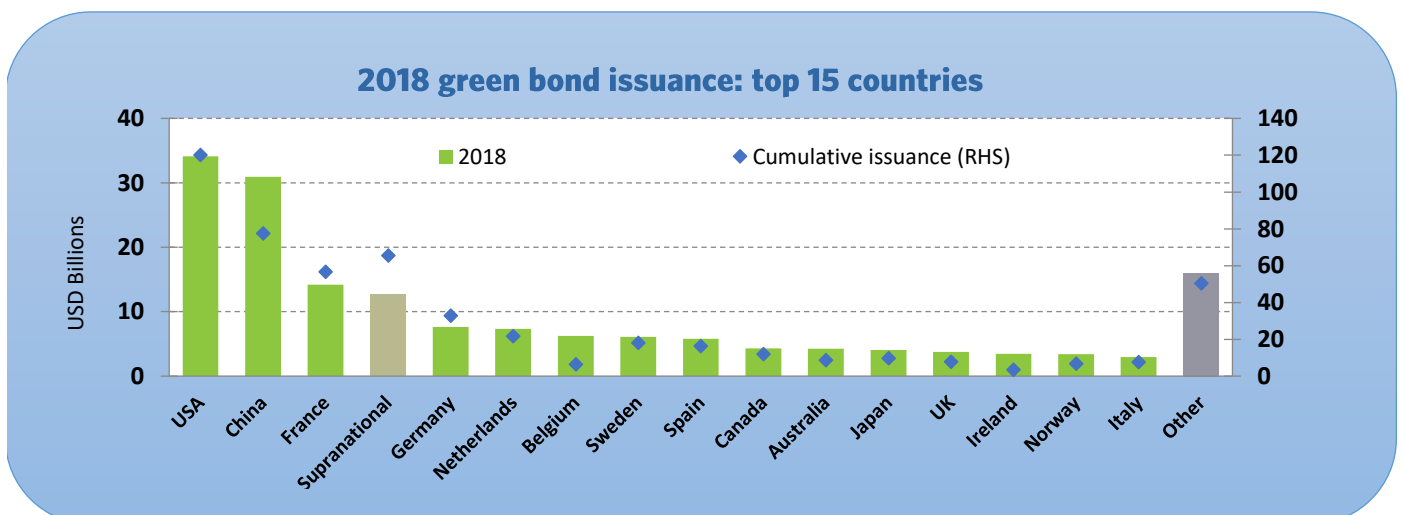
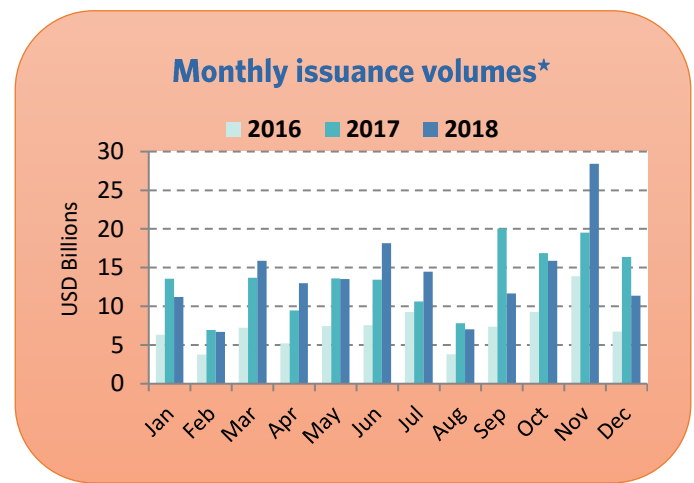
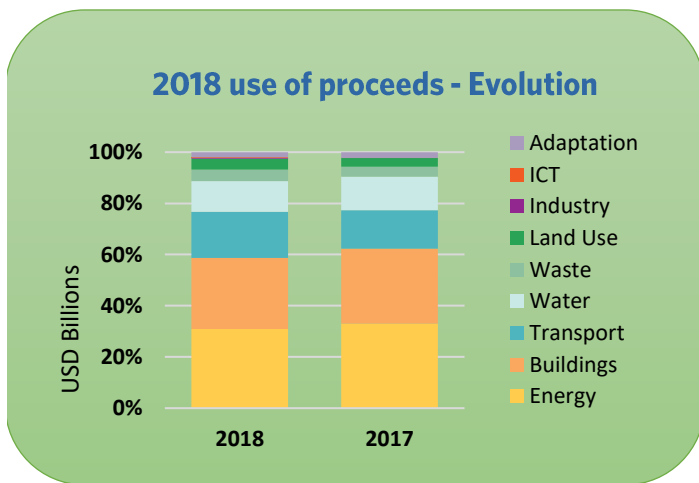
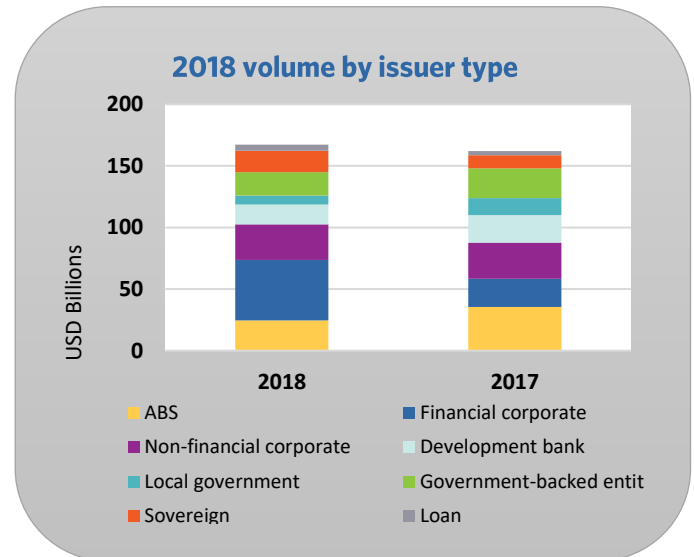


