GREEN BONDS GLOBAL STATE OF THE MARKET 2019

Climate Bonds Initiative

Prepared by Climate Bonds Initiative.

Overall global green bond market

- **USD754bn** cumulative issuance (since inception in 2007)
- **5,931** deals
- **927** issuers
- **USA** leading with **USD171.5bn**, followed by **China** (**USD107.3bn**) and **France** (**USD86.7bn**)
- **Certified Climate Bonds** reach **USD100bn** milestone

2019 global green bond market

- **USD258.9bn** 2019 issuance (2018: USD171.2bn)
- **1,802** deals (2018: 1,591)
- **506** issuers (2018: 347)
- **291** new issuers: (2018: 204)
- **8** new countries (**Russia, Saudi Arabia, Ukraine, Ecuador, Greece, Kenya, Panama, Barbados**)
- **USA** top with **USD51.3bn**, followed by **China** (**USD31.3bn**) and **France** (**USD30.1bn**)

Outlook for 2020 – 2021

- **Green bond growth expected** from financial institutions, sovereigns, Certified Climate Bonds, and climate-aligned issuers
- **Greater use of other labels** (e.g. sustainability and social bonds), especially in light of COVID-19, as well as performance-linked instruments (e.g. KPI-linked credit facilities) to facilitate transition
- **Increased focus on transitioning "brown" sectors**, such as aviation, steel, and cement
- **Harmonisation of taxonomies (esp. EU Taxonomy)**, green bond guidelines and disclosure

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About this report

This is the Climate Bonds Initiative's *Green Bonds Global State of the Market 2019*. It focuses on the 2019 green bond market, uncovering trends in issuance and identifying avenues for market growth. The analysis is based on our Green Bonds Database.[1] The figures are as of the end of 2019, and have slightly increased since our 2019 Green Bond Market Summary (from February) due to additional bonds being included.[2]

In September we will publish an interim State of the Market for 2020, including analysis of the wider labelled debt universe.

About the Climate Bonds Initiative

The Climate Bonds Initiative (CBI) is an international investor-focused not-for-profit organisation working to mobilise the USD100tn bond market for climate change solutions. Our mission is to help drive down the cost of capital for large-scale climate and green infrastructure projects, including supporting governments seeking increased capital markets investments to meet climate goals.

Understanding green bonds

Green bonds

Green bonds are issued to raise finance for climate change solutions - the key is for the proceeds to go to green assets. They can be printed by various issuer types, such as governments and government-backed entities, financial institutions, and non-financial corporates. The green label can be applied to any debt format, including private placements, securitisations, covered bonds, and sukuk, as well as green loans which comply with the Green Bond Principles (GBP) or the Green Loan Principles (GLP).[3,4]

Green definitions

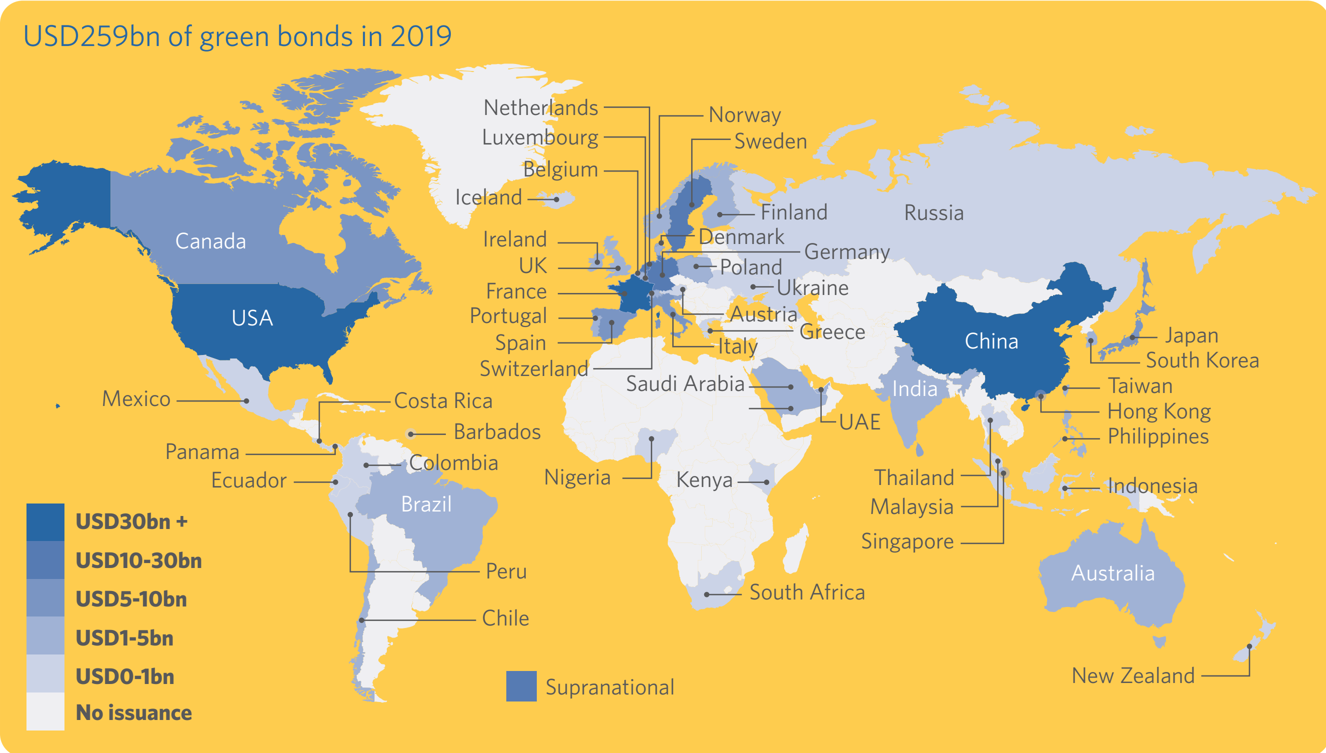
The Climate Bonds Green Bonds Database and market analysis is based on the Climate Bonds Taxonomy categories: Energy, Buildings, Transport, Water, Waste, Land use, Industry, and ICT.[5] Certified Climate Bonds

CBI also develops Sector Criteria with expert input from the international science community and industry professionals.[6] Issuers can certify their green debt instruments under the Climate Bonds Standard and these Sector Criteria.[7] Independent Approved Verifiers provide a third-party assessment that the use of proceeds complies with the objective of capping global warming at 2°C.

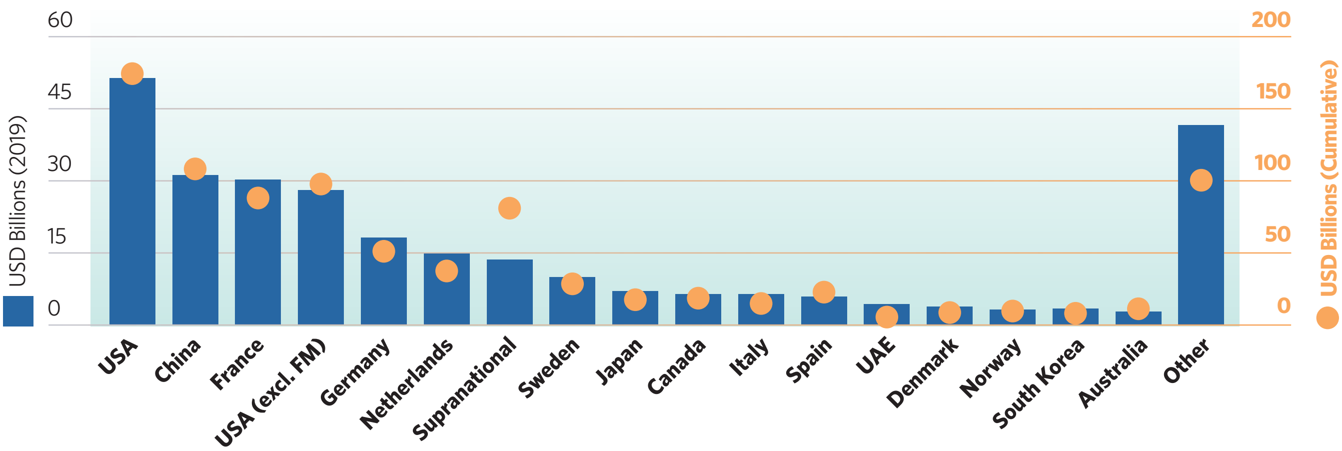
Inclusion in CBI's Green Bonds Database

Only bonds with at least 95% of proceeds dedicated to green assets and projects that are aligned with the Climate Bonds Taxonomy are included in our Green Bond Database and figures. If there is insufficient information on allocations, a bond may be excluded. The full version of the CBI Green Bond Database Methodology is available on CBI's website.[8] However, we are currently working on a revised methodology, to be published in the coming months.

