bn. The universe is made up of 2,769 bonds from 407 issuers. These bonds span across six climate themes; Transport, Energy, Buildings and Industry, Agriculture and Forestry, Waste and Pollution, and Water.

UNLABELLED CLIMATE-ALIGNED BOND UNIVERSE

We identified bonds with proceeds financing climate-aligned assets.

We screened the Bloomberg data universe and reviewed approximately 1,400 companies to identify those with over 95% revenues from climate-aligned assets. The Climate Bonds Taxonomy provided the definition of climate-aligned used in the analysis.

3. http://www.bis.org/publ/qtrpdf/r_qt1403y.htm

Over 400 issuers with bonds outstanding are fully aligned with the CBI taxonomy. **To provide a snapshot view of the market we gathered all outstanding bonds (as of June 10 2015) issued after January 1 2005.** We also identified unlabelled project bonds and asset backed securities backed by climate-aligned assets.

LABELLED GREEN BOND UNIVERSE

In addition to those unlabelled bonds there are the labelled green bonds with a defined use of proceeds. Labelled green bonds earmark 100% of the proceeds of the bond sale for projects or assets that fit within the Climate Bonds Taxonomy.

These bonds are, by the fact of labelling, easier to locate. Climate Bonds Initiative tracks green bonds in a list available on its website.

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The largest theme in the $597.7bn climate-aligned universe continues to be Transport with $418.8bn bonds outstanding since January 1, 2005. Rail accounts for 95% of this, largely from state backed entities.

Energy ($118.4bn) is the second largest sector, with 20% of the universe. This theme is comprised of a range of renewable energy power producers including hydropower, wind, solar, bioenergy, geothermal and nuclear (p5). Buildings and Industry ($19.6bn) is the third main theme and has captured the attention of the labelled green bond market in the past year.

The remaining themes, Water ($3.2bn), Waste & Pollution ($7.1bn), and Agriculture & Forestry ($2.3bn), are crucial investment areas for climate adaptation. These will require scaling up if we are to address the climate risks of food supply, flooding, water scarcity, and health issues, such as pollution.

Multi-Sector ($28.2bn) are all labelled green bonds issued that finance a range of assets across the six themes. This is a change compared to previous reports as such bonds had been classified in a separate Finance theme. In this report, entities financing one theme, such as Eurofima, which only finances rail, are classified to the relevant theme.

Bonds that finance a range of projects across the six themes and are not dominated by one theme remain in Multi-Sector.

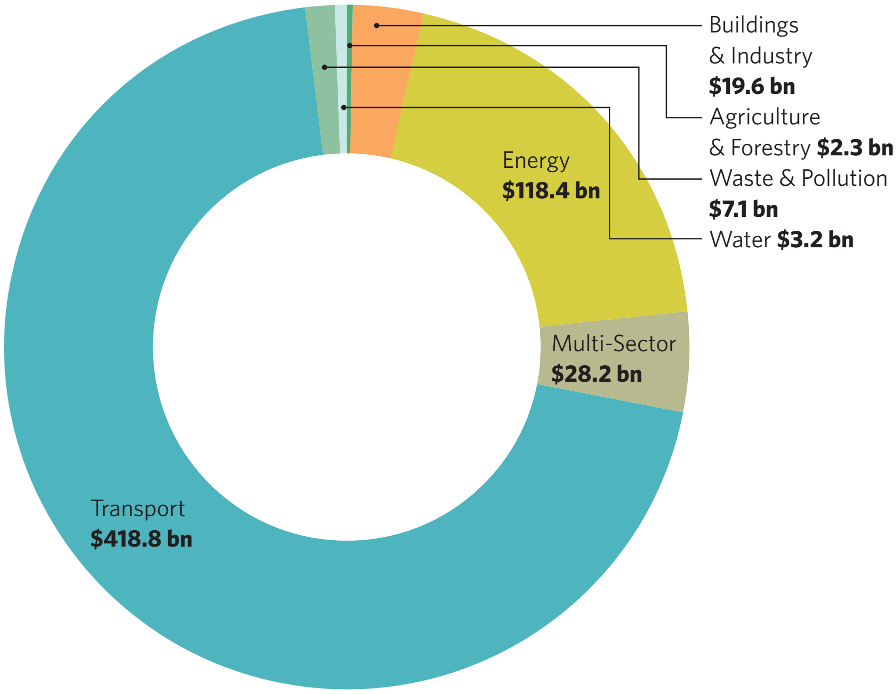
The climate-aligned universe has increased by $95bn since the 2014 report. Almost a third of the increase (32%) came from the rapid growth of the labelled green bond market (additional $30.6bn of green bonds). Unlabelled climate-aligned bonds financing rail in China, India, France, South Korea and the UK contributed another 40% of the increase.

The climate-aligned universe has a range of maturities. The majority of outstanding issuances have tenors over 10 years. This reflects the long-term nature of climate assets such as rail infrastructure bonds.

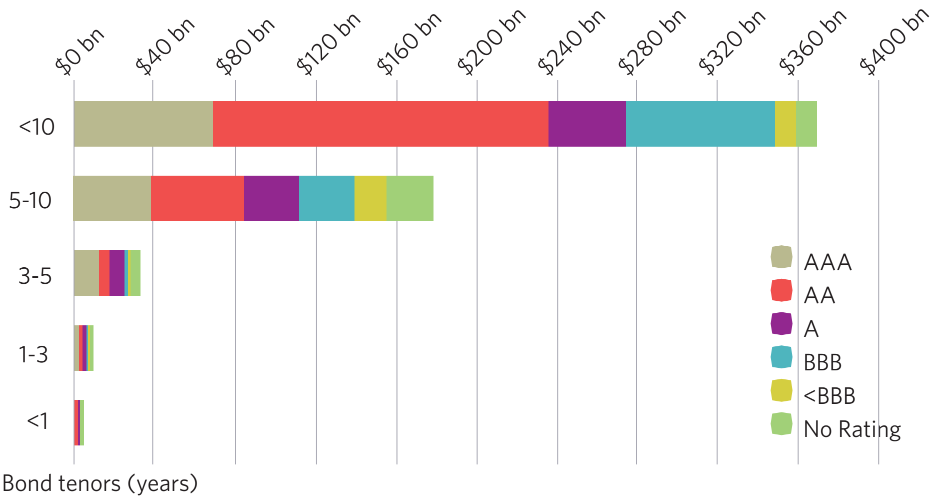
As in previous years the majority of climate-aligned bonds, $523.5m, are investment grade (BBB- or above).

Climate-aligned bonds are denominated in 37 different currencies. Chinese yuan (CNY) denominated bonds account for $197.7bn of the universe, due to Chinese rail and hydro bonds. Other currencies represented include US dollars ($124.8bn), Euros ($111.3bn) and Sterling ($51.9bn).

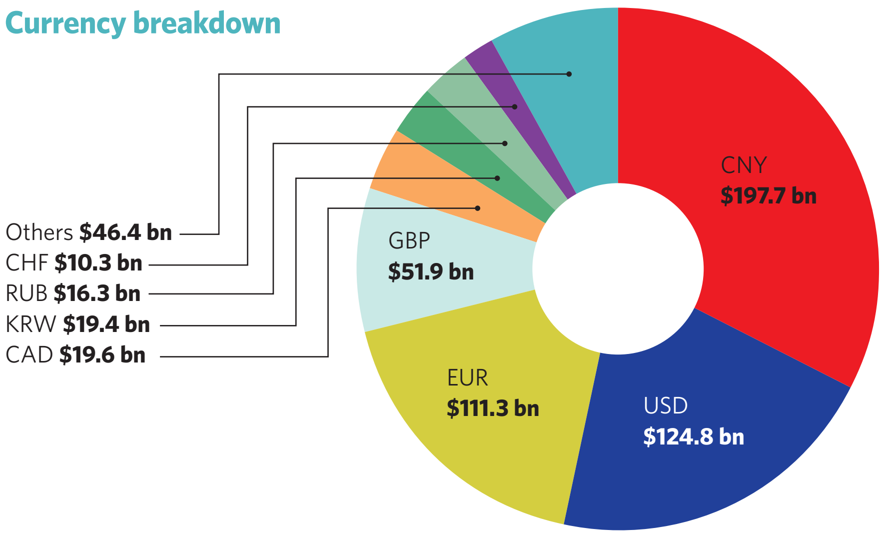
Transport continues to be the dominant theme in the $597.7bn climate aligned universe



Climate-aligned bonds have long tenors, reflecting the length of climate projects, and offer a range of investment ratings



Currency breakdown



Transport and Energy remain the dominant themes in the climate-aligned bond universe

Transport

$418.8bn Total Value

99% 1%

Unlabelled Labelled

83 Issuers
Largest issuer China Railway Corp ($171.5bn)
1012 Bonds

Rail continues to dominate the Transport theme, with smaller issuances for electric vehicles and bicycle manufacturing

China Rail remains the largest issuer of any climate-aligned entity. European rail entities Eurofima ($14.6bn), France's SNCF ($11.0bn) and UK's Network Rail ($44.1bn) were also significant issuers. However, it's not all rail — there are other sub-sectors to the Transport theme including finance for electric vehicles, buses and bicycles. Issuers likeTesla and Excon are developing electric cars while Chinese company Chaowei Power develops electric bike batteries. Push bicycle manufacturers such as Ideal Bike Corp, Sun Race and Xhejiz also make up a small part of the theme. Transport for London issued a labelled green bond in 2015 for a range of public transport infrastructure projects (rail, bicycle and bus).

