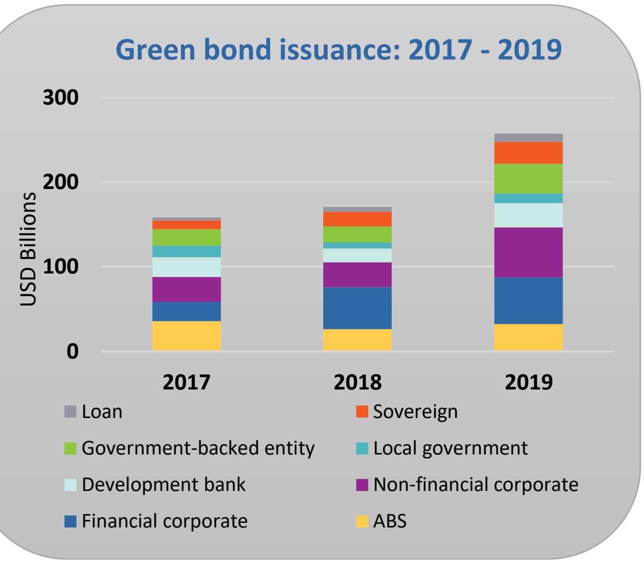
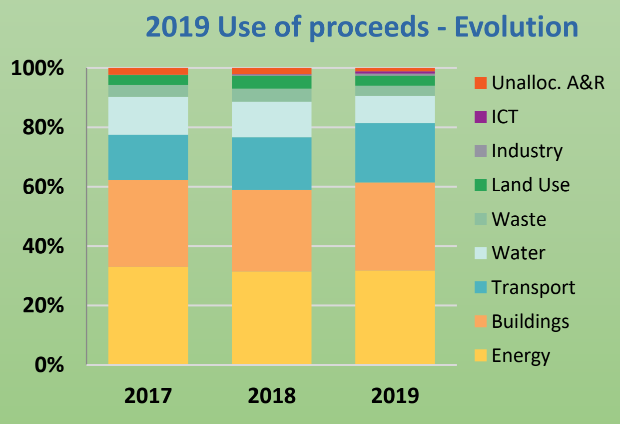
2019 Green Bond Market Summary

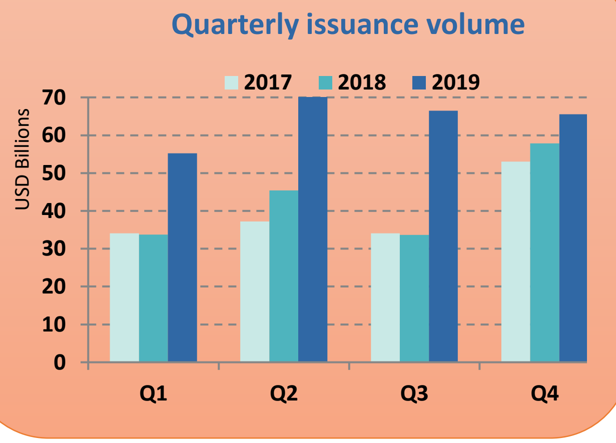
February 2020

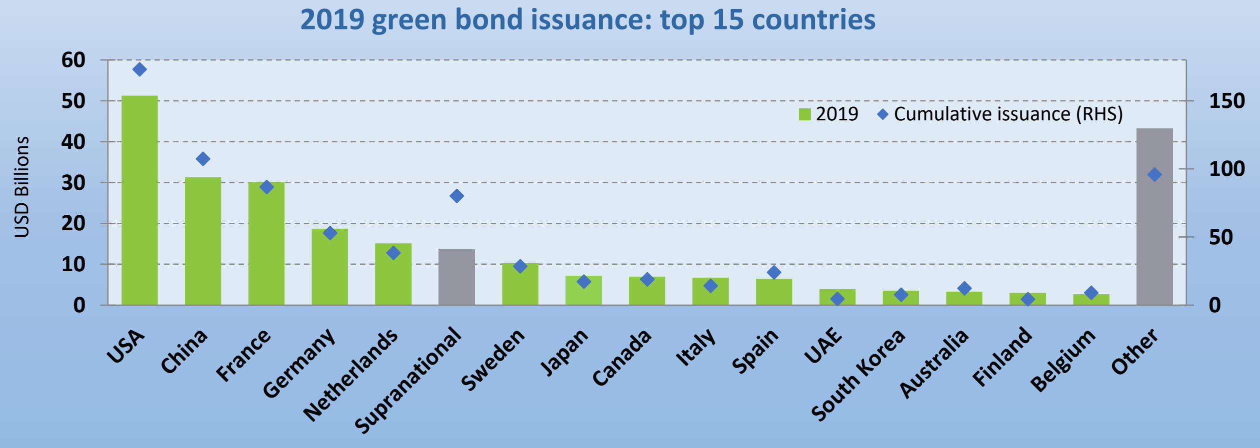
2019 at a Glance

- A new global record: USD257.7bn total green bond issuance*
- 51% growth on 2018
- 1788 green bonds from 496 issuers
- 250 new issuers, bringing a total of USD67.8bn
- 51 jurisdictions, of which 8 are new
- Dutch State Treasury Agency (Certified Climate Bond) at EUR5.99bn (USD6.66bn)
- Certified Climate Bonds cumulative total passed the USD100bn market milestone









** All charts and analysis are based on latest figures for 2019 issuance volume and number of deals. There are 28 deals still under assessment for inclusion in the CBI green bond database. Any subsequent variation will be reflected on the Climate Bonds website.*

2019 highlights

Global green bond and green loan issuance reached **USD257.7bn** in 2019, marking a new global record. The total is up by 51% on the final 2018 figure of USD170.6bn.