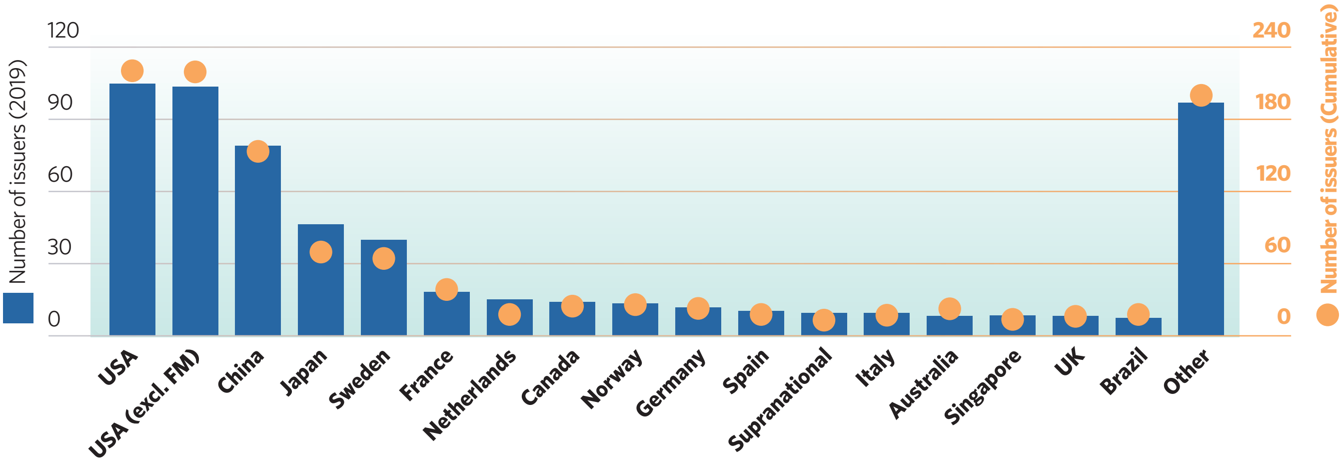
Geographic Market Overview



Top 2019 countries: Amount issued (2019 vs. Cumulative)



Top 2019 countries: Number of issuers (2019 vs. Cumulative)



Note: Country reflects the country of risk, which is different to the issuer's domicile if its parent is from another country. FM = Fannie Mae.

2019 Green Bond Market in Numbers

Overall market

- **USD258.9bn** issued (+51% vs. 2018)
- **506** issuers (+46%)
- **1,802** deals (+13%)
- **811** deals excluding Fannie Mae (+65%)
- New countries: **Russia, Saudi Arabia, Ukraine, Ecuador, Greece, Kenya, Panama, Barbados**

Top 5 issuers

1. **Fannie Mae**, USA (USD22.8bn, +13%)
2. **KfW**, Germany (USD9.0bn, +375%)
3. **Dutch State Treasury** (USD6.7bn, debut)
4. **Republic of France** (USD6.6bn tap, +9%)
5. **ICBC**, China (USD5.9bn, +154%)

Top 5 countries (amount issued)

1. **USA** (USD51.3bn, +44%)
2. **China** (USD31.3bn, +1%)
3. **France** (USD30.1bn, +113%)
4. **Germany** (USD18.7bn, +144%)
5. **Netherlands** (USD15.1bn, +105%)

Top 5 most frequent issuers

1. **Fannie Mae**, USA (991 deals, -10%)
2. **Vasakronan**, Sweden (29, +93%)
3. **IFC**, Supranational (16, +78%)
4. **SNCF**, France (12, no deals in 2018)
5. **ADB**, Supranational (11, +57%)

Top 5 countries (number of issuers)

1. **USA** (105 issuers, +59%)
2. **China** (79, +14%)
3. **Japan** (47, +88%)
4. **Sweden** (40, +43%)
5. **France** (19, +58%)

Deal size

- **10% of deals benchmark-sized** (USD500m+), 21% excluding FM (2018: 6%, 20%)
- **Average deal size USD144m**, USD291m excl. FM (2018: USD108m, USD308m)
- **Median deal size USD31m**, USD119m excl. FM (2018: USD21m, USD122m)

Deal currency

- **83% of deals in hard currency,** 63% excl. FM (2018: 87%, 59%)
- **83% of amount issued in hard currency,** 81% excl. FM (2018: 80%, 77%)
- **Issuance in 34 currencies** (2018: 31), including four new: DKK, CZK, KES, BBD

External reviews

- **92% of deals received an external review,** 81% excl. FM (2017: 95%, 83%)
- **86% of volume received an external review,** 85% excl. FM (2017: 89%, 88%)
- **CBI Certification: 17% of volume** (2018: 14%)

2019 Green Bond Market Overview

Top 3 sustainable finance trends in 2019

1. Mainstreaming of green finance in financial system, regulatory and investor responses to climate change contribute to annual green debt exceeding USD200 then USD250bn for the first time.

2. The continued rise of a broader range of SDG-related debt labels (e.g. sustainability bonds, social bonds) and ESG-linked credit. In parallel, an increasing debate on how to enable transition in various key sectors, including with ESG-linked instruments and the emergence of the 'transition' debt label.

3. Further work on market harmonization and standardization:

- The EU continued developing a taxonomy of sustainable activities, proposed creating an EU Green Bond Standard, and in December announced the EU Green Deal.[9]
- Launch of Climate Bonds Standard V3.0, with improved definitions, guidance, and alignment with upcoming EU Green Bond Standard. Climate Resilience Principles published as precursor to Climate Resilience Criteria.[10,11]

8 new countries and 291 new issuers

Issuance from eight new countries emerged in 2019 – Barbados, Ecuador, Greece, Kenya, Panama, Russia, Saudi Arabia, Ukraine – with a combined issuance of USD3.1bn. This takes the total number of countries with green bonds issued to 62 (excl. Supranational).[12]

Meanwhile, 291 debut green bond issuers (i.e. had not issued before 2019) accounted for USD88bn of issuance, or 34% of the global 2019 market. 37% of debut issuer volume was attributed to non-financial corporates and 25% to financial corporates. Sovereigns and loans followed, respectively with 11% and 9%. The largest debut issuer was the Dutch State Treasury Agency, issuing the Netherlands' first green sovereign, a Climate Bonds Certified transaction to the value of USD6.7bn.

40 of the 291 debut issuers, accounting for USD17bn in volume, came to market more than once in 2019. The largest in this group was the Republic of Chile with two deals totalling USD2.4bn, one in USD and the other in EUR – the first sovereign from Latin America has already returned to market with multiple deals in 2020. LG Chem and Citigroup were respectively the second and third largest.

215 repeat issuers: 66% of 2019 volume

USD171bn was issued by 215 repeat issuers (i.e. that had issued before 2019). This volume was evenly distributed across issuer types. Financial corporates (19%) and non-financial corporates (18%) remained top but were closely followed by government-backed entities (17%), ABS (15%) and development banks (14%). Repeat sovereign issuance contributed 9%, largely as a result of France tapping its French Green OAT three times for a total of EUR5.9bn; however, Belgium stood out as the most frequent sovereign issuer, with six taps (EUR2.4bn).

Further, 132 entities issued multiple deals in 2019 (i.e. repeat *within the year*), mostly previous issuers but also several market debuts as mentioned above. 21 entities issued five or more deals during the year, contributing 28% of the total volume.

Frequency (# of deals in 2019)	Number of issuers	Share of total 2019 volume
2	79	15.8%
3	18	8.4%
4	14	4.1%
5-9	16	15.4%
10 or more	5	12.3%
	132	**56.0%**

Regions and Countries

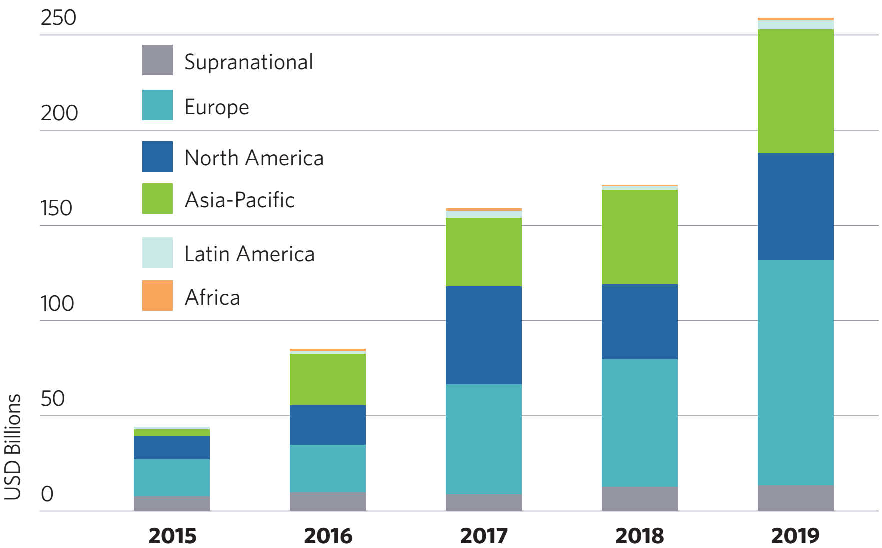
All regions increase volume

2019 was the first year since 2016 in which all regions (including Supranational) increased volumes. Not only this, but the changes were considerable everywhere. The same is true looking at issuers and deals *if Fannie Mae is excluded* (slight dip in North America's deal count otherwise).

Europe experienced the largest increase, with an added USD50bn vs. 2018 representing 57% of the global expansion. All European issuer types, apart from loans and ABS, reached their highest level yet, with non-financial corporates, government-backed entities and development banks standing out as particularly strong (resp. 2x, 2.5x and 5x increase).

This extends Europe's regional lead in *cumulative* volumes to over USD100bn more than North America and Asia-Pacific, which are respectively in second and third place.

Issuance by region: Europe drives 2019 growth



Note: Latin America includes Mexico.

For the first time ever, 2019 saw Asia-Pacific achieve the second-highest regional volume in consecutive years (previously 2018 and 2016), with corporates accounting for almost 60% of this. Even so, APAC's 29% increase was smaller than North America's 46%, so the difference between the two regions was smaller in 2019 than 2018. By number of issuers, APAC is comfortably the regional leader, having added another 126 issuers during 2019 (half of the total new issuer count). Japan was a key contributor to this, adding 22 issuers.

Elsewhere, Latin America and Africa both had their best years yet, respectively rising three-fold to USD4.7bn and six-fold to USD898m (vs. 2018). Latin America's increase was driven by the Republic of Chile issuing the first sovereign deals from the region as well as continued strength from non-financial corporates (3x increase), while more than half of Africa's volume stemmed from Redstone Solar's ZAR8bn (USD567m) Certified green loan.