2018 Green Bond Market Summary

January 2019

2018 at a glance

- USD167.3bn total green bond issuance*
- 3% growth* on 2017
- 1,543 green bond issues from 320 issuers*
- 204 new issuers, bringing the total to 625*
- 44 countries, of which 8 new countries*
- EUR4.5bn (USD5.5bn) – largest single green bond, issued by the Kingdom of Belgium
- New sovereign green bonds from Belgium, Indonesia, Ireland, Lithuania, Poland and the Seychelles, and two taps of France’s GroAT



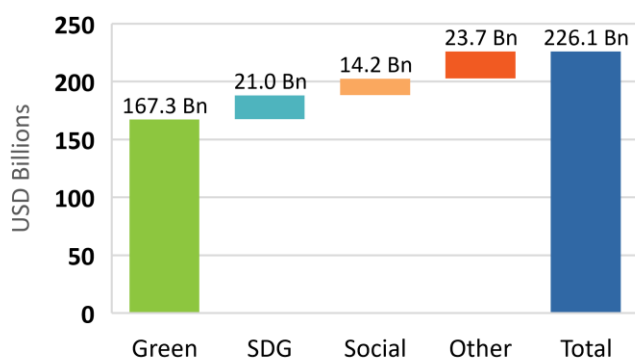
* All charts and analysis are based on preliminary figures for Q4 2018 issuance volume and number of deals, with 24 deals still under assessment for inclusion in the CBI green bond database.

2018 green bond issuance highlights

Global green bond issuance reached **USD167.3bn** in 2018, according to our preliminary annual figures, and surpassed 2017 volume of USD162.1bn by 3%.

The market's growth has slowed compared to the 84% year-on-year increase achieved in 2017. In part, this reflects decreased issuance in some bond markets, particularly from US Muni issuers. However, in 2018 we also witnessed a dramatic rise in the issuance of sustainability, SDG and social bonds, underscoring increasing label diversification. Taking all labelled issuance into account shows the market growing from USD199.3bn to USD226.1bn, or up 13% in 2018.

2018 issuance including sustainability/SDG, social and other excluded bonds



See p.4 for further information on other labelled bonds.