Of the total, USD10bn (4%) are green loans. For inclusion, at least 95% of proceeds must be dedicated to green assets or projects aligned with the Climate Bonds Taxonomy.

The 2019 volume was primarily driven by the European market, which accounted for 45% of global issuance.

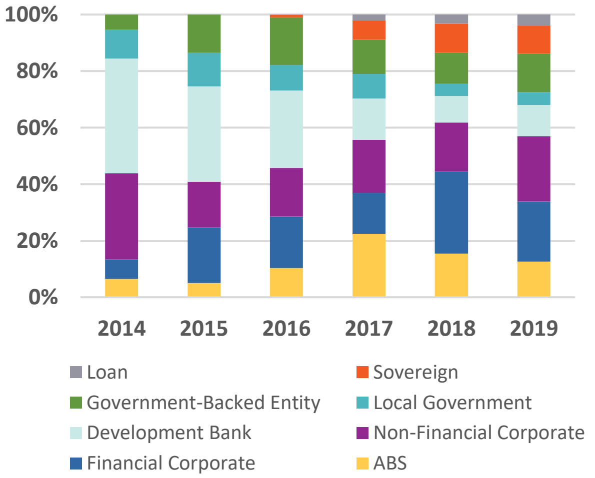
This is followed by the Asia-Pacific and North American markets, at 25% and 23%, respectively. In 2019, the total amount of green bonds issued in Europe increased by 74% (or USD49.5bn) year-on-year, reaching a total of USD116.7bn.

USA, China and France continue as top-ranked countries

The **USA, China** and **France** topped the country rankings once again. Together they accounted for 44% of global issuance in 2019. US issuers contributed USD51.3bn to the total, whereas their Chinese and French counterparts brought USD31.3bn[1] and USD30.1bn to market.

With debut green bond issuances from Barbados, Russia, Kenya, Panama, Greece, Ukraine, Ecuador and Saudi Arabia, the market saw further geographic diversification. This is particularly welcome as all the new entrants are from Emerging Markets (EM).

Issuer type evolution: 2014 - 2019



Top 3 issuers of 2019

Fannie Mae – the pioneer of issuing agency Green Mortgage Backed Securities (MBS) – remained the largest green bond issuer in 2019 with USD22.9bn issuance (or 9% of the total).

KfW, the German state-owned development bank, was the second largest issuer in 2019. It brought a total of USD9bn worth of green bonds to market. Proceeds will be used to provide financing or co-financing to renewable energy and green building projects.

The **Dutch State Treasury Agency** (DSTA) ranked as the third largest issuer in 2019 with its USD6.7bn debut green sovereign bond. The Certified Climate Bond meets the requirements of multiple sector criteria under the Climate Bonds Standard, including: Low Carbon Buildings (Upgrades), Low Carbon Transport, Marine Renewable Energy, Solar, and Water Infrastructure.

Certified issuance accounted for 17% of 2019 volumes

At USD45bn, Certified issuance in 2019 surged by 86% from USD24bn in 2018, comprising almost a fifth (17%) of global volumes.

The Netherlands Certified Sovereign Climate Bond (EUR5.9bn/USD6.7bn) was both the largest green bond of 2019 as well as the second largest green bond issued to date.

Together with other Certified bonds from ABN Amro, Obvion, Vesteda and De Volksbank, the Netherlands was the largest source of Certified issuance in 2019 at USD9.26bn (or 20%).

This was followed by France with a total of USD9.17bn of Certified issuance. Issuers included SNCF which continued to finance the multi-billion rail and metro expansion in Paris along with a total of USD5.1bn from others, such as Société du Grand Paris, Société Générale and Akiem Group.

By the end of 2019, cumulative Certified issuance under the Climate Bonds Standard reached USD101.4bn, marking a significant milestone for the international assurance scheme established by the Climate Bonds Initiative in 2011.

[1] The figures for China only include issuance that are aligned with international definitions of green.

2019 non-financial corporate issuance doubled compared to 2018

2019 witnessed a boost in green bonds from **non-financial corporates**, whose issuance almost doubled from 2018 (cumulative USD59.3bn in 2019 vs USD29.5bn in 2018), representing 23% of the 2019 volumes. All of the top three non-financial corporates operate in the energy sector: **Engie**, **MidAmerican Energy** and **Energias de Portugal SA (EDP)** together issued just below USD9bn. French utility company **Engie** (USD3.8bn) has climbed up three notches from the 2018 rankings, while **EDP** (USD1.8bn) reached third place in 2019 after having entered the green bond market at the end of 2018.

2019 debut issuances from new EM entrants **Kenya** and **Barbados** also came from non-financial corporates: the former with **Acorn Holdings'** USD41m deal (also listed on the London Stock Exchange), and the latter with **Williams Caribbean Capital**'s BBD3m(USD1.5m) private placement. Both issuances are Certified Climate Bonds.