Cumulative green bond issuance by region

Region	Green bond markets	Issuers	Amount issued (USDbn)	Change 2018-19 (amount)
Europe	25	269	307.4	74% +
North America	2	167	190.4	46% +
Asia-Pacific	18	345	183.6	29% +
Supranational	-	11	79.4	9% +
Latin America	11	47	12.9	216% +
Africa	6	16	2.7	495% +

Supranationals

Supranational entities also reached a record figure – USD13.8bn, 9% higher than in 2018 – despite there being no new issuers. As well as this, however, multilateral development banks (MDBs) have remained important supporters of emerging market (EM) issuance by investing in and helping to structure debut green bond deals.

In addition to the usual support provided by large MDBs, such as the World Bank, IFC and EIB, smaller regional development banks have also stepped up their involvement. In Latin America, for example, the Inter-American Development Bank (IDB) has subscribed, in whole or in part, to multiple deals – e.g. Ecuador's first, by Banco Pichincha – while also helping new issuers come to market, most notably the Republic of Chile with its inaugural sovereign green bond programme.

The IDB is also developing a Green Bond Transparency Platform for Latin American green bonds. It will be publicly available (open access) and feature disclosure of all documents and information pertaining to the green bonds.

In Asia, the Asian Development Bank (ADB) is a frequent issuer of green bonds (USD2.4bn from 11 deals in 2019) and increasingly provides support to issuers. For example, after fully subscribing to B.Grimm Power's Certified deal in December 2018, including funding the Certification itself, in 2019 the bank invested in another deal by a Thai issuer: AC Energy. The ADB is also helping to develop the market in other ways, for instance launching an Action Plan for Healthy Oceans in early 2019 through which it will expand investments and technical assistance for the blue economy by USD5bn between 2019-2024.

Overall, the share of developed markets (DM) grew from 69% in 2018 to 72% in 2019, with that of EM falling slightly from 24% to 23%. Supranationals experienced the largest drop, from 7% to 5%.

Top 10 issuer domiciles 2019

	Country	Issuers	Deals	Amount issued (USDbn)	2018-19 change (amount)
1	**USA**	105	1,128	51.3	44% +
2	**China**	79	99	31.3	1% +
3	**France**	19	54	30.1	113% +
4	**Germany**	12	25	18.7	144% +
5	**Netherlands**	15	17	15.1	105% +
6	**Sweden**	40	106	10.3	66% +
7	**Japan**	47	66	7.2	73% +
8	**Canada**	14	17	7.0	63% +
9	**Italy**	10	11	6.8	128% +
10	**Spain**	11	17	6.5	3% +
	Top 10 total	**352**	**1,540**	**184.3**	**49%** +
	Top 10 %	**69.6%**	**85.5%**	**71.2%**	**-0.9%** -

France, Germany & Netherlands prominent

Among the top 10 issuer domiciles, the top three remained the same in 2019: USA, China, and France.

The USA's increase was substantial, rising USD15.8bn, or 44%, with Fannie Mae (FM) included. Excluding FM, the USA experienced an even larger expansion of 85%, taking the volume to USD28.5bn (from 137 deals).

France, however, saw the largest increase of any country, more than doubling in amount issued to USD30.1bn (USD14.1bn in 2018), only USD1.2bn below that of China.

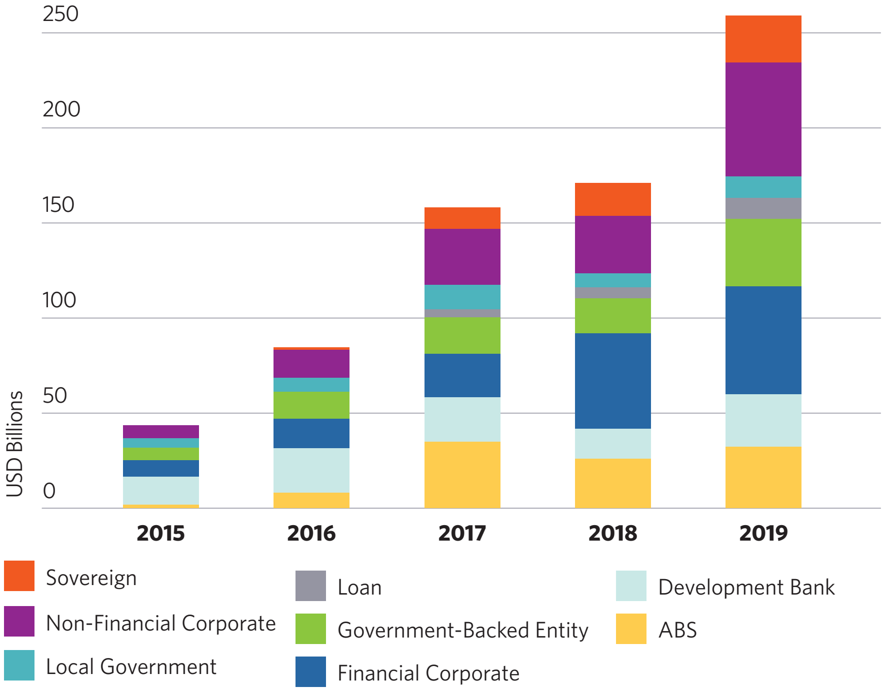
Supported by policy, **France has the widest pool of large issuers by some margin**, with the Republic of France (USD6.6bn), SNCF (USD4.3bn), Engie (USD3.8bn), Société du Grand Paris (USD3.6bn) and Crédit Agricole (USD2.6bn) all contributing more than USD2bn.

Other European countries also saw large jumps in volume. In **Germany**, issuance rose 144% to USD18.7bn, while in the **Netherlands** a 105% increase took it to USD15.1bn. Like France, both Germany and the Netherlands feature large issuers; the top two in each country – KfW and LBBW, and the Dutch State Treasury and TenneT Holdings – make up around 60% of respective volumes. Overall, European markets tend to have the largest issuers.

Sweden and **Canada** remained in the top 10 but ranked higher, while **Japan** and **Italy** were new entrants and **Spain** dropped to 10th place. However, all of these managed to increase volumes in 2019.

Issuer Types and Use of Proceeds

Non-financial corporates top issuer type for first time, rising 101%



Sovereign green bond issuers to date

Country	Debut	Total issued USD	Issue currency
Belgium	Mar 2018	8.2bn	EUR
Chile	Jun 2019	2.4bn	USD/ EUR
Fiji	Nov 2017	49m	FJD
France	Jan 2017	23.3bn	EUR
Hong Kong	May 2019	1.0bn	USD
Indonesia	Mar 2018	2.0bn	USD
Ireland	Oct 2018	5.7bn	EUR
Lithuania	May 2018	24m	EUR
Netherlands	May 2019	6.7bn	EUR
Nigeria	Dec 2017	71m	NGN
Poland	Dec 2016	4.3bn	EUR
Seychelles	Oct 2018	15m	USD

Non-financial corporates fuel growth

Like with regions, all issuer types experienced volume increases in 2019. The same is true by number of issuers and deals, apart from a small drop in ABS deal count due to less prolific issuance by FM.

Within private sector issuance, non-financial corporates performed particularly well, topping the issuer type ranking for the first time. Their issuance more than doubled to USD59.1bn, overtaking financial corporates which only increased 12%, the least of all issuer types. This is a "reversal" of 2018, which saw financial corporates more than double in volume while non-financials stagnated.[13]

Green loans were the second-largest movers in 2019, posting 98% growth. A total of 39 green loans were recorded during the year, the largest being a USD2.7bn Certified deal by debut Noor Energy 1 to finance a 950MW solar plant in Dubai.

Public sector issuance also rose robustly, with all issuer types apart from local governments reaching record volumes. Most of the increase was driven by government-backed entities – mostly European – and development banks, with both almost doubling in size. The latter was primarily due to strong issuance from national development banks such as KfW (over MDBs).

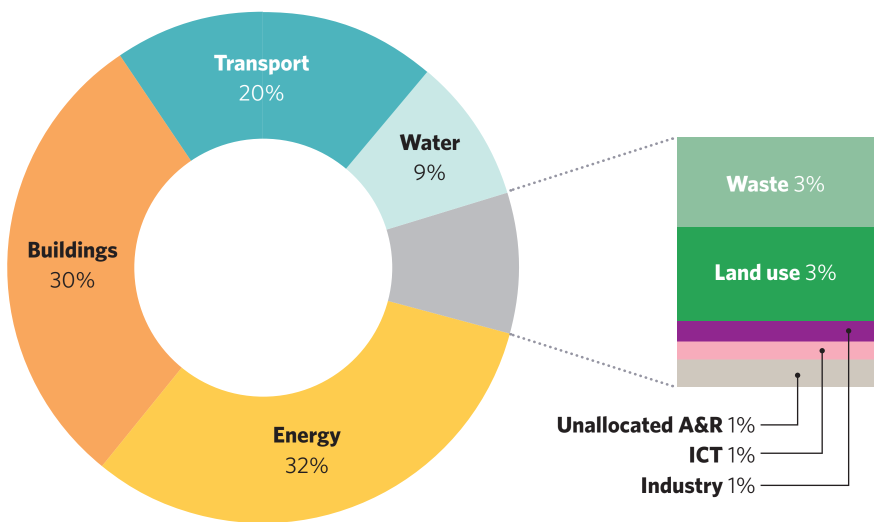
With nine issuers (eight in 2018), three of which were debuts, sovereigns increased another USD7bn (same gain as 2018) to reach almost USD25bn. The Dutch State Treasury Agency, a debut, ranked top with USD6.7bn, ahead of the Republic of France with USD6.6bn. The Kingdom of Belgium was third with USD2.7bn, its six deals being the only ones out of the country.

