

# SUSTAINABLE DEBT

## GLOBAL STATE

## OF THE MARKET

# 2021

GREEN



SUSTAINABILITY



TRANSITION



SOCIAL



SUSTAINABILITY LINKED



# 1. Introduction

## Contents

<b>1. Introduction</b>	2
<b>2. Methodology</b>	3
<b>3. Report highlights</b>	5
<b>4. Green</b>	7
<b>5. Sustainability</b>	14
<b>6. Social</b>	16
<b>7. Sustainability-linked and transition bonds</b>	19
<b>8. Spotlight: The unlabelled climate-aligned bond universe</b>	23
<b>9. Spotlight: The Sovereign GSS Bond Club</b>	25
<b>10. Spotlight: Taxonomies</b>	28
<b>11. Spotlight: Low-carbon energy, the most urgent transition</b>	30
<b>12. Outlook</b>	32
<b>13. Appendices</b>	33
<b>14. Endnotes</b>	34

## About this report

This is the 11<sup>th</sup> iteration of Climate Bonds Initiative's (Climate Bonds) Global State of the Market Report. The scope of this report has been extended to include analysis of the green, social and sustainability (GSS) markets, plus sustainability-linked bonds (SLBs), and transition bonds. This report describes the shape and size of the GSS, SLB, and transition (GSS+) themed debt market to the end of 2021.

## About the Climate Bonds Initiative

Climate Bonds is an international organisation working to mobilise global capital for climate action. It promotes investment in projects and assets needed for a rapid transition to a low-carbon, climate resilient, and fair economy. The mission focus is to help drive down the cost of capital for large-scale climate and infrastructure projects and to support governments seeking increased capital markets investment to meet climate and greenhouse gas (GHG) emission reduction goals.

Climate Bonds conducts market analysis and policy research; undertakes market development activities; advises governments and regulators; and administers a global green bond Standard and Certification scheme.

Climate Bonds screens green finance instruments against its global Taxonomy to determine alignment, and shares information about the composition of this market with partners.






The Climate Bonds team is in the process of expanding such analysis of alignment to other thematic areas, including social and sustainability bonds, via the development of definitions for investments that give rise to positive social impacts and added resilience.

Certification against the Climate Bonds Standard represents about 20% of global green bond market volumes. This scheme is underpinned by rigorous scientific criteria to ensure that Certified bonds and issuers are consistent with the well-below 2 °C target of the Paris Agreement. Obtaining and maintaining Certification requires initial and ongoing third-party verification to ensure the assets meet the metrics of Sector Criteria.

## List of Acronyms

<b>A&amp;R:</b> Adaptation and resilience
<b>ABS:</b> Asset-backed securities
<b>CCS:</b> Carbon capture and storage
<b>DFIs:</b> Development finance institutes
<b>DNSH:</b> Do no significant harm
<b>DM:</b> Developed market
<b>EM:</b> Emerging market
<b>ESG:</b> Environmental, social, and governance
<b>GBDB:</b> Green bond database
<b>GHG:</b> Greenhouse gas
<b>GSS:</b> Green, social and sustainability
<b>GSS+:</b> GSS, SLB, and transition
<b>IPCC:</b> Intergovernmental Panel on Climate Change
<b>LAC:</b> Latin America and Caribbean
<b>KPI:</b> Key performance indicator
<b>SBT:</b> Science-based targets
<b>SBTi:</b> Science Based Targets initiative
<b>SDG:</b> Sustainable development goal
<b>SLB:</b> Sustainability-linked bond
<b>SNAT:</b> Supranational issuers
<b>SPT:</b> Sustainability performance target
<b>SRI:</b> Socially responsible investment
<b>UNDP:</b> United Nations Development Programme
<b>UK:</b> United Kingdom
<b>UoP:</b> Use of proceeds
<b>YOY:</b> Year-on-year

## Total size of thematic markets as of 31/12/2021

	 <b>Green</b>	 <b>Sustainability*</b>	 <b>Social*</b>	 <b>SLB</b>	 <b>Transition</b>
<b>Total size of market</b>	USD1.6tn	USD520.5bn	USD538.8bn	USD135.0bn	USD9.6bn
<b>Number of issuers</b>	2045	425	861	225	15
<b>Number of instruments</b>	9886	2323	3471	317	32
<b>Number of countries</b>	80	51	44	37	12
<b>Number of currencies</b>	47	38	33	16	7

\*The Social and Sustainability Bond Database is being finalised and deal-level data may be subject to changes. Further, the Social and Sustainability Bond Database follows a different (less stringent) methodology than the Green Bond Database. The aim of this paper is to provide an indication of the shape and size of the market.

## 2. Methodology

### Scope of analysis

This report includes five sustainable debt themes based on the projects, activities, and expenditures financed: green, social, sustainability, SLB, and transition. Pandemic bonds are a sub-set of the social theme.

The GSS+ themes can be described as follows:

**Green:** dedicated environmental benefits (captured since 2012)

**Social:** dedicated social benefits (captured since 2020)

**Sustainability:** green and social benefits combined into one instrument (captured since 2020)

**SLBs:** coupon step-up/step-downs linked to entity-level sustainability performance targets (SPTs) (captured since 2021)

**Transition:** UoP supporting transition at activity or entity level. (captured since 2021)

### Methodology overview

This report is based on Climate Bonds three databases:

1. Green Bond Database (GBDB)
2. Social and Sustainability Bond Database
3. SLB and Transition Bond Database

To qualify for inclusion, debt instruments must have a label. Green, social, sustainability, and transition bonds must finance sustainable projects, activities, or expenditures. SLBs must announce clear SPTs for the entity.

Debt labels describe the types of projects, activities, or expenditures financed, and/or their benefits. Green, social, sustainability, and transition are the most common labels, but a broad range of labels is used (see Appendix A).

#### Green

All deals in the green theme have been screened to verify their integrity. Screening is based on a set of process rules stipulated in Climate Bonds GBD Methodology, including the following two overarching criteria:<sup>1</sup>



1. Deals must carry a variant of the green label
2. All net proceeds must verifiably (public disclosure) meet Climate Bonds' green definitions derived from the Climate Bonds Taxonomy<sup>2</sup>

We review all green debt instruments to ensure their green credentials.

### Pending green bonds

The Climate Bonds GBDB includes bonds with 100% of net proceeds dedicated to green activities, assets, projects, and/or expenditures aligned with the Climate Bonds Taxonomy. As of 4 February 2022, USD74bn of green bonds priced in 2021 remained under assessment for inclusion (pending).

The green bond market has expanded with an average growth rate of 54% in the last five years. Despite the rapid evolution of the market there has been a notable lack of standardisation among green bonds. Inadequate disclosure and/or clarity at the asset and/or project level in green bond frameworks is an issue that investors continue to face.

Climate Bonds encourages higher levels of ambition, innovation, and materiality of a bond's use of proceeds (UoP) that result in positive, long-lasting climate benefits. Transparency and completeness of information from issuers are essential to determine a bond's alignment with market standards and green taxonomies but the level of disclosure is often inadequate.

While a lack of granularity may have been understandable at inception as the market has matured, expectations have changed, and investors now want more precise definitions and reporting of eligible green project categories. Key challenges of determining the alignment of what is often a rather broad list of categories include:

- **Building energy efficiency (especially upgrade measures/retrofits)** is a project category which has often been found to be inadequately described. Since buildings contribute substantially to global GHG emissions and energy consumption, any serious reduction effort should explicitly address the carbon mitigation aspect

and energy savings opportunities of projects funded via green bonds. Good practice in energy efficiency in the built environment has included a minimum 20-30% energy efficiency target for the whole category. Numerous issuers do not provide detail on this. For instance, many US issuers do not include energy efficiency improvement targets for building retrofits in their offering documents, and they generally prefer to provide a list of individual measures that offer little indication on materiality.



- **Hydropower and geothermal energy generation** are often presented with no eligibility threshold. Frameworks that are in line with market practice have included emissions intensity for such projects, expressed in terms of the average gCO<sub>2</sub>e/kWh of electricity generated over the lifetime of the asset.
- **Sustainable agriculture** has appeared with increasing frequency in recent frameworks. The definition of this category is often rather opaque and can be a dissuading factor in assessing the eligibility of the offering, as issuers seldom provide details on the types of agricultural activities and methods of production covered, especially as they relate to climate mitigation or adaptation effects. More often, there is a simple reference to organic farming, which can but does not always generate climate benefits.

As standard practice, issuers should include robust pre-issuance UoP disclosure, ideally including thresholds and improvement targets for each asset and/or project along with several example projects to provide more clarity on the materiality of the investment.

## Social and sustainability

Climate Bonds does not yet screen social and sustainability bonds' UoP against performance thresholds. The UoP is, however, classified in accordance with the respective labels and categorised as follows:

**Sustainability:** label describes a combination of green and social projects, activities, or expenditures, e.g., sustainable; Sustainable Development Goal (SDG); socially responsible investment (SRI); or environmental, social and governance (ESG), etc.



**Social:** label is exclusively related to social projects, e.g., pandemic, COVID-19, housing, gender, women, health, education, etc.



Any instrument financing only green projects is included in the green theme, and the GBDB should it meet eligibility requirements, irrespective of its label. A sustainability-labelled bond that only finances social projects, as well as one that finances a combination of green and social, is considered to fall under the sustainability theme. Because of this, our analysis of other themes provides an initial indication of capital market funding aimed at each theme based on the deal label (see Appendix B).

The EU Platform on Sustainable Finance published its Final Report on Social Taxonomy in February 2022.<sup>3</sup> Climate Bonds will assess this report and incorporate its content and subsequent work on specific objectives, sub-objectives, and constituent significant contribution/do no significant harm (DNSH) criteria into the social and sustainability bond database where possible. This report is based on bonds priced on or before 31 December 2021, hence the EU report and the principles for its proposed social taxonomy did not feature in the screening process.

### Social and sustainability bonds originating

**from China:** Climate Bonds' work on social and sustainability bonds originating from China is just beginning. Climate Bonds does screen, classify, and verify indicative data pertaining to social and sustainability bonds originating from China but this does not yet extend to the full universe. The dataset referenced in this paper reflects bonds marked as social or sustainability in the WIND Financial database as of 31 December 2021.

## Sustainability-linked bonds

SLBs raise general purpose finance and involve penalties/rewards (e.g., coupon step-ups/step-downs, early repayment obligations, etc.) linked to not meeting/meeting pre-defined, time bound SPTs, typically at the entity level.



Climate Bonds records but does not yet screen SLBs against thresholds or targets. Such a screening methodology is under development.

## Transition bonds

Transition finance describes instruments financing activities that are not low- or zero-emission (i.e., not green), but have a short- or long-term role to play in decarbonising an activity or supporting an issuer in its transition to Paris Agreement alignment. The transition label enables inclusion of a more diverse set of sectors and activities and includes labels such as blue transition and green transition.



At present, transition bonds predominantly originate from highly polluting, and hard-to-abate industries. They do not fall into the existing definitions of green but are a critical component of a transition to net zero. Example sectors include extractives such as mining; materials such as steel and cement; and industrials including aviation and shipping.

Climate Bonds records but does not yet screen transition bonds against thresholds or targets. As relevant criteria at both activity and entity level are developed Climate Bonds will introduce screening for bonds and issuers in those sectors. Climate Bonds is currently developing criteria for the Cement, Basic Chemicals, and Steel industries.

### 3. Report highlights

At the end of 2021, Climate Bonds had recorded more than 16,000 GSS+ debt instruments with a cumulative volume of USD2.8tn.

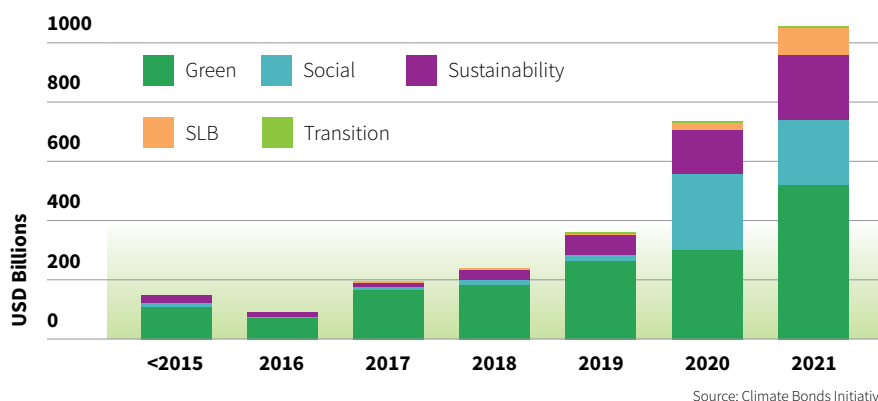
In 2021, Climate Bonds captured USD1.1tn of new GSS+ volumes, 46% more than the USD730.5bn in 2020. The green theme is still the largest source of debt, with 49% of the total, (USD523bn), and SLBs demonstrated the fastest growth, expanding by ten times year-on-year (YOY).

#### Market Analysis

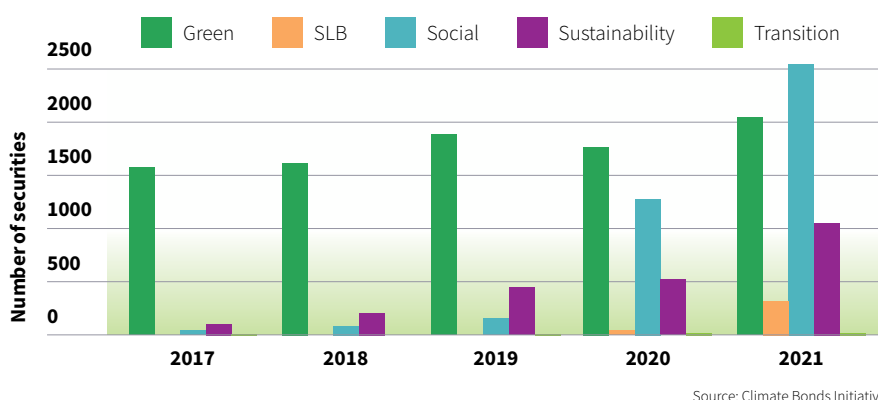
##### The sustainable debt market in 2021

- Climate Bonds captured GSS+ themed debt amounting to almost USD1.1tn in 2021. The addition of 5999 instruments contributed 35% to the cumulative total of 16,697.
- The year was characterised by post-COVID-19 inflation concerns and the timing of withdrawal of central bank support. Issuers crowded into the market to issue or refinance at prevailing low rates, and the GSS+ market continued to thrive.
- September was the busiest month on record, attracting GSS+ volumes of USD152.4bn. This included seven sovereigns who between them priced eight bonds worth almost USD30bn.
- The SLB market gained momentum and was the fastest growing theme attracting 189 issuer names.

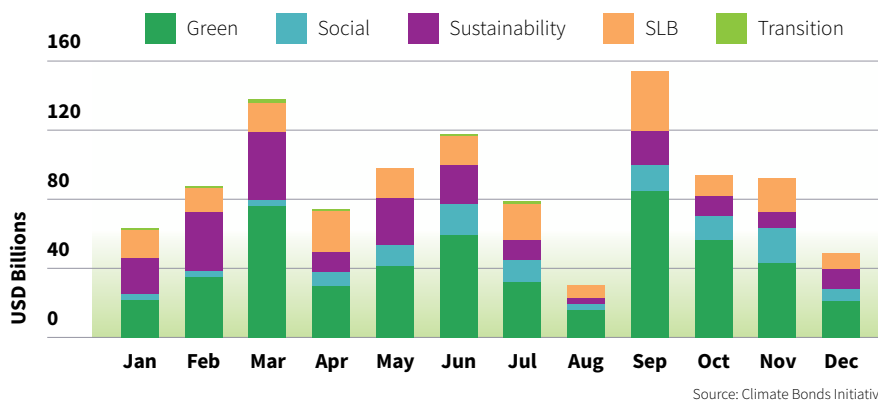
#### GSS+ debt volume surpassed USD1tn in 2021



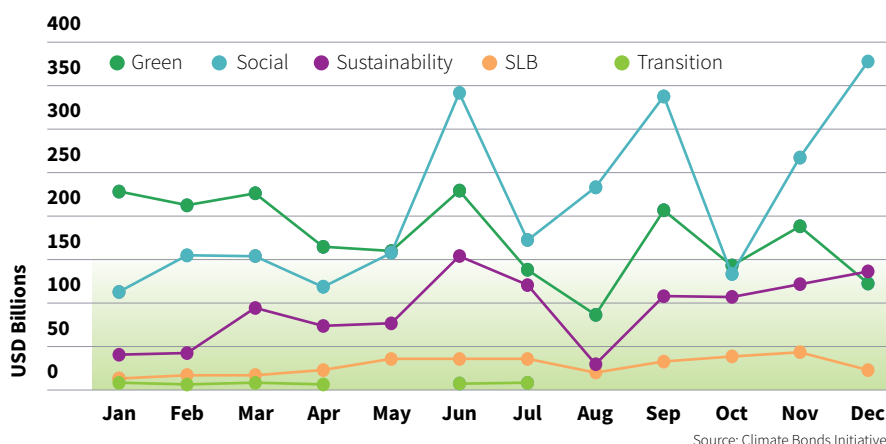
#### Climate Bonds captures more than 16,000 GSS+ securities



#### September was the busiest month for GSS+ debt



#### Six thousand GSS+ bonds were priced in 2021



## Green bond market score card



	2021	2020	Percent change YOY
Size of market	<b>USD522.7bn</b>	<b>USD298.1bn</b>	<b>75%</b>
Number of issuers	<b>839</b>	<b>636</b>	<b>32%</b>
Number of instruments	<b>2,089</b>	<b>1,749</b>	<b>19%</b>
Average size of instrument	<b>USD250m</b>	<b>USD165m</b>	<b>51%</b>
Number of countries	<b>58</b>	<b>56</b>	<b>3.5%</b>
Number of currencies	<b>33</b>	<b>34</b>	<b>-3%</b>

The green debt market returned to rapid growth, with volumes increasing by 75% YOY. The green theme continued to attract new issuers and included a total of 839 issuers during the year. The average size of individual green bonds rose by more than 50% to reach USD250m. The addition of developed market (DM) sovereign bonds from new and existing issuers no doubt contributed to that growth.

## Sustainability bond market score card



	2021	2020	Percent change YOY
Size of market	<b>USD200.2bn</b>	<b>USD162.5bn</b>	<b>23%</b>
Number of issuers	<b>287</b>	<b>101</b>	<b>184%</b>
Number of instruments	<b>1,065</b>	<b>523</b>	<b>104%</b>
Average size of instrument	<b>USD188m</b>	<b>USD310m</b>	<b>-39%</b>
Number of countries	<b>46</b>	<b>25</b>	<b>84%</b>
Number of currencies	<b>30</b>	<b>26</b>	<b>15%</b>

In 2021, Climate Bonds captured 184% more issuers of sustainability bonds compared to 2020. The average size of each instrument declined to USD188m. The number of countries represented in the market in grew 84% YOY to reach 46.

## Social bond market score card



	2021	2020	Percent change YOY
Size of market	<b>USD223.2bn</b>	<b>USD255.2bn</b>	<b>-13%</b>
Number of issuers	<b>321</b>	<b>568</b>	<b>-43%</b>
Number of instruments	<b>2,555</b>	<b>1,265</b>	<b>102%</b>
Average size of instrument	<b>USD87m</b>	<b>USD201.7m</b>	<b>-57%</b>
Number of countries	<b>26</b>	<b>36</b>	<b>-28%</b>
Number of currencies	<b>23</b>	<b>23</b>	<b>Flat</b>

Growth in the number of social bonds captured by Climate Bonds declined by 14% to USD223.2bn in 2021. While the number of instruments more than doubled the average size of each one more than halved.

## Sustainability-linked bonds market score card



	2021	2020	Percent change YOY
Size of market	USD118.8bn	USD11.4bn	941%
Number of issuers	200	31	545%
Number of instruments	277	33	739%
Average size of instrument	USD428.8m	USD345.6m	24%
Number of countries	35	15	133%
Number of currencies	16	7	129%

The SLB market was the fastest growing among all themes, with the format attracting issuers from more than twice the number of countries in the prior year. The increased number of issuers entering the space enables greater diversification for sustainable investors as well as increasing the profile of best practice.

## Transition bond score card



	2021	2020	Percent change YOY
Size of market	USD4.4bn	USD3.3bn	33%
Number of issuers	10	7	43%
Number of instruments	13	12	8%
Average size of instrument	USD338.5m	USD275m	23%
Number of countries	8	7	14%
Number of currencies	6	3	100%

The transition bond market remains small, mainly due to a lack of agreed standards and definitions in the market. Climate Bonds expects this to develop further in 2022, which will enable more issuers to tie their debt obligations to ambitious and credible transition strategies.