Waste and Pollution

$7.1bn Total Value

87% 13%

Unlabelled Labelled

20 Issuers
Largest issuer Klabin ($1.6bn)
50 Bonds

Recycled material issuers account for 83% of the Waste and Pollution theme

Brazilian paper manufacturer and recycling company Kablin is the largest issuer in the Waste and Pollution theme. Other large corporates are Darling Ingredients ($0.5bn), which recycles fat and cooking oil to make feed products and Swedish BillerudKorsnäs ($0.3bn), producer of fibre-based renewable packaging. The first ever labelled green bond in the Waste and Pollution theme was issued in 2015 by French recycling corporate Paprec ($0.5bn).

Buildings and Industry

$19.6bn Total Value

55% 45%

Unlabelled Labelled

54 Issuers
Largest issuer LG Electronics ($4.6bn)
251 Bonds

Labelled green bonds financing low carbon buildings boost the Buildings and Industry theme

Energy efficiency, energy efficient appliances and lighting, LEDs, Energy Service Companies (ESCOs) and low carbon buildings are the key sub themes in Buildings and Industry. LG Electronics, the largest issuer in this theme, has almost all of its product range certified with the Energy Star label. Labelled green bonds now account for 45% of the Buildings and Industry theme, with European real estate corporates and US State universities being the main issuers. The low carbon buildings have a certification from LEED, BREEAM or an equivalent. In 2015 Climate Bonds launched the standard for low carbon buildings. ANZ Bank was the first to issue a green bond ($0.5bn) certified under the property standard in late May 2015.

Assets and projects funded by green bonds across a range of sectors

Multi-Sector

$28.2bn Total Value

100%

Unlabelled Labelled

19 Issuers
Largest issuer European Investment Bank ($9.6bn)
234 Bonds

Multi-Sector bonds finance projects across a mixture of the six themes. The theme is entirely made up of labelled green bonds from development banks, municipalities and banks

The European Investment Bank is the largest issuer in the theme, with $9.6bn outstanding to finance renewable energy and energy efficiency projects. Credit Agricole is another big issuer ($1.1bn) offering green bond private placements in the Japanese market. The proceeds are used to finance a range of green loans in Europe. including for low carbon transport, renewable energy, water, waste management, energy efficiency and sustainable agriculture and forestry. Australia's ANZ Bank ($0.5bn) was the first multi-sector issuer to be certified under both the low carbon buildings and solar Climate Bonds Standards (see p 11). Municipalities, including as Île-de-France ($1.8bn), Johannesburg ($0.1bn) and Stockholm County Council ($0.4bn), also finance a range of projects.

Energy

$118.4bn Total Value

81% 19%

Unlabelled Labelled

205 Issuers
Largest issuer Hydro Quebec ($15bn)
881 Bonds

Energy is the most diverse theme with large hydro issuers adding size to the many smaller solar and wind issuers

Hydropower is the largest sub sector of the Energy theme with $40bn outstanding from a range of countries including China. Bonds financing nuclear power are $7bn of the total. Nuclear is included because it's low carbon, though controversial for certain investors. Labelled green bonds contribute 19% to the theme with banks such as Bank of America Merrill Lynch ($1.1bn), NAB ($0.2bn) and DNB ($0.1bn) issuing green bonds to refinance renewable energy loan portfolios. The largest corporate green bonds so far in 2015 are both in the Energy theme: TenneT Holdings (€1bn) and Terraform ($800m).

Agriculture and Forestry

$2.3bn Total Value

88% 12%

Unlabelled Labelled

10 Issuers
Largest issuer Sveaskog AB ($1bn)
49 Bonds

Largely untapped Agriculture and Forestry theme is dominated by certified forests

Sustainable forestry, meaning the cultivation of certified forests, accounted for 82% of this theme. A secondary theme is sustainable paper production with 11%. This area remains largely untapped. Climate Bonds Standard for agriculture, land use and forestry is under development and will guide issuers in the area on how to issue climate-aligned bonds.

Water

$3.2bn Total Value

2% 98%

Unlabelled Labelled

16 Issuers
Largest issuer Neder Waterschapsbank ($0.7bn)
292 Bonds

The trend in the US of labelling municipal water bonds as green has dramatically increased the size of the water theme

Following the success of municipal water utility DC Water ($0.4bn) last year, other US municipalities have issued labelled green bonds under the Water theme. Proceeds from these bonds have been used for climate change adaptation purposes, such as widening storm water tunnels, as well as efficiency in wastewater treatment.

Issuers of unlabelled climate-aligned bonds have the potential to start issuing labelled green bonds

A market leader here has been wind power company Vestas. Vestas has been part of the unlabelled climate-aligned universe in past years but in 2015, for its new issuance, it chose to label the general corporate purpose bond as green.

Solar energy, rail, water, forestry and many other companies with qualifying assets and projects could do the same in 2016, taking advantages of the marketing benefits of the green label, winning new investors, reinforcing investor loyalty, and being seen to be part of a larger, more liquid bond universe.

Companies just have to track and be able to report annually on qualifying assets, and get a certification or credible independent review. Simple.

Many opportunities for investors in the universe

This section examines investment opportunities within the climate-aligned universe. The key areas of opportunity are the mainstream index filtered universe, labelled green bonds and asset backed bonds.

Labelled Green Bonds Market $65.9bn (see page 8)

The size of the labelled green bonds universe has been growing rapidly since 2013. On June 10 2015 it stood at $65.9bn. This began as an issuer-labelled market, but rules and standards are gradually emerging through initiatives such as the Green Bond Principles, the Climate Bonds Standard and China's central bank green bond guidelines.

Project Bonds & Asset Backed Securities $13.9bn

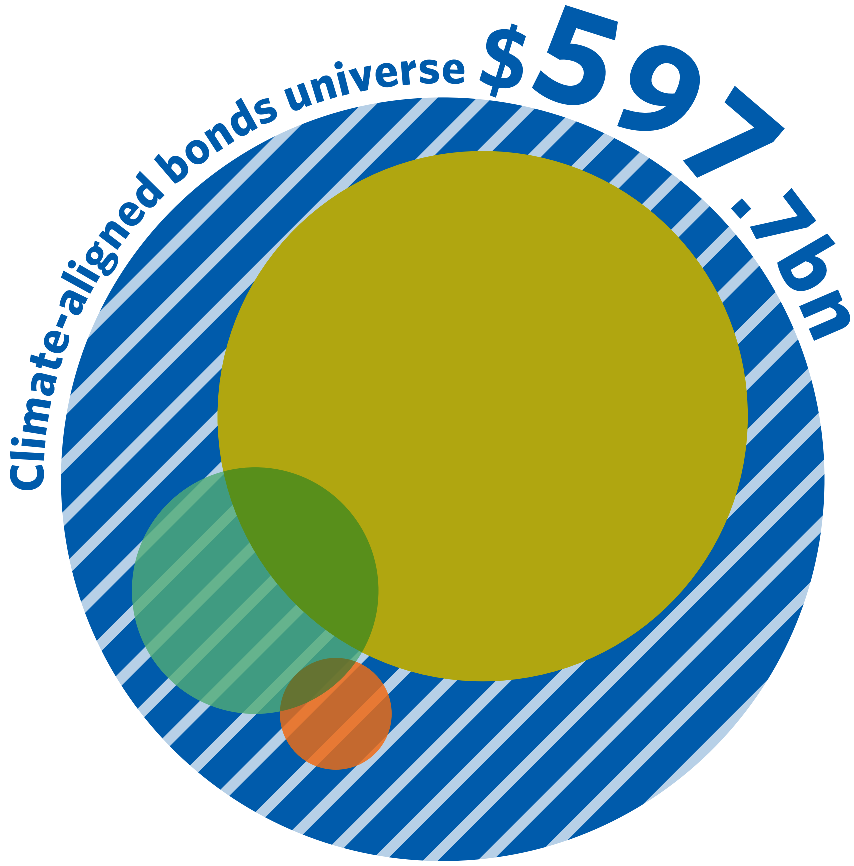
Climate-aligned asset backed bonds, such as project and securitised bonds, that provide investors with exposure to the performance of the underlying projects or assets, mainly consists of renewable energy projects.