Energy, Buildings and Transport extend lead

All use of proceeds (UoP) categories had volumes increase in 2019, most of them by a substantial amount – this contrasts with 2018, when they were mostly flat.[14]

While allocations rose across the board, the top 3 categories – Energy, Buildings and Transport – were the strongest performers, accounting for USD80bn of the overall USD88bn added. Buildings saw the largest absolute year-on-year increase (+USD30.1bn), closing the gap with Energy, while Transport was highest in relative terms with +71%. At 82%, their combined share reached the highest level since 2015 (77% in 2018).

Top 3 Use of Proceeds categories account for over 80% of 2019 issuance



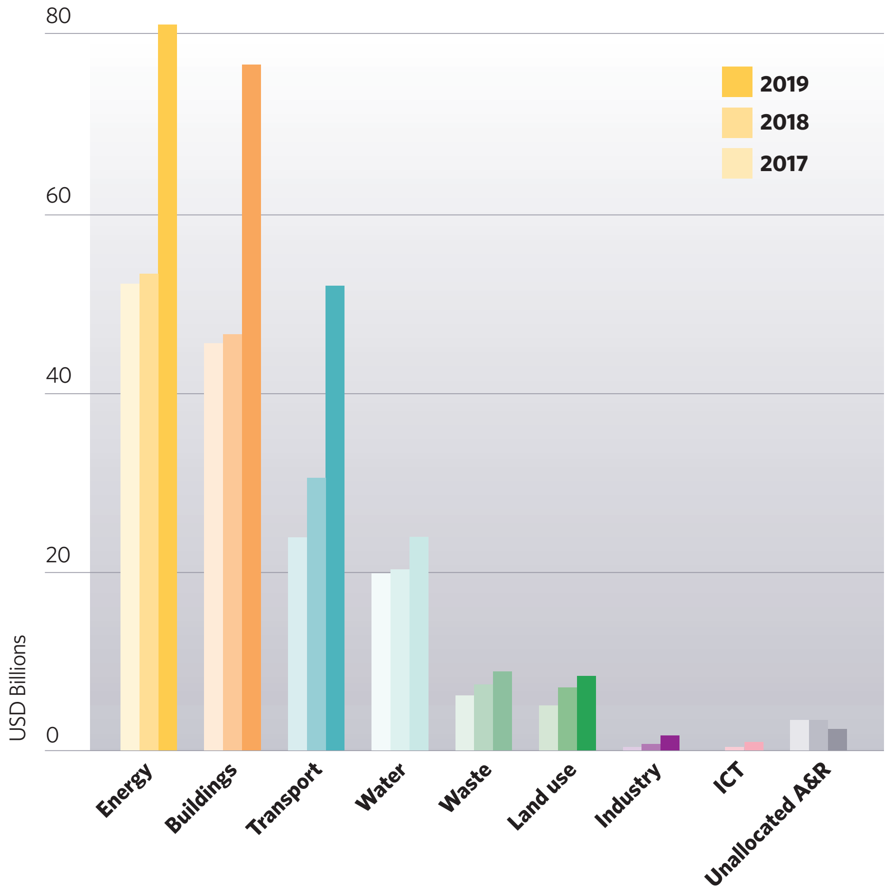
Water, Waste and Land use experienced more moderate growth. Water (+18%), which almost doubled in 2017 but was flat in 2018, has cemented itself as the fourth largest category. Waste (+17%) and Land use (+17%) continued the steady rise of the last few years but have yet to reach USD10bn in annual volume.

Comparing the growth in volume with the growth in number of deals and issuers yields some interesting differences.

In Waste, the number of deals rose 36%, while that of issuers only 10% - i.e. compared to 2018, the average amount allocated per deal fell while the amount per issuer increased. By contrast, in Land use the issuer count was up by 46% and deal count by 43%, suggesting lower average amounts for both. The drop in amount allocated per deal can be caused by a) smaller deals, and/or b) the share of Waste / Land use in each deal falling.

Finally, ICT allocations increased sharply in 2019 (22x versus 2018), albeit from a very low base. This was due to large debut deals by Telefónica (EUR1bn), Verizon (USD1bn) and Vodafone (EUR750m) to finance increases in network energy efficiency as well as investments in renewable energy and green buildings.

Energy, Buildings and Transport increase their share of UoP in 2019[15]

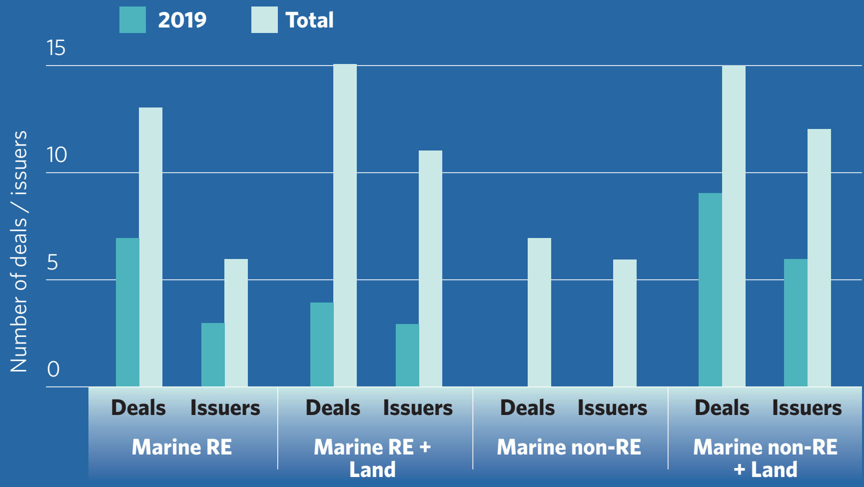


Blue economy: enhanced barriers prevent scale

While funding for sustainable marine projects has risen in the last few years, it is still dwarfed by most other project types - in fact, several studies indicate that "SDG 14: Life below water" receives the least investment globally out of all the SDGs.[16]

According to the Climate Bonds Green Bond Database, as of the end of 2019 there were 50 deals from 32 issuers financing blue projects, most of them related to offshore wind and/or also various types of projects on land.

Green bonds financing blue projects: dominated by marine renewables (i.e. offshore wind)



Note: Marine RE = marine renewable energy; Marine non-RE = any other marine projects (e.g. fishing, conservation); + Land = bond also financed other (non-marine) projects.

With environmental protection already a public good, the added challenge in the sustainable financing and management of marine activities is that these usually lack well-defined property rights and their impacts are difficult to attribute to a given cause (unlike land-based activities, where ownership and impacts are typically easier to define). An initiative to protect one marine area, for example, is likely to increase fish populations elsewhere.

This amplifies the barriers to scaling up financing for blue projects and enhances the need for public sector issuance as well as modern governance structures that address problems with a holistic, circular and ecosystems-based approach.

Definition: *the term 'blue economy' refers to the sustainable use of ocean resources for development, including activities such as fishing, tourism, offshore energy, biotechnology, marine conservation and others. Its usage has increased with the widespread degradation of marine ecosystems, which poses enormous threats to ocean and human health.*

Which projects are financed by each issuer type?

A relationship between UoP categories and issuer types is to be expected, by the simple fact that some types of projects are more likely to be financed, and often implemented, by some issuer types over others. For example, in many countries, waste / water management services are provided by public sector entities such as municipalities or government-backed entities.

Indeed, the UoP profile of each issuer type seems to support this.

Private sector issuance – especially from non-financial corporates and loans, which are almost always obtained by corporates – tends to finance Energy and Buildings. Likely reasons for this are that such assets are not only relatively 'easy' to finance with a green label – because the projects are more clearly green and the benefits easier to measure and verify – but they are also:

a. typically owned by private sector companies; and

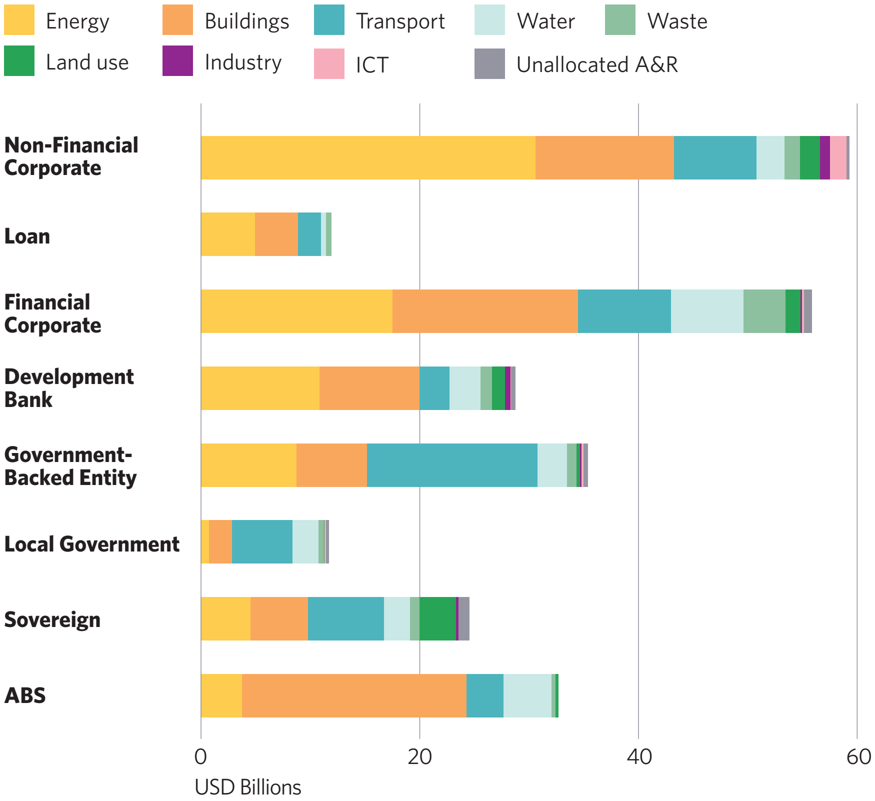
b. more often present economic gains from green investments, e.g. due to increasingly lower costs of production (Energy) or long-term resource savings (Buildings).