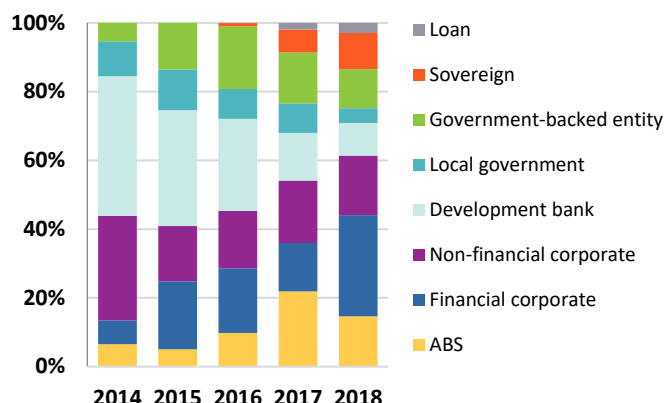
Top 3 déjà vu: USA, China and France

USA, China and France topped country ranking once again, accounting for 47% of global issuance in 2018. US issuers contributed USD34.1bn to the total, Chinese – USD30.9bn and French – USD14.2bn. Rather fittingly, the top 3 issuers are from the US, China and France:

1. **Fannie Mae** remains the largest US and global issuer with 2018 deals totalling USD20.1bn. This is 27% below 2017 volume, but is still impressive against a backdrop of reduced US issuance, particularly from US Munis.
2. **Industrial Bank Co** was the second largest global issuer and the largest from China. Its USD9.6bn of issuance accounts for 31% of China's total.
3. The **Republic of France** was the third largest issuer globally and the largest from France. The two taps of its green sovereign totalled USD6bn, or 42% of country volumes for 2018.

Geographic diversification continued increasing with eight countries recording debut green bond issuance: Iceland, Indonesia, Lebanon, Namibia, Portugal, the Seychelles, Thailand and Uruguay.

Sovereign and corporate issuance is rising



March of the sovereigns continues

Sovereigns deals kept a strong pace throughout the year contributing USD17.5bn and reaching a 10.5% share of the market, up from 7% last year. Debut sovereign green bonds came from **Belgium, Ireland, Indonesia** and **Lithuania**. Towards the end of the year the **Republic of Seychelles** issued the world's first **sovereign blue bond** to finance projects related to sustainable fisheries and marine conservation, including aspects of climate resilience and adaptation.

In February **Poland** became the first sovereign repeat issuer with its EUR1bn (USD1.2bn) deal. **France** tapped its sovereign green OAT twice taking its total issuance volume to EUR14.8bn (USD16.7bn) and retaining its top spot as the largest single bond to date.

Financial corporate issuance powers ahead

Financial corporates fuelled issuance of USD49bn, or 29% of the annual global total, up from 14% in 2017, when sector issuance was USD23bn. Industrial Bank Co (China), ING (Netherlands) and ICBC (China) accounted for almost a third of the segment's volumes.

Financial sector issuers were the first green bond issuers in Lebanon (Fransabank SAL), Thailand (TMB Bank) and Namibia (Windhoek Bank). In all three cases, the deals were private placements with supranationals (the IFC, EBRD and ADB), highlighting their increasing involvement in the market as an investor, supporting local market issuance.

Non-financial corporate issuance came second at USD29bn or 17% of the total. Iberdrola, Enel and Engie were the top three corporate issuers, with cumulative volumes of USD4.5bn – or 15.5% of the segment.

Non-financial corporate issuers were the first green bond issuers in Portugal (EDP) and Uruguay (Atlas Renewable Energy). In Indonesia, the first green bond

came from TLFF I Pte, the financing vehicle of a joint venture between France’s Michelin and Indonesia’s Barito Group which will invest in a sustainable agriculture and afforestation.

Government-backed power company Landsvirkjun became the first green bond issuer in Iceland early in the year, and the City of Reykjavik issued the country’s first local government green bond in December.

Public sector issuance, excluding sovereigns but including development bank deals, was more muted than in 2017 (2018: USD42bn, 2017: USD60bn). Still, in addition to Iceland, in 2018 we saw green bond market debuts from local government in New Zealand (Auckland Council) and from a development bank in Slovenia (SID Bank).