## Spotlight sections

This paper includes forward looking spotlight analyses of the following four themes which will continue to influence the development of the GSS+ debt market in 2022 and beyond:

### The unlabelled climate-aligned bond universe

A summary of the shape and size of the climate-aligned bond universe determined using Climate Bonds proprietary methodology. *page 23*

### The Sovereign GSS Bond Club

A round-up of sovereign GSS debt priced in 2021. We highlight an EM issuer, Chile, and a DM issuer, the United Kingdom (UK) both of which observed current best practice, and contributed to market development in 2021. *page 25*

### Taxonomies

Taxonomies provide a crucial framework for market standardisation. We provide a summary of recent and expected developments in the global taxonomy space. *page 28*

### Low-carbon energy, the most urgent transition

We highlight areas of opportunity for green bond issuers in the renewable energy and energy efficiency UoP categories. The need to transition to reliable, local, clean sources of energy has never been more pertinent. *page 30*

## 4. Green

### Introduction

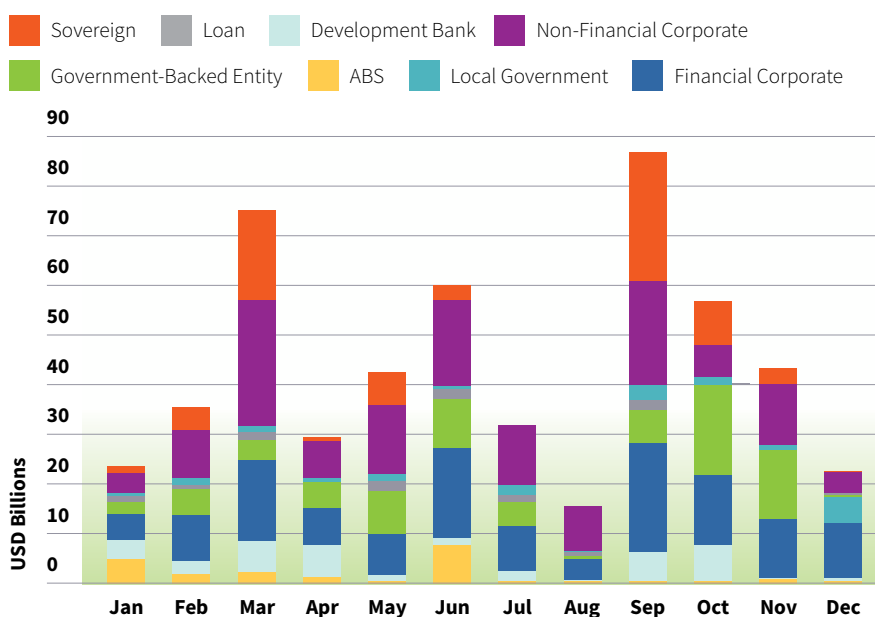
- Annual green bond issuance broke through the half trillion mark for the first time, ending 2021 at USD522.7bn, a 75% increase on prior year volumes. This lifted the cumulative total to USD1.6tn.
- Europe was the most prolific region, with cumulative issuance reaching USD758bn by year end.
- Rising inflation persisted driven by the post-COVID-19 economic recovery and higher energy prices. Issuers were keen to fund upcoming liabilities while interest rates remained low, and September was the most prolific month in the history of the green bond market (USD86bn).
- The Sovereign Green Bond Club continued to expand its membership. Eleven countries added USD72.8bn with new bonds or taps. Italy, the UK, Serbia, Spain, and South Korea issued debut sovereign green bonds.
- In 2021 private sector issuers returned to the green bond market in force. There was extraordinary growth from emerging market (EM) financial and non-financial corporate issuers.



### Regions

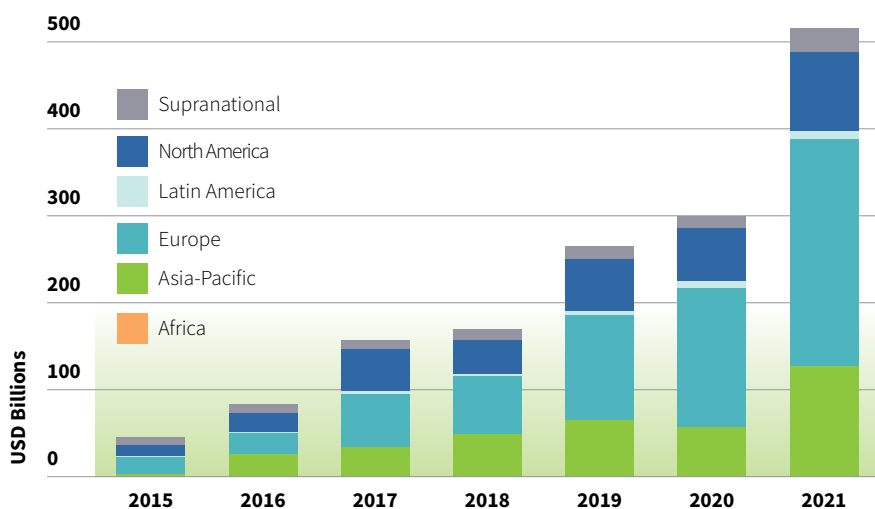
- Three quarters (73%) of the 2021 green bond volume originated from developed markets (DM) while 21% came from EM and just 4% was issued by supranational issuers (SNAT).** The EM contribution increased from 17% in 2020, with extraordinary growth from development banks (378%), financial (324%) and non-financial corporate (278%) issuers. Volumes in four regions increased YOY, while shrinking in the remaining two regions. Green bond issuance in the Asia-Pacific region (129%) experienced the strongest growth followed by SNAT (102%).
- Half of the 2021 green bond volumes originated in Europe which contributed USD265bn (50%) to the total. The most aggressive YOY growth in the region came from financial corporate (136%) and sovereign (103%) issuer types. Six European countries added sovereign volumes in 2021, including four debut issuers, and taps from three countries.
- Asia-Pacific became the second most prolific region for green bonds reaching a cumulative total of USD371.7bn by year end. A third of the cumulative Asia-Pacific green bond issuance was added in 2021 (USD129.5bn). Non-

### September was the busiest month on record for green bonds



Source: Climate Bonds Initiative

### Half of the 2021 green volumes originated from Europe



Source: Climate Bonds Initiative

financial corporate issuers were responsible for USD52bn, with the issuer type experiencing YOY growth of 309%. Financial corporates also experienced massive growth of 268% YOY, adding volumes of USD36bn. China, Japan, and Singapore were the top three largest country sources within the region, together originating 70% of the volume.

- North America fell one spot to third place with cumulative green bond issuance of USD343bn. The 2021 annual figure of USD92bn was 55% larger than the USD60bn recorded for the prior year, helped by stronger policy messaging and prevailing low rates. The largest absolute contributions came from non-financial corporate entities (USD28.3bn), and ABS (USD23bn).

- SNAT issuers were the fourth largest source of green bonds with the cumulative total reaching USD120.7bn at the end of 2021. Annual volumes doubled to USD27.3bn from 2020, and the increase can be explained by one bond: the green debut from the European Union (EU) worth USD13.9bn.
- Volumes from the Latin America and Caribbean (LAC) region declined on the year, with 36 issuers printing USD8.2bn worth of deals. LAC sovereign green bond volume in 2021 was entirely supplied by Chile, and the total declined by 68% to USD1.2bn from USD3.8bn in 2020. There were no sovereign green bonds from Africa in 2021, and just three issuers from the region came to the market bringing cumulative issuance to USD4.4bn.

## Turning Africa green

Africa is among the territories most vulnerable to the impacts of climate change, yet in 2021 just three green bonds from the region amounting to USD405bn were added to the Climate Bonds GBDB (ACME Solar Holdings 2026 USD334m, Nedbank 2028 ZAR1bn (USD62m), and Nedbank 2028 ZAR125m (USD9m)).



Any issuance in 2021 was likely the result of conversations initiated in 2020, and the COVID-19 response could help to explain the low green bond volumes. COVID-19 had a huge impact on Africa, affecting supply chains, commodity prices, and confidence. These factors contributed to Zambia's default in late 2020, and governments across the continent were preoccupied with immediate measures to keep their economies afloat. Similarly, banks would have been focused on managing COVID-19 driven loan delinquencies.

Development finance institutes (DFIs) can offer funding at lower rates compared to the debt markets, further limiting investor opportunity in the region. For instance, Cote d'Ivoire based shopping centre operator Emergence Plaza sold a USD18.1m 8-year private placement in August 2021 with a coupon of 7.5%.<sup>4</sup>

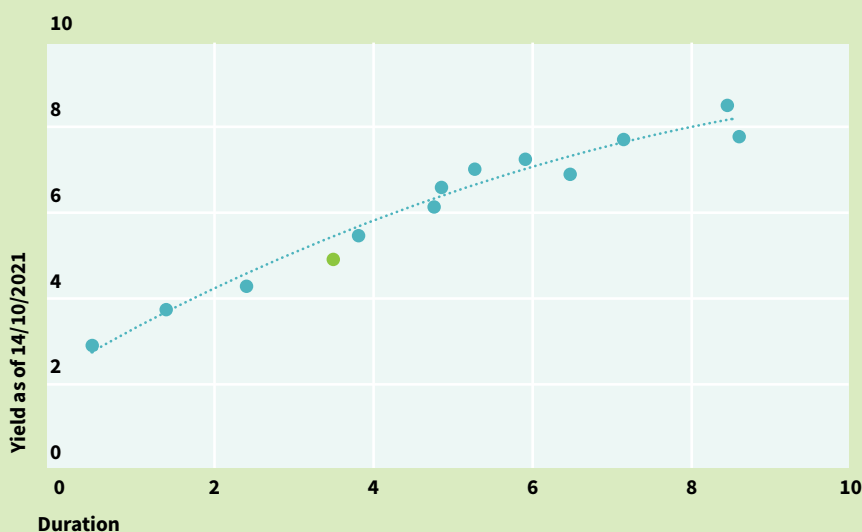
Historically, fragmented, small-scale borrowing needs have also been a barrier to

green bond issuance in Africa, especially to increase energy access through renewables. The global thematic debt market is far from reaching its potential to finance small-scale renewable energy in EM. As explored in Climate Bonds' upcoming *Linking Global Finance to Small-Scale Clean Energy* report, produced in partnership with UNDP, financial aggregation can be a key part of the solution to this problem and enable successful receivables securitisation, but relies on other complementary measures that must be addressed. Such measures mainly relate to strong institutions that underpin functioning

legal and banking systems, a developed local capital market, standardisation of data and receivables/contracts, and access to data.

Much of the rhetoric at COP-26 focused on the lack of investment to tackle climate change in developing countries. The upcoming COP-27 will provide an opportunity to present solutions and the location of host country Egypt, in the Northeast corner of Africa, will bring increased focus to the continent. Egypt priced its first green bond in September 2020. The bond priced with a greenium and has consistently remained inside its yield curve ever since.

### EGYPT 5.25% 2025 USD - inside conventional in secondary



Source: Bloomberg

## Countries

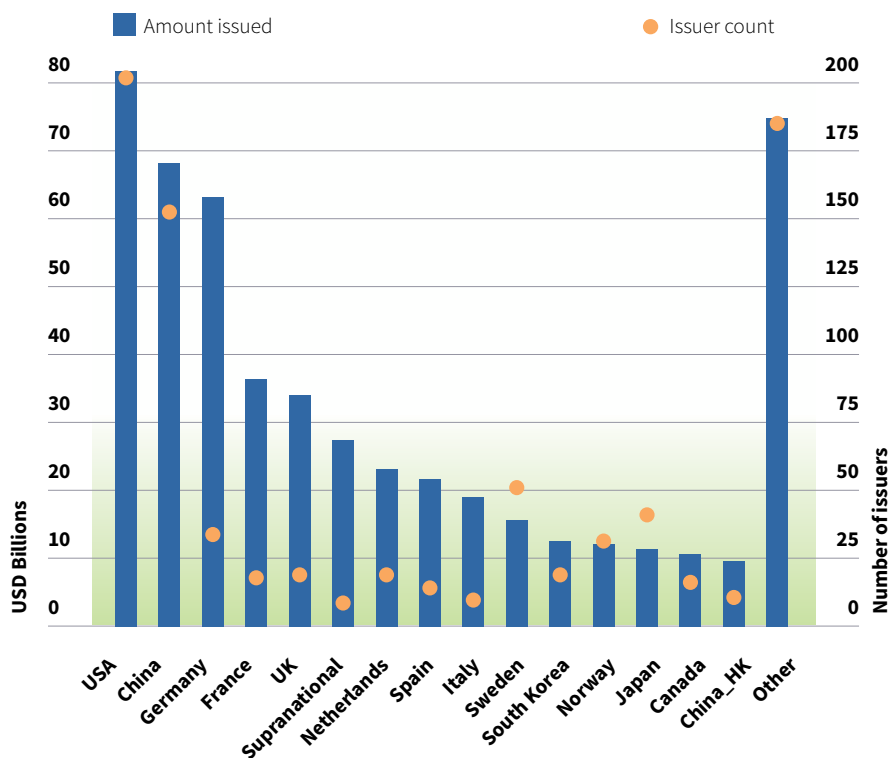
- **The USA maintained its position as the most prolific source of green bonds. Volumes increased by 63% to USD81.9bn from USD50.3bn in 2020.** The cumulative total stands at USD304bn, which is 50% larger than China, the next largest country source (USD199bn).

• The first quarter (Q1) was the strongest, as issuers printed 338 deals worth USD23.2bn. Given that the debt market came to a halt during the same period a year earlier, it is unsurprising that this represented a 208% YOY increase. Issuance remained stronger compared to 2020 throughout the year, but issuers had one eye on the Fed waiting for the inevitable signalling of rate increases.

• The US green bond market has been characterised by a relatively high number of issuers bringing smaller deals. In 2021, 204 issuers came to the market with the average sized deal increasing to USD100m from USD70m in 2020.

• The number of green bonds issued in the non-financial corporate space more than doubled from 15 in 2020 to 36 in 2021

### The USA was the largest country source of green debt in 2021



Source: Climate Bonds Initiative

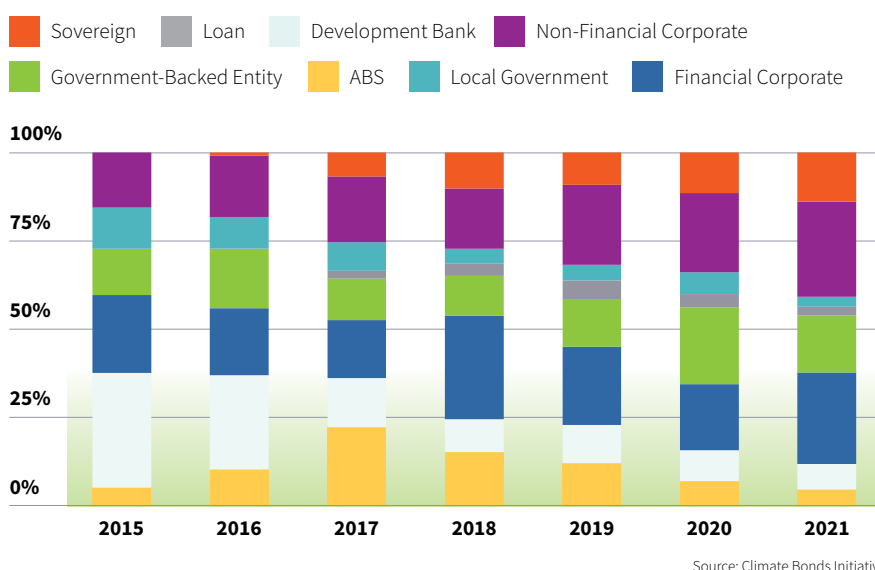
with total volume moving from USD7bn to USD27bn. The average size of each bond increased to USD750m in 2021 from USD475m in 2020. Just seven non-financial corporate green bonds were benchmark size in 2020, compared to 23 in 2021. This trend needs to continue - large liquid bonds from all sources help to attract dedicated green bond investment mandates.

- The government-backed entity issuer type, comprising mostly US municipality (muni) issuers, almost tripled to USD15.6bn in 2021 from USD5.5bn in 2020. COVID-19 distracted from muni green bond issuance in 2020 as many were addressing the socioeconomic consequences of the pandemic.
- **China** bounced back from a shaky 2020 (USD23.8bn) with an almost threefold increase in volumes (USD68.1bn) and almost two and a half times the number of securities (268 in 2021, 109 in 2020). The most aggressive growth occurred in the non-financial corporate space, as volumes grew fivefold to USD31.2bn. Meanwhile, Chinese ABS evaporated to a single bond in 2021 after 17 deals in 2020.
- **Germany's** annual green bond volumes increased by 49% on the year to USD63.2bn, helped by strong growth in financial corporates. Deutsche Bank priced 48 green bonds with a combined size of USD10.6bn. The German government doubled down on its commitment to the green bond market with two new bonds worth almost USD11.5bn. Germany now has a total of four sovereign green bonds.
- **The Republic of France (France)** consolidated its policy leadership position with its second sovereign green bond which by the end of the year was USD13bn. Total issuance originating from France was broadly static on the year at USD36bn down from USD37bn in 2020.

## Issuer types

- Private sector issuance recovered in 2021 with strong growth coming from financial corporate (143%) and non-financial corporate (111%) issuers. At the end of 2021, these two issuer types together represented 44% of cumulative green bond volumes. Sovereigns also experienced triple digit growth of 111% on the period, and now contributes 10% to cumulative volumes.
- **Financial corporates reversed the supply contraction of 2020 (USD55bn), to come back with green bonds reaching USD135bn in 2021.** A third of the total came from China (17%) and Germany (16%) combined. Among the 31 Chinese issuers, **China Development Bank** (USD6.5bn) and **ICBC** (USD4.5bn) issued the largest green bond volumes in 2021. In terms of currencies, just over half of the financial

## Most green volumes came from private sector



## Top green corporate issuers, 2021

	2021		Cumulative totals	
Issuer Name	USDbn	Number of green bonds	USDbn	Number of green bonds
<b>China Three Gorges Corp</b>	7.2	18	9.2	23
<b>Iberdrola</b>	3.3	3	16.4	21
<b>CTP Group</b>	3.0	3	4.2	5
<b>Ardagh Group</b>	2.8	4	2.8	4
<b>Engie SA</b>	2.6	3	16.9	14
<b>Ford Motor Co.</b>	2.5	1	2.5	1
<b>EDP</b>	2.4	3	2.4	3
<b>State Grid Corporation of China</b>	2.4	3	2.4	3
<b>Mondelez International</b>	2.4	3	2.4	3
<b>Liberty Global</b>	2.3	3	2.3	3

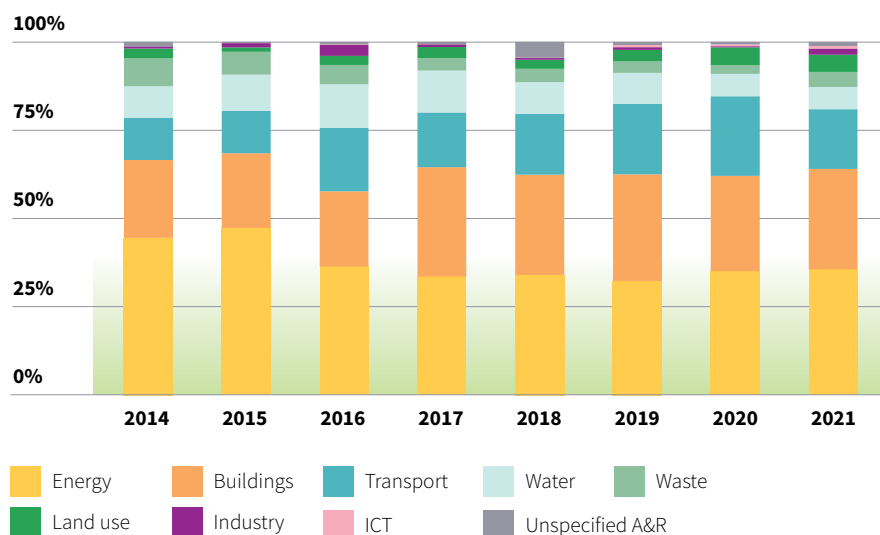
corporate paper (55%) was issued in EUR, broadly static on the 53% figure from 2020. The USD share dropped slightly to 20% from 24% in 2020, while RMB experienced a large increase in its contribution to 12% from 5%. This is largely as one would expect given the strong post-COVID-19 recovery seen in the region.

- **Non-financial corporates ended 2021 as the largest issuer type based on cumulative volumes which topped USD361bn.** In 2021, 328 issuers printed 540 green bonds totalling USD140.6bn. Chinese state-owned company **China Three Gorges Corporation** was the largest issuer, pricing 18 green bonds with a combined value of USD7.2bn. Among the top ten non-financial corporate issuers, two stand out as bringing much needed diversity to the green bond market. American multinational

**Mondelez** made its debut with a trio of green bonds worth USD2.4bn while high yield issuer **Ford Motor Co** finally came to the market with its first green bond worth USD2.5bn.