By contrast, public sector issuers, such as local governments and government-backed entities, fund a relatively high share of Transport, Water and Waste projects (sovereigns too but with a higher share of Land use). Apart from sovereigns, the most even UoP distribution is among financial institutions, i.e. financial corporates and development banks. This makes sense given that they typically allocate proceeds to many smaller projects and companies, and thus often list many eligible UoP categories.

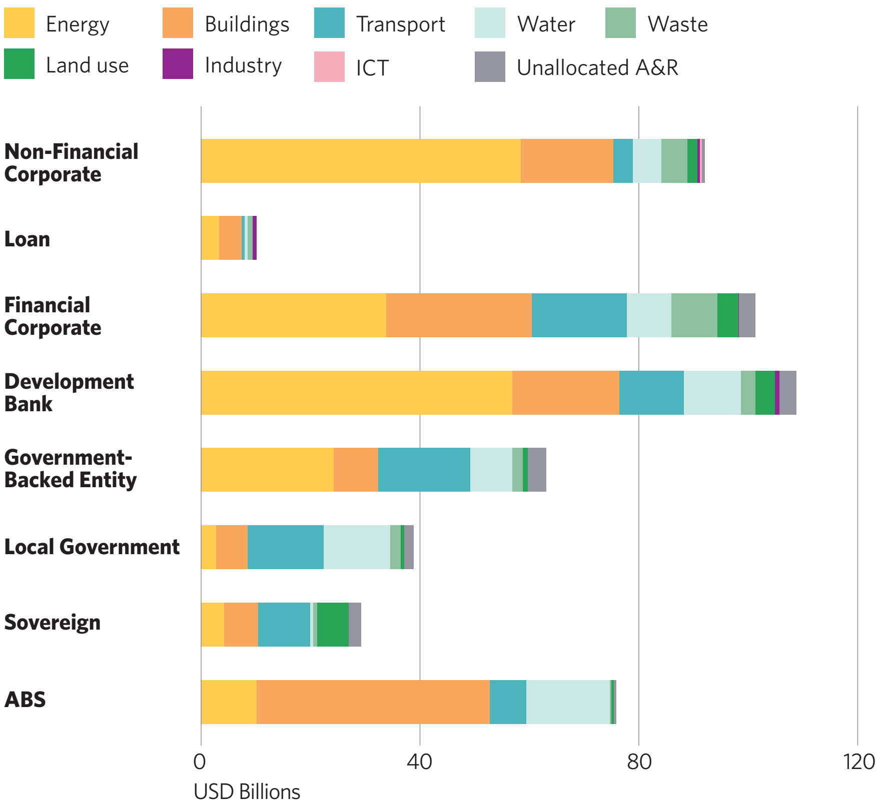
The same is broadly true pre-2019. However, most issuer types exhibit a more even split in 2019 than pre-2019, i.e. there is a general tendency towards more diversified UoP. This is despite the share of the top 3 categories remaining the same.

For example, non-financial corporates financed Energy, Buildings, and Transport respectively 64%, 18% and 4% pre-2019 versus 52%, 21% and 13% in 2019. Sovereigns saw also saw more diversification but across categories. The clearest exceptions are government-backed entities and local governments, with further concentration in Transport.

UoP by issuer type: 2019



UoP by issuer type: pre-2019 (i.e. up to 2018)



Currency

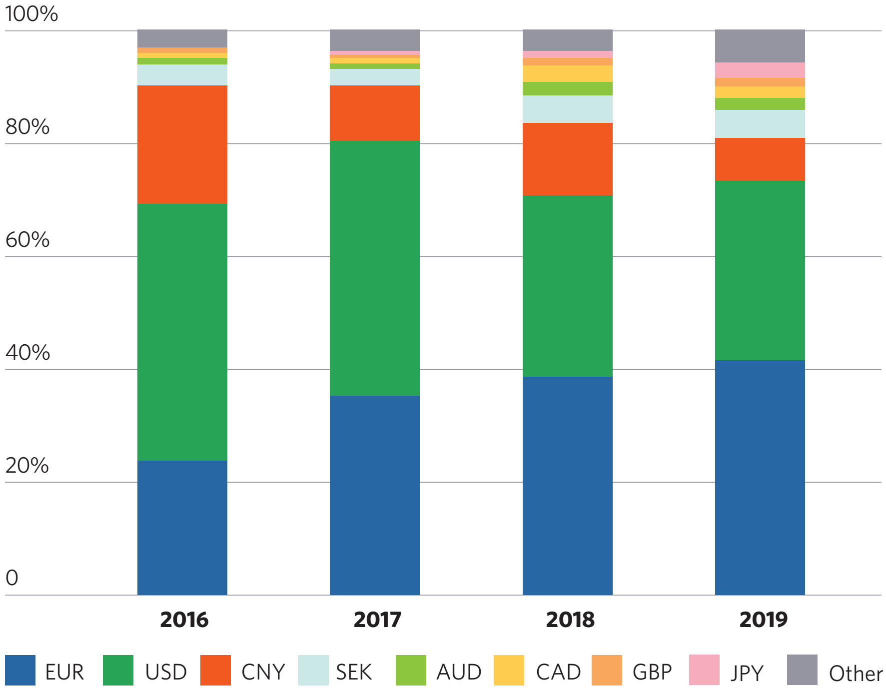
EUR accounts for 40% of 2019 volume

The share of the top 3 currencies – **EUR**, **USD** and **CNY** – totalled 81% in 2019. It reached a peak of 90% in 2016 and has been declining since. This has largely been due to i) relatively flat volume from locally denominated Chinese bonds, which in 2019 fell 10%, and ii) especially weak USD volume in 2018.

By contrast, the EUR has been growing robustly in both volume and share over the last five years. With USD108bn in 2019 (first time a currency has passed USD100bn in a single year), the EUR overtook the USD in cumulative volume, reclaiming the lead it had lost in 2015.

The top eight currencies have remained the same in the last few years, with denomination in **SEK** and **JPY** growing particularly fast. Almost all of this stems from issuance by Swedish and Japanese entities, mostly non-financial corporates. In 2019, SEK cemented itself as the fourth most preferred currency – not far behind CNY – while JPY jumped from eight to fifth place.

Share of EUR rising, USD flat, CNY falling



Note: 'Other' includes 26 currencies in 2019, and 32 in total (see Appendix).

Currency diversification

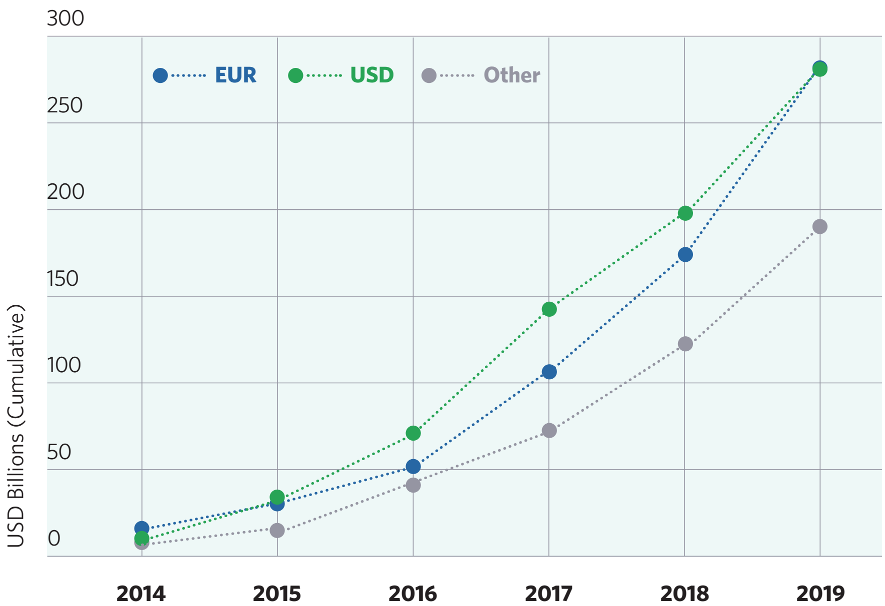
The share of hard currencies was 83% in 2019, in line with the cumulative total of 82% and between the 80-85% range of the last three years.

It is natural for the share of hard currencies to fluctuate less as the market becomes more mature, but over time we still expect this to drop gradually as EM issuance grows and EM issuers choose to denominate more in their local currencies.

2019 saw denomination in four new currencies: **DKK** (two deals, USD902m), **CZK** (one, USD52m), **KES** (one, USD41m), **BBD** (one, USD1.5m). A total of 34 currencies were used during the year.

This is a sign of continuing diversification and appeal to a wider range of domestic issuers. Greater local volumes of local currency issuance can help improve the visibility of domestic markets to foreign green bond investors.

EUR reclaims cumulative lead from USD



Deal Size, Tenors and Bond Types

32% of volume in USD500m-1bn range

The average green bond deal size jumped considerably from USD108m in 2018 to USD144m in 2019. This is largely due to Fannie Mae issuing a greater volume but from less deals, pushing the average up; excluding FM, the average deal size dropped from USD308m to USD291m.

A similar trend is observed with the median deal size, which increased from USD21m to USD31m for the total market, but fell slightly from USD122 to USD119m when excluding FM. (Growth in median size indicates that more issuers are issuing larger deals, whereas growth in average size is driven more by the volume of larger deals.)

Looking at different size brackets, the USD0-100m interval was relatively flat versus the others, which all rose significantly. The USD500m-1bn range increased the most in both absolute and percentage terms, almost doubling from USD46bn to USD82bn.