Financial corporates have maintained stable growth over time, with 2019 reaching almost USD55bn (2018: USD49.7bn), representing 21% of the total. The top two issuers are Chinese financial institutions such as **ICBC** and **Industrial Bank**. French banks **Crédit Agricole** and **BNP Paribas** rank third and fourth, with a combined total of USD4.5bn.

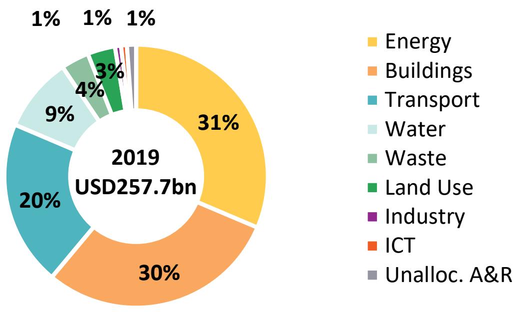
Notably, 2019 **Saudi Arabia** debut and Certified Climate Bond came from **Islamic Development Bank**, with its USD1.1bn deal allocated to renewable energy and energy efficiency for buildings. Other debut issuances from financial institutions came from Ecuadorian **Banco Pichincha** (USD150m) and Panamanian **CIFI** (USD27m).

Government-backed entities issued around 15% of all green bonds in 2019. **SNCF**, **Societe du Grand Paris**, **Kommuninvest**, **Ørsted** and **LBBW** represent the top five issuers, with combined volumes of USD 14.2bn.

Green asset-backed securities (ABS) have also been widely issued in 2019 (USD32.4bn). However, these are dominated by issuance from **Fannie Mae**, which issued USD22.9bn of green **agency mortgage-backed securities** (Agency MBS).

Sovereigns kept a strong pace throughout 2019, with debut green issuances from the **Hong Kong Special Administrative Region (SAR)** and the **Dutch State Treasury**, the latter a Certified Climate Bond. Further, Chile, Poland, Indonesia and Nigeria all came to market with new sovereign green bonds, while the Republic of France, the Kingdom of Belgium and the Irish National Treasury Management Agency tapped their original issuances.

Energy and Buildings remain the largest Use of Proceeds sectors in 2019



The **Energy** and **Buildings** sectors dominated green proceeds allocation, with both sectors having a similar share of the market (approx. 30%). Excluding **Fannie Mae**, which allocated USD18.7bn to buildings, **KfW** tops both sectors. **Noor Energy 1**, **MidAmerican Energy** and **Ørsted** represented the top issuance in the energy sector, while the **Republic of France**, the **European Investment Bank**, the **Dutch State Treasury Agency** and **Vasakronan** were prominent issuers for **Low Carbon Buildings**.

Transport and **Water** followed with **20%** and **9%** market shares, respectively. **SNCF** (USD4.3bn), **Société du Grand Paris** (USD3.6bn) and the **Republic of Chile** (USD2.2bn) represented top issuers in the transport sector.

Fannie Mae (USD4bn) ranked first also in the water sector as both its "Green Rewards" and "Green Building Certifications" programmes target water efficiency improvements. After Fannie Mae, **ICBC** (USD2bn), the **Dutch State Treasury Agency** (USD1.6bn) and **Engie** (USD825m) were the top issuers in the water sector.

Waste, land use, industry, information and communication technologies (ICT), and adaptation and resilience represented the remaining share of the market, accounting for around 10% of total 2019 issuance. Sectors such as ICT and industry started gaining ground in 2019. The telecommunications multinational **Telefónica**, for example, allocated part of its green bond proceeds to improving the energy efficiency of its network infrastructure.

Adaptation and resilience also came on the radar, especially with the launch of the first ever dedicated **climate resilience bond** by **EBRD** (USD700m). The deal is aligned with the Climate Resilience Principles published by the Climate Bonds Initiative in September 2019[2].

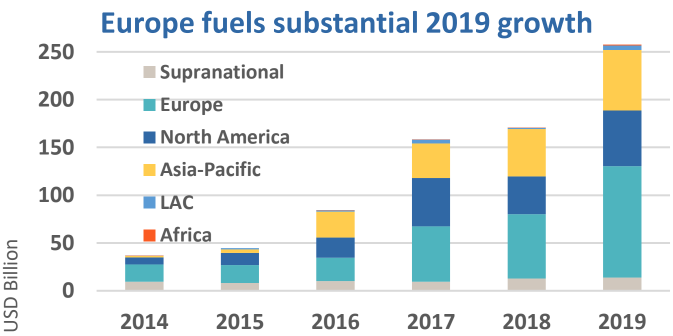
[2] https://www.climatebonds.net/files/files/climate-resilience-principles-climate-bonds-initiative-20190917.pdf

All regions registered an increase in volumes in 2019

While issuance grew across every region, Europe was the main driver behind the substantial increase in 2019 volumes. European issuance reached USD116.7bn, up 74% from 2018. Asia-Pacific, which saw nearly a third (29%) of year-on-year growth, remained the second largest region, although North America's 46% growth began to close the gap between the two.

Meanwhile, both Africa and LAC (Latin America & the Caribbean) had a strong year with the latter reaching record levels in issuance volume, the number of issuers, and country and issuer diversity. 2019 also saw the first issuer from the Caribbean - Williams Caribbean Capital, BBD3m (USD1.5m).