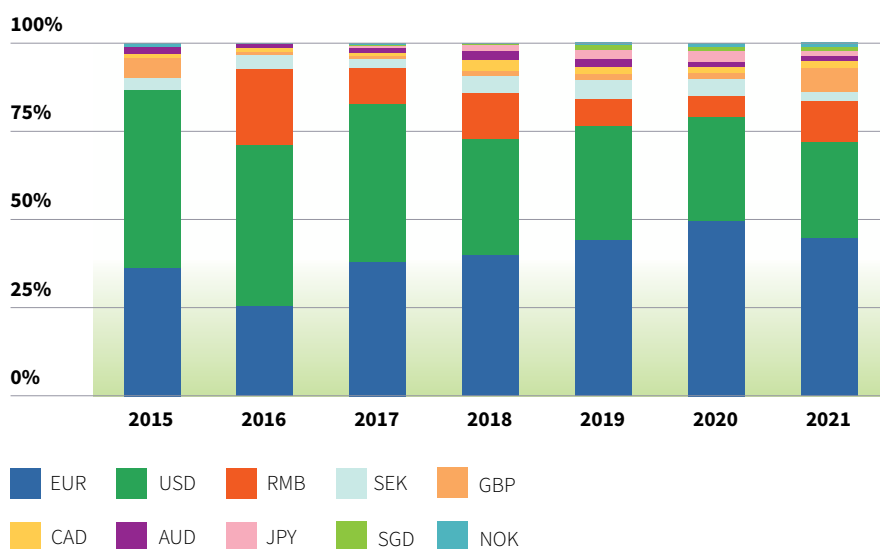
- **Sovereign green bond issuance reached a cumulative USD161bn of which USD72.8bn was added in 2021.** The UK provided 30% of the supply as it supported its COP-26 hosting duties with a pair of green bonds worth USD21bn. Four other issuers joined the Sovereign Green Bond Club in 2021: **The Kingdom of Spain (Spain)** (USD5.9bn), **The Republic of Italy (Italy)** (USD10bn), **The Republic of Serbia (Serbia)** (USD500m), and **The Republic of Korea (South Korea)** (USD812m). The largest individual sovereign issuer is **France** which had two green bonds worth a combined USD44bn outstanding at the end of 2021.

## 80% of green UoP went to Energy, Transport, and Buildings



Source: Climate Bonds Initiative

## EUR remained the currency of choice for green



Source: Climate Bonds Initiative

- **Development banks increased their contribution to the green bond market by 45% in 2021, reaching USD38bn on the year.** KfW was the largest individual issuer. In 2021 green bonds constituted 20% of KfW's funding mix, and USD13.6bn of its debt was added to the Climate Bonds GBDB.

- **Government-backed entities** experienced 30% growth. While this was considerably lower than the 80% growth seen in 2020, the issuer type was responsible for the third largest outright volume at USD84bn. This issuer type tends to comprise smaller bonds from a broad range of issuers, with 137 of the 184 issuers bringing under USD500m each. The largest issuer was the European Union, with its USD13.8bn green bond, almost twice the size of the USD7.5bn contribution of second placed Soci  t   du Grand Paris.

- A tenth of the issuance came from **ABS issuers** which amounted to USD24.2bn. Fannie Mae was the most prolific of the 19 issuers, providing USD13.4bn spread over 542 securities (close to 80% of ABS volume).

- **Local governments** contributed 5% of total volumes in 2021 and was the only issuer type to shrink to USD14.6bn compared to USD18.5bn in 2020. There were fewer issuers - 79 compared to 94 in 2020 and local government issuance from the USA contracted from USD9.5bn to USD4.7bn.

- **Green loans** constituted 3% of the market in 2021, and 60% of the volume originated from Asia-Pacific. The contribution of this issuer type grew by 18% in 2021, but due to the bilateral nature of loans of all types, only the largest ones are recorded in the public domain. Many of those do not qualify for inclusion in the Climate Bonds GBDB due to inadequate disclosure.

## Use of Proceeds

- **Energy, Buildings, and Transport** were the three largest UoP categories, collectively contributing 81% to the 2021 total.
- All UoP categories exhibited growth YOY, ranging from 824% in Industry to 31% in Transport.
- Non-financial corporate issuers were the strongest supporters of Energy and Transport providing 40% and 27% of the total capital, respectively, while Buildings received most support from financial corporates (37.5%).
- **Allocations to Industry UoP increased from just USD1bn in 2020, to USD9.1bn in 2021.** Industry was earmarked as a UoP category in 32 deals including sovereign deals from the UK, Serbia, and Hong Kong, and the EU green bond.

## Currency

- Hard currencies were the source of 82% of green bond issuance in 2021, a 3% decline on the prior year. Issuance in the soft currencies increased by 102% largely because of the rebound in RMB issuance which reached USD58.7bn from USD17.4bn in 2020.
- The number of currencies remained static at 33. The share of the top three currencies EUR (43%), USD (26%), and RMB (USD58.7bn) remained similar to the prior year (81%). The amount of EUR issuance in 2021 (USD226.7bn) exceeded that of EUR and USD put together in 2020 (USD225.6bn).
- EUR was the preferred currency in terms of volume, and number of international issuers (36). However, the number of issuers at 408 was under half of those issuing in USD. Most (96%) of the bonds issued in USD originated domestically, while 81% of bonds issued in EUR originated from issuers using EUR as their official currency. The European green bond market is the most developed in the world, being the source of numerous dedicated investment mandates, and the most advanced policy measures. Where practicable, issuers prefer to issue in EUR to obtain maximum investor diversification.
- The share of the top ten currencies was marginally more concentrated in 2021, at 97% against 96% the prior year. There was only one change to the composition of the top ten - CHF was replaced by NOK which was the source of 45 bonds worth USD6bn. GBP increased its footprint by 686% to USD35bn moving from seventh to fourth place, helped by the issuance of USD21bn worth of green Gilts.

## Deal size

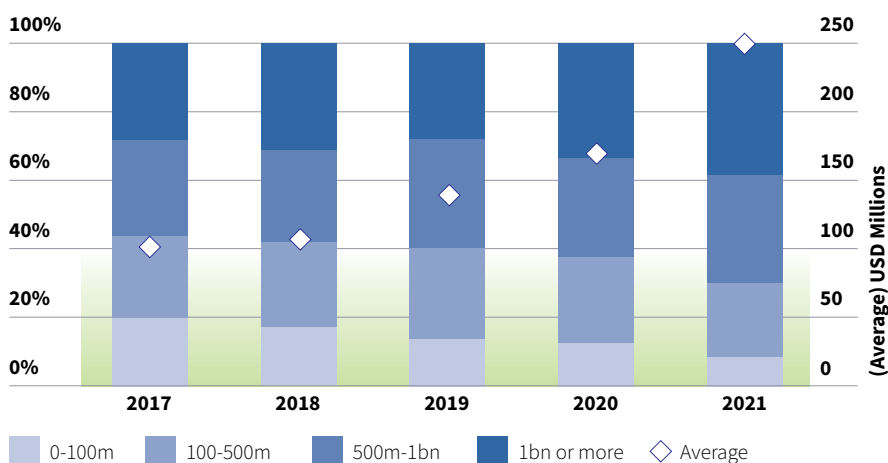
Benchmark size deals (USD500m and above) accounted for 70% of the volumes in 2021, up from 62% in 2020.

- USD68bn of sovereign green bonds and USD40bn of financial corporates were the two largest sources of bonds falling into the USD1bn+ category. This category included 93 bonds, up from 54 a year earlier, fewer than the others. In contrast, the smallest bonds of up to USD100m increased by USD43.5bn spread over 1261 bonds.
- The average size of green bonds increased to USD250m from USD170m in 2020.

## Tenor

- Bonds with a maturity out to 10-years comprised 63% of the issuance, static YOY. There was a slight increase in the contribution of the shortest bonds (up to 5-years) from 24% to 28%.
- The public sector accounted for 79% of the bonds added to the longest category (>20-years) with 50% of those coming from sovereigns.

## Green issuance split by size

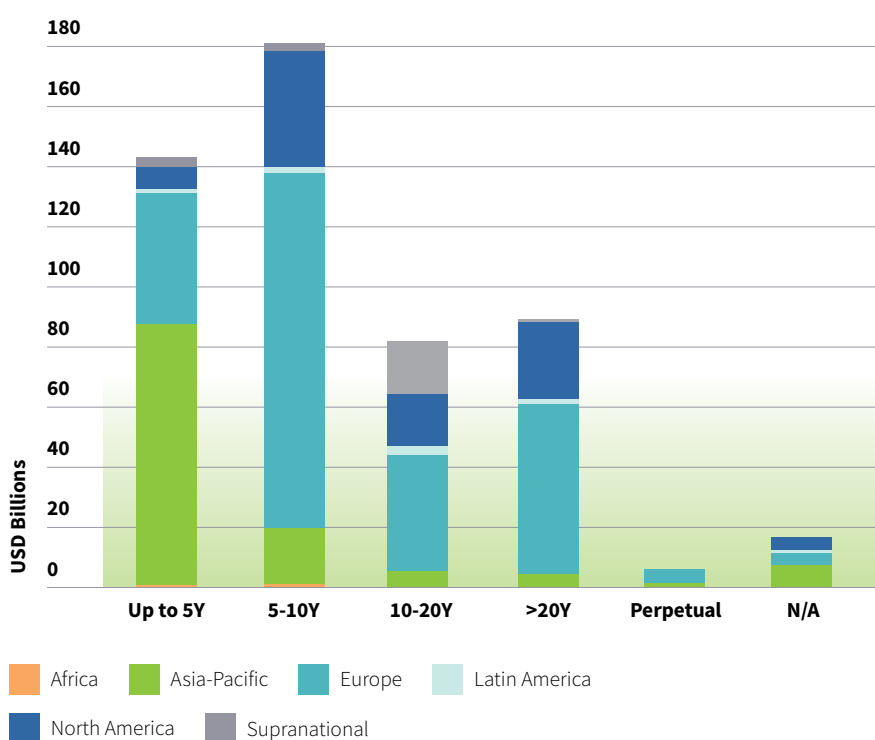


Source: Climate Bonds Initiative

## Largest deal in each issuer type, 2021

Issuer Type	Issuer	USDbn
<b>ABS</b>	SLG Office Trust 2021-OVA	2.8
<b>Development Bank</b>	KfW	4.8
<b>Financial corporate</b>	China Development Bank	6
<b>Government backed</b>	European Union	13.9
<b>Loan</b>	Vineyard Wind	2.3
<b>Local Government</b>	Province of Ontario	2.2
<b>Non-financial corporate</b>	Ford Motor	2.5
<b>Sovereign</b>	United Kingdom	13.6

## 63% of green bonds had a maturity of up to 10-years



Source: Climate Bonds Initiative

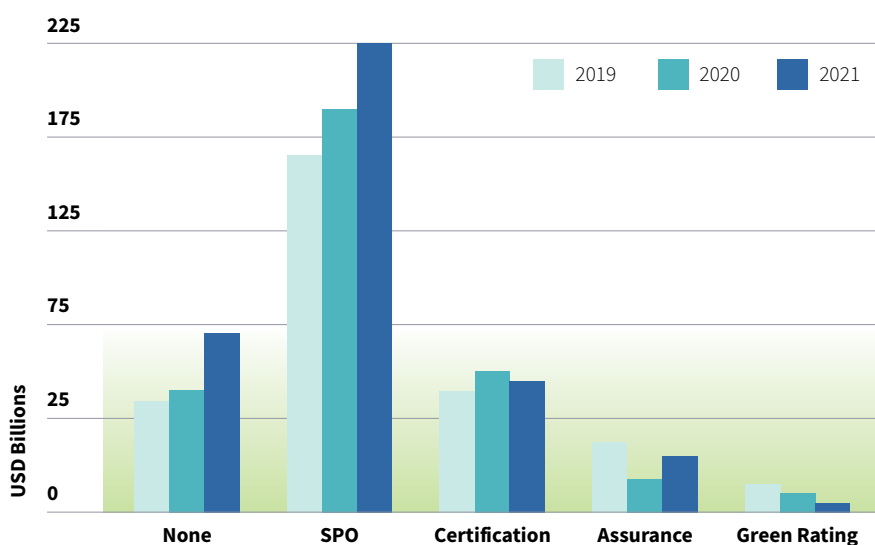
## External reviews

- Most green bonds (86%) added to the Climate Bonds GBDB in 2021 had external reviews. This is a decline of 2% compared to 88% coverage in 2020. Two thirds of the deals without external reviews originated from the USA (45%) and China (21.4%). Both countries have lagged in green bond transparency, although investors repeatedly highlight an external review as being crucial to green integrity. When, as part of the Climate Bonds' China Green Bond Investor Survey 2021, respondents were asked to describe the factors driving their green bond investment, satisfactory green credentials at issuance were assigned the highest score of all.<sup>5</sup>
- The volume of Green Ratings declined by 75% from 69 in 2020 to 39 in 2021. Moody's exited the green rating business in 2021 when it acquired Vigeo Eiris (V.E.) to establish a presence in SPOs.
- The number of Certified Climate Bonds declined slightly to 96 from 102 the prior year. The number of public sector entities seeking Certification dropped off while bonds from the private sector increased.

### Notable certifications included:

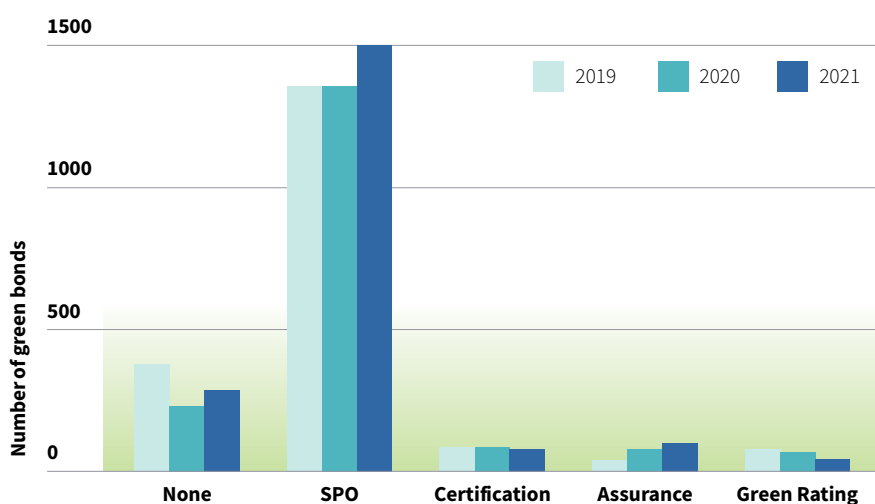
- **FS Bioenergia** (programmatic) in Brazil (USD100m), first certification under the Climate Bonds Bioenergy criteria
- **Kiwirail** in New Zealand (USD246m), first certification in Climate Bonds Shipping criteria
- Large certified deals included **ICBC** (USD 3.23bn) and **China Development Bank** (USD2.3bn).
- Some issuers sought external reviews from multiple sources hence the sum of external review volumes is greater than the total amount of green bonds issued.

## The volume of bonds with no external review increased in 2021



Source: Climate Bonds Initiative

## Bonds obtaining an SPO grew 20% in 2021

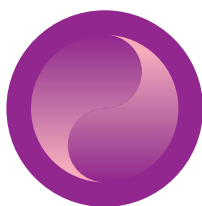


Source: Climate Bonds Initiative

## 5. Sustainability

### Introduction

Sustainability-themed bonds (excluding China) continue to expand, to a record-breaking USD192.9bn in 2021 contributing 18% to total GSS+ volume on the year.



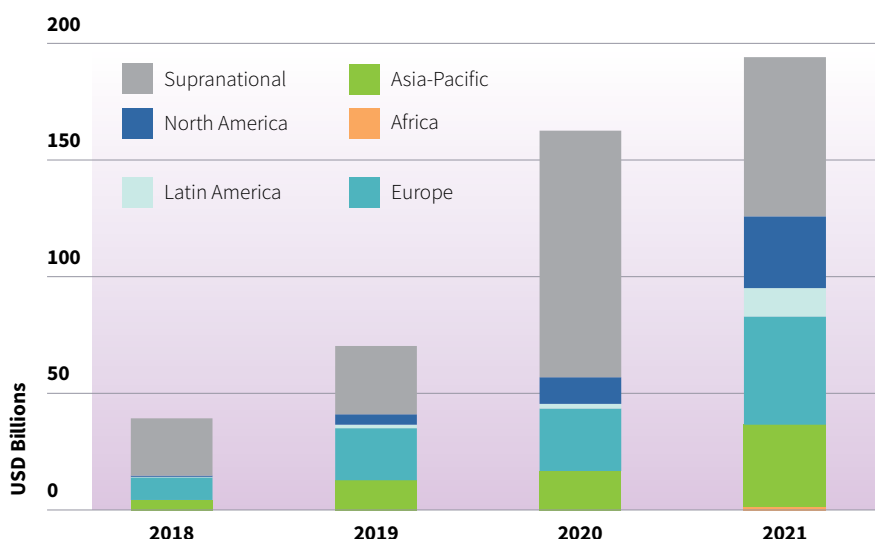
Sustainability issuance grew by 19% compared to the previous record of USD161.6bn set in 2020.

### Regions

**SNAT issuance tops the sustainability theme** with USD67.6bn originating from eight issuers. While an increase in sustainability-themed issuance was recorded in all regions, SNAT sustainability bonds dropped 36% compared to 2020. The largest contribution came once again from the **World Bank (IBRD)** at USD41.6bn (against USD80.5bn in 2020). IBRD has demonstrated its commitment to raise funds for projects that address social goals alongside climate action, through its involvement in the sustainability bond market. Despite the YOY decline, cumulative SNAT volumes through 2021 stood at USD252bn and still represent the largest portion of the market (49% of total sustainability-themed issuance since 2008).

Europe placed second with USD45.9bn, a 74% increase YOY. In June 2021 the German state of **North Rhine-Westphalia (NRW)** issued its eighth sustainability bond with a record volume of EUR3.5bn (USD4bn), positioning itself as the largest issuer in the region. Asia-Pacific ex-China

### Supnationals issued more sustainability debt than any region



Source: Climate Bonds Initiative

took the third spot, with USD35.8bn and almost 19% of volumes. This represents a 113% spike YOY. Issuance from the top five combined makes up over one-quarter of the region's volumes.

### Countries

In 2021 Climate Bonds identified a total of 277 issuers of sustainability bonds from 45 countries. While SNAT issuance tops country rankings, USA volumes contribute 14% of sustainability-themed issuance, with USD27.7bn and 635 deals. South Korea followed with USD11.6bn, while France and the UK rounded out the top five, each with

USD9.7bn but a different number of deals (11 and 21, respectively), representing the largest sources of sustainability bonds in Europe.

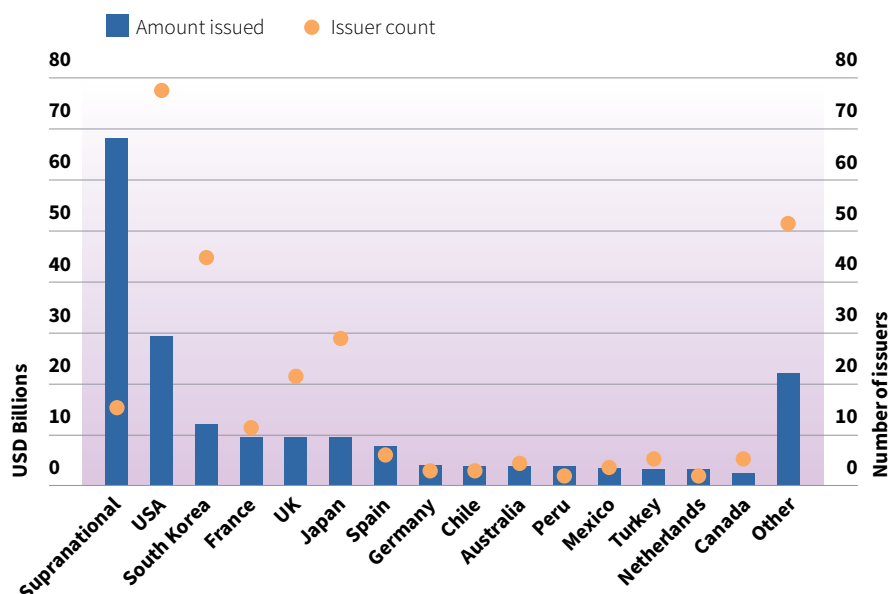
Newcomers to the sustainability country list included:

**Slovenia** issued its inaugural sustainability bond, the first from a sovereign in Central and Eastern Europe and only the second by an EU member state.<sup>6</sup>

**Indonesia** entered the sustainability bond market with the first Sustainable Development Goals (SDG) sovereign in South-East Asia.<sup>7</sup> This was complemented by one bond from Indonesia **Infrastructure Finance** and one from **Bank Mandiri Persero**.

**Benin** launched its debut SDG bond, the first from an African country. The landmark EUR500m (USD693m) transaction priced in July with a 14-year tenor.

### Supnationals and the USA were the source of 49% of sustainability debt in 2021



Source: Climate Bonds Initiative

### Currency

In 2021 the total volume of hard currency-denominated issuance increased by 19% to USD181.2bn, with EUR and AUD showing the most impressive development. Issuance of sustainability bonds denominated in EUR went up by 39% from the previous year to USD54.3bn, while issuance in AUD increased to USD3.4bn (+38%). GBP and USD denominated issuance was up 17% and 13% respectively from the prior year.

Virtually all sovereign issuance in the sustainability theme was denominated in hard currencies (USD12.45bn or 98%). While 63% of sovereign sustainability issuance was in USD, about 29% was EUR-denominated. The only deal issued in local currency came from Uzbekistan (UZS), making up around 2% of total volumes.

Around 64% of EUR-denominated sustainability bonds (USD34.8bn) originated from countries in Europe. SNAT made the second largest contribution, with USD12.8bn or 24%. Asia-Pacific countries accounted for 4% of EUR-denominated issuance, closely followed by North America and LAC (each around USD2bn). Benin was the first African country to enter the EUR-denominated sustainability-themed market with its EUR500m (USD693m) transaction.

Indonesia is an example of sustainability bond issuers' distinct preference for hard currencies. The country issued all 2021 deals on the hard currency sustainability bond market: its inaugural sovereign sustainability bond was EUR-denominated, and the other two deals were issued in USD. Similarly, sustainability issuance originating from Brazil during 2021 was entirely USD-denominated.