Larger deals can provide more liquidity and depth to the market, attracting additional investors and mainstreaming the green bond market through inclusion in broad market indices, while also allocating more funds to green projects from a single issuance.

In 2019, the top 10 deals combined accounted for 11% of the global market. A total of 45 bonds of USD1bn or more, from 36 different issuers, came to market (172 benchmark-size, i.e. USD500m or more). The vast majority, particularly the largest ones, were issued by sovereigns, financial corporates (mainly Chinese), development banks (both national and supranational), and large government-backed entities (especially European).

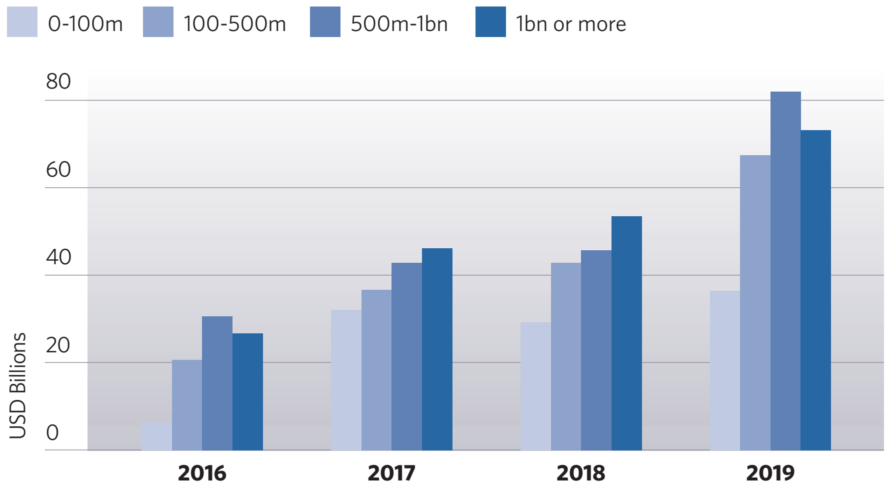
However, a robust base of smaller issuers is also positive, demonstrating that the market is an effective source of capital for various profiles of issuers, including those with lower financing needs; as is often the case, diversity is a sign of resilience.

Regional differences

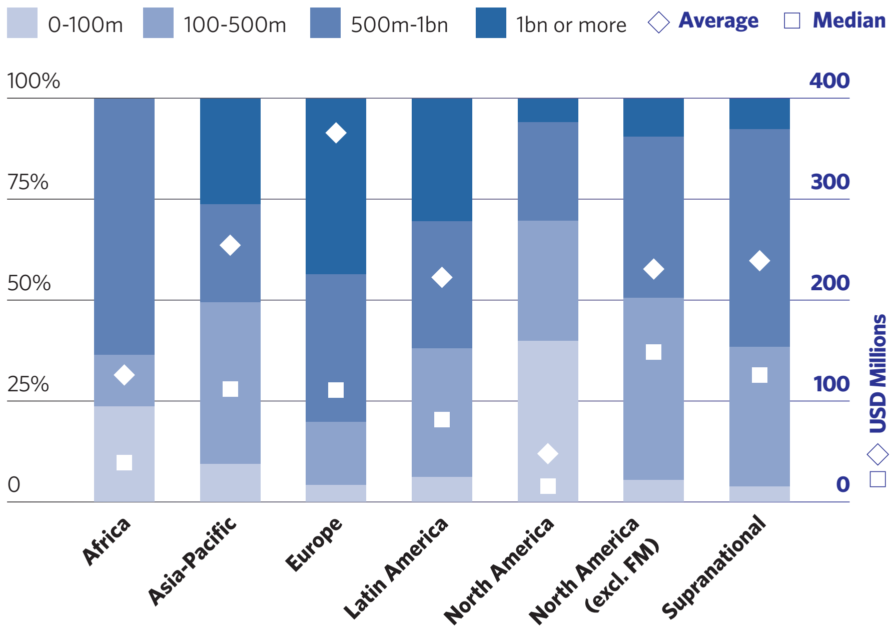
Europe has the biggest pool of benchmark-size bonds by a substantial margin, especially in the USD1bn+ category. The average European deal size is therefore the highest, standing at USD366bn, while its median of USD114m is in line with the global median. This shows the effect a few very large deals can have.

North America is almost the opposite. Even when FM is excluded, it has the highest share of deals up to USD500m due to US Munis.

Increasing volume in larger size brackets



Europe has highest share of large deals by some margin



Top 10 issuers in 2019 (excluding Supranationals)

	Developed Markets	Certified	Emerging Markets	Certified
1	Fannie Mae (US)		ICBC (CN)	
2	KfW (DE)		Industrial Bank Co., Ltd (CN)	
3	Dutch State Treasury Agency (NL)	✓	Noor Energy 1 (UAE)	✓
4	Republic of France (FR)		Republic of Chile (CL)	✓
5	SNCF (FR)	✓	Republic of Poland (PL)	
6	Engie (FR)		China Construction Bank (CN)	✓
7	Société du Grand Paris (FR)	✓	Bank of Jiangsu (CN)	
8	Kingdom of Belgium (BE)		China Development Bank (CN)	
9	Crédit Agricole CBI (FR)		MAF (UAE)	
10	Kommuninvest (SE)		Islamic Development Bank (SA)	

But as this is heavily concentrated in the USD100m-500m range (not USD0-100m), the region has the highest median (without FM).

Asia-Pacific has the most even size distribution, with at least 10% in every range and a 50:50 split between benchmark- and non-benchmark-size deals.

Latin America exhibited the second largest USD1bn or more share, while in Africa there were none of this size.

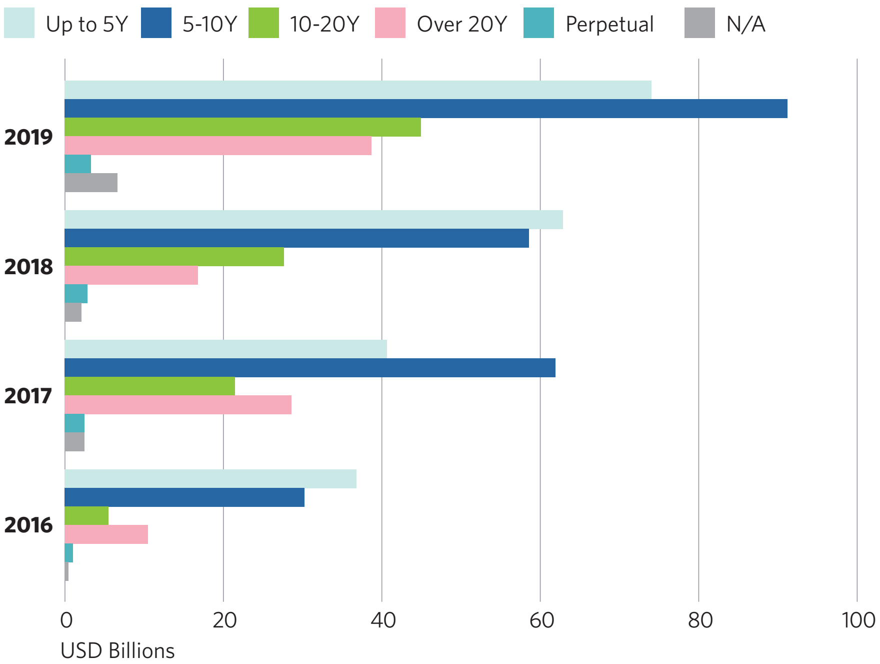
Green bonds were longer-dated in 2019

There was a significant change in the distribution of bond tenors in 2019, essentially away from shorter terms towards longer ones. This is despite volumes increasing across all tenor ranges.

2018 had seen a marked shift towards shorter terms, most probably largely a result of higher market volatility and rising interest rates. The opposite happened in 2019, which may be partly associated with a reversal of these trends as the market recovered and interest rates remained low.

Overall, the use of longer tenors increased far more than shorter ones, with the growth being largest the longer the term. This is most noticeable in the 20Y+

Volume increasing more among longer tenors[17]



bracket, which more than doubled in volume to USD39bn following a 41% drop in 2018; this took its share from 10% to 15%. The next largest movers were the 10-20Y and 5-10Y intervals, which respectively increased 62% and 56%. Bonds with a term under 5Y were up by 18%, versus 55% in 2018.

Within the other categories, perpetuals continued their steady growth, although at 20% this was below the overall market. Around two-thirds of perpetual volume came from energy companies Engie and Iberdrola, both with one deal. Finally, driven by the increase of green loans, the N/A category more than tripled to USD6.7bn.

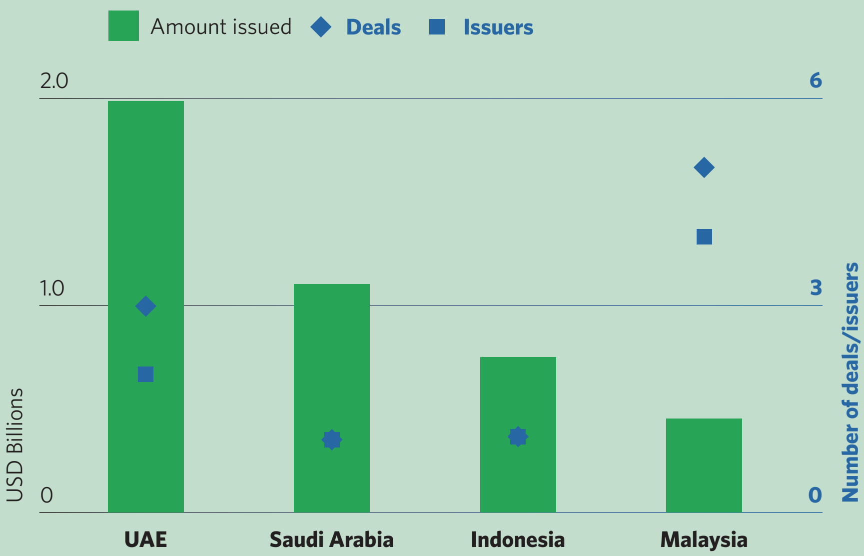
Sukuk leads bond type diversification

Within bond formats, there were no obvious changes versus 2018, certainly among the most common types. The share of the top 10 was unchanged at 86%. Senior unsecured deals remained the most prevalent, accounting for almost half of the market, although the subordinated unsecured format experienced one of the largest increases, more than doubling to USD14bn. Secured debt prevailed as the second largest category, as usual driven by Fannie Mae.