Supranationals issued a total of USD13.7bn in 2019. While this represents 7% growth compared to 2018, the increase is by far the smallest of the regional classifications. The largest issuers in this group were the European Investment Bank, Asian Development Bank and European Bank for Reconstruction and Development, followed by the World Bank (IBRD) and International Finance Corporation.



Regional analysis of issuer types and Use of Proceeds

In this edition of our annual Highlights series, we shed additional light on the differences and development of issuer types profiles and the Use of Proceeds (UoP) mix for each region. For the latter, we compared 2019 numbers with the cumulative total up to 2018 (shown in charts) as well as with 2018 only (not shown).

The differences are not only noticeable in terms of both issuer types as well as UoP, but the landscape is also evolving quickly. In some cases, this showed up as marked differences between 2019 and prior years.

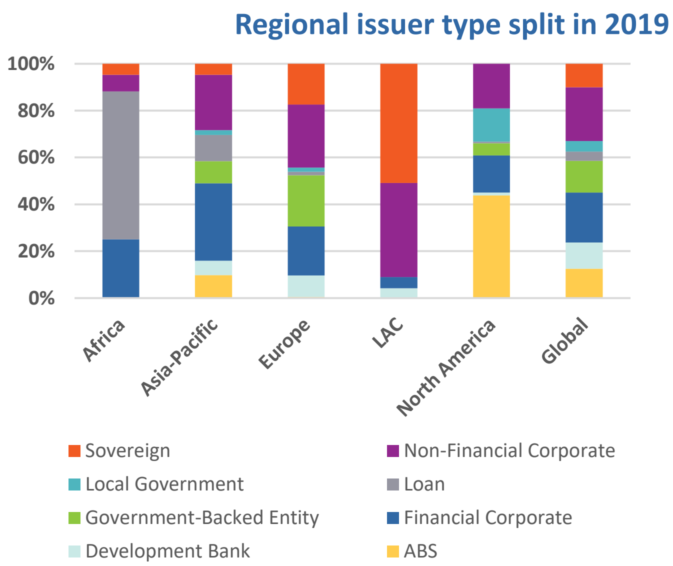
Note: This analysis is not meant to uncover differences in volume, but rather show the relative differences in profiles between regions. Therefore, all the charts add up to 100%.

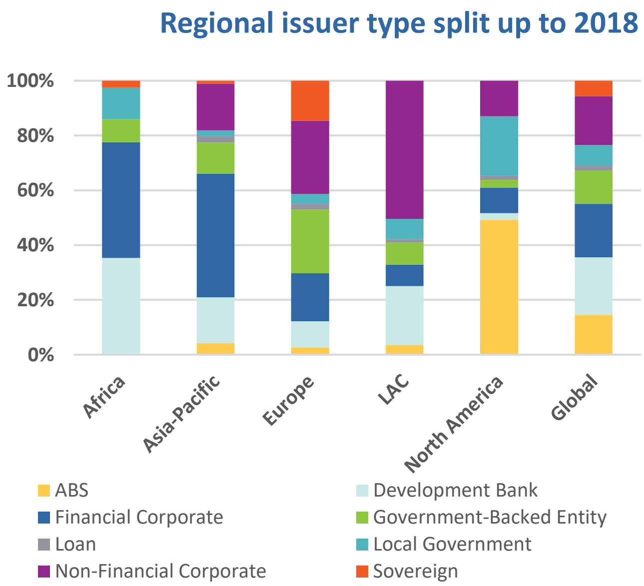
Varied and evolving issuer type profiles

Regional variations likely stand out more when looking at issuer types than any other category tracked by Climate Bonds Market Intelligence.

Apart from natural variations, there are structural differences in the types of issuers that access debt markets in each region. For example:

- In the **USA**, significant issuance volume from Fannie Mae leads to a very high share of ABS deals and Muni bonds (issued by US local governments) are also common.
- In **Europe**, the share of government-backed entities is much higher than in most other regions – especially North America – owing to the historically greater role played by European states in economic activities and planning.
- In certain countries, for instance **Brazil**, local governments have limited abilities to issue debt, since it requires a sovereign guarantee.





Furthermore, it's naturally expected for regions with less developed green bond markets, e.g. Africa, to have less diversity in terms of issuer types than more developed ones, e.g. Europe[3]. This main aspect that stands out in the regional issuer split as shown.

Comparing the profiles in 2019 with those up to 2018, it is also clear that less developed regions – namely Africa and LAC – tend to have a more "volatile" mix of issuer types than their more developed counterparts. This is likely due to the fact that smaller markets are more susceptible to the effects of individual deals.

Key takeaways by region

Europe: Financial corporate issuance fell in 2019 compared to 2018 yet maintaining a level well above the cumulative total up to 2018. This suggests the segment is gaining prominence in the region. Sovereign issuance also picked up in the last two years (especially in 2018). Overall, the issuer type mix in Europe is consistently the most varied and balanced of the regions.

Asia-Pacific: The region saw a changing mix with an increase in non-financial corporate issuance in 2019, coupled with a decrease in financial corporate and development bank activity.