## Deal size

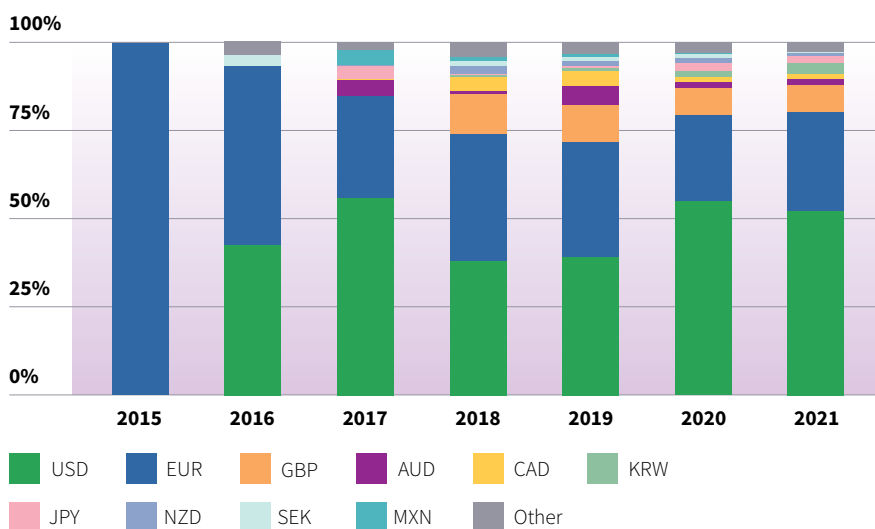
Smaller deals were the most common for sustainability-themed issuance, with over three-quarter of deals falling into the up to USD100m bucket. 132 deals were at least benchmark size or larger (13% by number of deals), while there were fewer medium-sized deals (121 deals or 12%).

Despite being down 19% from the previous year by volume, deals larger than USD1bn still represented the largest share of issuance (USD100.3bn or 52% of volumes). While these are generally favoured by public sector issuers, the private sector has also contributed to the segment, with multiple deals from financial and non-financial corporates falling into the largest size bucket. Deals include **Telecom Italia's** first EUR1bn sustainability bond aimed at improving the energy performance of their network and promoting digital inclusion in less urbanised areas in Italy, as well as responding to the health crisis.

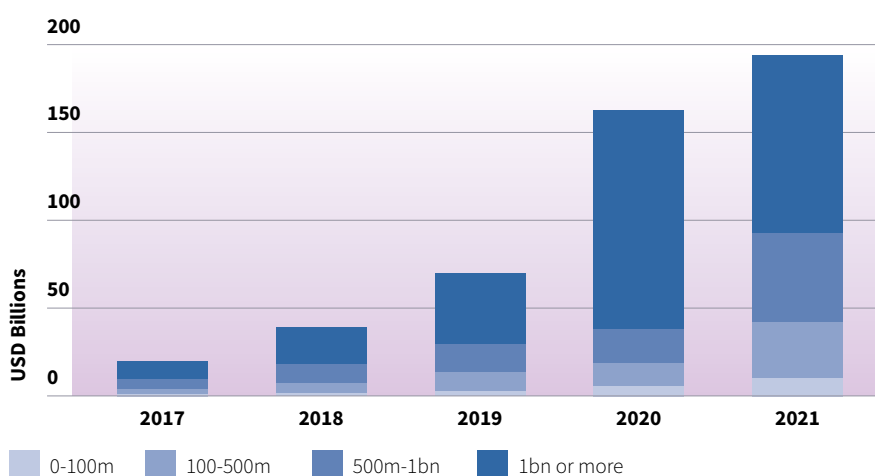
## Tenor

The longest maturity of the 2021 sustainability-themed offerings came from **Peru**, with its first sustainable sovereign bond maturing in 2072 (50+ years). Two deals follow closely, each with a 50-year maturity: **Chile's** inaugural sovereign issuance and the USD50m sustainability bond issued by **Berea College** to provide educational opportunities for students in Appalachia while also enabling the development of green projects on campus. Overall, bonds with a tenor of more than 20-years amounted to USD30.6bn, or 16% of sustainability-themed issuance. Issuers of sustainability bonds broadly favoured shorter tenors. Combined, the 0-5 and 5-10-year brackets accounted for 67% of the total volume (around 31% and 36% respectively).

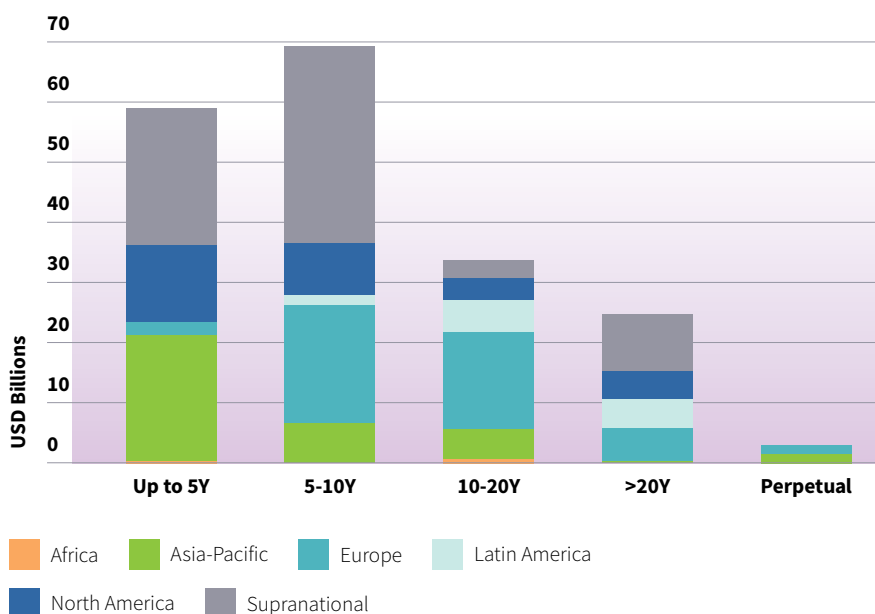
## Sustainability debt was mainly hard currencies



## Large deals make up most of the sustainability volumes



## Sustainability issuers favoured shorter tenors



## 6. Social

### Introduction

The social theme (excluding China) contributed 20.5% to total GSS+ volumes in 2021.

Social bond issuance has skyrocketed since the outbreak of COVID-19 in early 2020, hitting an annual record in 2021 at approximately USD220bn. This represents an 18% increase YOY.



### Regions

In 2021, social bond issuance experienced an upward trend in almost every region.

Europe was the largest source of social debt in 2021, up 32% YOY. The region was responsible for USD101bn, 46% of the total. Issuance originating from Europe was led by government-backed entities, which contributed over three-quarters of volumes.

The LAC region showed the most impressive development, growing by 338% YOY to USD11.5bn. Most of this came from sovereign issuers: USD9bn from Chile which represented 80% of the region's market, while Peru contributed USD1bn or 10% of the total.

Asia-Pacific issuance (not including China) remained broadly flat on the previous year with USD23.2bn versus USD23.5bn in 2020. SNAT volumes dropped by 15% to USD60bn and contributed just over a quarter of total volumes.

### Countries

France made the largest contribution to social-themed issuance in 2021, with USD77.5bn originating from 12 issuers. Government-backed entities were responsible for 91% of the country's volumes, with **Caisse d'Amortissement de la Dette Sociale (CADES)** alone contributing around 71%. Elderly care services company **Korian** was the only non-financial corporate issuer to enter the market in 2021, with the second-smallest contribution (USD348m) after **Assistance Publique Hopitaux de Paris** (USD302.6m).

With the same number of issuers, SNAT took second place. Its USD60.7bn volume was down approximately 13% from the previous year. The EU was the largest issuer, as its EUR46.1bn (USD55bn) contribution coming from six deals made up 91% of SNAT issuance. The **Council of Europe Development Bank** was the only other issuer reaching a total issuance volume of over USD1bn.

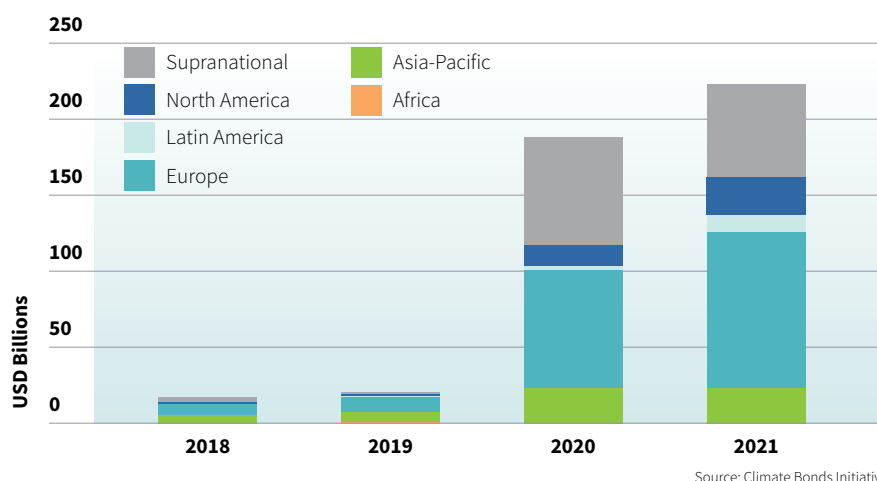
### The Just Transition

Transitioning to a green economy cannot be achieved without addressing the risks faced by communities that are still highly dependent on fossil fuels and other emission-intensive sectors. While transitioning to net zero will result in many economic gains, such as creating approximately 18 million new green jobs worldwide, it could also cause approximately six million job losses from the coal and petroleum industry by 2030.<sup>8</sup> Job loss in the fossil fuel sector is among the greatest transition risks. The Ruhr industrial region in Germany, for example, lost 480,000 coal mining jobs between 1955 and 1980.<sup>9</sup>

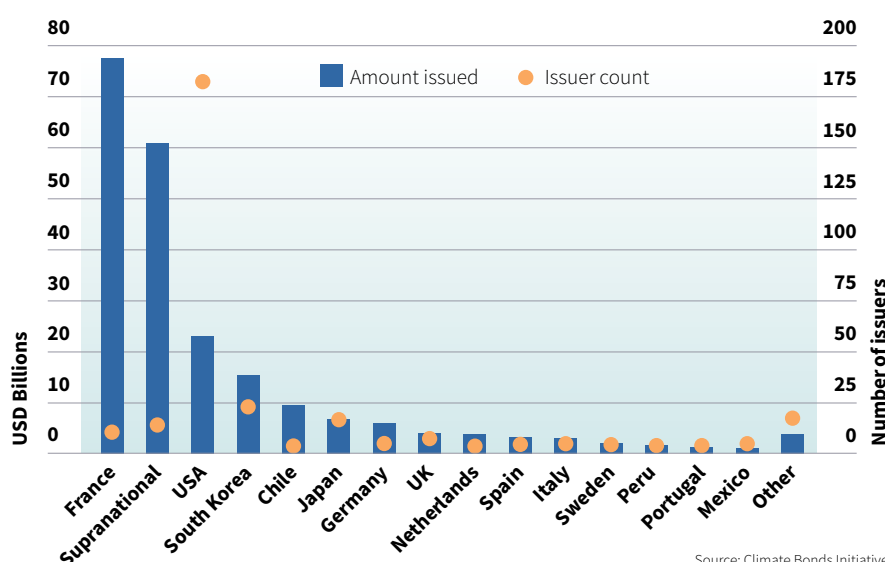
Just transition is a commonly used framework to address these transition risks, which has been adopted by several governments and

entities. A just transition framework often requires extensive social dialogue with affected and vulnerable workers. In 2018, Spain agreed on a deal with trade unions and energy companies to retire coal plants early, compensate for job losses, and re-skill the workforce.<sup>10</sup> With its 2016 Green Job Act, the Philippines aims to foster green growth by providing financial incentives to companies generating green jobs (e.g., tax deductions for training).<sup>11</sup> The private sector has also adopted the just transition framework in their activities. **Enel**, an Italian-power utility company, is adopting a coal decommissioning programme and providing compensation for workers affected by early retirement.

### Europe was the source of most of the social issuance



### France surpassed supranational as the main source of social debt



Three newcomers entered the social debt market in 2021:

**Taiwan:** USD175.5m and five issuers all from the private sector. Far Eastern New Century was the only non-financial corporate and the largest contributor to the region's social-themed market;

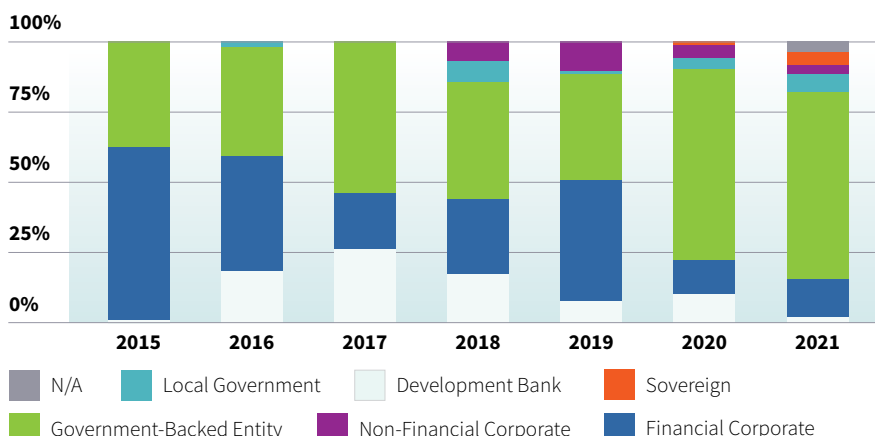
**Switzerland:** USD54.2m issued entirely by the Canton of Geneva;

**South Africa:** USD8.7m coming from the only contributor in the region, Standard Bank of South Africa.

## Issuer types

Government-backed entities were the most prolific issuers, with a total USD145.9bn or 66% of total social-themed volumes. The European Union Support to mitigate Unemployment Risks in an Emergency (EU SURE) programme was the source of 38% of government-backed entity volume. EU SURE is the world's largest social bond scheme and by May 2021 had priced bonds with 5, 10, and 15-year tenors. EU SURE is based on a system of loans and back-to-back loans to Member States conditional on the development of national short-term employment schemes and other similar measures to preserve employment and support incomes during the COVID-19 pandemic.

## Government-backed entities boosted 2021 social issuance

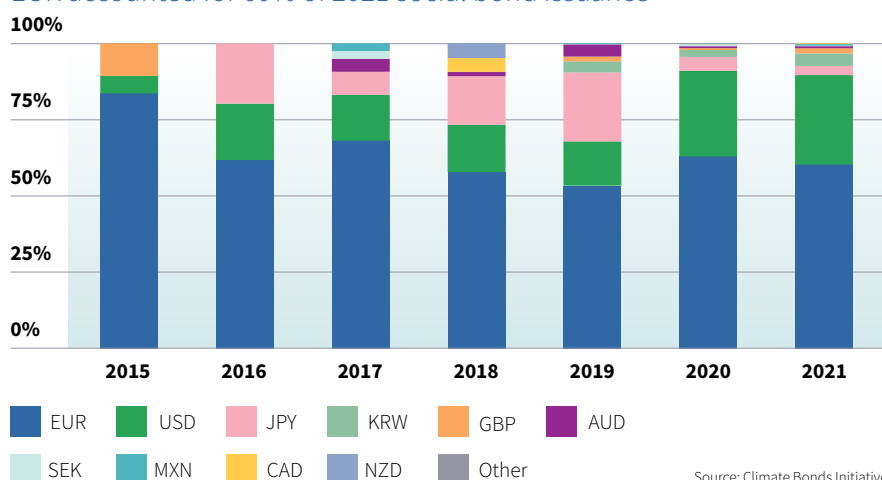


Overall, 19 EU Member States have received financial support under this programme.<sup>12</sup>

Sovereigns registered the most impressive increase, as volumes grew almost fivefold (392%) compared to a 2020 baseline, to USD10.3bn from USD2.1bn. Notably, social sovereign bonds gained ground in Latin America. As discussed above, **Chile** led the way for sovereign social spending in 2021, with a series of landmark deals following its first in 2020. The EUR and USD denominated issuance in July 2021 was the largest social

bond operation in Chile's history, and included the longest tenors issued by the Republic.<sup>13</sup> The proceeds of Chile's social bonds were destined to support low-income families, the elderly and other vulnerable groups, as well as provide funding for education, employment, affordable housing, healthcare and food security.<sup>14</sup> **Peru** went social in November 2021 with its debut 15-year social bond issued in EUR, raising funds for 2021/2022 budget funding to support education, essential health services, housing and SMEs. Just as with other themes, sovereign issuance plays a critical role in mainstreaming social bond issuance in local markets and encouraging best practice in facilitating targeted and additional positive social impact.

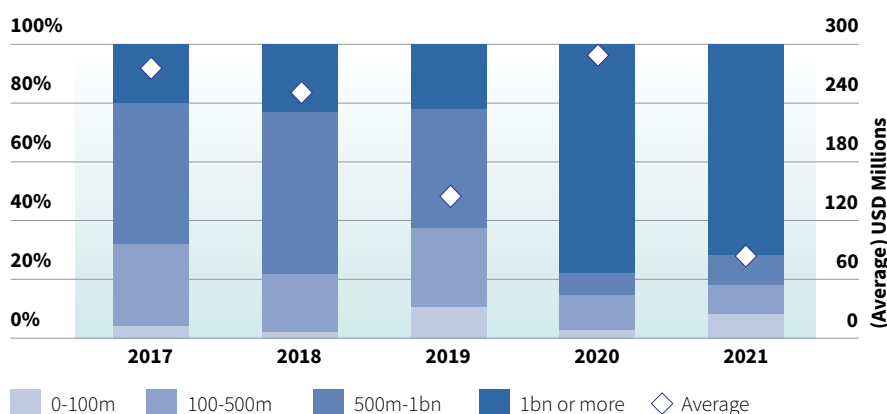
## EUR accounted for 60% of 2021 social bond issuance



## Currency

Social bonds were issued in 23 currencies in 2021. Social bond volumes were issued almost entirely (95%) in one of the hard currencies, with EUR (60%) and USD (29%) being the most popular. This represents a 31% increase on the year. Besides European countries, issuers from other parts of the world issued EUR-denominated social bonds, such as Peru with its EUR1bn sovereign and South Korea's **KEB Hana Bank** for an EUR500m (USD607m). The remaining 5% of the volume was issued in soft currency. The largest contribution was KRW (4%), followed by MXN (1%).

## Most of the social volume came from larger deals



## Deal size

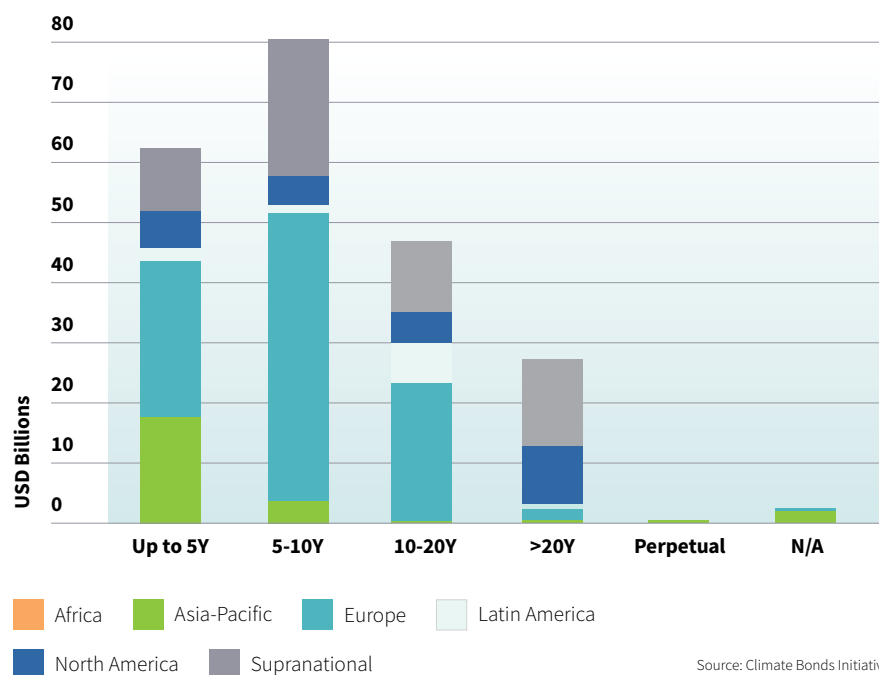
Small deals are the most frequent by number, with approximately 97% of social-themed bonds below benchmark size (<USD500m). By volume, bonds falling into the USD0-500m bucket made up 18% of 2021 social-themes issuance. A major contribution to below-benchmark sized deals came from local governments in the United States.

87 deals worth USD180bn (82% of volumes) fell into the USD500m-1bn bucket. Among these, 48 deals were larger than USD1bn and amounted to USD155.5bn. The largest individual social deal of 2021 was the EUR10bn (USD12bn) bond issued under the **EU SURE** programme in February.

## Tenor

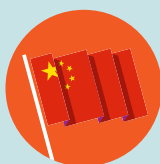
Short-to-medium tenors are most prevalent among new social bonds: 37% of volumes fall into the 5-10-year bucket, followed by 29% maturing within five years. About one-fifth of social bonds have longer tenors of 10- to 20-years, while the longest tenor bucket (20-years and above) comprises 12% of social issuance. Perpetual bonds made up <1% of the total.