More broadly, though, there is a general market trend of increased diversification to include other bond types, to be expected in a growing and maturing market.

The most interesting development is the growth of green sukuk, which are becoming more popular in Islamic countries. Green sukuk volume more than tripled in 2019, reaching USD4.3bn from eight issuers in four countries. They spanned various issuer types, with renewable energy - mainly solar - being the most funded category. Our ASEAN and GIIO reports explore this topic in more detail.[18, 19]

Sukuk: Malaysia has biggest pool of bonds and issuers UAE, Saudi Arabia and Indonesia dominate volume



Note: Ordered by size, the eight sukuk issuers of 2019 were: MAF (UAE, two deals), Islamic Development Bank (Saudi Arabia), Taweelah IWP (UAE), Republic of Indonesia, PNB (Malaysia, two deals), Cypark Ref Sdn Bhd (Malaysia), Edra Solar Sdn Bhd (Malaysia), and Pasukhas Group (Malaysia).

External Reviews

More external reviews for smaller deals

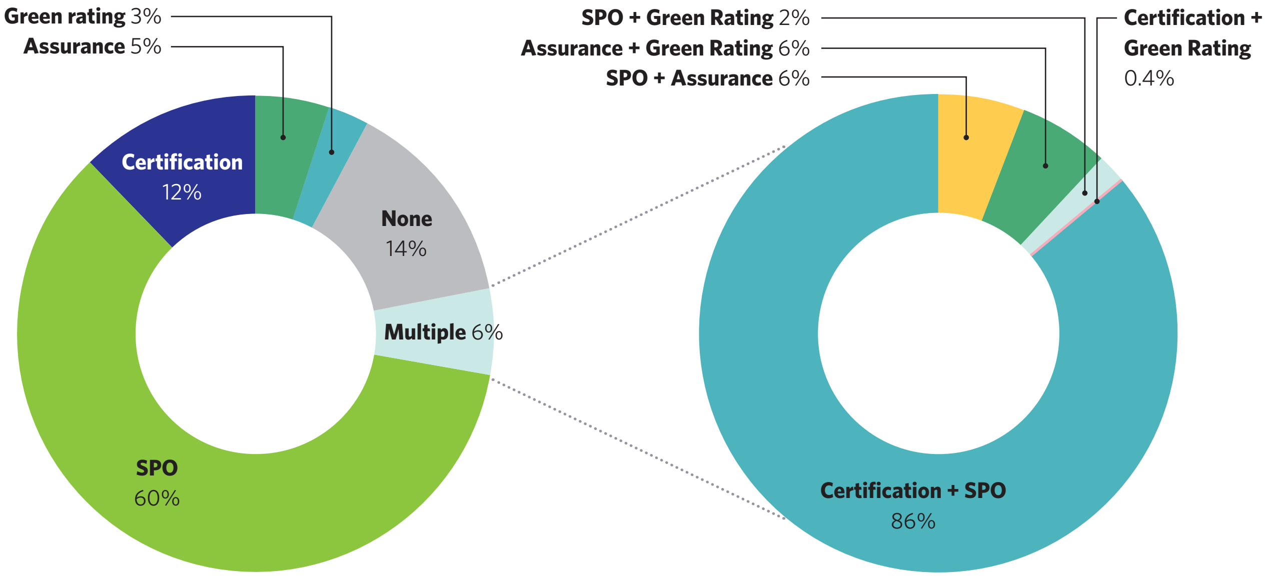
86% of the amount issued had some form of external review in 2019. Second party opinions (SPO) remain the preferred option by far, accounting for almost two-thirds of the total market; however, Certification under the Climate Bonds Standard increased most, almost doubling in volume to USD45bn and cementing itself as the second largest category. On the other hand, green bond ratings – typically provided by credit rating agencies – were relatively flat at USD8bn and assurance dropped from about USD21bn to USD16bn.

A similar trend is observed looking at deal count, except that here the increases are more significant for all types of review; for example, the number of deals with an SPO increased 75% compared to 55% by volume (even despite less deals by Fannie Mae, which benefit from a CICERO SPO). This suggests that, on average, more smaller deals are obtaining external reviews.

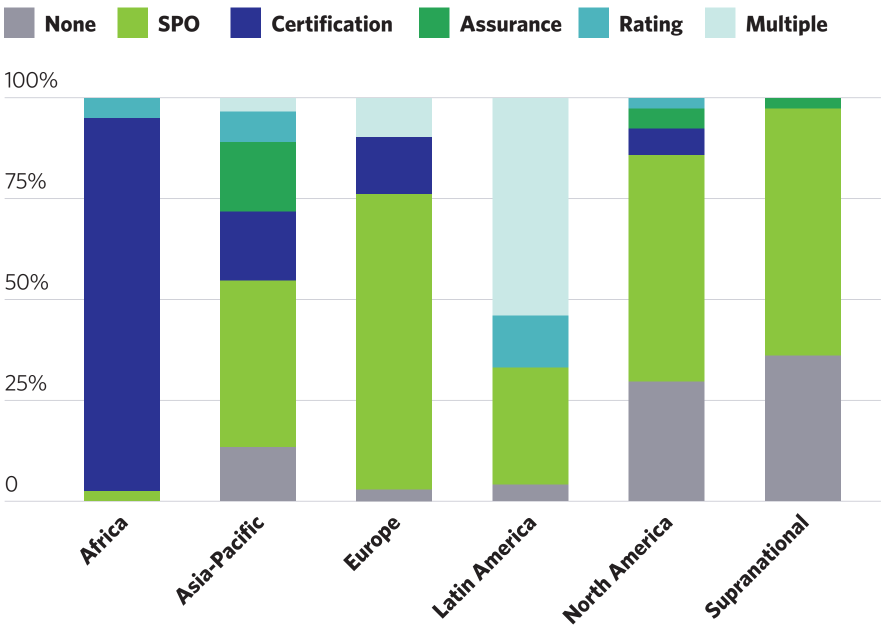
It is also worth noting that several deals benefit from multiple types of review, the most common case clearly being Certification + SPO. Curiously, some of the largest issuers of Certified Climate Bonds chose to also obtain an SPO, most notably Société du Grand Paris, the Republic of Chile, and Germany's EnBW.

Furthermore, a total of USD3.1bn issued between 2016 and 2018 benefitted from three forms of external review: Certification + SPO + Green Rating.

86% of issuance had at least one form of external review; 6% had multiple



The use of external reviews varies by region



Regional differences

The profile of external reviews varies considerably by region.

Africa technically has the highest share of review with seven out of seven deals reviewed, five of which were Certified Climate Bonds.

Europe follows with 97%, largely composed of SPO, with Latin America next at 96% (LatAm's volume is dominated by multiple reviews due to Chile's sovereigns, but most deals only had an SPO).

Asia-Pacific has the most even distribution of review types, while, driven by the US Muni market, North America features a high share without any review (only surpassed by Supranational entities).

Certified Climate Bonds

Certification under the Climate Bonds Standard reached its highest share of the market yet in 2019, at 17% (14% in 2018, 14% cumulative), with 44% of the Certified volume to date coming during the year. The cumulative amount from Certified Climate Bonds has now passed the USD100bn mark.

Unlike in 2018, allocations to Transport accounted for 50% of the Certified volume, more than Energy and Buildings combined. Almost all the largest issuers financed Transport to some extent.

The top 5 issuers of Certified Climate Bonds in 2019 were:

Dutch State Treasury Agency (Netherlands): one deal, USD6.7bn, to finance renewable energy, energy efficiency in buildings, transport, and water infrastructure (including adaptation).

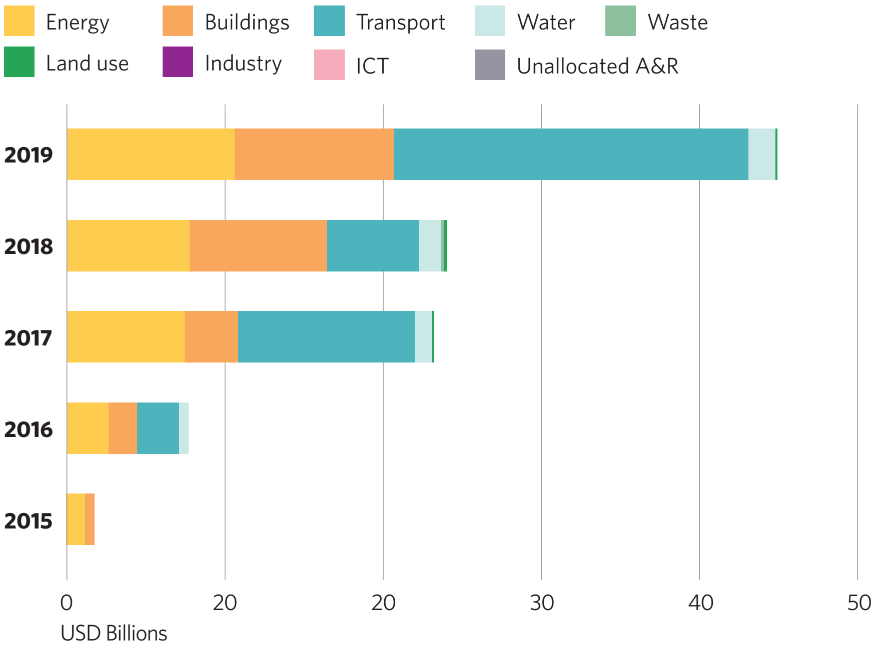
SNCF (France): nine deals, USD4bn, for various rail projects, including maintenance, upgrades, and energy efficiency as well as new rail lines and extensions to existing lines (for both passengers and freight).