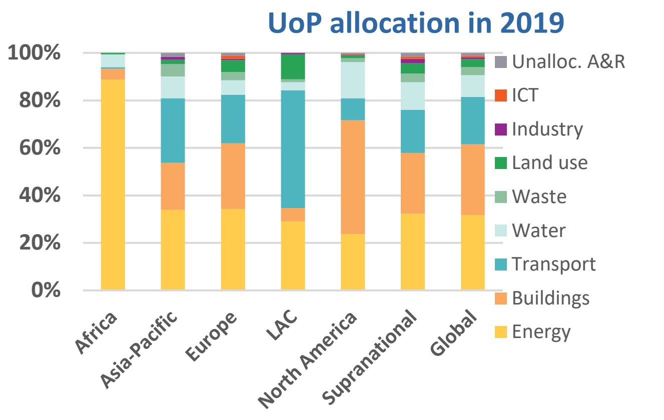
North America: The issuer mix was relatively unchanged, although corporates – both financial and non-financial – seem to be growing in share while local governments are dropping on a relative basis.

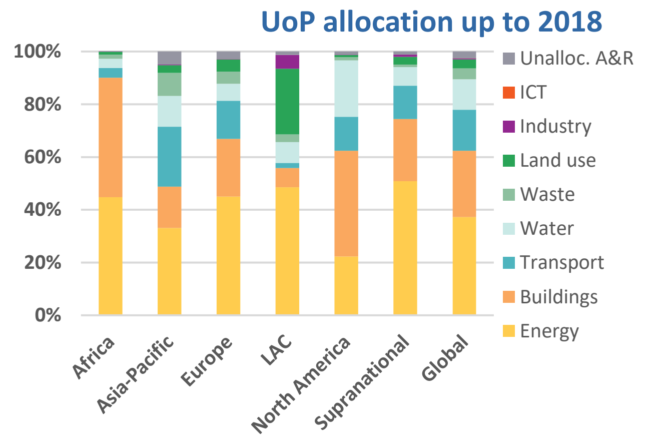
LAC: 2019 was a special year given Chile's sovereign deals (the first ones from the region), which dominated issuance volume. While the share of non-financial corporates fell, their volume tripled from USD636m to USD1.9bn. However, other issuer types lagged in 2019. Achieving greater diversity of issuers will be a key objective for the region going forward.

Africa: Totalling USD898m in 2019, Africa's market was dominated by the ZAR8bn (USD567m) project loan to Redstone Solar Plant. Even when accounting for this, however, the mix changed considerably in 2019 with the remainder composed of issuance from corporates and Nigeria's second green sovereign.

UoP allocations tend to be more stable but still with significant differences

Globally, the share of energy in the mix seems to be dropping gradually, although it is still the most funded category. This is to be expected given the increasingly diversified issuer and project base in the global green bond market.





Key points by region

Europe: Energy allocations seem to have stabilised below the cumulative total up to 2018, having dropped from 45% in that period to 34% in 2018 and 2019. On the other hand, Buildings and Transport each grew six percentage points in 2019 versus 2018.

Asia-Pacific: There was a substantial increase in Buildings and Transport allocations over the last two years, driven by Chinese issuers investing in assets and projects in these categories.

On the other hand, investments in Water and Waste infrastructure fell markedly, both in 2018 as well as further in 2019.

North America: In 2019, Buildings continued to grow in share, representing almost half (48%) of allocations, while Transport and Water dropped distinctly below the cumulative total up to 2018.

Compared to other regions, North America stands out as the only one where Energy is not the most funded category, and among developed markets, with much smaller allocations to Transport, Waste, Land Use, Industry and ICT.

LAC: The mix in 2019 was very different driven by the shift to Transport as a result of Chile's sovereign deals.

[3] 'Supranational' region has been excluded as it is almost fully (>99%) composed of development banks.

After a strong few years underpinned by issuance from paper and forestry companies (especially from Brazil), allocations to Land Use have fallen in the last two years, particularly in 2019.

This is positive, as it indicates growing sector diversity among green bond issuers; less positive is the falling share of Industry, which we hope will recover in the coming years.

Africa: 2019 was an outlier year, with a very high share of allocations to Energy – dominated by Redstone Solar Plant's inaugural deal, which financed solar energy generation assets in South Africa.

However, Africa's low issuance volume is naturally subject to large shifts and we will continue to monitor this space. For now, it is reassuring to see a greater variety of assets and projects starting to get funded.

Supranationals: Among Supranational entities, the most noticeable trend is the declining share of Energy allocations. Meanwhile, proceeds directed to most other categories, namely Transport, Water and Waste, have increased. This is a welcome development and suggests MDBs are being able to diversify the projects and organisations they fund.

SDG, sustainability and social bonds continue their ascent

The labelled bond market continues to expand beyond green. Sustainability and social bonds are increasingly prominent. Issuers and investors are increasingly adopting policies and strategies linked to the SDGs.

While the Climate Bonds Initiative remains focused on green bonds, which are specifically linked to climate-change-change mitigation, adaptation and resilience, we acknowledge that other labelled bonds may also finance climate change solutions.