In 2015, a several of solar and wind energy project bonds have been issued. One example is Solar Star Funding, which issued a $325m project bond, the second tranche of the $1bn 2013 bond, backed by 579MW solar projects in California. Other examples of project bonds are in the table below.

S&PDJ Indices launched a Green Project Bond Index in 2014. The index enables investors to locate labelled green or unlabelled climate-aligned project bonds or ABS and improves the understanding of their performance.

ABS and project bonds, though important, are on a much smaller scale than the corporate, municipal, bank and development bank bonds that comprise the rest of the climate-aligned universe.

Corporates account for 74% ($443m) of the climate-aligned universe. Other issuer types may have climate-aligned assets funded by some of the proceeds of their bonds as well, but without these issuers committing to use proceeds only for green and labelling the bonds as green accordingly, it is unkown to what extent these bonds are climate-aligned.



Mainstream index filtered $266.3bn (see page 7)

Rules for mainstream indices influence the investment options of mainstream investors. These indices have requirements on the ratings (investment grade only), size (minimum $200m) and currency denominations (mainstream currencies) of bonds.

For more detail on the criteria for indices and analysis of this sub-section, which is 45% of the overall universe, see page 7.

Opportunities outside the mainstream index filter $331.4bn (see page 7)

Investors are not only interested in bonds inside these mainstream index filters. Emerging market, private placement and high-yield investors are seeking bonds with different profiles. The climate-aligned universe is diverse and is accessible for all these types of investors.

Hallett Hill, Gwynt y Mor and Energía Eólica S.A have all used bonds to refinance wind projects in the past year

PROJECT	SIZE	DESCRIPTION
Hallett Hill (two tranches)	$99m & A$76m	Operates 34 wind turbines in Adelaide, Southern Australia. DNV GL second review.
Gwynt y Mor OFTO Plc	$325m	Transmission link for Gwynt y Mor the second largest offshore wind farm in the world. EIB project bond credit enhancement.
Energía Eólica S.A	$204m	2 wind projects in north-western Peru with a combined capacity of 114 MW.

Mainstream indexes play an important role in investment management and determining what bonds mainstream investors invest in

Investors use indexes extensively in managing funds on behalf of asset owners. In active mandates indices are used to measure performance, and passive mandates track indices.

Typically, mainstream indices have rules for inclusion around the rating, currency and size of bonds. We have applied the following mainstream index filters to the climate-aligned universe:

- **investment grade (BBB or above)**
- **currencies eligible for benchmarks/ indices**
- **$200m minimum issuance size**

$266.3bn of the climate-aligned bond universe complies with these mainstream index filters. Looking within these filters, fund managers investing in mainstream indices can invest now in a range of climate-aligned bonds in the Transport, Energy, Buildings and Industry, Waste and Pollution, Water, and Multi-Sector themes.

Agriculture and Forestry is the only theme that is not represented in the mainstream index filtered universe. The majority of bonds are investment grade in this theme, but too small to meet the $200m minimum.

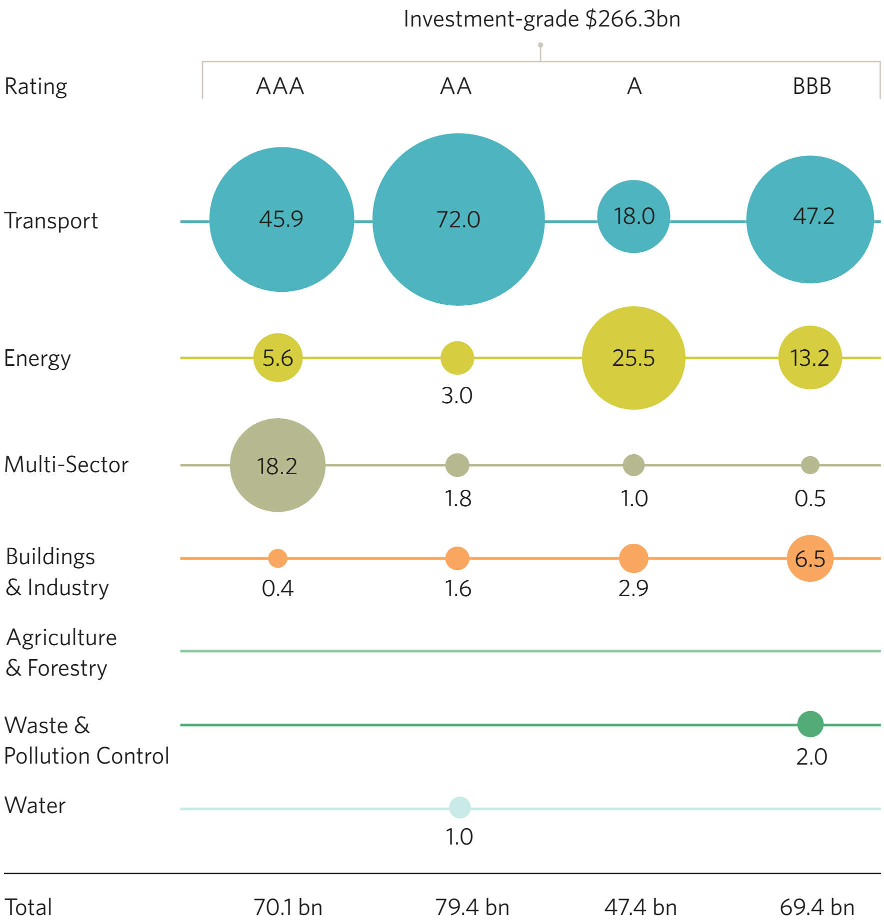
A mix of investment grade ratings are available within the mainstream index filter

Similar to the composition of the full universe, Transport is the largest theme because of highly rated government-backed rail bonds (with the majority rated AA). This differs from the second biggest theme, Energy, which has a more even distribution across the investment grade ratings (AAA to BBB).

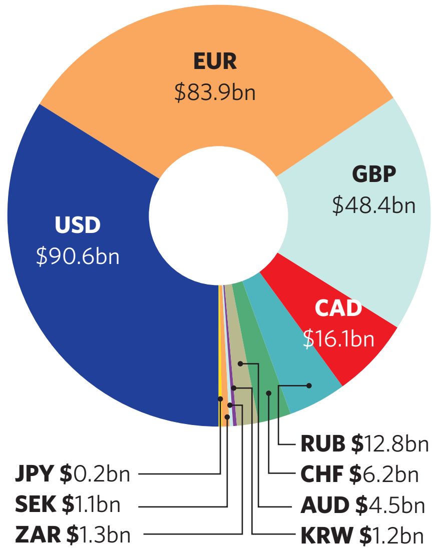
Development banks with AAA ratings account for the majority of the Multi-Sector, with the remaining bonds issued by municipalities with ratings of A or above. In contrast, the Buildings and Industry theme has more corporates and few government backed entities, and rating tends to sit lower at A or BBB. Waste and Pollution is also mainly corporate issuers with lower ratings.

The largest currencies represented in the mainstream index filtered universe are US dollars ($90.6bn) and Euros ($83.9bn). This reflects the denominations of indexes. Other currencies include British sterling, Canadian dollars, Russian roubles, Australian dollars and Swiss Francs — a total of 11 currencies.

Range of ratings available for climate-aligned bonds filtered by mainstream index-type rules



Over half of the index filtered universe is denominated in US dollars or Euros



Outside of this mainstream index filter there are $331.4bn climate-aligned bonds in a wide range of sizes, ratings and currencies.

Non-mainstream index currencies

In addition to the 11 mainstream index currencies in the filtered universe, there are a further 26 currencies represented in the wider climate-aligned universe. This provides opportunity for investors seeking currency diversification or investors located in emerging markets that want to invest in domestic currencies. For example the Chinese yuan (CNY), which is not included in the mainstream index filter, has $197.7bn climate-aligned bonds outstanding for investment. These CNY climate-aligned bonds are predominately financing rail and hydro power infrastructure projects. Similarly the State Railway of Thailand has $3.1bn outstanding in Thai Baht.

Sub-investment grade

5% of the full climate-aligned universe is sub-investment grade and 7% is not rated. These climate-aligned bonds are distributed across the main themes with the exception of Multi-sector which only comprises investment grade bonds.