Almost half of Certified Climate Bonds top USD1bn

Certified Climate Bonds accounted for 14% of 2018 volumes, slightly below 2017’s share, but volumes were slightly higher at USD23.3bn (2017: USD23.1bn). Almost half of Certified deals by volume were USD1bn or above in size (2017: 25%), with ING breaking the record for largest Certified Climate Bond with its USD2.95bn deal.

This reflects a wider trend in the green bond market where benchmark size issuance is increasing (see box).

More deals come in benchmark sizes

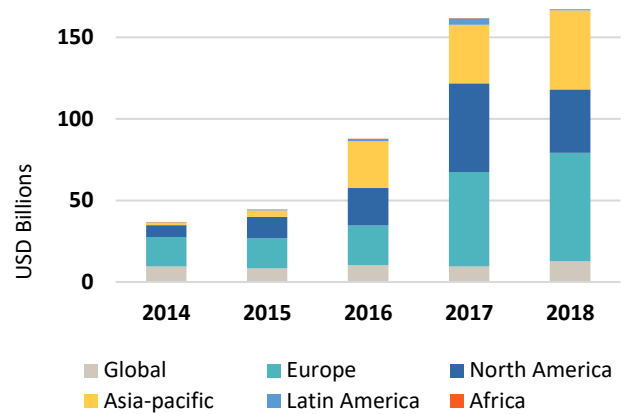
Climate Bond’s [pricing research](#) concentrates on USD and EUR denominated green bonds, with vanilla structures, greater than USD500m in size. During 2017, our pricing work included 59 green bonds, while in 2018 we captured 64 individual bonds. This slight increase in the number of larger individual bonds is helpful for the liquidity of the green bond market. Larger, benchmark sized, green bonds are eligible for inclusion in more of the broad market indices, meaning that green bonds will be exposed to a broad base of mainstream investors.

European and Asian issuance make headway

European issuance reached USD66.6bn, up 15% from 2017 volumes. Issuance from the Asia-Pacific region, however, recorded the highest level of increase: 35% over 2017 to reach USD48.5bn in 2018.

Supranationals issued USD12.7bn, with the EIB and the World Bank contributing significantly to that total. This reverses last year’s trend of lower issuance from these institutions.

European issuance is strong Asian volumes are rising



European issuers keep developed market issuance on a growth path

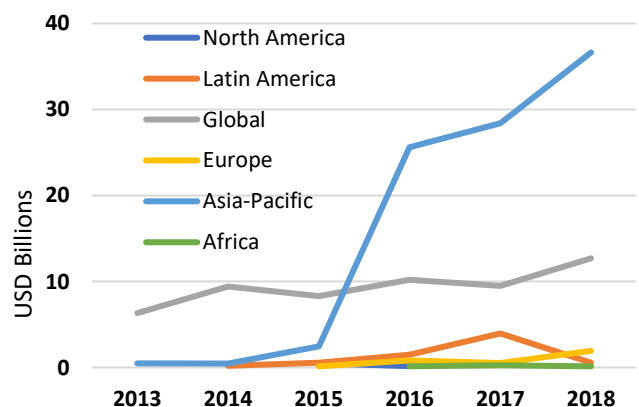
At USD115bn, **developed markets** green bonds represent 69% of 2018 issuance – a slight fall compared to 71% in 2017. 56% of volumes came from the European issuers, with significant contributions from sovereign issuance from France, Belgium and Ireland.

US issuance stood at 30%, a 10% drop in share compared to 2017. This is mainly due to a slowdown in the US Muni which made up only 11% of country volumes compared to 26% in the previous year.

Emerging market issuance continues rising in Asia

Emerging markets (EM) accounted for USD40bn of green bond volume in 2018, or around a fifth of issuance (2017: 23%). Including deals from supranational development banks – whose mandate is to support EM development – takes EM’s contribution to 31% of global issuance, versus 29% in 2017.

Asian EMs record highest 2018 rise



China retained a leading role with 78% of 2018 EM issuance volumes and 18% of global volumes, up from 14% in 2017. Total labelled green bond issuance from

Chinese issuers reached USD41.4bn, and USD30.9bn of that is aligned with international standards, which exclude coal and other fossil fuel-based technologies.