Société du Grand Paris (France): six deals, USD3.6bn, to finance rail and metro expansions around Paris, including 200 km of new metro lines, 68 metro stations and seven supporting technical centres. The entire project is funded via green bonds, with Programmatic Certification.[20]

Noor Energy 1 (UAE): one deal, USD2.7bn, to develop a 950MW solar CSP + PV project south of Dubai. This is the first Certified deal in the Middle East.

Republic of Chile: two deals, USD2.4bn, mainly to finance upgrades and extensions to Santiago's metro network, as well as

Transport dominates within Certified Climate Bonds



investments in electromobility, sustainable buildings, water management and solar energy across the country. Chile has already tapped these deals and issued another two in 2020, totalling USD3.8bn.

External review providers

CICERO remained the leading SPO provider in 2019, representing 40% of the amount issued, followed by Sustainalytics (29%) and Vigeo Eiris (16%). However, this is driven by Fannie Mae; excluding it, Sustainalytics would be first (although by a mere USD0.3bn).

By number of issuers, Sustainalytics leads with 88 versus CICERO's 69, while by deal count CICERO is top, with 202 deals against Sustainalytics' 119 (excluding FM). The figures suggest that, compared to other providers, CICERO engages with relatively fewer issuers but these tend to issue more bonds.

Many SPO providers are also Approved Verifiers for Certifications under the Climate Bonds Standard. Sustainalytics led amongst verifiers, accounting for over half (52%) of the Certified volume and 40% of deals.

An increasing number of issuers without an external review are providing similar information to what would go into a green bond framework in the offer prospectus. As prospectus disclosure is reviewed by legal counsel, technical advisors and auditors, this provides a degree of comfort on green claims, but a separate external review would nonetheless strengthen disclosure.

External reviews

External reviews from an independent party confirm alignment with the GBP/GLP and/or compliance with the Climate Bonds Standard. The most common forms of review are:

Assurance: external confirmation of compliance with GBP.

Second Party Opinion (SPO): external assessment of the issuer's green bond framework, confirming compliance with GBP and analysing the eligible categories.

Green bond rating/evaluation: evaluation against a third-party rating methodology, which considers the environmental aspects of the investment (separately from credit ratings).

Verification for Certified Climate Bonds: third-party verification, pre- and post-issuance, which confirms that assets adhere to the Climate Bonds Standard and Sector Criteria.

CLIMATE BONDS STANDARD CERTIFIED

Certified Climate Bonds

Issuers can certify green issuance under the Climate Bonds Standard.[21] Certification confirms that the bond is aligned to the Paris Agreement, i.e. keeping global warming under 2°C.

A third-party Approved Verifier assesses compliance of the assets with the Climate Bonds Standard and Sector Criteria. Annual post-issuance verification is then required to maintain Certified status.

Appendix: Yearly green bond volume by currency (in USD)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
EUR	807m			3m	51m	748m	4.3bn	16.8bn	15.0bn	20.6bn	56.1bn	66.4bn	108.0bn	**288.8bn**
USD			480m	290m	665m	585m	5.3bn	11.2bn	22.5bn	38.0bn	71.2bn	55.3bn	82.4bn	**287.9bn**
CNY								208m	95m	17.7bn	15.6bn	22.0bn	19.9bn	**75.5bn**
SEK		414m	429m	234m	29m	631m	608m	3.0bn	1.4bn	3.3bn	4.1bn	7.9bn	13.2bn	**35.4bn**
AUD				1.3bn	124m	168m	84m	680 m	923m	911m	2.1bn	4.2bn	5.4bn	**15.8bn**
CAD					10m			1.1bn	551m	916m	1.5bn	4.8bn	4.8bn	**13.7bn**
GBP								1.3bn	2.6bn	711m	1.2bn	2.5bn	4.2bn	**12.5bn**
JPY				1m			192m	357m		98m	853m	2.5bn	6.6bn	**10.6bn**
CHF								388m			688m	450m	2.3bn	**3.8bn**
HKD											253m	1.5bn	2.1bn	**3.8bn**
BRL				786m	96m	12m	460m	512m	74m	533m	152m	210m	896m	**3.7bn**
NOK				68m				461m	426m	123m	788m	170m	1.6bn	**3.6bn**
ZAR				661m	146m	1132m	124m	247m	67m	74m	77m	93m	751m	**3.4bn**
SGD											440m	876m	1.7bn	**3.0bn**
NZD				483m			67m	236m	97m	26m	835m	136m	300m	**2.2bn**
INR					5m			44m	420m	654m	905m	51m	3m	**2.1bn**
TWD											67m	478m	1.0bn	**1.5bn**
MYR				4m		8m					479m	223m	660m	**1.4bn**
TRY				214m	119m		3m	259m	290m	6m	111m	81m		**1.1bn**
MXN				102m		135m	60m	27m	17m	186m	10m	370m	135m	**1.0bn**
DKK													902m	**902m**
THB												153m	734m	**887m**
COP				91m						115m	216m	181m	52m	**654m**
PHP										226m		110m	287m	**623m**
PLN						20m							499m	**519m**
KRW												277m	110m	**387m**
RUB				67m	12m	23m	16m		5m		89m		4m	**216m**
MAD										167m		38m		**205m**
IDR						6m		7m	68m	43m	4m	50m		**178m**
CLF												67m	83m	**149m**
HUF				41m									100m	**141m**
NGN											30m		107m	**136m**
ISK												33m	98m	**132m**
PEN								42m				30m	30m	**102m**
CZK													52m	**52m**
FJD											29m	19m		**48m**
KES													41m	**41m**
VND										27m				**27m**
NAD												5m		**5m**
BBD													2m	**2m**
Total	**807m**	**414m**	**909m**	**4.3bn**	**1.3bn**	**3.5bn**	**11.3bn**	**36.8bn**	**44.5bn**	**84.5bn**	**158.0bn**	**171.2bn**	**258.9bn**	**776.3bn**

Endnotes

1. Climate Bonds Green Bond Database, Climate Bonds Initiative, 2020.
2. 2019 Green Bond Market Summary, Climate Bonds Initiative, February 2019.
3. Green Bond Principles, ICMA, June 2018.
4. Green Loan Principles, LMA, December 2018.
5. Climate Bonds Taxonomy, Climate Bonds Initiative, January 2020.
6. Climate Bonds Sector Criteria, Climate Bonds Initiative, 2020.
7. Climate Bonds Standard, Climate Bonds Initiative, 2020.
8. Climate Bonds Green Bond Database, Climate Bonds Initiative, 2020.
9. Sustainable Finance, European Commission, 2020.
10. Climate Bonds Standard V3.0, Climate Bonds Initiative, 2020.
11. Climate Resilience Principles, Climate Bonds Initiative, 2020.
12. Figures refer to the issuer's domicile, defined as country of risk. This is not necessarily the domicile of the issuing entity, e.g. if its parent is from another country, the parent's domicile would be 'country of risk'.
13. The increase in non-financial corporate issuance is particularly positive given strong demand from investors for this issuer type, as uncovered in our Green Bond European Investor Survey 2019. Sovereigns are also highly in demand.
14. Unalloc. A&R = Unallocated Adaptation & Resilience, i.e. funding for A&R projects/assets that we are unable to allocate/specify to the other UoP categories. The drop in 'Unalloc. A&R' volume versus 2018 is due to a change in the name and definition of this category in 2019; previously, all A&R was included (i.e. not just unallocated / unspecified A&R).
15. Use of proceeds figures are estimates based on the Climate Bonds Initiative Green Bond Database methodology.
16. The State of World Fisheries and Aquaculture: Meeting the Sustainable Development Goals, FAO, 2018.
17. Green Infrastructure Investment Opportunities (GIIO) Programme, Climate Bonds Initiative, 2020.
18. For deals with multiple tranches and maturity dates, the longest term is used. N/A applies when we are not able to find the maturity or when the deal is a loan without term.
19. ASEAN Green Finance State of the Market 2019, Climate Bonds Initiative, April 2020.
20. Programmatic Certification, Climate Bonds Initiative, 2020.
21. Climate Bonds Standard, Climate Bonds Initiative, 2020.

Climate Bonds Taxonomy

The Climate Bonds Taxonomy identifies the assets and projects needed to deliver a low carbon economy and gives GHG emissions screening criteria consistent with the 2-degree global warming target set by the COP 21 Paris Agreement. More information is available at https://www.climatebonds.net/standard/taxonomy.

ENERGY	TRANSPORT	WATER	BUILDINGS	LAND USE & MARINE RESOURCES	INDUSTRY	WASTE	ICT
Solar	Private transport	Water monitoring	Residential	Agriculture	Cement production	Preparation	Broadband networks
Wind	Public passenger transport	Water storage	Commercial	Commercial Forestry	Steel, iron & aluminium production	Reuse	Telecommuting software and service
Geothermal	Freight rail	Water treatment	Products & systems for efficiency	Ecosystem conservation & restoration	Glass production	Recycling	Data hubs
Bioenergy	Aviation	Water distribution	Urban development	Fisheries & aquaculture	Chemical production	Biological treatment	Power management
Hydropower	Water-borne	Flood defence		Supply chain management	Fuel production	Waste to energy	
Marine Renewables		Nature-based solutions				Landfill	
Transmission & distribution						Radioactive waste management	
Storage							
Nuclear							

Certification Criteria approved

Criteria under development

Due to commence

06/2020

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