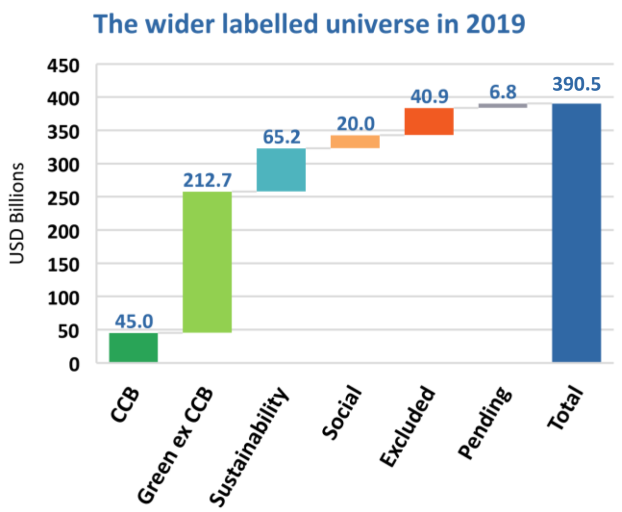
Sustainability and SDG bonds allow proceeds to be allocated to both green and social projects. 2019 sustainability bond issuance totalled USD65bn, according to our data. This is over a three-fold lift on USD21bn in 2018. Adding these bonds to CBI's green bond tally of USD257.7bn results in a total of USD USD322.9bn, a robust 72% year-on-year increase.

Sustainability / SDG Bond Frameworks

2019 has witnessed a continuing rise in **Sustainability / SDG bond frameworks**, which distinguish between green and social eligibility criteria and allow the issuer to classify a bond as "green", "sustainability" or "social" depending on the use of proceeds.

Such frameworks allow the issuer to make a clear distinction between bonds that finance environmental and social projects, if relevant. This makes it easier for investors with a dedicated mandate to identify bonds that comply with their investment criteria.

Sustainability bond frameworks usually entail a set of green and social eligibility categories. If a specific proceed allocation split between each category is not provided by the issuer, we assume an equal split among the listed categories. This means that sustainability bonds may allocate a significant amount of funding to green projects – however, as the CBI



Green Bond Database Methodology allows only up to 5% of proceeds allocated to assets and projects that are not aligned with the Climate Bonds Taxonomy, all bonds exceeding this threshold are excluded from the green bond database and associated figures.

As an example Philippines' RCBC issued a USD300m sustainability bond in September 2019. The bank's Sustainability Finance Framework includes seven eligible green categories (energy, buildings, transport, urban and industrial energy efficiency, waste, water and land use) and five eligible social categories (affordable basic infrastructure, access to essential services, employment generation, affordable housing and socioeconomic advancement and empowerment). Applying an equal split among these categories results in 42% of funding allocated to social projects and the rest to climate-aligned projects.

Another example is Starbucks, which issued a USD1bn sustainability bond in May 2019. Sustainalytics' Second-Party Opinion confirmed two of the eligible categories fall under the social umbrella (socioeconomic advancement and empowerment and access to essential services) and one under green (green buildings).

Based on the information provided at issuance, both RCBC's and Starbuck's bonds have therefore been excluded from our database. However, if the additional social benefits are achieved by delivering green projects – e.g. if the affordable infrastructure and housing are provided via green buildings – we may still include sustainability and SDG bonds in our database, as long as the total proportion of funding directed to green projects reaches 95%. This may happen with the information provided at issuance or through post-issuance reporting. In the examples above, the disclosure at issuance is insufficient and so the instruments would only be included if post-issuance reporting provides more detail on the green credentials of the funded projects.

2019 also saw the issuance of the first **SDG-linked bond**, launched by the Italian energy producer Enel, which had already issued USD4bn in green bonds. While the use of proceeds is aimed at general corporate purposes, the new instrument requires Enel to measure its performance against several environmental and social KPIs and dependant on whether they are achieved, to pay up to 25 basis points more in the coupon to bondholders.

Social bonds also grew in 2019, albeit less dramatically than sustainability/SDG bonds, with USD20bn worth of deals coming to market – a 41% increase versus 2018. Adding social bonds to green and sustainability volumes yields an annual total of **USD342.8bn**, 69% above 2018 volumes.

While most issuers have issued sustainability/SDG bonds under which they can finance both green and social projects, some have opted to develop separate green and social bond frameworks and as a result issue bonds separately for the two purposes.

An example is the African Development Bank (AfDB), a repeat issuer of green bonds (USD2.6bn in total) that debuted in the social bond market last year. In April 2019, AfDB placed a dual-tranche NOK500m (USD59m) three-year social bond and SEK1.25bn (USD135m) five-year green bond. Eligible categories under its Social Bond Framework include universal access to electricity, agricultural transformation and access to a range of social and economic opportunities, among others.

Climate Bonds is looking to expanding our sustainability and social bonds list. Analysis on the eligibility and proportion of the "green" component of such bonds will also be developd

Excluded green bonds

Bonds allocating over 5% of proceeds to assets or projects that are not necessarily linked to green (such as social projects or general corporate working capital), or financing for projects that are not aligned with the CBI Green Bond Database Methodology, or those without sufficient information on the proceeds allocations, are excluded from the eligible green bond database.

Bonds with more that 5% of proceeds used for general corporate working capital or general funding purposes represent 75% of all excluded deals in 2019, the majority of which are from Chinese issuers - as general working capital is eligible under the guidelines released by National Development and Reform Commission (NDRC) and stock exchanges.

Bonds allocating proceeds to projects that are not aligned with Climate Bonds Taxonomy account for 25% of 2019's excluded volumes. This category includes retrofits of fossil fuel power stations, "clean" coal, coal efficiency improvements, controversial hydro projects or those without disclosure in power density, etc. This category is also dominated by Chinese issuers.

China's local market context means some bonds considered green in China are not regarded as green by international investors. Overall, USD24.2bn worth of labelled green bonds from Chinese issuers is not in line with international green bond definitions. However, as the regulators in China are trying to harmonise the local definitions of green with the international ones, more aligned issuance is expected to be released to the market in the future.