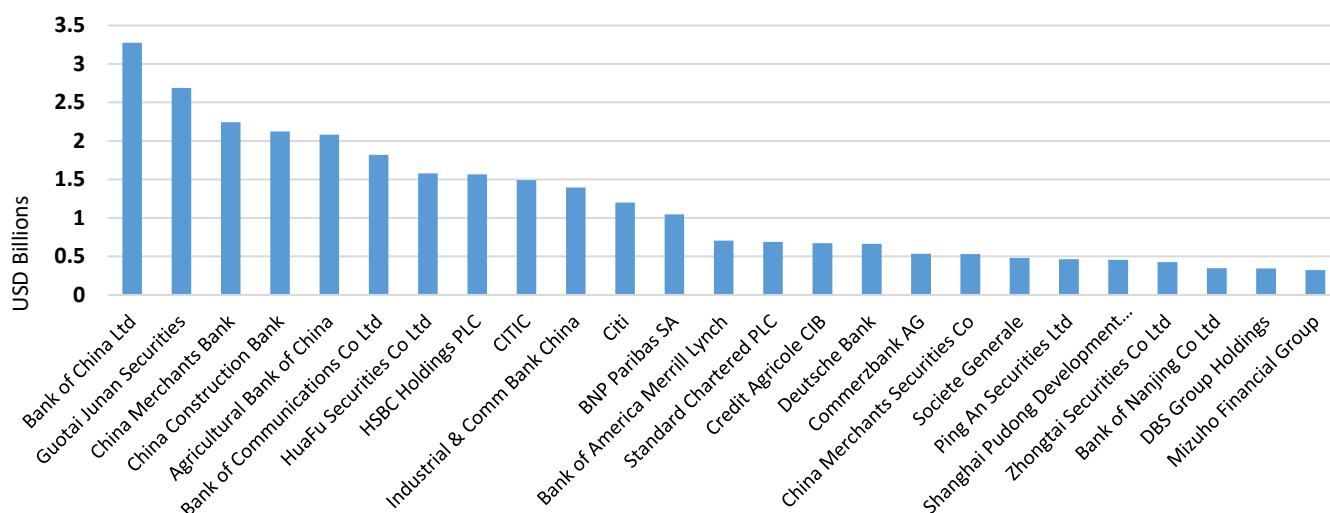
In addition, Hong Kong issuers issued USD2.3bn worth of green bonds, up 4.6x on 2017. Deals include two green loans to Leo Paper Group and New World Development, and two green panda bonds issued on China interbank market and Shenzhen Stock Exchange.

The prominence of Chinese issuance is reflected in the EM green bond underwriter league table, which is dominated by Chinese underwriters.

In the **ASEAN region**, the momentum from the introduction of the ASEAN Green Bond Standards in late 2017 carried through into 2018 with issuers from Indonesia and Thailand entering the market, and continued growth in Singapore. The Republic of Indonesia’s USD1.25bn green sukuk became the first sovereign bond from Asia in March 2018. Thai issuer B.Grimm Power debuted with a Certified Climate Bond.

In **Europe**, Poland, Iceland, Lithuania and Slovenia contributed to EM market growth with public sector issuance.

Bank of China at No.1 in EM Green Bond Underwriters League Table



Source: Refinitiv. Information on Refinitiv’s underwriter league table methodology is provided on p.7.

The dawn of SDG, sustainability and social bonds

The labelled bond market has expanded beyond green bonds. Sustainability and social bonds have been around for a few years now, but they really came into their own in 2018, with SDG bonds also emerging as issuers and investors started adopting policies and strategies linked to the UN’s 17 Sustainable Development Goals (SDGs).