Examples from the sub-investment grade climate aligned universe are rail bonds from Metro Lisboa ($ 1.8bn, BB), and French labelled green waste bonds from Paprec ($522.6m, B). The Energy theme has a mix of project bonds (CRC Breeze $381m, B), yieldcos (Abengoa $634.7m ,B) and corporates (Infinis $543m, BB).

Green bond market continues to grow in size and diversity

Massive growth of the labelled green bonds market with $65.9bn outstanding by June 2015 – with greater diversification in issuance

Total labelled green bonds outstanding were $65.9bn per June 10 2015. In 2014, the market grew rapidly, with issuance of $36.6 billion of green bonds – a tripling of the $11bn issued in 2013. So far in 2015, we have seen issuance of $14bn. Issuance is expected to ramp up in the second half of 2015 with the build up to the UN Climate Conference in Paris at the end of the year. The Climate Bonds Initiative expects total 2015 issuance to reach $70bn, with a stretch target for $100bn of issuance. Bloomberg New Energy Finance (BNEF) estimates $80bn of issuance[4], and Swedish bank SEB estimates issuance to hit $70bn[5].

Broader range of yields and currencies

To grow a deep and liquid green bond market we need to scale up issuance but also to diversify in currencies and ratings.

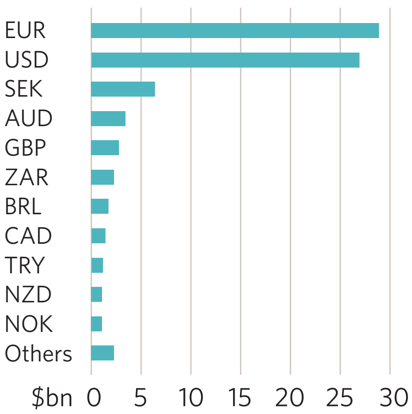
23 different currencies represented

The bulk of labelled green bond issuance continues to be in US dollars and Euros, but the development banks have increasingly been issuing smaller labelled green bonds in a range of currencies including Turkish Lira, Brazilian Reals and Indian Rupees. So far, labelled green bonds have been issued in 23 currencies.

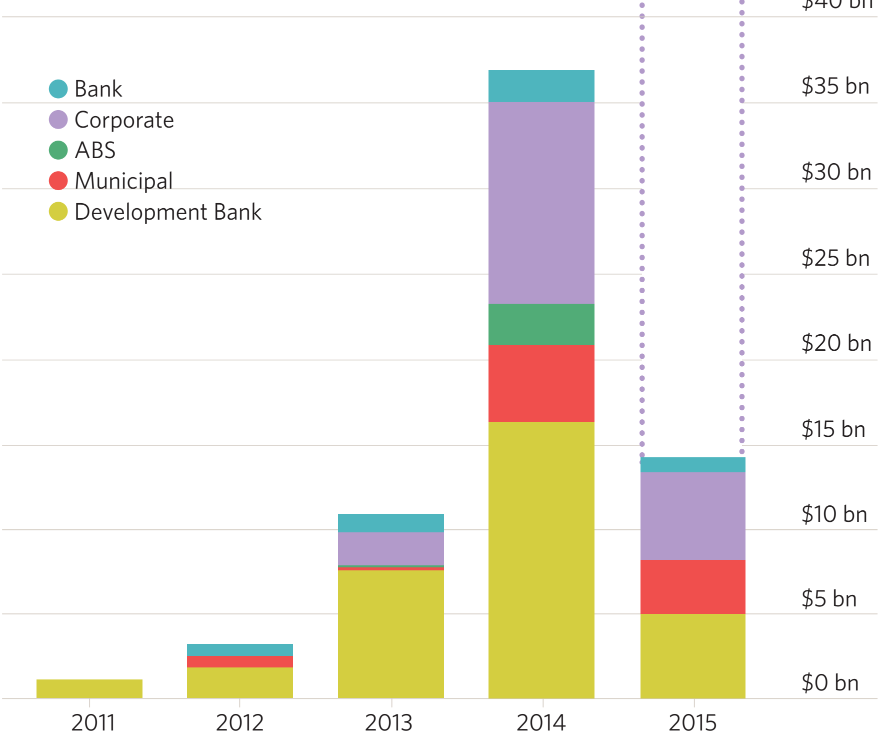
High-yield green bonds

A subset of the market is high-yield (non-investment grade) green bonds. The first high-yield green bond was issued by NRG Yield in August 2014 for $500m. Since then, Abengoa Greenfield, Paprec and Terraform Power have also issued high-yield green bonds.

Labelled green bond currencies



Corporate and municipal green bonds have become a key part of the market



Types of issuers

Development bank green bonds

The largest issuers of labelled green bonds to date are the European Investment Bank ($11.6bn) and the World Bank ($8bn), with German development bank KfW ($4bn) propelling to third place after several large issuances in 2014 and 2015.

Asia-based development banks have also issued labelled green bonds in the past year including the Asian Development Bank ($500m and ZAR25m), and the Development Bank of Japan issuing the first Japanese green issuance (€250m).

Corporate green bonds

Overall corporate issuance has increased, although early corporate bonds issued by GDF Suez (March 2014, €2.5bn) and EDF (November 2013, €1.4bn) have not been exceeded in size in the past year. More new issuers have entered, but they are bringing relatively smaller bonds (less than $1bn) to market.

In 2015, corporate bonds have moved beyond the utilities and real estate sectors to include transport and waste, with a £400m green bond from Transport for London and a €480m issuance from French recycling company Paprec.

Municipal green bonds

The US municipal green bond market heated up in mid-2014 with two key themes; green property for universities and sustainable water projects.

Green bonds make it easier for investors to identify climate-aligned bonds

FEATURES OF LABELLED GREEN BONDS
Earmarking proceeds for eligible green projects
Comparable pricing to non-green bonds from the same issuer
Easy to discover for green investors as labelled

After private university Massachusetts Institute of Technology (MIT) issued its green bond ($370m) to refinance green buildings in September 2014, other public universities such as Cincinnati ($30m), Indiana ($59m), Arizona ($183m) and State of Virginia ($98m) issued green bonds with proceeds for green buildings.

Similarly, after the municipal utility DC Water's $350m bond in June 2014, a number of states issued green water bonds including; Indiana ($204), Chicago ($225m) and Iowa ($321.5m).

European cities and municipalities are also issuing green bonds. After Île-de-France and Gothenburg entered the market in 2012 and 2013, Europe has seen a steady growth in municipal green bonds, with repeat issuances and new entrants.

Commercial bank green bonds

Credit Agricole was an early issuer of green bonds responding to demand from the Japanese private placement market, and was the first bank to get a second review (p 11) on its green bond framework, in early 2015.

Other bank green bonds, such as DNB, Bank of America, NAB, Yes Bank and ANZ, are using proceeds to finance a mixture of renewable energy, such as solar, wind and hydropower projects, and energy efficient property. NAB (A$300m), ANZ (A$600m) and ABN AMRO's (€500m) labelled green bonds were certified against the Climate Bonds Standard (p 11).

Investor demand is strong

The investor appetite for labelled green bonds can be shown in several ways. First, it shows through in the high level of oversubscription compared with non-green issuances. A recent example is ABN AMRO's bond, which received €1bn of orders for what was going to be an €350m issue. Oversubscription gives the issuer the flexibility to upsize the bond. For example, strong demand allowed the World Bank's retail green bond in January 2015 to be upsized from $15m to $91m; KfW's A$300m green bond to balloon to A$600m; and Yes Bank to double its offering from INR 5bn to INR 10bn.

2015 has seen issuance from new and repeat issuers: KfW is now the 3rd biggest issuer of green bonds within a year of its first green bond

Green Bonds Issued	
European Investment Bank	$11.5bn
World Bank	$8.1bn
KFW	$4.0bn
GDF Suez	$3.4bn
IFC	$3.4bn
Electricite de France	$1.9bn
Ile de France	$1.8bn
Toyota	$1.8bn
Unibail-Rodamco SE	$1.6bn
Asian Development Bank	$1.5bn

Signs of Investor Demand
Oversubscription
Investor commitments
Specialist green bond funds, mandates and portfolios

Secondly, there are pledges to invest a set amount into green bonds and investor statements supporting the growth of the green bonds market. In 2015 public pledges came from Zurich Insurance, Deutsche Bank treasury, KfW, Barclays treasury and ACTIAM to build €1bn green bond portfolios. This sends an important signal of investor demand to the market.