## Most social bonds are <10-years



## China's social and sustainability markets

Restricted access to China's fixed-income market has historically precluded buying and selling onshore instruments to overseas investors. Recent access reforms, inclusion in some global bond indices and an increasingly internationalised currency are resulting in rapidly increasing inflows.<sup>15</sup> For instance, the country has now opened its social and sustainability bond market to non-mainland China issuers to further develop the segment. The National Association of Financial Market Institutional Investors (NAFMII), an interbank bond market self-regulatory entity under the central bank, launched a pilot programme enabling international issuance of renminbi-denominated bonds in China (Panda bonds), a critical move to boost the country's already booming GSS+ market.<sup>16</sup>



### Sustainability

Among private sector issuer types, non-financial corporates made the largest single contributions to the country's sustainability bond market. The top two deals were USD-denominated, issued by **Bilibili Inc** and **Alibaba Group Holding** and amounting to USD1.6bn and USD1bn respectively.

Online video sharing company Bilibili has a large, fast-growing, young, and highly engaged

user base and has built its business around community. In 2020, educational content on their platform was streamed by 113 million users, three times the amount of college students in China.<sup>17</sup> The company has therefore a key role to play in facilitating technological innovation and social development in the country. The proceeds of its sustainability bond were earmarked for improved access to education in remote rural areas via primary school construction and study-tour subsidy programmes for children, in addition to green buildings, renewable energy and waste management projects. The company's sustainability framework presented interesting prospects in terms of social responsibility of companies operating in the video streaming and social media businesses. One notable feature of the framework was that expenditures also targeted vocational opportunities and support to underprivileged content creators, by providing income generation opportunities, training, equipment and tools (e.g. lighting equipment, 5G network cards).

Two domestic issuers of RMB-denominated sustainability bonds were the real estate developer **Redco Properties** and **Far East Horizon** (USD38m cumulative volume). The latter, a Hong Kong-incorporated financial leasing company, issued a RMB150m two-year sustainability note. This was China's first sustainability-themed Panda bond, issued near

the year-end and just one day after NAFMII launched its pilot programme for overseas issues of renminbi-denominated social and sustainability bonds.<sup>18</sup> Funds raised by the transaction were earmarked for a healthcare and pension project, as well as sewage treatment and clean transportation.

### Social

Social-themed issuance in China is widely CNY-denominated. Issuers from several sectors have entered the labelled social bond market, including:

Passenger airlines **Shenzhen Airlines** and **Xiamen Airlines**, each with three deals but different volumes (RMB3.8bn and RMB1.8bn, or USD585m and USD278m, respectively);

Chemical manufacturer **Xinjiang Zhongtai Chemical** with RMB500m (or USD77m);

Pharmaceutical companies **Sichuan Kelun Pharmaceutical**, **Jointown Pharmaceutical Group** and **Zhejiang CONBA Pharmaceutical** issued RMB3bn worth of cumulative volumes (or USD469m);

Agricultural companies **Beijing Capital Agribusiness & Food Group** and **Muyuan Foods** each issued one deal with a cumulative volume of RMB1.1bn (or USD170m).

## 7. Sustainability-linked and transition bonds

GSS+ debt markets are growing rapidly in an attempt to fund the low-carbon transition. However, the transition is not yet being delivered at sufficient scale and pace to achieve the goals of the Paris Agreement. Standardising the definitions and ambition levels for what is classified and labelled as transition could accelerate the flow of capital to fund the climate transition.

In 2021, Climate Bonds introduced draft guidelines on credibly transitioning entities. The whitepaper *Transition Finance for Transforming Companies* puts forward five hallmarks of a credibly transitioning company, and a finalised version of the recommendations will be published later in 2022.<sup>19</sup> These five hallmarks are the foundations for the assessment and certification of instruments like SLBs with their forward-looking, entity-wide targets; for transition-labelled UoP bonds, and overall assessments of the integrity of a company's transition.

The transition and SLB markets went from strength to strength in 2021, with the transition bond market growing by more than 33.0% YOY to a cumulative USD9.6bn, and the SLB market expanding by 941% to a total of USD135.0bn. At the end of 2021, SLBs comprised 4.8% of the GSS+ market, up from 0.9% share in 2020.

The growth of the transition and SLB labels was boosted by ICMA's *Sustainability-Linked Bond Principles*, published in June 2020, which defined the disclosure and reporting requirements for SLB issuers. This and the December 2020 *Climate Transition Finance Handbook* has encouraged issuers to include descriptions of their entity-level transition strategies as part of their SLB Frameworks.

### Sustainability-linked bonds

SLBs are forward-looking, performance-based debt instruments issued with links to Sustainability Performance Targets (SPTs) and associated Key Performance Indicators (KPIs) at the entity level. SLBs can be a useful tool for issuers on a low-carbon transition trajectory as they finance whole entities in transition and help to build experience and credibility on target setting.

However, issuers and investors must be mindful of the pitfalls around issuing credible SLBs: they need to have credible SPTs, which are calibrated ambitiously in line with sector-based pathways, and provide significant financial reward/penalty,

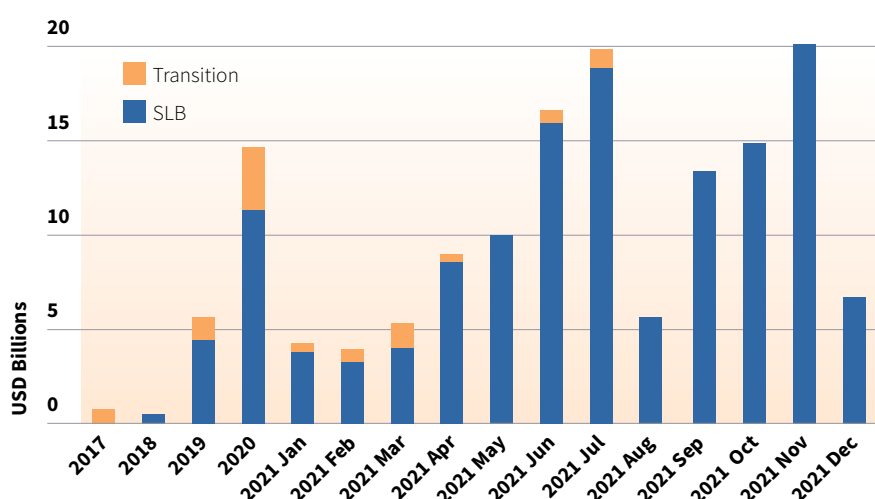


to be seen as useful and credible sustainable finance instruments that yield real behaviour change for an entire entity.

It should be noted that comparing market volumes of SLB debt with other thematic debt is not relevant per se, because SLBs have non-specific UoP. Issuers without specific projects, assets, or expenditures can issue SLBs if they have sustainability targets in place, irrespective of the quality of those targets.

The perception of SLBs inclusive format has contributed to the growth of the segment, but there are fewer restrictions around issuance. Further guidance and standards for SLBs would introduce comparability and integrity to the market. Climate Bonds is defining sector-based Transition Finance Standards at activity and entity level suitable for transition UoP bonds, SLBs, and transitioning entities.

### SLBs exploded, while transition bonds appeared sporadically in 2021



Source: Climate Bonds Initiative

### Five Hallmarks of a Credibly Transitioning Company



#### 1. Paris-aligned targets

- Select sector-specific transition pathway aligned with Paris Agreement goals
- Company-specific KPIs that align as early as possible with that pathway
- Science based, address scope 1, 2 & 3 emissions and address short, medium and long term



#### 2. Robust Plans

- Set the strategy and plan to deliver on those KPIs
- Prepare associated financing plan detailed cost estimates and expected source of funding
- Put in place necessary governance frameworks to enact change



#### 3. Implementation action

- Capital expenditure, operating expenditure
- Other actions detailed in the strategy



#### 4. Internal reporting

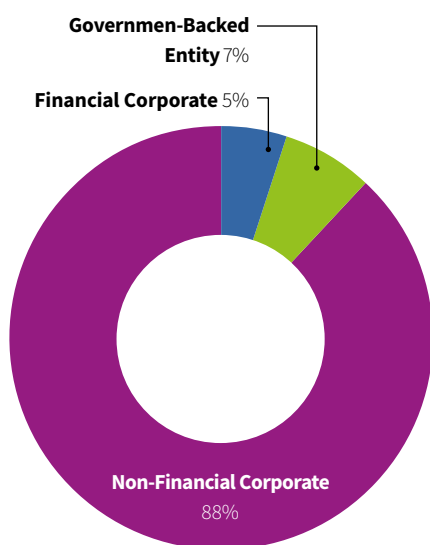
- Track performance
- Re-evaluated and recalibrate KPIs as needed



#### 5. External reporting

- External reporting and independent verification on the KPIs and strategy to deliver (per Hallmarks 1 and 2)
- Annual reporting of independently verified progress in terms of action taken and performance against targets. (per Hallmarks 3 and 4)

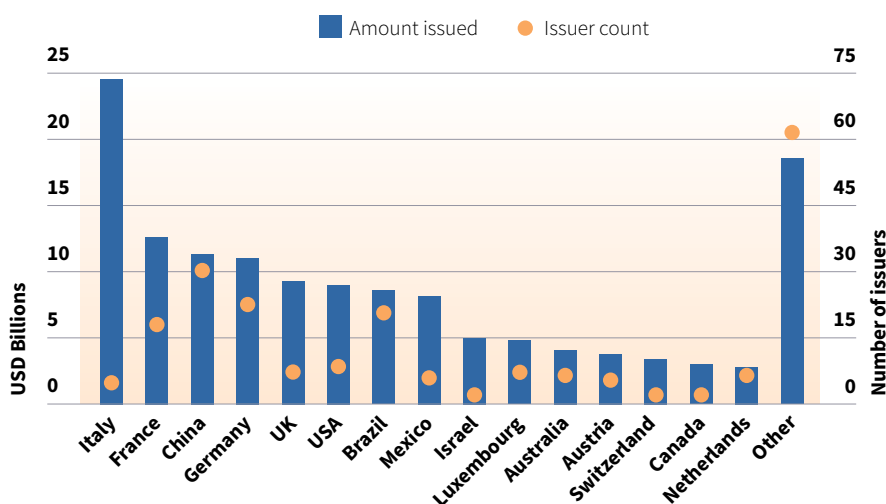
## Most SLB volume came from non-financial corporate issuers



Source: Climate Bonds Initiative

- Non-financial corporates were the source of 89.5% of SLB issuance in 2021. The largest non-financial corporate and individual SLB issuer was **Enel**, having issued USD11.9bn across three deals in 2021.
- Financial corporates brought 4.9%. The largest financial corporate SLB issuer in 2021 was **China Construction Bank**, with a pair of bonds worth USD1.2bn.
- Government-backed entities provided 6.6% of SLB deals, predominantly utilities, with a few deals from airports and universities. The largest of these was a USD889m deal from Greek electric utility **Public Power Corp**, in March 2021.
- At the end of 2021, no sovereign SLBs had been issued, but Climate Bonds recognises **Chile's** USD2.0bn tied to the country's GHG emissions and Renewables Installed capacity issued in early 2022. Their GHG emissions targets are derived from Chile's Nationally Determined Contributions (NDCs) to the Paris Agreement, and its renewables targets aims targets a majority (50%) by 2028, and 60% by 2032. This issuance not only serves as an ambitious example of a sovereign SLB for others, but also makes Chile the only sovereign to have issued GSS (UoP) and SLB debt.

## Italy was the most prolific source of SLB volume



Source: Climate Bonds Initiative

- Climate Bonds also recognises and encourages the first local government/municipal SLB issuance from the Swedish **City of Helsingborg**, which is also not included in the data covered in this report as it was issued in early 2022, aiming to reduce GHG Emissions 61% by 2024 against its 1990 baseline, setting a strong precedent for future sovereign and local government SLB debt.

## Regions

- SLB growth sprouted across the globe in 2021, led by European issuers, responsible for 55.7%, or USD67.8bn. Asia-Pacific's share of the pot grew the most, to 21.2% in 2021 from 4.6% in 2020.
- LAC originated USD16.8bn in 2021 against USD1.5bn in 2020, growing its share of the overall market from 12.8% to 13.8%. Mexican beverages company **Fomento Economico Mexicano (FEMSA)** a major supplier to Coca-Cola and also a green bond issuer, priced the largest SLB from the region in April, in a EUR1.2bn (USD1.5bn) two-tranche deal.
- Africa got its first SLBs with a pair of bonds from South African water utility **Rand Water** worth ZAR1165m (USD76.9m), followed by deals from **Redefine Properties** and **Fortress REIT**, however SLBs originating from the region remain small at 0.2% of the total.

## Countries

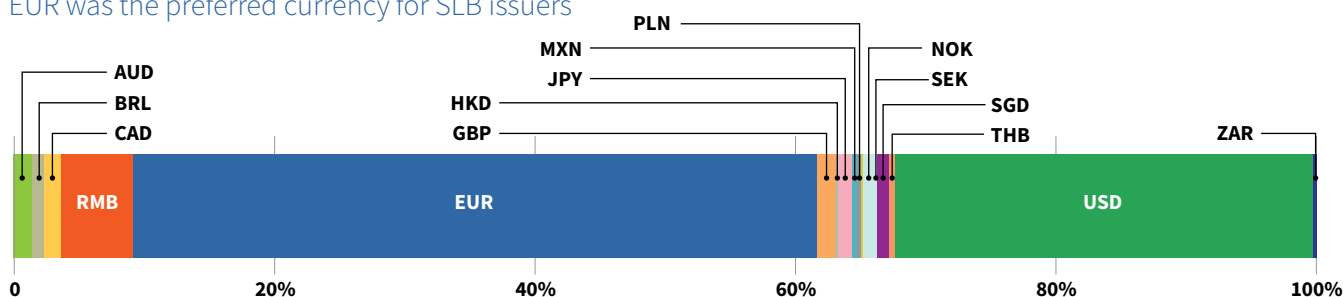
Italy and France were the source of the largest contributions to 2021 SLB volume, with **Enel** alone making up some 68% of Italy's SLB debt, having issued USD16.9bn cumulatively.

China ranked third in issuance volume, but had the most issuers (30), dramatically more diverse than Italy (11). However, deals were relatively smaller, just five Chinese deals were benchmark sized, the largest of which was a RMB5bn (USD800m) deal from state-owned electric utility **State Grid Corp of China**.

## Currencies

- 90.3% of the sustainability-linked universe was in hard currencies and only 9.7% in soft currencies. EUR came out on top with 52.5%, or USD62.9bn of debt originating mostly from Italy, France, Germany, and the UK. EUR and USD were the preferred currencies of 81% of SLB volumes originating in the UK.
- Soft currency debt is led by RMB with volumes of USD6.7bn, followed by BRL (USD1.2bn), and SEK (USD1.19bn). SLBs were issued in a broad range of currencies in 2021 which saw first time deals in SGD, MXN, NOK, THB, and ZAR, amongst others. The largest bond issued

## EUR was the preferred currency for SLB issuers



Source: Climate Bonds Initiative

in a new currency came from energy and urban development company **Sembcorp Inc** which issued a SGD675m (USD487m) deal in October 2021.

## Deal Size & Tenor

Benchmark sized deals accounted for USD83.6bn, or 70.4% of the total issuance in 2021. North America had the largest portion of benchmark deals representing USD11.6bn, or 89.5% of its issuance volume. Benchmark deals comprised 74.3% and 69.4% of deals originating from Europe and LAC respectively, while Asia-Pacific tended towards smaller size, with 52.9% of debt volumes worth under USD500m.

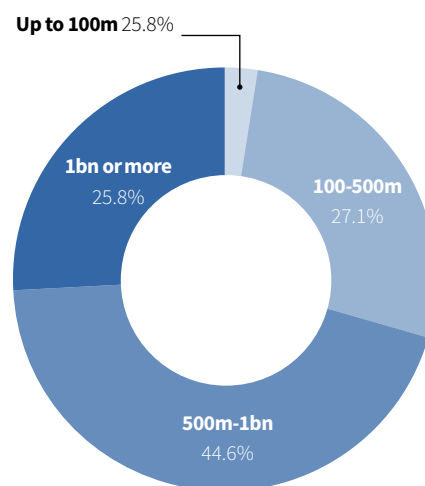
Most SLBs issued in 2021 (79.1%) had a tenor of five years and above. Half of that amount (49.8%) was in the 5- to 10-year bucket, with another quarter (27.8%) in the 10- to 20-year tenor range. North America demonstrated a clear preference for longer term debt, with 94.4% of SLBs originating from the region having a tenor of five years or more, while Asia-Pacific tended towards shorter term debt, with 35.1% of its debt with tenors below five years.

## Economic sector

SLBs are often described as an ideal funding solution for issuers from hard-to-abate sectors which do not have the assets required for traditional GSS bonds, but still look to tie their financing to their decarbonisation journey. However, SLBs are often also used by others, including those who could issue GSS bonds, for general corporate purposes, or to refinance existing debt. The use of SLBs by these two groups is evident in the economic sectoral breakdown of SLBs.

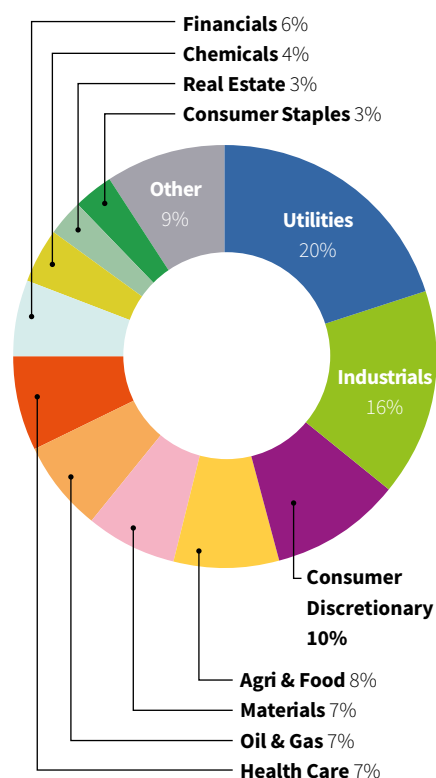
- Utilities is by far the largest sector, with **Enel** contributing USD16.9bn across 15 deals out of the sector's USD28.7bn. Without Enel, the utility sector would find itself in third place with just 9.2%.
- Companies from the Industrials sector were responsible for 65 of the 317 SLBs that had been captured by Climate Bonds at the end of 2021, the most from any sector. Italian motorway operator **ASTM SpA** is the largest issuer, with USD3.4bn of debt tied to a reduction in its scope 1, 2, and 3 emissions in line with a target verified by the Science-Based Targets Initiative (SBTi). ASTM has selected one of the most ambitious financial mechanisms, having chosen a 28bps coupon step-up for its 2030 tranche if it fails to meet its 2027 scope 1 & 2 emissions target, and 42bps in the case of missing its 2027 scope 3 target.
- **Enbridge Inc** is among the largest of the oil & gas producers using the SLB format, committing USD2.4bn of debt to a 35% reduction in scope 1 and 2 GHG emissions by 2031 with a 50bps step-up, and a secondary target of increasing racial and gender diversity with a 5bps step-up.
- **Agriculture and Food** is the fastest growing sector for SLB issuance by issuer count and volume, with 24 deals worth USD10.7bn, including 22 in 2021 alone worth USD10.2bn. Brazilian meat processing company **JBS S.A.** is the largest issuer, with USD2bn of debt tied to targets to reduce scope 1 and 2 GHG emissions 30% by 2030, while also committing to updating these targets as SBTi verifies their commitments.

## Most SLB volume came from non-financial corporate issuers



Source: Climate Bonds Initiative

## Utilities and Industrials issued the largest share of SLB volumes



Source: Climate Bonds Initiative

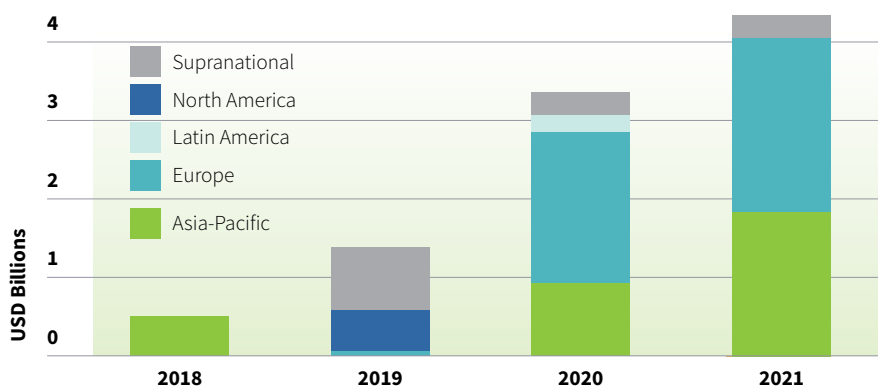
# Transition

## Introduction

- The transition bond market is still relatively new and continued to grow, with 13 bonds coming from ten issuers, amounting to USD4.4bn in 2021.
- SNAT made the largest contribution, with debt from **EBRD** and the Inter-American Development Bank (IDB) making up 19.9% of volumes.
- Japanese transition debt is set to grow rapidly supported by the publication of *Basic Guidelines on Climate Transition Finance* from the Japanese Ministry of Economy, Trade, and Industry in May 2021. Shipping company



## Most transition bond volume originated from Europe.



Source: Climate Bonds Initiative

**NYK Line** issued the country's first transition labelled debt instrument in July 2021 and many other Japanese entities in hard-to-abate sectors will likely follow.