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

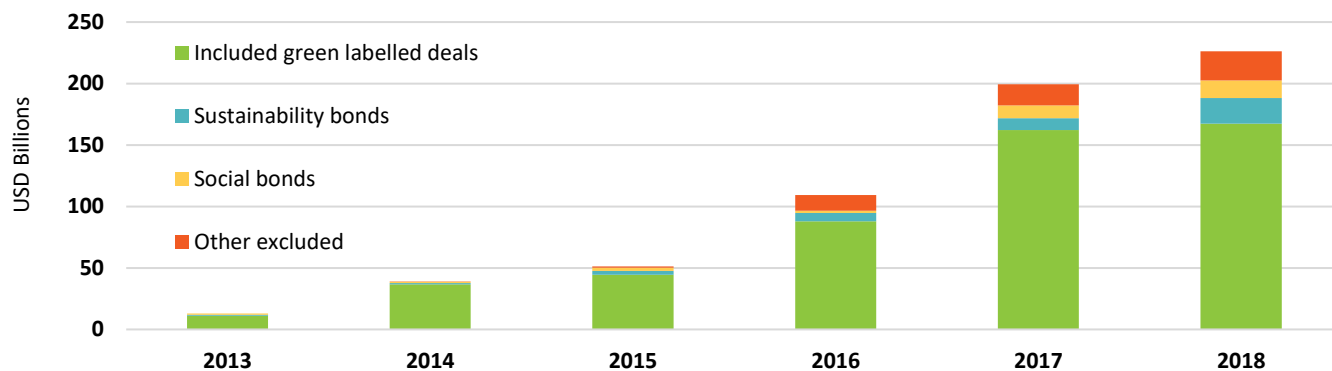
Sustainability and SDG bonds allow proceeds to be allocated to both green and social projects. 2018 sustainability bond issuance totalled USD21bn, according to Climate Bonds data. This represents an 114% growth compared to 2017. Adding these bonds to CBI’s green bond tally of **USD167.3bn** results in a total of **USD188.3bn**, or a 10% year-on-year increase.

SDG Bond Frameworks

2018 has witnessed the emergence of **SDG frameworks**, which distinguish between green and social eligibility criteria and allows the issuer to classify a bond as “green”, “sustainability” or “social” depending on the use of proceeds.

These frameworks allow the issuer to keep a clear distinction between bonds that finance environmental projects and social projects. This makes it easier for investors with a dedicated mandate to identify bonds that comply with their investment criteria. BBVA became a frontrunner in this field, with a [EUR1bn green bond](#) issued in May under its newly developed [SDG Bond Framework](#).

Label diversification is increasing beyond green bonds



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 listed categories. This means that sustainability bonds may use a substantial amount of funding to finance green projects. However, as the [CBI Green Bond Database Methodology](#) allows only up to 5% of proceeds are 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 figures.

For instance, Korea Railroad Corporation issued a EUR110m (USD127m) senior unsecured sustainability bond in October 2018. The issuer’s [Green, Social and Sustainability Bond Framework](#) includes 5 green eligibility categories (transport, energy, energy efficiency, waste and adaptation) and 3 social eligibility categories (access to basic infrastructure, employment generation and socioeconomic advancement and empowerment). Applying an equal split among categories results in 38% of funding allocated to social projects, and the rest for climate-aligned projects.

Région Occitanie also came to market in late 2018 with a EUR200m (USD235m) senior unsecured Green and Sustainability bond. According to the [Green and Social Bond Framework](#), funding will be allocated to projects falling under the following categories: Ecological and energy transition, natural resources protection, social action, and education and culture. This points to a 50% split of funding between social and green projects.

Social bond issuance also increased in 2018, albeit less dramatically compared to sustainability bonds, with USD14.2bn worth of deals coming to market in 2018 – a 37% year-on-year growth. Adding social bonds to green and sustainability volumes would yield an annual total of USD202.5bn, or 11% above 2017 volumes.

NWB Bank is an example of a repeat issuer of both green and social bonds. The Dutch financing institution has issued 7 social bonds between 2017 and 2018, for

a total of EUR5.2bn (USD6bn). As stated in the [Social Bond Framework](#), proceeds will be fully allocated to affordable housing projects in the Netherlands.

Spanish state-owned bank Instituto de Crédito Oficial debuted in the social bond market in November 2018 with a EUR500m (USD566m) senior unsecured deal. According to the [Social Bond Framework](#), eligible projects include loans to fund SMEs located in an underperforming region of Spain that are not involved in industries considered to have a potential negative social or environmental impact, including alcohol, tobacco, gambling and coal mining.