In December 2014 an investor statement, brought together by Climate Bonds Initiative and supporting the green bond market, was signed by asset owners and fund managers with a combined $2.62trn assets under management. This was followed in 2015 with another investor statement setting out expectations for the green bond market by Ceres Investor Network on Climate Risk and signed by 26 investors.

Finally, there are increasing numbers of specialised green bond funds looking to invest in green bonds. Swedish insurance company SPP, SEB Asset Management, Nikko Asset Management, BlackRock, Calvert, Shelton Capital Management and State Street all manage green bond funds.

Majority of green bond proceeds are allocated to renewable energy and low carbon buildings

We estimate that over a third of labelled green bond proceeds are financing renewable energy (38%). So far in 2015, Vestas (€500m), KfW (A$600m) and Terraform ($800m) have all issued green bonds purely to finance renewables.

The second biggest use of proceeds relates to Buildings and Industry (28%). The bulk of this is for low carbon buildings, represented across all the issuer types: development banks (e.g. Development Bank of Japan), corporates (e.g Regency, Vonardo Realty, Vasakronan) and municipalities (e.g. US states). The past year, labelled green bonds use of proceeds has also diversified, with more green bonds issued also to finance water, transport and waste projects. The thematic split of the non-labelled climate-aligned universe also indicates there is a lot of potential to grow these themes, in particular transport.

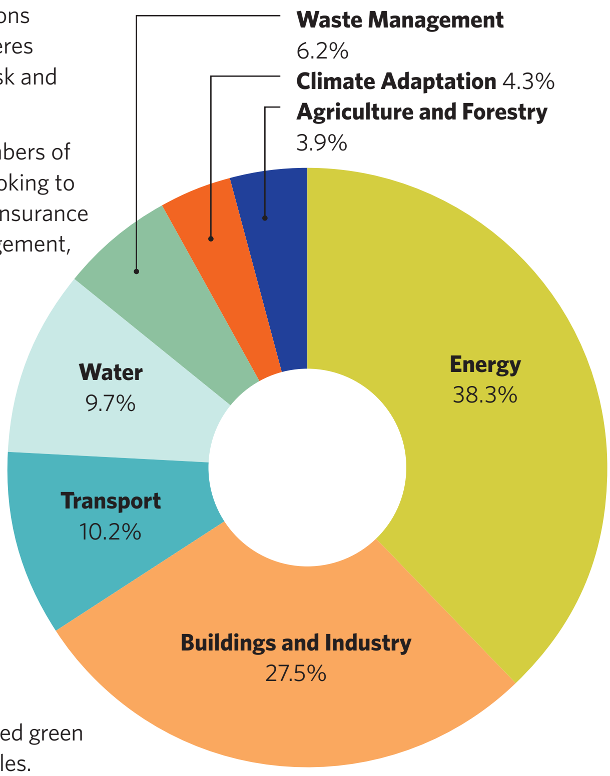
Green bond reporting

The first annual reports on green bond issuances were published in November 2014, as this marked the year anniversary of the first corporate green bonds.

Reporting post-issuance is an important part of the labelled green bond market. Currently, the expectation is for issuers to confirm the allocation of proceeds to eligible green projects and ideally, gain second party assurance. This ensures investors know that the commitment made at issuance, to use proceeds for certain defined projects or assets, has been kept. EDF, NRW Bank, Unilever, Bank of America Merrill Lynch, Regency and Vonardo all have assurance statements on their green bond proceeds.

All publicly available green bond reports are available on the Climate Bonds website.

Green bonds use of proceeds



4. http://about.bnef.com/blog/liebreich-10-predictions-clean-energy-2015/content/uploads/sites/4/2015/01/BNEF_VIP_Comment_2015-01-27-Ten-predictions-for-clean-energy-in-2015.pdf
5. https://webapp.sebgroup.com/mbs/research.nsf/alldocsbyunid/6E85B0D8ACE4B674C1257E14004BE91F/$FILE/The_Green_Bond_2015_03_26.pdf

Developments in the green bond market

The Green Bond Principles update in March 2015 emphasised the role of assurance of green credentials and annual reporting.

The Principles are voluntary best practice guidelines for labelled green bonds. They focus on transparency of use of proceeds, the process for project evaluation and selection, management of proceeds, and reporting on use of proceeds.

Launched in 2014, by Citi, JP Morgan, Credit Agricole and Bank of America Merrill Lynch, the International Capital Markets Association now hosts the Principles.

The Principles are governed by a membership secretariat made up of green bond issuers, investors and intermediaries.

Sustainability and ESG bonds

We need non-green companies to grow their green assets. Labelled green bonds can help finance this transition.

A problem some isssuers have is limited scale of existing green assets or pipeline of green projects. In this case, a first step towards the market is to issue a sustainability or ESG bond where proceeds finance green assets and non-green assets; similar to the Lloyds and the State of North Rhine-Westphalia mixed bonds.

The next step for these issuers is to grow the green assets to the point of issuing fully green bonds.

Multiple green bond indices launched provide a benchmark for investors

Indices make it easier for investors to find green bonds and track performance. Investment products are starting to be built around these indices, with State Street launching a tracker fund linked to the Barclays MSCI green bond index.

Climate Bond Certification of National Bank of Australia's $300m green bond

National Australia Bank (NAB) issued the first Certified Climate Bond from a bank. Compliance with the Climate Bonds Standard was verified by DNV-GL.

The bond closed in December 2014 after doubling in size on the back of strong investor demand. Proceeds of the A$300m bond finance loans to a portfolio of 17 wind and solar energy farms. 14 of these are operational and 3 are under construction. The assets will total an aggregate installed capacity of 1.5 gigawatts of electricity across different states in Australia.

Further growth of green Asset Backed Securities (ABS)

Following the success in 2013 of Hannon Armstrong's green ABS, the first municipal ABS came to market in November 2014.

Issued by the Hawaii State Department of Business, Economic Development and Tourism (DBEDT), the $150m AAA-rated green ABS was issued in two tranches and backed by a Green Infrastructure Fee, which will be applied to the bills of electricity customers of the Hawaiian state utilities.

Proceeds will go to support the DBEDT's Green Energy Market Securitization programme, which will provide loans to consumers to fund the installation of solar PV panels and solar connectors such as storage, advanced inverters and monitoring devices.

First labelled green covered bond from BerlinHyp

The first labelled green covered bond, meaning a bond with dual recourse to the issuer and a cover pool of assets, was issued by real estate and mortgage bank BerlinHyp in May 2015. The €500m bond received a very positive reception, and was four times oversubscribed.

The covered bond market overall is sizeable, with €2,400bn outstanding. Real estate accounts for the largest type of assets financed in this market.

We expect to see more green covered bonds issued for mortgages for low carbon buildings over the next year.

Additionality and green bonds

Proceeds from green bonds can fund new green projects or refinance existing green assets. This has led to market wide discussions of whether additional projects or assets are financed as a result of green bonds. This argument and definition of additionally is misleading and one that has spilled over from other asset classes; in particular carbon credits and equities.

Primarily, bonds are refinancing tools that allow issuers to free up capital from existing assets. This role is crucial in the capital pipeline. In the higher risk construction phase of projects it is important for issuers, equity investors or banks providing loans to know that once operational the asset can be refinanced through bonds.

We need project developers to be confident when investing in the early high-risk stage of projects that green projects can be refinanced easily and potentially at a better price. That is the additionality green bonds can achieve.

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

Determining the green credentials of labelled green bonds

GREEN STANDARDS AND DEFINITIONS ARE NEEDED TO FASTER SCALE UP THE GREEN BOND MARKET

The evaluation of environmental claims of labelled green bonds has been a key issue of debate in 2014 and the first half of 2015.

In the absence of clear and widely accepted guidelines around what is green many investors have raised concern about a risk of "greenwashing", where bond proceeds are allocated to assets that have little or doubtful environmental value. This would shake confidence in the market.

The main tools in the market to address this issue are the Green Bonds Principles and the Climate Bonds Standard scheme.

The Climate Bonds Standards Board oversees standards development and certification for the green bond market.

The Board represents investors with $34trn of assets under management. Through the Climate Bonds Initiative it convenes scientists, investors and other specialists in expert committees that develop criteria for assets and projects that can be financed with green bonds.

The benefit of the Standard is that it provides clear, science-based criteria on what is green. The newly updated Climate Bonds Standard is aligned with the transparency requirements of the Green Bond Principles.

Most green bonds use some sort of external review or benchmark measure. 60% use an independent review, commonly called a second party review. A number of US issuers reference certified assets (such as LEED rated buildings) as an indicator of the green credentials of the bond. The largest issuer in the market, the European Investment Bank, uses KPMG to provide an external review of allocation of proceeds.