We review a selection of Transition bonds priced in 2021, describe why these issuers have chosen to issue transition bonds, and remark on their alignment with *Climate Bonds Five Hallmarks of a Credibly Transitioning Company*.

Issuer	Deal	Motivation for transition label	Five Hallmarks Alignment
<b>Cadent Gas Limited</b>	<b>Amount issued:</b> EUR625m (USD743.2m) <b>Coupon:</b> 0.625 <b>Maturity:</b> 2030	<p>UoP includes financing for the retrofit of gas pipelines for integration of hydrogen and other low-carbon gases, as well as repairs to hydrogen-ready pipelines to reduce methane leakage. It also includes an exclusion of any gas network expansion.</p> <p>However, the UoP also includes projects for Compressed Natural Gas (CNG), including CNG refuelling stations and vans, which, being a fossil fuel, is not eligible for UoP green bond issuance.</p>	<p><b>Hallmark 1:</b> Cadent Gas has committed to reducing its emissions 80% by 2050 against a 1990 baseline and has committed to updating future emissions reduction targets in line with SBTi.</p> <p><b>Hallmark 2:</b> Cadent Gas has identified three main areas for emission reduction within its business and committed to transforming its gas distribution network for hydrogen and low-carbon gases.</p> <p><b>Hallmark 3:</b> Cadent Gas has CapEx and OpEx plans to support its decarbonisation.</p> <p><b>Hallmark 4 &amp; 5:</b> Cadent Gas has committed to reporting on relevant KPIs and UoP, internally and externally.</p>
<b>Seaspan Corp</b>	<b>Amount issued:</b> USD750m <b>Coupon:</b> 5.5 <b>Maturity:</b> 2029	<p>UoP includes financing what are described as alternative fuel sources' which include liquid natural gas (LNG) newbuilds, alongside bio-/electro-methane, hydrogen, bio-diesel, ammonia, or other viable low-carbon fuel sources.</p> <p>LNG is not eligible under Climate Bonds Standard's Shipping Criteria, as investment in it will not help the goal of decarbonisation, even though it could reduce emissions in the short term.</p>	<p><b>Hallmark 1:</b> Seaspan currently does not have a net zero target, nor mid-term science-based targets. It however reference's Poseidon Principles' trajectory of 50% GHG reduction by 2050.</p> <p><b>Hallmark 2:</b> Seaspan has set 3 potential pathways for its decarbonisation journey, but these are vague and non-binding.</p> <p><b>Hallmark 3:</b> Seaspan has committed to spending on alternative fuel sources including LNG. It has however issued SLBs committing it to USD200m of CapEx on newbuilds and upgrades for alternative fuel source-powered ships.</p> <p><b>Hallmark 4 &amp; 5:</b> Seaspan has committed to relevant reporting on relevant KPIs and UoP, including GHG Emissions in 2022, amongst other shipping-specific efficiency metrics.</p>
<b>NYK Line</b>	<b>Amount issued:</b> JPY10bn (USD90m) <b>Coupon:</b> 0.26 <b>Maturity:</b> 2026 <b>Amount issued:</b> JPY10bn (USD90m) <b>Coupon:</b> 0.38 <b>Maturity:</b> 2028	<p>UoP includes two sections labelled Green Projects and Transition Projects. In the second category financing is included for LNG-fuelled vessels and bunkering vessels.</p> <p>As mentioned above, LNG is not included under Climate Bonds' shipping criteria. However, unlike Seaspan, NYK has developed a long-term transition plan to use ammonia and hydrogen fuel sources, decarbonise onshore activities, and develop offshore wind capacity.</p>	<p><b>Hallmark 1:</b> NYK has SBTi-approved targets for 50% reduction in emissions intensity by 2050, and 30% by 2030. While this KPI does not include scope 3 emissions, 95% of NYK's emissions are from scope 1 and 2, and scope 3 is determined not material and thus not considered.</p> <p><b>Hallmark 2:</b> NYK has developed a transition plan detailing its future use of ammonia and hydrogen fuel sources, as well as fully decarbonising its onshore activities, and develop offshore wind.</p> <p><b>Hallmark 3:</b> NYK has detailed CapEx and OpEx funding plans in line with its transition plan.</p> <p><b>Hallmark 4 &amp; 5:</b> NYK reports and has committed to reporting on relevant KPIs and UoP, both in overall GHG emissions and other shipping-specific metrics.</p>

## 8. Spotlight: The unlabelled climate-aligned bond universe

### Glossary

**Climate-aligned issuers:** issuers that derive at least 75% of their revenues from climate-aligned business activities. These comprise:

- **Fully-aligned issuers:** issuers that derive ≥ 95% of revenue from climate-aligned activities
- **Strongly-aligned issuers:** issuers that derive ≥ 75% of revenue from climate-aligned activities

**Unlabelled climate-aligned bonds:** bonds that finance climate-aligned activities but are not labelled by the issuer.

**Climate-aligned bond universe or climate-aligned bonds:** the universe of climate-aligned outstanding bonds

- **Fully-aligned issuers:** 100% of outstanding debt is considered climate-aligned
- **Strongly-aligned issuers:** pro-rata amount based on the issuers' percentage alignment. For example, if an issuer is 80% aligned, 80% of its outstanding debt is considered climate-aligned

**Climate-aligned outstanding debt** = outstanding volume issued by fully-aligned + strongly-aligned issuers

**Labelled bonds** are not included in the unlabelled climate aligned research

### Scorecard climate aligned

	Strongly aligned	Fully aligned	Total
<b>Total market size</b>	USD417bn	USD378bn	USD795bn
<b>Number of issuers</b>	89	228	317
<b>Number of instruments</b>	1169	1661	2830

### Introduction

Unlabelled climate-aligned (climate-aligned) bonds are not labelled as green by the issuer or anyone else. Such bonds finance climate-aligned projects, assets, and expenditures. They are defined at the entity level i.e., by defining the share of green revenues derived from a pool of public and private sector issuers. The methodology is available in Climate Bonds' *Climate-Aligned Investment Opportunities: Climate Aligned Bonds and Issuers 2020*.<sup>20</sup>

Climate Bonds has been researching bonds financing climate-aligned assets since 2012, to identify opportunities in the unlabelled bond market, and drive investments towards green assets and technologies. Because they are not labelled as green, climate-aligned bonds often lack the visibility and transparency inherent in green bonds that typically come with a framework detailing the relevant assets, projects, or expenditures being financed.

Identifying these bonds highlights opportunities to scale up the labelled green bond market, for example, as climate-aligned debt rolls off, it could be re-financed with a green label. The green label could achieve cheaper funding for the issuer and enable its inclusion in dedicated mandates. This research also offers an entity-level assessment by identifying the share of revenues linked to green activities for bond issuers included in the scope of the analysis.

In 2021 Climate Bonds identified a total flow of capital into climate-aligned assets and activities amounting to USD795bn, on top of the USD2.96tn labelled GSS+ debt universe.

### Top three climate-aligned themes

	Amount outstanding 21 January 2022
<b>Transport</b>	USD463bn
<b>Energy</b>	USD200bn
<b>Water</b>	USD88bn

### A closer look at the global climate-aligned universe

In 2021, the climate-aligned universe comprised 317 climate-aligned issuers, across 42 countries and six climate themes. DM and EM contributed almost equally, with 1% of volume coming from the only supranational climate-aligned issuer, **EUROFIMA** (USD7bn).

**Asia was the largest source of climate-aligned debt**, responsible for USD388bn or 49% of the total. The region's issuance was led by China, which alone contributes almost four-fifths of Asia's outstanding climate-aligned bonds. As in the previous year, most of this volume originates from railway issuers. They remain the most prolific issuers, despite infrastructure investment in China being almost flat in 2021 compared to 2020, under a prudent fiscal policy stance to combat the impacts of COVID-19.<sup>21</sup> Europe came second in volume (32% or USD258bn), with the largest contributions coming from France's state-owned railway company **SNCF** (USD56bn) and utility company **EDF** (USD48bn). North America maintained its third position, with 15% of the market (USD121bn). The three largest North American issuers make up more than half of the region's climate-aligned outstanding volumes: freight rail company **Union Pacific Corp** is once again the top issuer in the region with USD29bn, followed by public utility company **Hydro-Quebec** (USD22bn) and another freight rail issuer, **Canadian Pacific Railway Corp** (USD12bn).

### Top 10 climate-aligned countries

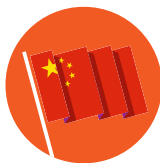
Country	Outstanding climate-aligned debt (USD)	Market share
<b>1. China</b>	302bn	38%
<b>2. France</b>	134bn	17%
<b>3. United States</b>	74bn	9%
<b>4. South Korea</b>	61bn	8%
<b>5. UK</b>	54bn	7%
<b>6. Canada</b>	47bn	6%
<b>7. Germany</b>	28bn	4%
<b>8. Brazil</b>	14bn	2%
<b>9. Austria</b>	14bn	2%
<b>10. Japan</b>	13bn	2%

### Top three climate-aligned issuers

	Amount outstanding 21 January 2022
<b>China State Railway Group</b>	USD222bn
<b>SNCF</b>	USD56bn
<b>EDF</b>	USD48bn

## China maintains top position as largest contributor to climate-aligned debt

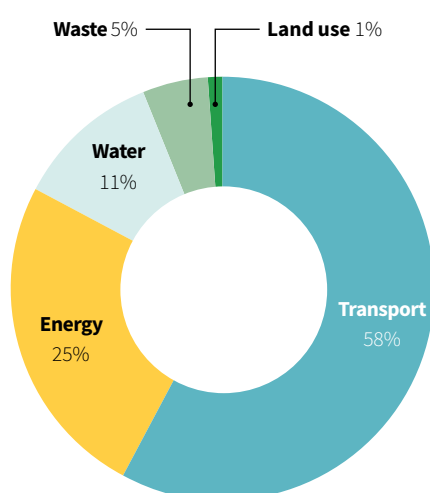
**Transport remains the dominant climate theme**, making up almost three-fifths of the climate-aligned universe (USD463bn). Railway companies account for most of the transport volumes (94%). The remaining share is classified as Metro or light rail (4%), Public transport (1%) and Other (1%).



**China State Railway Group** (China Railway) is the top climate-aligned issuer by volume, with USD222bn outstanding or 28% of the total. In early 2021 the state-owned railway company announced it would scale back network expansion to prioritise a restructuring of its operations and boost efficiency and productivity. This came at a time when the Chinese government's policy shifted from supporting infrastructure projects to improving education, social welfare and public health post-COVID-19.<sup>22</sup> In the coming year, however, infrastructure investment will resume amid a slowdown in economic growth.<sup>23</sup>

China is already home to the world's largest high-speed railway network and it aims to expand track mileage of intercity high-speed railways by 32% by 2025 to 50,000 kilometres under its new five-year transport plan issued in January 2022.<sup>24</sup> We expect Chinese railway issuers' contribution to the climate-aligned universe to expand further this year, increasing transport's market share.

## Transport is the largest climate-aligned theme



Source: Climate Bonds Initiative

**The climate-aligned universe is almost equally split between hard and soft currencies.** Over a third of the outstanding debt (37%) is RMB denominated, with virtually the whole volume originating from China. France and Hong Kong also contributed to RMB issuance, with USD300m and USD100m respectively. EUR and USD, came second and third in volume, contributing 19% and 15% of the total. While RMB tops currency ranking for strongly-aligned issuers, fully-aligned issuers favour USD.

## Entity-level assessments

As investors seek to align their portfolios with the objectives of the Paris Agreement and increase their resilience to climate risk, appetite for sustainable investment continues to grow. Climate-related investment products have multiplied across asset classes. To date, the debt market has been dominated by use-of-proceeds labelled bonds, i.e., proceeds are earmarked to finance or re-finance projects, assets or expenditures classified as green. Issuers must state the eligible UoP categories up front but do not necessarily need a clear climate change strategy and it can be hard for investors to assess their exposure to climate risks and opportunities.

Climate Bonds identifies climate-aligned bonds at the issuer level. This entails an entity-level assessment, which is conducted via analysis of the issuer's revenue streams found in publicly available financial statements and other mainstream sources of information. The share of a company's revenues generated by products and services identified as positively contributing to the achievement of international climate goals is broken down, when possible, at the most granular level (i.e., revenue streams by business lines), and evaluated against the Climate Aligned Activities Tables to determine eligibility for inclusion in the climate-aligned database.

**Labelled and unlabelled universes meet** when climate-aligned entities come to the market with labelled green bonds. The most frequently cited advantages of issuing green bonds include a broader investor base, enhanced investor engagement, reputational benefits and greater visibility in the market, as illustrated in the 2020 Green Bond Treasurer Survey conducted by Climate Bonds.<sup>25</sup> In 2021, over one-quarter of the climate-aligned issuers identified by Climate Bonds had already reaped the benefits of the labelled market, and their collective issuance of GSS+ debt rose to USD77bn. Hydro giant **China Three Gorges Corp** is the largest climate-aligned issuer to have entered the labelled market, with USD11bn worth of green bonds. While the green label remains the most popular among climate-aligned issuers, two companies issued sustainability-labelled bonds (USD597m) and social issuance stood at USD2bn.

## Iberdrola – Climate-aligned + green bonds + operational decarbonisation plan

Some climate-aligned issuers are also taking steps towards decarbonising their operations and increasing their resilience to climate change impacts. Spanish electric utility company **Iberdrola**, a strongly-aligned issuer, is also spearheading the transition to a low-carbon economy with a robust plan embedded into its corporate strategy. The company has committed to reduce the intensity of its direct emissions globally to 50gCO<sub>2</sub> per kWh generated by 2030, and to reach net-zero emissions by 2050. At the end of 2021, Iberdrola had almost USD14bn of labelled green bonds outstanding.

## 9. Spotlight: The Sovereign GSS Bond Club

### Introduction

Sovereign GSS bond volumes increased by 103% in 2021 raising cumulative issuance to USD193bn compared to USD95.2bn at the end of 2020.

Green bonds provided most of the additional USD97.8bn (74%), but the sustainability theme attracted the largest number of debut issuers (10), and the social theme demonstrated the most aggressive growth (392%).

Europe is the largest source of sovereign GSS bonds, with 75% of volumes originating from the region. The climate agenda features strongly in EU policy development and the largest number of dedicated green bond mandates originate from Europe and are EUR denominated.<sup>26</sup>

Fourteen members of the EU 27 have issued at least one sovereign GSS bond, with a total value of USD121.2bn (Denmark was the 15th member state to come to the market in January 2022). France remains the largest overall issuer in the Sovereign GSS Bond Club. Its two green bonds had a combined size of EUR38.2bn (USD43.6) by the end of 2021.

Notably, North America does not feature on the regional chart.

97% of the sovereign issuance is concentrated in three currencies, with the two UK green bonds being responsible for virtually the entire GBP share (97%).

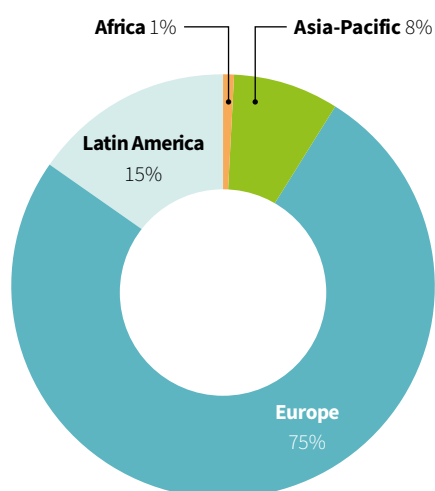
As of 31 December 2021, Bloomberg recorded 11,931 sovereign bonds with a residual maturity of >1year, and a combined outstanding amount of USD49.6tn. Sovereign GSS volumes represented less than 0.4% of this amount, hence capacity is far from saturated.

### Sovereign Scorecard

	Green End of 2021	Social End of 2021	Sustainability End of 2021
<b>Total size of market USD bn</b>	160.7	12.4	20.7
<b>Number of issuers</b>	21	4	14
<b>Number of instruments</b>	50	13	18
<b>Average size of instrument USD bn</b>	3.2	1.0	1.2
<b>Number of countries</b>	21	4	14
<b>Number of currencies</b>	10	3	4
<b>2021</b>			
<b>2021 volume USD bn</b>	72.8	10.3	14.8
<b>Number of issuers</b>	11*	2	11
<b>Number of instruments</b>	20	7	14
<b>Average size of instrument USD bn</b>	6.6	1.5	0.9
<b>Number of countries</b>	11	2	11
<b>Number of currencies</b>	5	2	3

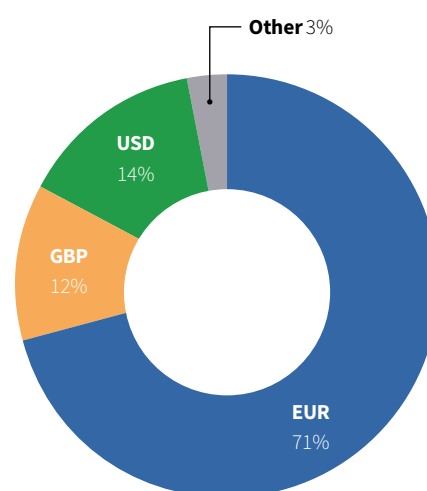
\* Chile did not issue any new green bonds but tapped two green bonds for a total of USD1.2bn.

Most of the sovereign GSS volume originated from Europe



Source: Climate Bonds Initiative

EUR accounted for the majority of sovereign GSS issuance



Source: Climate Bonds Initiative

Sovereign Green Bonds					
Theme	Market	Country	USD Bn as of 31/12/2021	Year of first green bond	Repeat issuer
Green	DM	UK	21.9	2021	✓
	DM	Spain	5.9	2021	✗
	DM	Italy	10.1	2021	✗
	DM	Germany	25.1	2020	✓
	DM	Sweden	2.3	2020	✗
	DM	Hong Kong	7.2	2019	✓
	DM	Netherlands	10.0	2019	✗
	DM	Belgium	8.2	2018	✗
	DM	Ireland	5.7	2018	✗
	DM	France	43.6	2017	✓
	EM	South Korea	0.8	2021	✗
	EM	Serbia	1.2	2021	✗
	EM	Egypt	0.8	2020	✗
	EM	Hungary	2.2	2020	✓
	EM	Chile	7.4	2019	✓
	EM	Indonesia	3.9	2018	✓
	EM	Lithuania	0.1	2018	✗
	EM	Seychelles	0.0	2018	✗
	EM	Fiji	0.0	2017	✗
	EM	Nigeria	0.1	2017	✓
	EM	Poland	4.3	2016	✓
Social	EM	Peru	1.1	2021	✗
	EM	Chile	9.2	2021	✓
	EM	Guatemala	1.7	2020	✗
	EM	Ecuador	0.4	2020	✗
Sustainability		Latvia	0.68	2021	
		Peru	3.25	2021	✓
		Indonesia	0.59	2021	✗
		Isle of Man	0.77	2021	✗
		Benin	0.69	2021	✗
		Uzbekistan	0.23	2021	✗
		Slovenia	1.41	2021	✗
		Andorra	0.60	2021	✓
		Malaysia	0.80	2021	✗
		Chile	4.00	2021	✓
		Luxembourg	1.78	2020	✗
		Mexico	2.64	2020	✓
		Thailand	2.08	2020	✗
		South Korea	0.50	2019	✗

## Green

Eleven issuers priced new green bonds and/or tapped in 2021. USD72.8bn was added to the Climate Bonds GBDB including debut green bonds from Italy, Spain, the UK, and Serbia. South Korea added a green bond to the sustainability bond it priced in 2019, bringing its total GSS liabilities to USD1.3bn. The largest individual sovereign green bond issuer in 2021 was the UK which priced a pair of bonds worth GBP16bn (USD21.9bn). Ten countries classified as DM have issued sovereign bonds bearing the green label, and the average size is the largest among the three themes at USD3.2bn.

## Sustainability

Eleven issuers priced sovereign sustainability bonds in 2021, all EM, with **Mexico** the only repeat visitor. Among the 14 total sovereign issuers, only **Luxembourg** and **Isle of Man** are DM. The sustainability theme is well suited to EM sovereigns. It broadens the categories of eligible expenditures to include environmental and social themes which are usually interlinked in EM to a greater extent than DM, and allows issuers to align with a greater number of SDGs.

## Social

The social theme remains the smallest source of sovereign bonds contributing USD10.3bn, but volumes experienced growth of 392% in 2021. Chile added six social bonds worth USD9.2bn and Peru contributed one bond, a EUR1bn (USD1.13bn) 15-year, priced in November.

## EM Sovereign: Chile

At the end of 2021, GSS bonds accounted for 33% of Chile's USD77bn outstanding liabilities.<sup>27</sup> Chile is the only sovereign to have issued bonds in all three themes.