A wider labelled green bond universe

Other excluded bonds - besides bonds allocating over 5% of proceeds to social projects - comprise deals that are either unlabelled, or where there is insufficient information on the proceed allocations, or financed projects are not aligned with the Climate Bonds Taxonomy, or if over 5% of proceeds are used for working capital/general funding purposes.

Bonds allocating a significant share of proceeds to working capital represent 20% of excluded deals in 2018. The majority of bonds under this category are from Chinese issuers, as working capital is an eligible category under the guidelines released by National Development and Reform Commission (NDRC).

Bonds which are not aligned account for 18% of 2018’s excluded volumes. One of the main reasons for exclusion under this category is the allocation of proceeds to fossil fuel related projects, including improvements in energy efficiency of fossil fuel-based technologies. Chinese issuers represent around half of the exclusion category’s share due to the financing of coal assets, which is allowed under the People’s Bank of China green bond catalogue.

Factoring in all labelled issuance brings the 2018 total of labelled bonds to USD226.1bn, or 13% up over the 2017 volume of USD199.3bn.

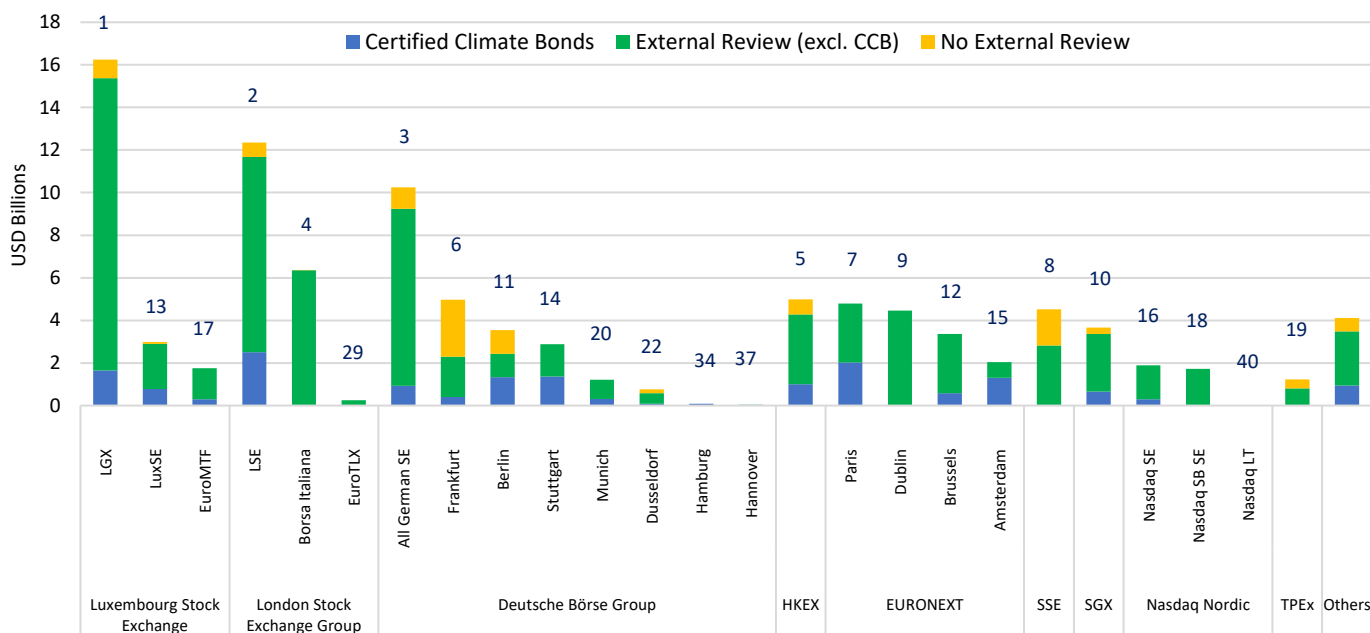
Trading venue league table

In 2018, USD100.2bn worth of green bonds was listed and/or traded on a variety of venues, and this figure represents 60% of total annual green bonds issuance. Over-the-counter (OTC), which is used by say US Munis, and China Interbank Bond Market (used by Chinese domestic issuers) are not included in the league table and account for 24% of the market at USD40.4bn. The

remaining 16% of bonds issued last year are either not listed or the information is not available.