CICERO, Vigeo and DNV GL continue to be significant providers of second party reviews. Newcomers in the past year are Oekom, Sustainalytics and KPMG.

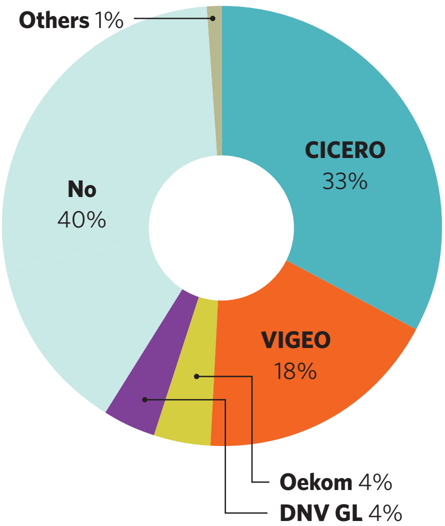
Independent second party reviews use a variety of approaches, from checking simple adherence to the Green Bond Principles to applying broader Environmental, Social and Governance (ESG) frameworks. These bespoke reviews help investors to understand green credentials.

As we look to scale the market there is a need for robust green bond standards that make comparisons between bonds easier and that can be assured against by a wide range of verifiers.

Climate Bonds Standards are rolling out across different sectors

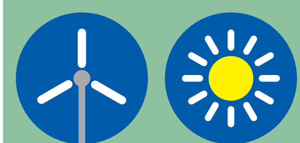
DEVELOPED	FOR RELEASE IN 2015
Solar	Bioenergy Geothermal
Wind	Water, from water utilities to hydro
Low carbon transport: Bus Rapid Transit (BRT) systems	Low carbon transport: Rail, metros, EV and hybrids
Low carbon buildings	Agriculture and Forestry

Second reviews on green credentials are an important intermediary step until standards are up and running



Climate Bonds Bond Certification is Simple ....

Identify qualifying green projects & assets based on the climate bonds taxonomy.



Get independent verification from an approved verifier

See the full list at http://www.climatebonds.net/verifiers.

Track and report

The value of the assets or projects must stay equal to, or greater than, the amount of the bond.

Report each year. For advice on specifics consult the Climate Bonds Initiative.

Approval from the Climate Bond Standards Board. Issue the certified green bond.

Climate Bond Certified

Emerging markets are kicking off their green bond markets this year

INDIA AND CHINA ARE LEADING THE WAY

Low carbon and climate resilient finance needs to grow fast in emerging markets with huge levels of investment required to ensure their immense demand for infrastructure and growth is aligned with global climate targets.

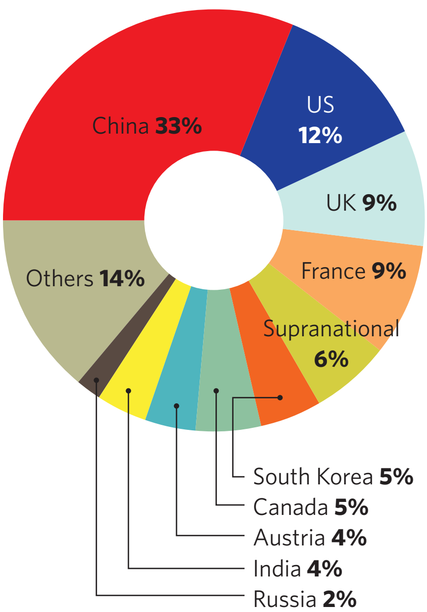
At the same time, it's on the agenda for many emerging economies to grow their domestic capital markets, to reduce reliance on bank lending and international markets for their financing needs.

Green bonds allow emerging economies to hit two birds with one stone by facilitating climate investment and the growth of a robust domestic debt capital market.

Emerging market green bond markets need demonstration issuance and liquidity.

Development banks like the IFC are beginning to help with this, issuing green bonds in emerging market currencies and even acting as cornerstone investors to support new issuance.

Top 10 countries for climate-aligned bonds



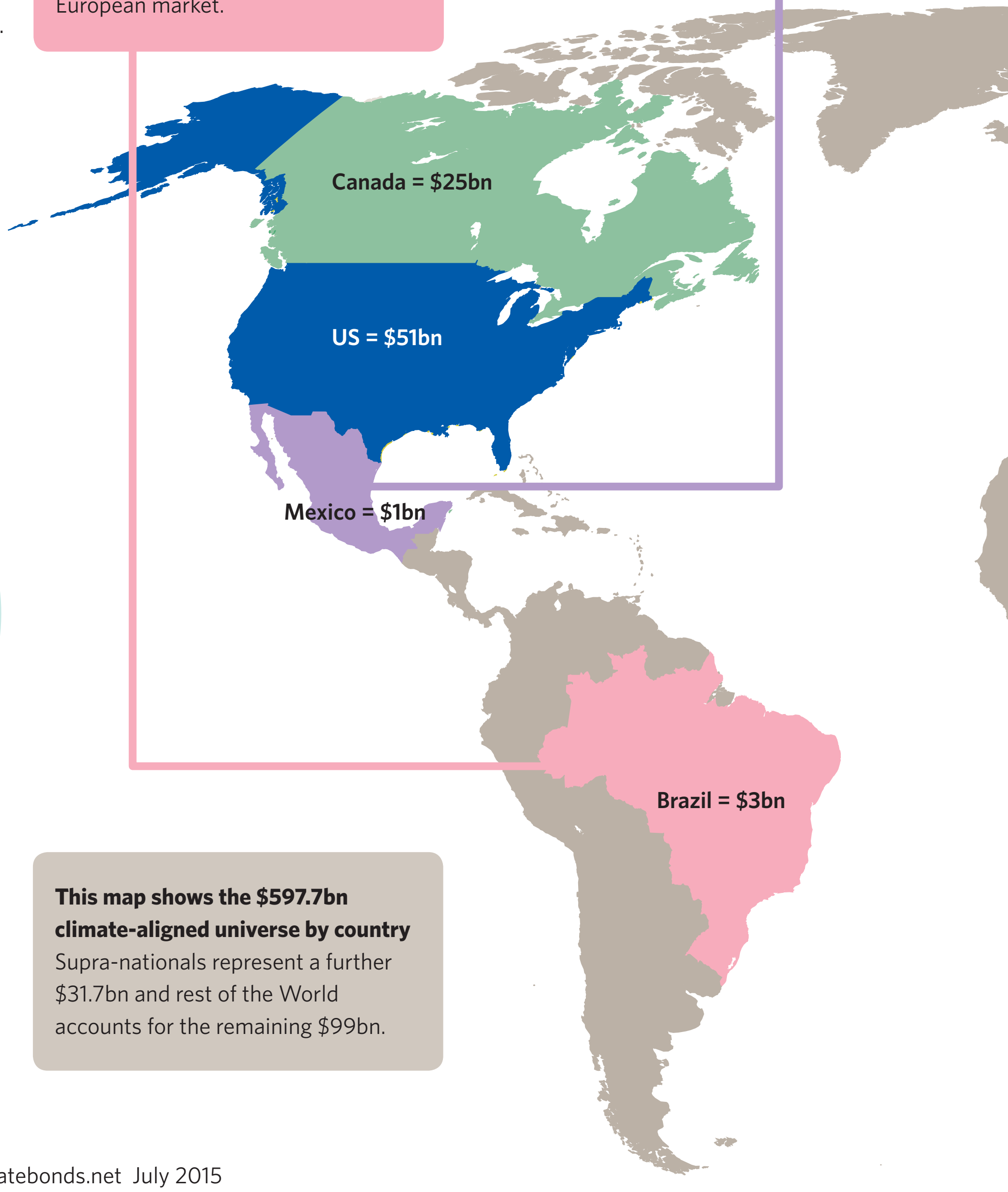
Brazil: Green Bond Market Development Committee

Brazil is so far preparing their role in the green bond adventure behind the scenes, waiting out the difficult domestic investment climate. In 2014/2015, they established a Green Bond Market Development Committee, led by FEBRABAN, the Brazilian Association of Banks.

Food producer BRF kicked off the labelled green market in Brazil with the first Brazilian green bond in June 2015. The €500m corporate issue was sucessfully placed in the European market.

Mexico: Upcoming labelled green ABS issuance

Mexico is getting ready to jump in with a green asset-backed securities deal underway. The planned $105m deal will be backed by energy efficiency loans to small-medium enterprises, credit enhanced with partial guarantees from the Inter-American Development Bank.



This map shows the $597.7bn climate-aligned universe by country
Supra-nationals represent a further $31.7bn and rest of the World accounts for the remaining $99bn.