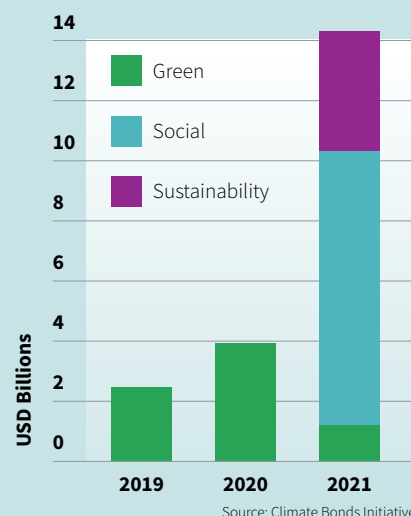


Chile published its Sustainable Bond Framework in November 2020.<sup>28</sup> The framework was prepared by the Chilean Ministry of Finance with support from the IDB. The framework identifies nine social project categories including financing support to disadvantaged groups (elderly, indigenous and marginalised communities) via pension schemes; support for low-income families and victims of human rights violations via subsidies and contributions; promoting

food security for vulnerable groups; access to essential education and health services via preventive and curative health initiatives. Areas of green financing include clean transportation, energy efficiency, renewable energy, conservation of natural resources and land use and marine areas, water management, and green buildings. Overall, this framework is very inclusive and demonstrates Chile's commitment to building a large pipeline of investable sustainability-themed expenditures to facilitate the achievement of multiple SDGs thereby building a resilient society.

In 2021, Chile referenced the new framework with social and sustainability bonds (USD9.2bn and USD4bn respective totals) and increased the size of existing green deals (USD1.2bn). Chile is continuing to pioneer in the sustainable debt space, announcing the first sovereign SLB in early 2022.

Chile is the only sovereign to have issued in all three GSS themes



## DM Sovereign: United Kingdom

The UK has the most developed climate policy agenda after the EU. Starting with the UK Climate Act in 2008, a string of supportive policies has been introduced in the intervening period, and in 2019, the UK became the first major economy to commit to a legally binding target to reach net-zero by 2050. Efforts are being made to establish the UK as a green finance hub. A green taxonomy is being developed, and the London Stock Exchange has high-profile



green, sustainable, and transition bond segments attracting issuers from around the globe.

The UK published its green bond framework in June 2021 which listed clean transportation, renewable energy, energy efficiency, pollution prevention and control, living and natural resources, and climate change adaptation as six eligible project categories.<sup>29</sup> Each category listed metrics to monitor environmental impacts and social co-benefits. The framework was consistent with the ambitions described in the Ten Point Plan for a Green Industrial Revolution published by HM Government in 2020.<sup>30</sup>

### Pricing dynamics

The first UK sovereign green bond (green Gilt), a GBP10bn (USD13.6bn) 22-year, was priced by syndicate in September 2021 and was the largest debut green sovereign to date. The sale attracted an order book of over GBP100bn (USD137bn), a record high among green sovereigns. HSBC and JPM, lead brokers on the deal, publicised a greenium of 2.5bps.

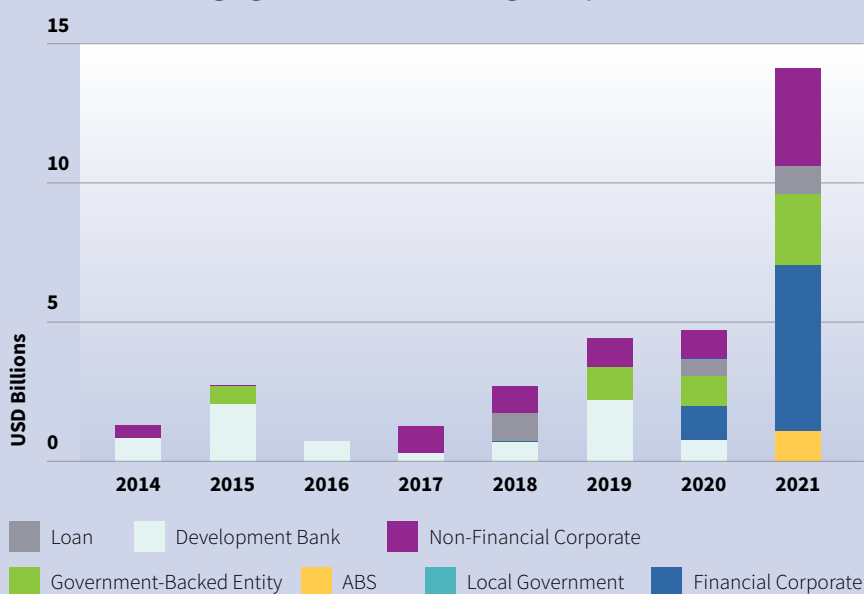
A second green Gilt, a GBP6bn (USD8.3bn) 31-year, was added a month later, just ahead of the UK hosting COP-26 in October 2021. On this occasion, the order book exceeded GBP74bn (USD102bn).

The UK Debt Management Office (DMO) plans to gradually increase both bonds to become 10- and 30-year benchmarks. The DMO remarked that it was delighted with both transactions, noting that both green Gilt attracted high quality order books from large institutional investors. Domestic investors were allocated 83% of the 2033, and 88% of the 2053.

Excluding the green Gilt, the Climate Bonds GBDB recorded GBP22.7bn (USD30.6bn) of cumulative GBP denominated green bonds at the end of 2021. This was just 2.4% of the non-sovereign sterling denominated debt market.<sup>31</sup>

Sterling non-sovereign green bond volumes increased by 79% in 2021, and the success of the green Gilt transactions is expected to build on this. A deeper investible opportunity set would encourage more dedicated mandates from the estimated GBP2.2tn UK pension fund community.<sup>32</sup>

### GBP non-sovereign green bond volumes grew by 79% in 2021



## 10. Spotlight: Taxonomies

### What is a green/sustainable finance taxonomy?

The term taxonomy is generally used in scientific fields to describe a system for the identification and classification of information.

In green finance, a green or sustainable taxonomy has gained increasing market acceptance and use over the past few years and describes a **classification system** that identifies activities, assets or revenue segments that deliver on key environmental objectives.

A taxonomy is intended to **provide clarity** and guidance to financial market participants on which activities/assets are eligible for sustainable investment.

### A bit of history – how did taxonomies come to be?

Green/sustainable definitions, principles and/or classification systems have been used for decades to determine the eligibility of assets for inclusion in ESG and other sustainable investment products. Historically, **these were mainly private sector-led**, usually constructed in-house and often based on methodologies, ratings and scoring tools developed by specialist service providers. While many of these were fit for purpose, the number of different approaches and their sometimes-opaque criteria led to concerns around greenwashing.

**Public actors entered the fray** to put forward more top-down approaches to determining green/sustainable activities, initially to support the growth of the green bond market. This began with the establishment of national/regional green bond guidance which was generally voluntary and in line with the Green Bond Principles.

These guidelines proved useful in promoting transparency and disclosure but as they generally did not have specific eligibility criteria (e.g. performance thresholds) with regards to what is green, concerns around greenwashing persisted.

To address these concerns, **public authorities have increasingly moved to a more detailed and mandatory** set of eligibility criteria in the form of a taxonomy. China was the first to put forward a more detailed and mandatory paradigm for assessing and approving the issuance of green bonds (the official name is the *Green Bond Endorsed Project Catalogue* but is referred to here as the China Taxonomy). In 2016 the European Commission accepted a recommendation by an expert group to develop a European Taxonomy, culminating in regulation that has been agreed by the EU co-legislators (with technical work on the detailed criteria still ongoing).

While not run by a public authority, Climate Bonds launched its voluntary guidelines in the form of a taxonomy and related certification scheme in 2012.

### A taxonomy reduces the wiggle room for greenwashing

The main difference between taxonomies and ESG guidance is that the former are generally:

- **Granular:** taxonomies provide detailed (often binary or numerical) information on what is eligible as green or sustainable. This reduces the need for interpretation and therefore greenwashing.
- **Publicly available:** they are available publicly and are not based on proprietary methodologies. They can therefore become

understood and commonly accepted and used across a wide range of actors. The approach to taxonomy development may involve a mix of public, private, and non-government actors.

- **Science-based:** as far as possible, taxonomies are based on science rather than on national priorities or opinions.

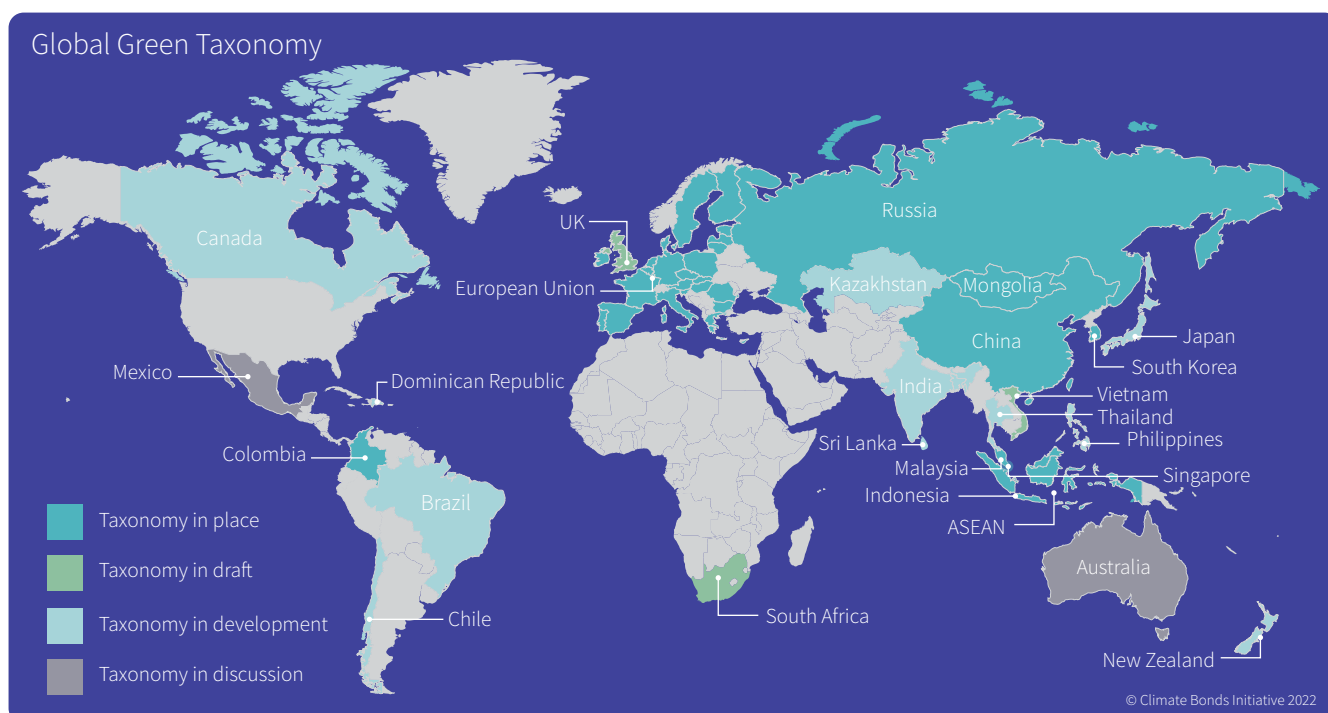
These differences are the value that taxonomies have added to the green and sustainable investment landscape by providing clarity on what can be considered green and reducing the need for interpretation or extensive due diligence.

### Which are the main ones?

**The EU and China** are arguably the main jurisdictions referred to in taxonomy discussions, although many other countries have taxonomies in draft or in discussion. Most other country taxonomies are based at least in part on the EU and China taxonomies.

**China:** The *Green Bond Endorsed Project Catalogue* has been in mandatory use to guide the domestic **green bond market** since January 2015 and was updated in 2021 to align more closely with global definitions. The taxonomy addresses climate change, environmental improvement, circular economy, waste recycling and pollution prevention.

**European Union:** The EU Taxonomy is being developed in several stages. The overarching Taxonomy Regulation was approved in 2021 and the Climate Delegated Act (which details climate-related thresholds) at the end of 2021. This first phase of the Taxonomy criteria is focused on climate change mitigation and adaptation measures which are two out of six proposed project categories.



There is work ongoing to further develop the Taxonomy, with a view to set out criteria for the remaining four categories: protection of water and marine resources, circular economy, pollution prevention, and biodiversity protection.

The EU Taxonomy goes beyond green bonds and will support mandatory disclosure of sustainable investments and assets by investors, banks, and corporates in the EU.

## What about social and other taxonomies?

As of early 2022, the most well-developed taxonomies are green taxonomies, covering environmental issues. **Climate change** is the environmental objective with the most coverage across different taxonomies.

Other objectives, such as circular economy or biodiversity are being discussed (e.g., in the EU) and will be put forward as they are ready (likely later in 2022 in the EU).

**Social taxonomies are less well developed** globally although there is an aspiration, particularly in EM, to cover social goals in time.

**The Platform on Sustainable Finance** for the EU published the first report on a social taxonomy in February 2022.<sup>33</sup> The report summarises the Platform's 18 months of work on a social taxonomy but does not bind the European Commission on any decision. Other jurisdictions may use the work to put forward their own thinking.

Taxonomies covering social or broader environmental issues can be a valuable addition to the sustainable finance landscape, but stakeholders should also recognise the limitations of taxonomies.

While taxonomies have been useful in putting forward granular and numerical thresholds to define climate investments, some social and other broader environmental objectives do not lend themselves to straightforward thresholds. Taxonomies should therefore be seen as one tool for analysis of social investments, but other processes, certifications, labels, and principles may also be required to understand these investments, ensure they are delivering the intended positive impacts, and/or minimising risks.

## Integrity

The science basis of taxonomies is core to their development.

However, taxonomy development is fraught with political pressure and influence from industries. This is a global problem exemplified in the EU, where the very concept of a science-based taxonomy is under threat by the moves (yet unapproved) to include nuclear and gas-fired power as transition activities under the existing green framework.

Politics does and can compromise a technology neutral, science-based tool. But there are some antidotes – investors may choose to disregard certain controversial elements of taxonomies and independent taxonomies such as the Climate Bonds Taxonomy can also guide investors as to where there are differences between national taxonomies and science.

## How can they guide investment decisions?

As noted, taxonomies can help investors by providing clear and granular guidance that is not open to interpretation. The science-based nature of taxonomies can reduce due diligence and investors can have some certainty around the alignment with investment objectives.

Where a taxonomy is also accompanied by disclosure regulations (as in the EU), this may also help investors to have the information and data at hand to assist in investment decisions.

## How can they help issuers to design green bonds?

For issuers, taxonomies also help to create certainty around which assets can be eligible for inclusion in green finance instruments. It reduces interpretation and allows them to clearly show which assets are aligned with, for example, the aims of the Paris Agreement.

This means issuers are required to provide much less justification as to why an investment is green, particularly in the more difficult sectors. For example, before the EU Taxonomy, there was limited guidance on what green cement production looked like so a company might have had to justify their position to the market as to why green = x tonnes CO<sub>2</sub> per tonne of cement. Now, the only requirement is to demonstrate compliance with the threshold in the EU Taxonomy.

## Expected developments in 2022

**Transition and amber taxonomies.** There has been a lot of discussion around how taxonomies can cover transitional activities. In addition to this, we expect some countries to cover more difficult transition activities like mining and the resources sector. We expect to see a lot more on this during 2022.

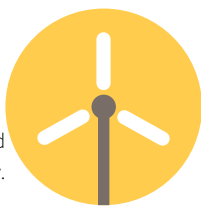
**Resilience.** One of the big priorities is to get finance flowing to projects and activities that help build resilience to physical and other climate impacts, particularly in smaller low-emitting countries where mitigation is not a number one priority. Taxonomies will be one of the tools that could assist with this.

**More jurisdictions.** Many countries/regions are looking to finalise their taxonomies in the coming months, some after consultation. Watch out for South Africa, Vietnam, Colombia, Sri Lanka, the UK and many more.

**Implementation.** While the focus to date has been on taxonomy creation, we expect this to shift to discussion around use and implementation. Reporting under the EU Taxonomy is now mandatory for large companies and encouraged for SME's, so we expect to see evidence of reporting and, along with it, challenges, and solutions for other taxonomies to reference for their own implementation.

## 11. Spotlight: Low-carbon energy, the most urgent transition

The February 2022 Russian invasion of Ukraine highlighted the vulnerabilities of fossil fuel reliance, and the need for greater energy security.



A rapid global transition to renewable and low-carbon energy and increased energy efficiency are the twin inevitable responses to the climate crisis, and their accelerated implementation would offer protection against oil and gas price volatility too. Renewables are cheap to produce, offer stable supply, and demonstrate predictable pricing.

The key components for scale implementation are known and tested. Adequate technology is already in place and improving all the time, and the green bond market is equipped with the standards and taxonomies to identify projects that can contribute to a zero-carbon future. There is a large and growing number of investors looking for labelled transparent green bonds meeting robust UoP standards.

### Standards and taxonomies are in place

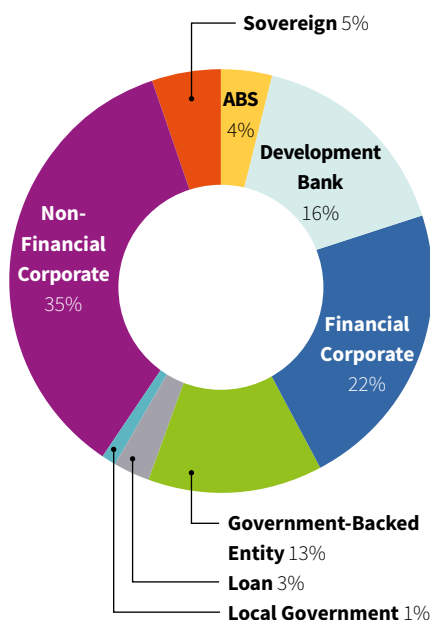
Climate Bonds has approved Certification Criteria for seven sources of renewable energy: Solar, Wind, Geothermal, Bioenergy, Hydropower, Marine Renewables, and Electrical Grids and Storage, and recognises Nuclear as a low-carbon energy source. The criteria for Hydrogen is under development (see box).

In the Low Carbon Buildings category, Climate Bonds has approved Certification Criteria for Residential, and Commercial properties. The Climate Bonds Taxonomy can be used by any entity to identify which assets, activities, and expenditures are compatible with reaching net zero by 2050.

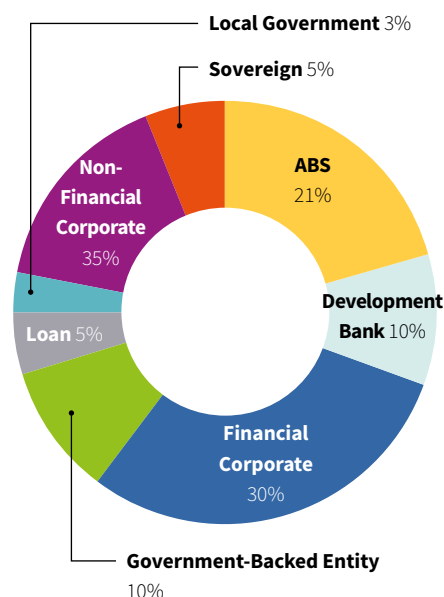
At the end of 2021, the Climate Bonds GBDB recorded cumulative volumes of USD580bn and USD480bn earmarked for Renewable Energy and for Low Carbon Buildings respectively.

Most of the investment to date has come from the private sector. The largest contribution from a sovereign issuer is the UK which earmarked the proceeds of its pair of green bonds equally to seven categories of expenditure which included Energy Efficiency and Low Carbon Buildings (USD3.12bn each).

Non-financial corporates have issued the most Renewable Energy green bonds



Energy Efficiency has mostly been financed by financials and ABS



#### Top 5 issuers

##### Total allocation to Low Carbon Buildings UoP USDbn

1. Fannie Mae	82.3
2. KfW	16.2
3. Republic of France	16.0
4. EIB (European Investment Bank)	15.4
5. Gecina	7.9

### Renewables must replace gas

Following the invasion of Ukraine, the IEA swiftly published *A 10-Point Plan to Reduce the European Union's Reliance on Russian Natural Gas*. The IEA estimates that if implemented in 2022, the 10-Point Plan could reduce the EU's gas imports from Russia by over one third.<sup>34</sup>

The Nord Stream 2 undersea pipeline completed in 2021 was built to transport gas from Russia to Germany and would have supplied half of Germany's annual consumption. Further pipelines would have distributed gas from Germany to other European nations. Germany halted the project on 22 February 2022, and the EU stated that it would do everything possible to accelerate the region's transition to renewables.

Globally, gas cannot be eliminated immediately. As well as its application in electricity production, gas is used in numerous manufacturing processes as a raw material and a heat source.

#### Top 5 issuers

##### Total allocation to Renewable Energy UoP USDbn

1. KfW	32.5
2. EIB (European Investment Bank)	23.0
3. TenneT Holdings	15.1
4. Iberdrola	13.3
5. Engie	9.7

It is an ingredient to fertiliser, antifreeze, pharmaceuticals, plastics, and fabrics among others. It is also used to produce chemicals like ammonia, butane, ethane, propane, methanol, and acetic acid. Gas also has a role in manufacturing steel, cement, ceramic, bricks, paper, and food products.

Higher gas prices are having a global impact. Fertiliser is among the items heavily subsidised by the Indian government, reliant on the agricultural sector, and gas is a key input which has driven prices, and therefore the cost of subsidies, higher. The government is encouraging the private sector to develop alternatives using green hydrogen and has accelerated its planned transition to renewable sources of electricity. India plans to quadruple its renewable power generation capacity by 2030, and recently announced plans to issue an INR green sovereign bond of up to USD3.3bn in 2022.<sup>35</sup>

## Climate Bonds working to develop standards for Hydrogen

Hydrogen is not a primary energy source but an energy carrier, which requires high amounts of energy to produce. Such energy can originate from a variety of sources, including fossil fuels, biomass, renewables, nuclear, and diverse technologies. However, most hydrogen production today relies on the historically cheapest and requiring no storage alternatives: fossil gas steam reforming and coal gasification.