In the league table below, we have grouped those venues under the same stock exchange group. The numbers on top of the bars indicate the ranking of each venue. Luxembourg Green Exchange tops 2018 venue rankings, followed by the London Stock Exchange.

LGX at No.1 in 2018 green bond trading venue league table



Listing venue league table: Methodology

For a green bond to be eligible for the league table, deals must meet our Methodology criteria. For example, ESG bonds with significant social project allocations, or bonds that finance clean coal are excluded.

- Primary data sources for listing venues include Thomson Reuter 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.

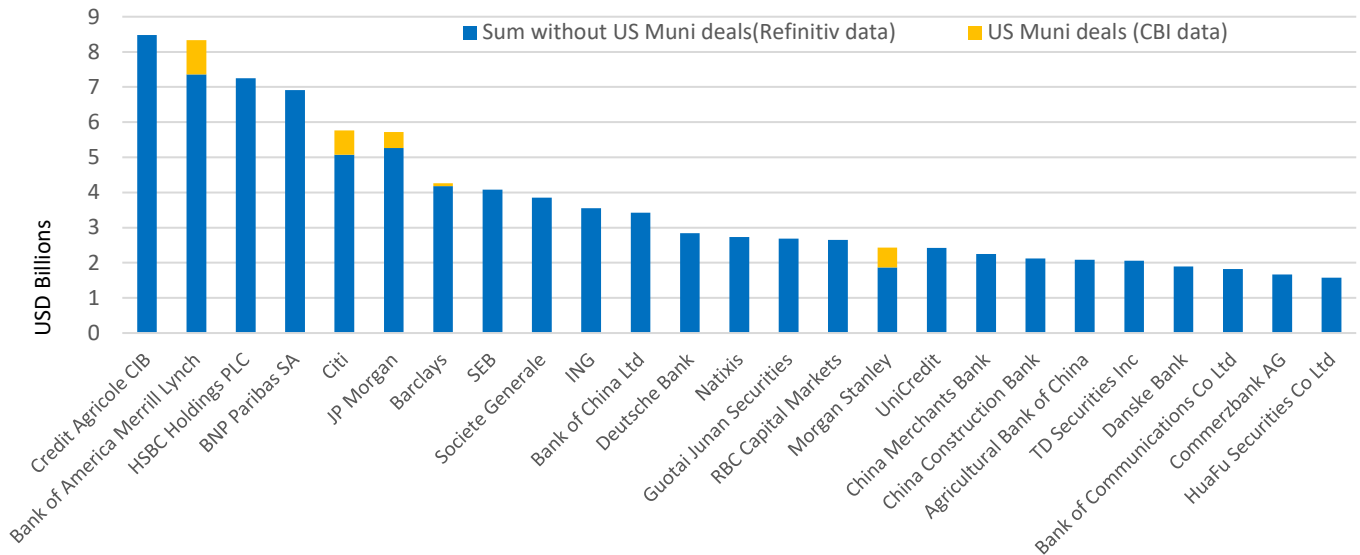
- A bond listing venue is treated as “Not listed” when the bond is not listed or relevant information is not available from the sources identified in this methodology.
- Bond volumes allocated to each listing venue are categorised into Certified Climate Bonds, bonds with external reviews (other than 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 table

The 2018 green bond underwriter league table shows Credit Agricole climbing to the top from 2nd place in 2017 and 3rd in 2016. Bank of America Merrill Lynch dropped to second spot from the first place last year as a result of the fall in the US muni deals that it underwrites. HSBC has maintained the 3rd place.

Mobilised by an increase of green bond issuance from China, seven Chinese banks and securities firms made their way into the top 25 global underwriters, with Bank of China at No. 11 achieving the highest spot among them

Credit Agricole, BAML and HSBC in top 3 of 2018 green bond underwriters league table



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
- Underwritten transactions only
- Refinitiv data excludes tax exempt US Municipal bonds
- 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 securitizations) unless two or more managers/ underwriters unrelated to the issuer are present.
- Transactions with an issue size of less than USD 1m (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 five business days of pricing to be eligible
- 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