India: First labelled green bonds issued in 2015

In India, the first corporate green bond emerged from Yes Bank, in February 2015. The INR 10bn ($161.5m) bond will finance renewable energy projects.

Following the success of Yes Bank, the Export Import Bank of India issued a larger $500m green bond. The green bond will finance renewable energy and transport projects.

We had expected China to be first out the gate of the biggest emerging economies, but India beat them to it. Expect a lot more in the coming year.

South Africa

South Africa has been a pioneer in green bond issuance, with IDC issuing a green bond in 2012 and Nedbank offering a green retail bond the same year.

June 2014 saw the first emerging market green municipal bond, when Johannesburg issued a R1.4bn ($136m) green bond.

We expect emerging market "Green City" bonds to be a big theme in the coming year, as municipalities seek new ways to finance and green their huge urbanization investment needs.

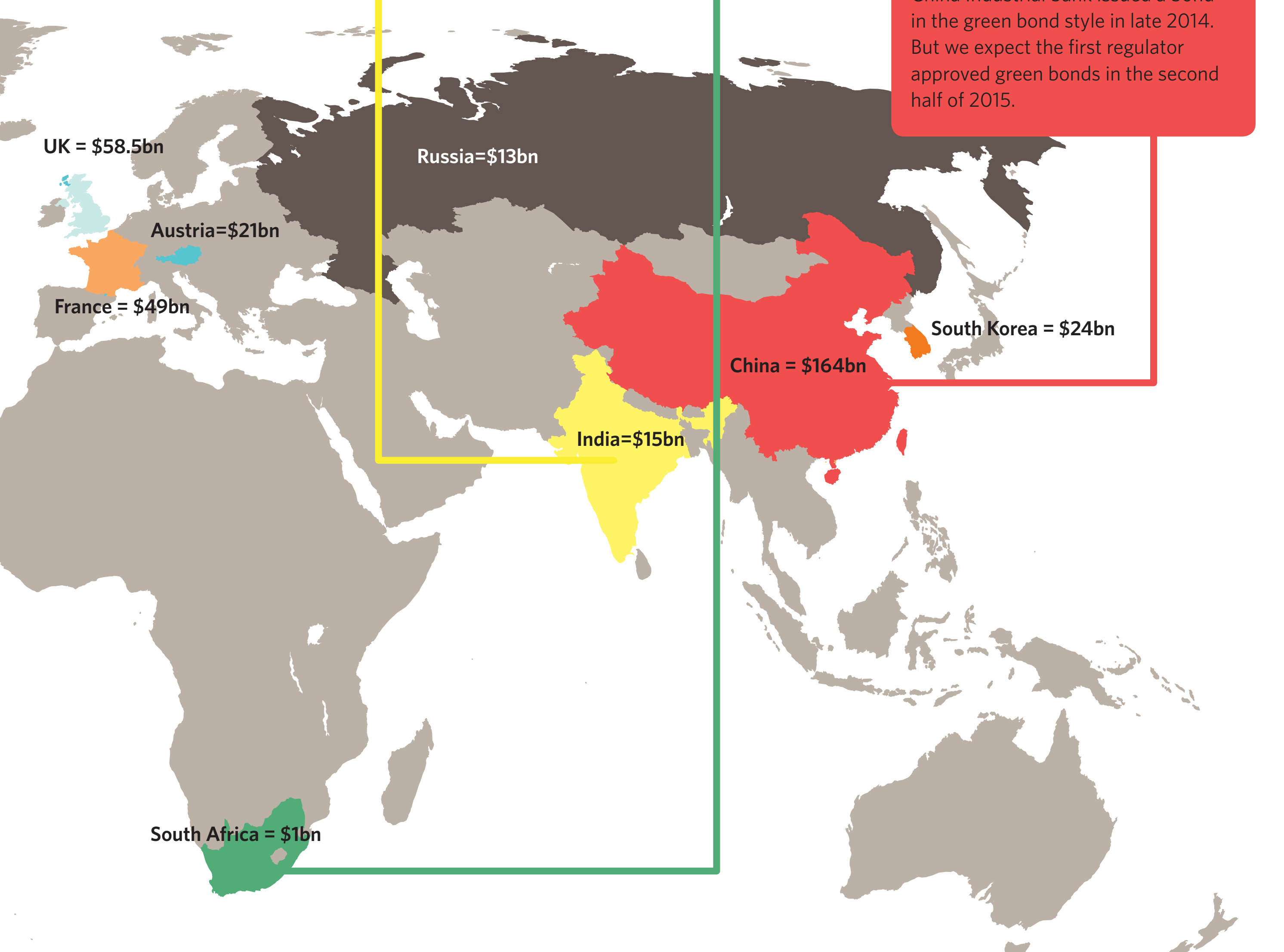
China's policymakers planning to grow a large green bonds market

China's State Council has announced it wants to see a labelled green bond market as part of the country's shift to green development. In China, the world's third largest bond market, labelled green bonds will be regulated.

In April 2015 ambitious policy proposals emerged from China's central bank (PBoC). The proposals cover the development of green definitions; an evaluation system for allocation of funds and environmental impacts of green bonds; tax incentives; preferential risk weighting in bank capital requirements and fast track issuance for green bonds.

The central bank's green financial bond regulations have already been drafted and will be operational later in 2015. Other Chinese bond regulators will follow suit.

China Industrial bank issued a bond in the green bond style in late 2014. But we expect the first regulator approved green bonds in the second half of 2015.



Footnote: country categories have changed since our last report due to reclassification of bonds issued by development banks at data source to 'Supra-national'. Issuers of green bonds such as the World Bank, the European Investment Bank and the European Rail funder Eurofima are included in this category rather than their country of registration.

So what's next? How to grow green bond markets around the world

PUBLIC SECTOR AGENDA FOR STIMULATING PRIVATE MARKET DEVELOPMENT IN GREEN BONDS

The rapid growth of the green bond market over the last year has proven that there is strong investor demand for financially competitive green bonds.

However, while the growth rates of the green bond market are impressive, and volumes are starting to be significant, the market is still tiny compared to the overall $100 trillion bond market.

To address the climate change challenge we need continuing rapid growth in the market, especially in emerging markets. This is where the vast majority of investment needed to transition the world to a low carbon and climate resilient economy will be.

Many of these countries are also now reforming their capital markets, creating exciting opportunities to make sure reforms facilitate the growth of a labelled *green* bond market.

In 2015 we've seen several labelled green bonds from emerging economies, notably India. This is a great development; now we need to speed up the process to ensure that the rapid expansion of infrastructure and growth in these countries is low carbon and climate resilient. The scale of the opportunity is immense: in India alone, the government has set a target of 165 gigawatts of new renewable energy capacity by 2022. According to Yes Bank, $70bn of debt investment is needed to achieve this goal – ample opportunity for green bonds.

There is a role for the public sector to create and develop a market for green bonds to tap into investor demand and ensure the market meets its potential.

The public sector and different market actors - including investors, commercial banks and bond issuers – can work together to enable market creation. The main market development tool used so far has been green bond issuance by multilateral and national development banks. This has been essential to establish models and provide market liquidity.

But such issuance is only one of the options in the public sector toolkit.

10-point Agenda for the Public Sector

Issuer base

1. Strategic issuance from public entities

Public issuance can provide initial market deal flow and liquidity, engaging investors and educating them about the asset class. International development bank issuance kick-started the green bond market. More recently we've seen the impact of German development bank KfW issuance in kick-starting a German green bond market.

In addition to domestic and multilateral development banks, potential public demonstration issuers include green banks and municipalities.

Green Bond Market Development Committees

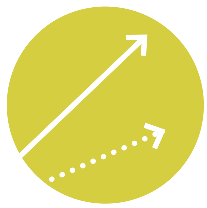
One collaborative model being implemented to create and develop green bond markets is the Green Bond Market Development Committee. These Committees representing various stakeholders are currently being organized in Mexico, Brazil, Turkey, India, China, Canada and California. We expect to seemany more in the coming year.

Global cooperation between the Committees will allow ideas and policy proposals to be shared and activities to be synchronized. The Climate Bonds Initiative is actively supporting the Committees.

2. Strengthening planning and pipeline transparency of green projects

This allows potential green bond issuers, investors and regulators to plan ahead. It gives these actors reason to develop improved expertise in the relevant investment areas.

Investor base



3. Improving the risk-return profile of green bonds: credit enhancement

Credit enhancement should be selective, and aim to make green bonds fit institutional investors' credit requirements.

Relevant credit enhancement tools include partial guarantees, subordinate debt and insurance.

For example, in 2014, a green credit enhancement program was launched by the US-government guaranteed Overseas Private Investment Corporation (OPIC). Multiple green project bonds have been issued under this program. Other agencies have similar schemes.