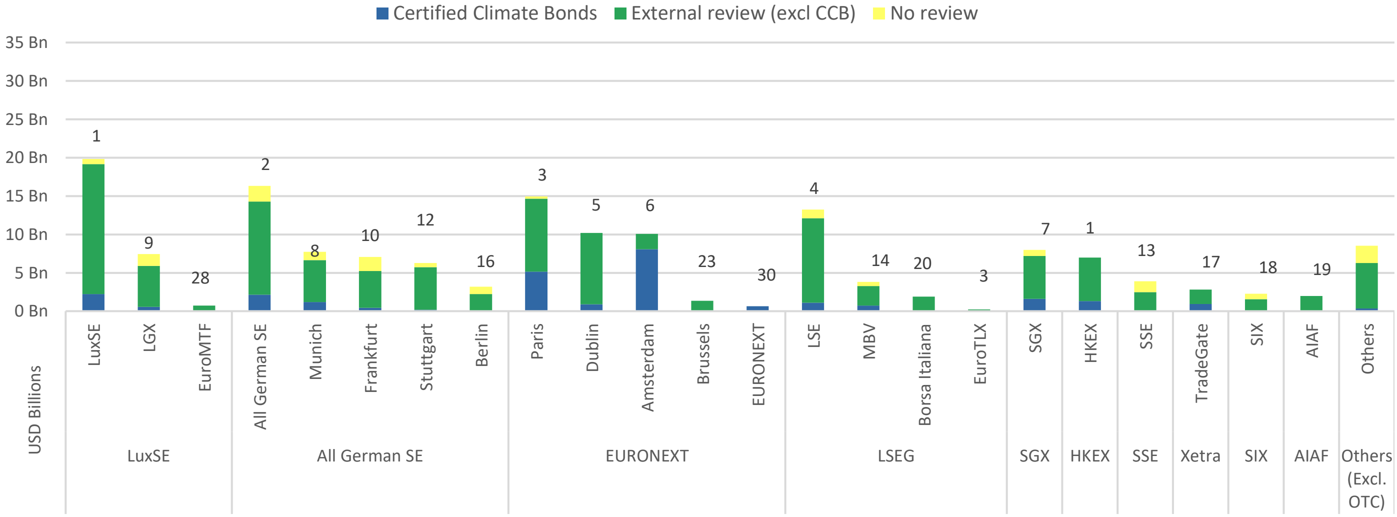
Trading venue league table

In 2019, USD167bn worth of green bonds were listed on various stock exchanges, representing 65% of the total green bonds (USD257.7bn). Green bonds issued on the over-the-counter (OTC) markets, including the China Interbank market, account for 16%. The remaining 19% was not listed or information was not available.

In the league table below, we have grouped venues by stock exchange group, if applicable. The numbers on top of the bars indicate the ranking of each venue.

LuxSE (Luxembourg Stock Exchange) was the most popular green bond listing venue with USD19.8bn worth of deals in 2019. 11% of the deals listed on its platform are Certified Climate Bonds, including a sovereign bond by Republic of Chile (EUR861m /USD972m). The German Stock Exchanges combined took second place, followed by Euronext Paris.

LuxSE at the top of green bond listing venues so in 2019



Trading venue league table: Methodology

- Primary data sources for listing venues include Thomson Reuters EIKON, Bloomberg Terminal and Wind Financial Terminal. They are further supplemented by information collected from stock exchanges with a dedicated green bond segment, such as Luxembourg Green Exchange, London Stock Exchange, Borsa Italiana, Shanghai Stock Exchange and Taipei Exchange.
- At most four listing venues are recorded for calculation purposes. If a bond is listed on multiple exchanges, primary vs. secondary listing venues are not differentiated.
- When a green bond is listed on more than one venue, the issued amount is divided by the number of venues and each venue is allocated an equal share.
- We have not allocated bonds listed on All German SE, EURONEXT and Nasdaq Nordic to the constituent stock exchanges.
- A bond listing venue is treated as “Not listed” when the bond is not listed, or relevant information is not available from the sources identified in this methodology.
- Bond volumes allocated to each listing venue are categorised into Certified Climate Bonds, bonds with external reviews (other than Certified Climate Bonds) and bonds with no external reviews.

Commentary:

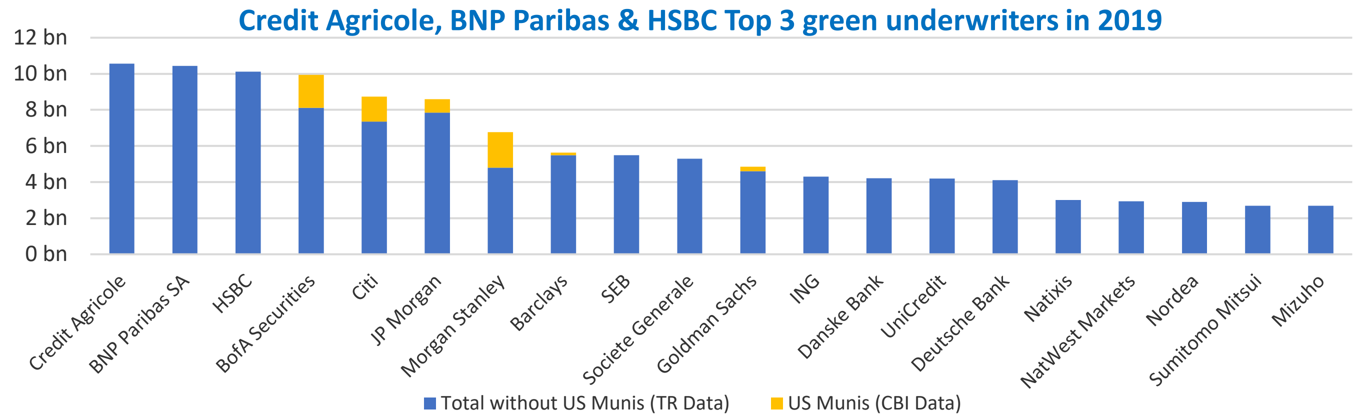
- Bonds issued before the Green Bond Principles were first published in 2014 generally do not have external reviews. Many of the early issues have now matured.
- Some external reviews may not be available until an assurance audit is completed. For instance, KPMG provides an annual independent review of EIB’s Climate Awareness Bonds. The 2017 assurance report was published in November-2018.
- All LGX deals without a review relate to those most recent EIB CAB, for which an assurance report has not been published yet.
- If a bond is traded on LuxSE and displayed on LGX at the same time, only LGX is recorded as it’s trading venue to avoid double counting.

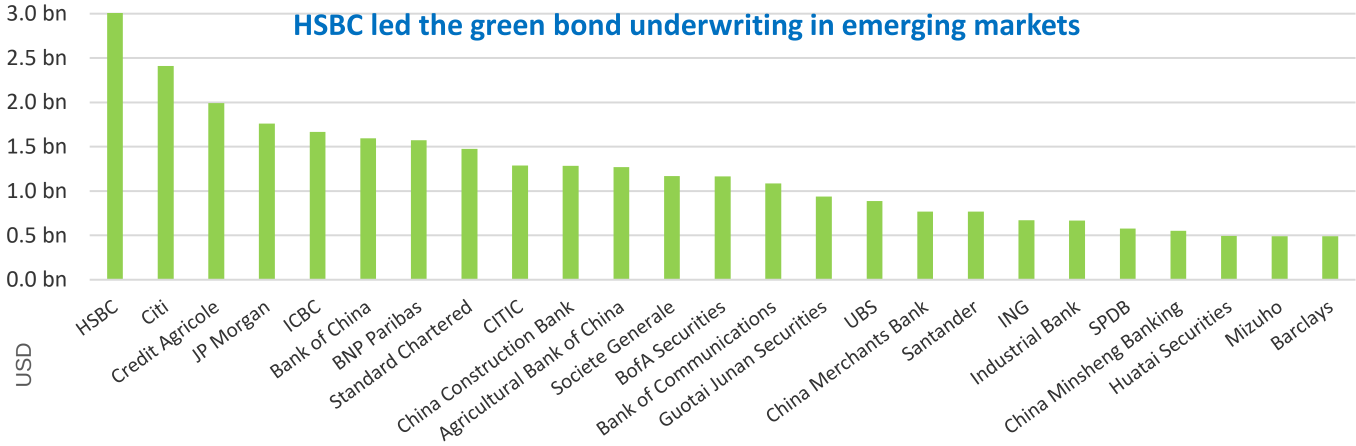
Green bond underwriter league tables

In 2019, **Crédit Agricole** (USD10.6bn) was the largest green bond underwriter in the global market, winning a close race between **BNP Paribas** (USD10.5bn) and **HSBC** (USD10.1bn). The top three underwriters account for 17% of the total underwritten amount.

The top three underwritten green bonds by Crédit Agricole include deals from Enel (USD1.3bn), Crédit Agricole (USD1.1bn) and Republic of Chile (USD972mn).

In 2019, Morgan Stanley was the largest US green Muni deal underwriter (USD1.96bn) followed closely by BofA Securities (amount underwritten - USD1.82bn)





Data source: Climate Bonds Initiative, Refinitiv

Underwriter league tables: Methodology

Since Q3 2016, the underwriters league tables are collated using data from Refinitiv except for US municipal bonds which are calculated by the Climate Bonds Initiative. As such, ranking volumes differ from Refinitiv tables. Volumes may differ from other league tables as they include ABS deals and US Muni bonds and only include bonds which have 95% or more of proceeds going to assets or projects, aligned to the Climate Bonds Taxonomy.

Refinitiv data methodology:

- Primary Issuance only. Excludes tax exempt US Municipal bonds
- Underwritten transactions only
- The global table includes transactions that mature at least 360 days after settlement
- Transactions that mature or are callable/puttable less than 360 days after settlement are excluded
- Self-funded straight debt transactions are excluded (excluding mortgage and asset securitisations) unless two or more managers/ underwriters unrelated to the issuer are present
- Transactions with an issue size of less than USD1m (equivalent) are included; sole led MTN take downs with a minimum size of USD50m for core currencies are included, USD10m for non-core
- Deals must be received within 5 business days of pricing
- For a transaction to be green league table eligible, deals must have 100% of proceeds formally earmarked for green projects
- Issuances where there is a mixed use of proceeds designated across different projects, are not eligible: e.g. ESG bonds that combine social and green projects
- Securitisation deals and private placement will be included provided they meet the standard criteria