The IEA estimates that the total demand for hydrogen in 2020 was around 90 million tonnes per year (Mt/year). About 45% was used in oil refining and 50% in chemical production, mainly ammonia. Steel production accounted for 5%. Most of the expected global demand will be for zero-carbon (green) hydrogen; nevertheless, there is no consensus yet on expected hydrogen demand by 2050.

Although hydrogen has the potential to replace fossil fuels and contribute to the decarbonisation of the economy, some issues need to be addressed to scale up hydrogen projects and promote investments. Such decisions include acceptable energy sources and efficiency, lock-in risks for fossil-based production, thresholds for emissions reduction, and scope 3 GHG emissions beyond CO<sub>2</sub>.

Climate Bonds is creating a Technical Working Group (TWG) to provide guidance on the development of global criteria for the hydrogen industry and an Industry Working Group (IWG) to offer feedback on the applicability of these criteria. Some of the issues that will be addressed during the criteria development process are:

- Hydrogen value chain challenges and investable activities needed during the production, transportation, storage, and end-use
- 1.5° C production pathways criteria and carbon intensity targets
- Hydrogen infrastructure building and repurposing criteria
- Hydrogen storage criteria
- End-use prioritisation
- Other environmental impacts relating to hydrogen projects, such as air pollution and water consumption

Given the critical role that hydrogen is expected to play to decarbonise some challenging sectors of the economy, the development of criteria and science-based standards is crucial to attract green investment across the whole hydrogen value chain.

## The role of coal and the base load

There are adequate fossil fuel sources and power stations to cover current base load requirements, so new fossil fuel infrastructure need not be built. For now, this does not present an issue, but alternatives must be operational by 2030 when Europe has committed to wind down coal use.

The IEA suggested that the impact of its Ten Point Plan could be further boosted by an increase in supply from Europe's coal-fired power stations. Climate Bonds expects coal mines and power stations to remain operational in the short term, with closures potentially delayed. Some countries including Czech Republic, Bulgaria, and Germany have already indicated that they may increase coal production to cover the gap left by fossil gas.

Growing satellite evidence on fugitive emissions from fossil gas suggests that the CO<sub>2</sub>e emissions do not vastly differ from coal, given methane's far stronger global warming potential. In addition, nobody is describing coal as a transition fuel, its emissions intensity is well understood and not subject to systematic underestimation.<sup>36</sup> Coal infrastructure will be wound down much faster than gas simply because it is not being replaced and is closer to the end of its life. We are already

beginning to see dedicated financing emerge for earlier retiring of coal power, including the Asian Development Bank's (ADB) Energy Transition Mechanism (ETM) announced at COP26.

## Getting on the grid

An increase in electricity generated from renewables will require an increase in the sophistication and number of transmission and distribution networks, as well as a scaling up of storage for load balancing and localised grid systems. According to the World Economic Forum, if this does not happen, congestion and curtailment, which leads to wastage, could degrade the economic viability of renewable energy projects.<sup>37</sup> Further development and roll out of thermal storage such as molten salt batteries will enable greater flexibility in renewable energy management including demand spikes.

**Fingrid, National Grid, TenneT, and Red Electrica** have all issued green bonds to improve electricity transmission, with **Terna, Latvenergo, MidAmerican Energy, Iberdrola, and Alliander** earmarking portions of their green bond proceeds for such activities.



## TenneT is financing the transmission transition with green bonds

Dutch grid operator TenneT operates, maintains, and expands the high-voltage grid in the Netherlands and a large part of Germany. TenneT has a well-defined transition strategy, and the Climate Bonds GBD captures 13 TenneT green bonds with a cumulative volume of close to USD14bn at the end of 2021.

TenneT published its updated green bond framework in 2021, with Renewable Energy listed as the only eligible project category. Renewable Energy projects include:

- a. The transmission of renewable electricity from offshore wind power plants into the onshore electricity grid using direct current technology or alternating current technology.
- b. Development, construction, and reconstruction of the onshore electricity grid to enhance the transmission capacity for renewable energy.<sup>38</sup>

All activities are aligned with the EU Taxonomy and contribute to UN SDGs 7 (Affordable and Clean Energy), and 13 (Climate Action). Maturing liabilities and new CapEx have been financed with green bonds since 2015. There are just two non-green bonds remaining on the TenneT yield curve and the yields are relatively higher for those, suggesting that investors attach a lower value to those bonds. This is likely due to a combination of the lack of liquidity in the older paper, and the increasing preference for the green label.

## Energy efficiency

Improvements in energy efficiency would lower energy demand. For example, the heating of buildings is currently unregulated. Policy makers could introduce temperature caps on heating in commercial buildings, which would also help to deal with demand spikes.

Measures that grow investment in energy efficiency can help to create jobs – for example, manufacturing and installation of triple glazed windows, draft excluders, heat pumps, solar roof tiles, and general home retrofitting. Such measures should be combined with accelerated planning approval at the municipal level and could also contribute to boosting the (European) economy as well as a rapid reduction in energy demand.

## 12. Outlook

2021 was yet another record year for the GSS+ market, with combined volumes breaking through the annual USD1tn mark for the first time. Climate Bonds expects issuance in



2022 to remain buoyant, and the results of a Climate Bonds stakeholder survey conducted in late 2021 suggest that we may reach USD1tn in new green bonds alone before the end of the year. Green remains the most dominant theme taking a 49% share of 2021 issuance, but growth across all themes including SLBs demonstrates an inclusive approach to growing capital flows.

At the beginning of 2022, the world continues to grapple with several interlinked crises:

- Large scale ecological degradation driven by the sixth mass extinction of the species and the impacts of Climate Change as underscored by the recent Working Group II (*Adaptation, Impacts, and Vulnerability*) and Working Group III (*Mitigation of Climate Change*) reports released by the Intergovernmental Panel on Climate Change (IPCC) in February and April 2022 respectively;
- The continued COVID-19 pandemic and the subsequent impact on economies and societies around the world; and
- The invasion of Ukraine which threatens both geopolitical stability, energy security, and seems to point to an inevitable global recession as evidenced by the recent inversion of the US Treasury curve.

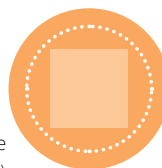
Each of these exacerbate the already dire situation faced by the marginalised and vulnerable, and further deepen inequality and poverty across all counties, impeding our ability to develop sustainably. Governments are struggling to find the resources to address these issues in concomitance.

Mobilising the resources of the private and public sectors is more important than ever. The financial community can step up to support the development and implementation of solutions to reverse the impacts of climate change, prevent further damage, and protect the most vulnerable members of our society. The GSS+ debt market provides clear standards, labelling, and taxonomies to support the capital flows to reach the areas where it is most needed.

Climate Bonds expects five themes to dominate the GSS+ market in 2022.

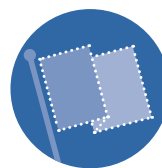
### 1. Adaptation and Resilience (A&R)

Findings in the IPCC Working Group reports leading up to the September 2022 release of the Sixth Assessment Report (AR6) describe in stark detail the devastating impacts of climate change in all corners of the globe. The reports note that so far, most climate finance has been earmarked for mitigation activities and highlights the need to amplify and accelerate A&R solutions. The reports describe the efforts in A&R to date as having been unevenly distributed, fragmented, and incremental. Investors are increasing the systematic scrutiny of the resilience of their investments hence it is crucial for issuers of all types of debt to make sure that any exposure is addressed in the planning process using current best practice. Public sector liabilities must include resilience measures in infrastructure, urban development projects, water resource management, and research, while private sector capital can flow into A&R through including resilience measures in all project categories.



### 2. The Sovereign GSS+ Bond Club

Sovereign issuers have the ultimate power in the GSS+ debt markets because of their scale and influence. Sovereigns must leverage this potential to direct capital flows to climate-friendly expenditures and examine all their expenditures through a climate mitigation or resilience lens. This creates a template for private sector issuers, as well as opportunities for crowding in. Sovereign demonstration issuance that adheres to an emerging taxonomy affords the perfect opportunity to test applicability in both a local and global context.



### 3. Taxonomies

Taxonomies help issuers to identify suitable projects to finance on the one hand, and investors to preference sustainable investments on the other. The development of robust taxonomies in 2022 led by the EU and China will help to bring scale to the market. The EU will also push forward with its social taxonomy discussions in 2022 which if developed into a working taxonomy, will help investors allocate capital to those in greatest need.



### 4. Low-carbon energy

The transition to low-carbon and renewable energy was highlighted as a global imperative in the IPCC Working Group III report. This stark instruction together with events unfolding in Ukraine demand that we do everything possible to expedite the transition. China has shifted its focus more sharply onto renewable energy with the announcement of its 30.60 ambitions and India has stated that it intends to have 30% renewable energy in place by 2030. The technology is in place to achieve these goals, and green bonds provide the perfect financing vehicle. With solar power already cheaper than fossil alternative, achieving rapid scale will also help to further reduce the cost of the required infrastructure earlier than had previously been predicted hence making it more accessible to EM.



### 5. Transition

Investors are now evaluating issuers according to the quality and clarity of their net-zero transition strategies. Climate Bonds expects this to become more pervasive. Climate Bonds is developing standards to identify appropriate sector and entity-level pathways to decarbonisation and other sustainability ambitions beginning in 2022 with Basic Chemicals, Steel, and Cement. This will enable the inclusion of traditional hard-to-abate economic sectors in sustainable investment mandates.



## 13. Appendices

### Appendix A

The following table shows the composition of labels in each theme.

				
Green	Sustainability	Social	SLB	Transition
Blue	ESG	Affordable Housing	Sustainability-linked	Transition
Climate	Green Innovation	Education	ESG-linked	Blue Transition
Green	Positive Impact	Gender Equality	SDG-linked	Green Transition
Green (Carbon Neutrality)	Sustainability	Healthcare	Social Impact-linked	Low-carbon Transition
Renewable Energy	Sustainability Awareness	SDG Housing	Social & Sustainability-linked	
Solar	SDG	Town Revitalisation		
Environmental	Socially Responsible Investing (SRI)	Youth		
Water		Employment		
PACE				

### Appendix B

#### Methodology notes & caveats

**1.** Due to the methodological difference between green and other themes, it is important to note that **Climate Bonds analysis of other themes is merely an indicator of the financing aimed at each, based on the label applied to each deal.**

For instance, some deals labelled as SDG, and therefore included under the sustainability theme, may only actually finance social projects. Importantly, there will also, for example, be various deals under the social and sustainability themes that finance, in whole or in part, pandemic-related investments. *Climate Bonds is developing more granular UoP analysis for other themes.*

**2.** Climate Bonds GBDB includes many loans and ABS deals. These have historically been treated these as issuer types, and the same applies to this report. However, under Climate Bonds new methodology, these are considered *different instrument* – not *issuer* – types. It remains uncommon to see loans or ABS deals with a sustainability, social, or pandemic label. Performance-linked loans are not included.

#### Climate Bonds Database updates

Climate Bonds has expanded data coverage to other labelled debt instruments, particularly sustainability and social bonds, and a separate database covering these will be launched in 2022. The extended databases will complement other enhancements to our data collation and analysis including the collection of more granular information on the UoP and impacts of green bonds, more robust and detailed analysis of climate-aligned issuers, and a more detailed assessment of SDG alignment.

## Endnotes

1. Climate Bonds Initiative. 2020. Green Bond Database Methodology. <https://www.climatebonds.net/market/green-bond-database-methodology>
2. Climate Bonds Initiative. 2021. Climate Bonds Taxonomy. <https://www.climatebonds.net/standard/taxonomy>
3. Platform on Sustainable Finance. 2022. Final Report on Social Taxonomy. [https://ec.europa.eu/info/sites/default/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/280222-sustainable-finance-platform-finance-report-social-taxonomy.pdf](https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/280222-sustainable-finance-platform-finance-report-social-taxonomy.pdf)
4. Energy Capital & Power. 2021. Emergence Plaza Issues West Africa's First Green Corporate Bond. <https://energycapitalpower.com/emergence-plaza-issues-west-africa-first-green-corporate-bond/>
5. Climate Bonds Initiative 2022. Green Bond China Investor Survey.
6. Responsible Investor. 2021. Bonds & Loans: Slovenia issues €1bn sustainability bond. <https://www.responsible-investor.com/bonds-and-loans-slovenia-issues-eur1bn-sustainability-bond/>
7. Joint SDG Fund. 2021. The Indonesian SDG Bond: A Leap Towards Financing the SDGs. <https://www.jointsdgfund.org/article/indonesian-sdg-bond-leap-towards-financing-sdgs>
8. International Labour Office. 2018. World Employment and Social Outlook 2018: Greening with jobs. [https://www.ilo.org/weso-greening/documents/WESO\\_Greening\\_EN\\_chap2\\_web.pdf](https://www.ilo.org/weso-greening/documents/WESO_Greening_EN_chap2_web.pdf)
9. World Resources Institute. 2021. Germany: The Ruhr Region's Pivot from Coal Mining to a Hub of Green Industry and Expertise. <https://www.wri.org/just-transitions/germany-ruhr-region>
10. World Resources Institute. 2021. Spain's National Strategy to Transition Coal-Dependent Communities. <https://www.wri.org/just-transitions/spain>
11. World Resources Institute. 2021. Philippines: A Whole-of-government Approach to Creating Green Jobs. <https://www.wri.org/just-transitions/philippines>
12. European Commission. 2021. SURE. [https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/financial-assistance-eu/funding-mechanisms-and-facilities/sure\\_en](https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/financial-assistance-eu/funding-mechanisms-and-facilities/sure_en)
13. Ministerio de Hacienda. 2021. Social Bonds: 2021 [EUR-2027; EUR-2036; EUR-2051; USD-2033; USD-2041; USD-2061]. <https://www.hacienda.cl/english/work-areas/international-finance/public-debt-office/sustainable-bonds/social-bonds/2021-eur-2027-eur-2036-eur-2051-usd-2033-usd-2041-usd-2061-case-study-july-2021>
14. Ministerio de Hacienda. 2021. Sustainable Bonds. <https://www.hacienda.cl/english/work-areas/international-finance/public-debt-office/esg-bonds/sustainable-bonds>
15. Allianz Global Investors. 2021. 9 things to know about China's bond markets. <https://us.allianzgi.com/-/media/allianzgi/globalagi/china-microsite/9-things-to-know/9-things-to-know-about-chinas-bond-markets.pdf?la=en-us&hash=6349C04572297D8316D9EB95614DCD8F>
16. Reuters. 2021. China to allow social, sustainable development Panda bond issuance. <https://www.reuters.com/article/china-bonds-panda-sustainable-id/USB9N2Q00Z>
17. Bilibili. 2021. Bilibili 2020: Environmental, Social and Governance Report. [https://ir.bilibili.com/system/files/encrypted/nasdaq\\_kms/assets/2021/07/29/1-59-22/Bilibili%202020%20Environmental%20C%20Social%20and%20Governance%20Report.pdf](https://ir.bilibili.com/system/files/encrypted/nasdaq_kms/assets/2021/07/29/1-59-22/Bilibili%202020%20Environmental%20C%20Social%20and%20Governance%20Report.pdf)
18. Global Capital. 2021. Far East Horizon launches sustainability Panda debut. <https://www.globalcapital.com/asia/article/29c89hkn56oy7vltq80/china/china-bonds/far-east-horizon-launches-sustainability-panda-debut>
19. Climate Bonds Initiative. 2021. Transition finance for transforming companies. <https://www.climatebonds.net/files/Transition%20Finance/Transition%20Finance%20for%20Transforming%20Companies%20ENG%20-%2010%20Sept%202021%20.pdf>
20. Climate Bonds Initiative 2020. Climate-Aligned Investment Opportunities. [https://www.climatebonds.net/files/reports/cbi-climate-aligned\\_bonds\\_issuers\\_2020.pdf](https://www.climatebonds.net/files/reports/cbi-climate-aligned_bonds_issuers_2020.pdf)
21. ING Think. 2022. China will grow faster in 2022 than it did in 4Q21 with easier monetary and fiscal policy. <https://think.ing.com/articles/china-in-2022-will-grow-stronger-than-4q21-with-easing-monetary-and-fiscal-policy>
22. South China Morning Post. 2021. China's railway investment loses steam as government turns from debt-fuelled building boom. <https://www.scmp.com/economy/china-economy/article/3117264/chinas-railway-investment-loses-steam-government-turns-debt>
23. China Briefing. 2022. China Infrastructure Investment in 2022 – Can it Stimulate Economic Growth? <https://www.china-briefing.com/news/china-infrastructure-investment-in-2022-spurring-economic-growth/>
24. South China Morning Post. 2022. China plans expansion of high-speed railway equal to combined length of next 5 largest countries by network size by 2025. <https://www.scmp.com/economy/china-economy/article/3163957/china-plans-expansion-high-speed-rail-network-equal-combined>
25. Climate Bonds Initiative. 2020. Green Bond Treasurer Survey. <https://www.climatebonds.net/files/reports/climate-bonds-gb-treasurer-survey-2020-14042020final.pdf>
26. 43 out of 58 green bond funds identified by Environmental Finance were EUR denominated [https://www.environmental-finance.com/content/analysis/green-bond-fund-assets-reach-\\$25bn-table.html](https://www.environmental-finance.com/content/analysis/green-bond-fund-assets-reach-$25bn-table.html)
27. Bloomberg – BICS Level 1 = sovereign, Country/Region of risk = Chile
28. Ministry of Finance. 2020. Chile's Sustainable Bond Framework. <https://www.hacienda.cl/english/work-areas/international-finance/public-debt-office/sustainable-bonds/chile-s-sustainable-bond-framework>
29. UK Government. 2021. UK Government Green Financing Framework. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1002578/20210630\\_UK\\_Government\\_Green\\_Financing\\_Framework.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1002578/20210630_UK_Government_Green_Financing_Framework.pdf)
30. UK Government. 2020. The ten point plan for a green industrial revolution. <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>
31. Bloomberg non-sovereign sterling denominated bonds outstanding on 31 December 2021
32. Office for National Statistics. 2020. UK pension surveys: redevelopment and 2019 results. <https://www.ons.gov.uk/economy/investments/pensionsandtrusts/articles/ukpensionsurveys/redevelopmentand2019results>
33. Platform on Sustainable Finance. 2021. Draft Report by Subgroup 4: Social Taxonomy. [https://ec.europa.eu/info/sites/default/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/sf-draft-report-social-taxonomy-july2021\\_en.pdf](https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/sf-draft-report-social-taxonomy-july2021_en.pdf)
34. International Energy Agency. 2022. <https://www.iea.org/reports/a-10-point-plan-to-reduce-the-european-unions-reliance-on-russian-natural-gas>
35. Business Standard. 2022. India plans Rs 24,000 cr sovereign green bond as economy goes low carbon. [https://www.business-standard.com/article/economy-policy/india-plans-rs-24-000-cr-sovereign-green-bond-as-economy-goes-low-carbon-122031500116\\_1.html](https://www.business-standard.com/article/economy-policy/india-plans-rs-24-000-cr-sovereign-green-bond-as-economy-goes-low-carbon-122031500116_1.html)
36. International Energy Agency. 2022. Global Methane Tracker 2022. <https://www.iea.org/reports/global-methane-tracker-2022>
37. World Economic Forum. 2020. Why transmission and distribution are the clean energy transition's secret weapons. <https://www.weforum.org/agenda/2020/07/transmission-distribution-clean-energy-transition/>
38. TenneT. 2021. Green Financing Framework. [https://www.tennet.eu/fileadmin/user\\_upload/Company/Investor\\_Relations/SPO2021/Green\\_Financing\\_Framework\\_2021.pdf](https://www.tennet.eu/fileadmin/user_upload/Company/Investor_Relations/SPO2021/Green_Financing_Framework_2021.pdf)



Prepared by Climate Bonds Initiative.

Sponsored by IFC, JP Morgan and Luxembourg Green Exchange.

**Lead Authors:** Caroline Harrison,  
Matthew MacGeoch, Carlotta Michetti

**Contributing Authors:** Bridget Boule,  
Nabilla Gunawan, Marian Rodriguez,  
Krista Tukiainen

**Design:** Godfrey Design, Joel Milsted

**Suggested Citation:** Harrison C., MacGeoch M.,  
Michetti C., *Sustainable Debt Global State of the  
Market 2021*, Climate Bonds Initiative 2022

© Published by Climate Bonds Initiative, April 2022

[www.climatebonds.net](http://www.climatebonds.net)

**Disclaimer:** The information contained in this communication does not constitute investment advice in any form and the Climate Bonds Initiative is not an investment adviser. Any reference to a financial organisation or debt instrument or investment product is for information purposes only. Links to external websites are for information purposes only. The Climate Bonds Initiative accepts no responsibility for content on external websites. The Climate Bonds Initiative is not endorsing, recommending or advising on the financial merits or otherwise of any debt instrument or investment product and no information within this communication should be taken as such, nor should any information in this communication be relied upon in making any investment decision. Certification under the Climate Bond Standard only reflects the climate attributes of the use of proceeds of a designated debt instrument. It does not reflect the credit worthiness of the designated debt instrument, nor its compliance with national or international laws. A decision to invest in anything is solely yours. The Climate Bonds Initiative accepts no liability of any kind, for any investment an individual or organisation makes, nor for any investment made by third parties on behalf of an individual or organisation, based in whole or in part on any information contained within this, or any other Climate Bonds Initiative public communication.