Of course, credit enhancements need to be tailored to the context of particular markets. That takes work, some trial and error and good initial analysis, such as the work done by the Climate Policy Initiative, comparing the fiscal efficiency of different support mechanisms for renewable energy development in India.

4. Tax incentives

Tax credit bonds are being used to encourage the development of bond markets in various countries around the world, including, for example, the municipal bond market in the US and the infrastructure bond market in India.

Specific green tax incentives are also used. The Obama Administration has put in place a number of tax credit schemes that support green investments. China is now examining opportunities to introduce tax incentives specifically for green bonds.

There is also an opportunity for policymakers to tweak tax codes to encourage longer dated investments more generally. This would benefit low carbon investments and green bonds, as many of them are longer term.

Tax incentives can be designed to accrue to issuers or investors.

5. Boosting demand: domestic fund mandates

Governments regularly provide guidance to public pension funds, sovereign wealth funds and the like about investment filters that will support a sustainable economy. The same can apply to green investments, including green bonds. For example, Norway's sovereign wealth fund, one of the largest in the world, now includes green bonds in its fixed income portfolios through its environmental mandate.

Green sukuk (Islamic bonds)

There has been lots of talk of investor interest in green sukuk. The market needs to be kick-started with issuance by government associated entities, such as energy utilities or sovereigns. We're hopeful that this will happen before next year's State of the Market report.

6. Boosting demand and convening power: central banks

Central banks can use their balance sheets to purchase green bonds, including through quantitative easing, liquidity-providing operations and other mechanisms. They can also play a coordinating role in bringing together policymakers and advancing the green bond policy research agenda. How China's central bank has advanced the green bond agenda in 2015 sets an example (see p13).

Market structure

7. Market integrity: Supporting standards development

The public sector can support efforts to establish common green definitions, standards, verification, certification and enforcement processes for the green bond market. One example is green bonds only qualifying for market incentives, such as tax incentives, if they comply with standards.

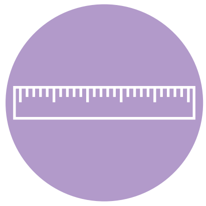
8. Market creation and development: aggregation of small-scale green assets

Facilitating aggregation of green assets is crucial, as many low carbon investments are small-scale – for example rooftop solar PV. Supporting the growth of a securitisation market for low carbon assets is one way the public sector can do this. This includes encouraging deal flow of green loans suitable for subsequent securitisation; supporting financial warehousing of loans and providing credit enhancement for securitisation issuance. These supports can be made conditional on loans using standardized contracts. This would speed up the standardization process for low-carbon assets such as energy efficiency loans.

9. Financial regulatory measures are important

Regulatory measures can provide opportunities for positive incentives for green bonds. One example is the preferential risk weighting for green bonds in banks' capital ratio requirements being considered by China's central bank.

But it is also crucial to ensure that other regulatory changes do not have unintended negative consequences for low carbon and climate resilient investments. This has been the case with Basel III and Solvency II, which has disincentivised the longer-term investments needed in renewable energy and other low carbon sectors.



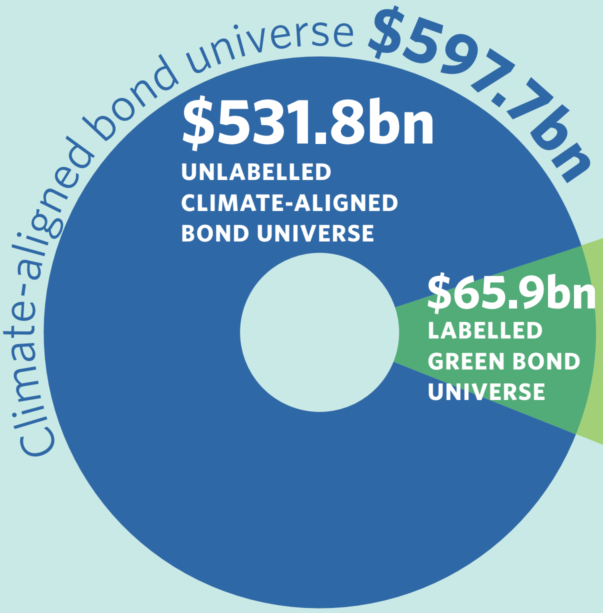
10. International financial cooperation

International collaboration is crucial to avoid fragmenting the global green bond market with incentives e.g. having different tax incentives in different European countries. Liquidity benefits arise from such international cooperation on policy support, as it allows the creation of a global green bond market. An example here would be mutual recognition of standards for green bonds between governments. Of course ideas-sharing is also useful.

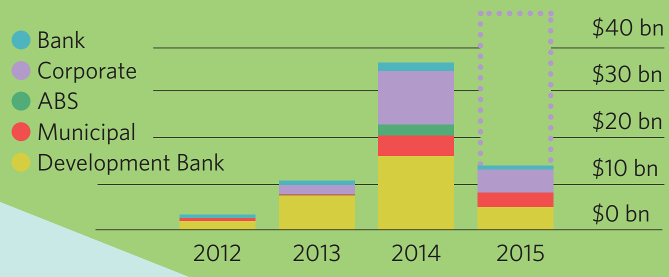
For more details on each action area see the Climate Bonds Initiative website.

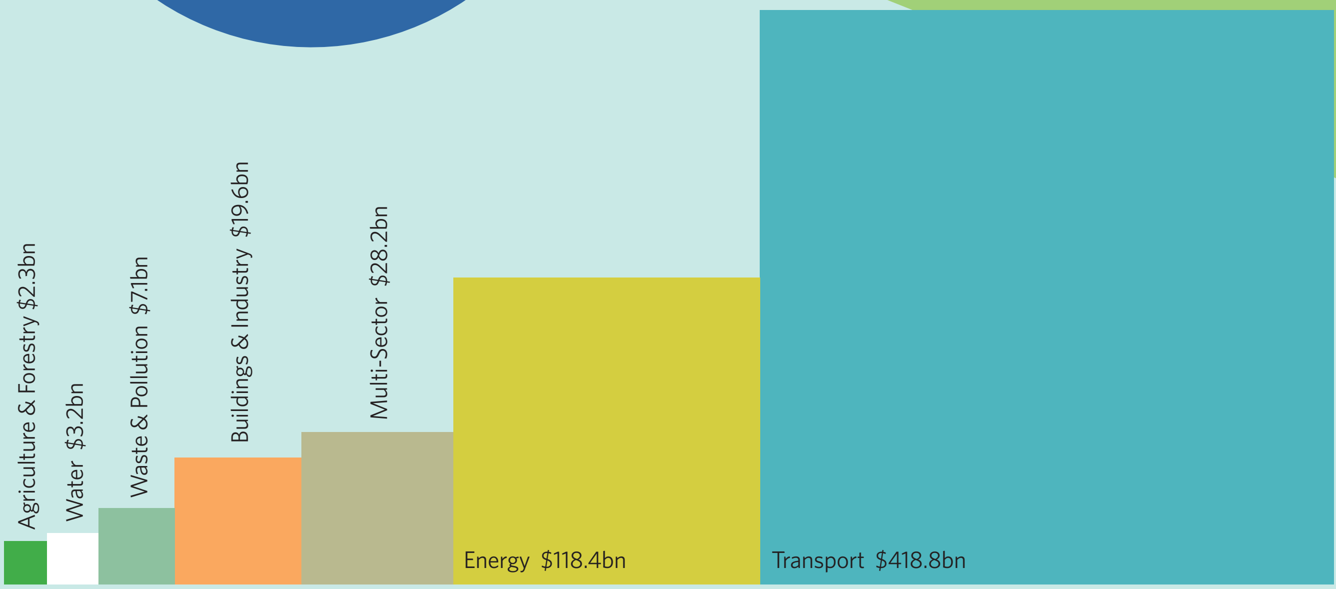
The Climate Bonds Initiative will publish an extended strategic policy guide for green bonds in October 2015.

Key Findings



Labelled green bond market growth driven by corporates and municipalities has led to $36.6bn issued in 2014. Further growth is expected in 2015.





OTHER KEY DEVELOPMENTS:

Investors managing $2.62trn declare support for green bonds

FIRST LABELLED GREEN COVERED BOND

First-ever Indian green bond

US municipal green bond market heats up

BNEF EXPECTS $80BN GREEN BOND ISSUANCE IN 2015

PLUS: policymakers can boost the market in 10 different ways

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The Climate Bonds Initiative is an investor focused not-for-profit, mobilizing debt capital markets for a rapid transition to a low-carbon and climate resilient economy.

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All figures are rounded.

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