

SECTOR IN-DEPTH

9 May 2019



TABLE OF CONTENTS

Q1 2019 green bond volume sets first-quarter record with strong corporate issuance	2
Sustainable investing assets continue to grow	5
Draft EU Green Bond Standard published in March	6
Green sukuk and sustainable investing principles overlap, driving good long-term potential despite a slow start	8
Moody's publishes proposed framework to assess carbon risks for high-risk corporate sectors	9
Appendix: List of Moody's Green Bond Assessments (GBAs) as of 30 April 2019	11
Moody's related publications	13

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Cross-Sector – Green Bonds

Corporate issuers drive strong global green bond volume in Q1 2019

Issuers brought \$47.2 billion of green bonds to market globally in the first quarter of 2019, a 40% increase over the first quarter of 2018 (see Exhibit 1). This issuance level is a record for first-quarter green bond issuance, and trails only the fourth quarters of 2017 and 2018 for the largest quarterly issuance to date. Corporates, both financial and non-financial, as well as European issuers, were strong contributors to overall issuance. First-quarter issuance puts the market roughly in line to hit [our 2019 forecast of \\$200 billion](#) of total green bond issuance.

- » **Q1 2019 green bond volume sets first-quarter record, with strong corporate issuance.** Corporates were strong contributors to overall issuance, with \$15.9 billion of non-financial corporate issuance and \$8.1 billion of financial corporate issuance accounting for 34% and 17% of total volume, respectively.
- » **Sustainable investing assets continue to grow.** According to the Global Sustainable Investment Alliance's recently released 2018 Global Sustainable Investment Review, assets under management using sustainable, responsible and impact (SRI) investing strategies stood at \$30.7 trillion globally at the start of 2018, a 68% increase from four years earlier.
- » **Draft EU Green Bond Standard published in March.** On March 6, 2019, the Green Bond Standard subgroup of the EU Technical Expert Group (TEG) on Sustainable Finance issued its interim report on a proposal for a new EU Green Bond Standard. The report presents the TEG's progress in one of the key areas of the European Commission's Action Plan on Financing Sustainable Growth, published in March 2018.
- » **Green sukuk and sustainable investing principles overlap, driving good long-term potential despite a slow start.** We expect the Islamic finance sector's strong growth over the past 10 years to continue, reflecting that it remains underrepresented in the global financial system while demand for Shariah-compliant financial instruments is rising. This growth should translate into stronger prospects for green sukuk issuance, primarily by sovereigns and financial institutions.
- » **Moody's publishes proposed framework to assess carbon risks for high-risk corporate sectors.** On May 7, 2019, [Moody's published a Request for Feedback](#) on a proposed carbon transition risk assessment tool for rated non-financial companies (carbon transition assessments, or CTAs). Our proposed CTAs are intended to provide market participants with a greater level of visibility and transparency into how we assesses carbon transition risk.

Description of our green bond data sources

We use the Climate Bonds Initiative as our primary source for global green bond market data. Climate Bonds Initiative data are widely used in the market and include detailed information on green bond transactions across the globe. Our analysis is based on data as of 22 April 2019.

Green bond data from the Climate Bonds Initiative include labeled bonds that meet the organization's criteria for inclusion in its dataset. These data exclude issuance that does not conform to the Climate Bonds Initiative's criteria, including bonds with more than 5% of proceeds being allocated to "non-green" uses and bonds potentially financing projects that do not align with Climate Bond Standards.

Although the analysis in this report is based on Climate Bonds Initiative data, the methodology factors of the Moody's Green Bond Assessment (GBA) remain separate and distinct from Climate Bond Standards.

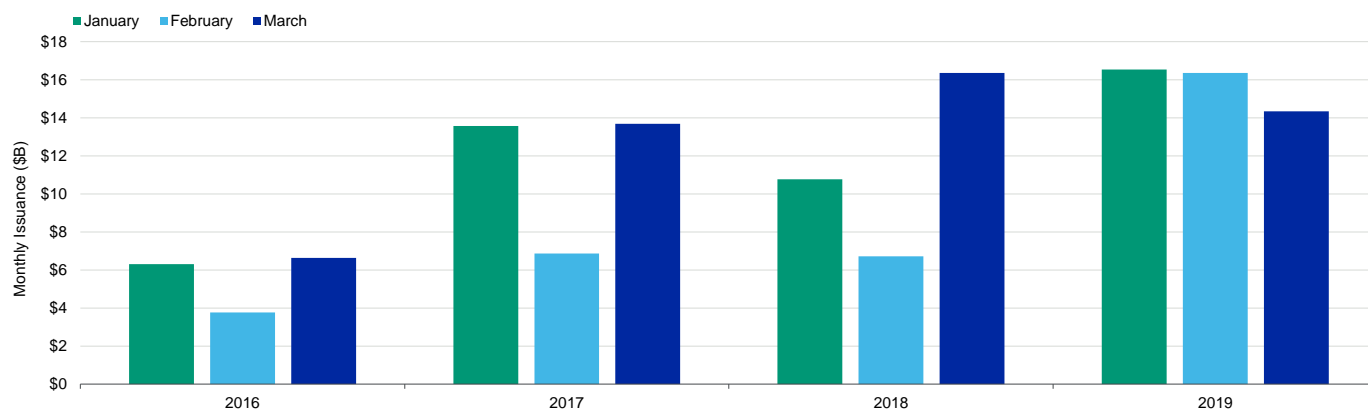
Climate Bonds Initiative is an international organization working solely to mobilize the largest capital market, the \$100 trillion bond market, for climate change solutions.¹ Moody's is a [partner of the organization through its Climate Bonds Initiative Partners Program](#), supporting the organization's efforts to advance the growth and development of a global market for climate and green bonds that rely on the use of debt capital markets to deliver climate solutions.

Q1 2019 green bond volume sets first-quarter record with strong corporate issuance

Issuers brought \$47.2 billion of green bonds to market globally in the first quarter of 2019, a 40% increase compared with the first quarter of 2018 (see Exhibit 1). The issuance level is a record for first-quarter green bond issuance, and trails only the fourth quarters of 2017 and 2018 for the largest quarterly issuance to date. Corporates, both financial and non-financial, as well as European issuers, were strong contributors to overall issuance. First-quarter issuance puts the market roughly in line to hit our 2019 forecast of \$200 billion of total green bond issuance.

Exhibit 1

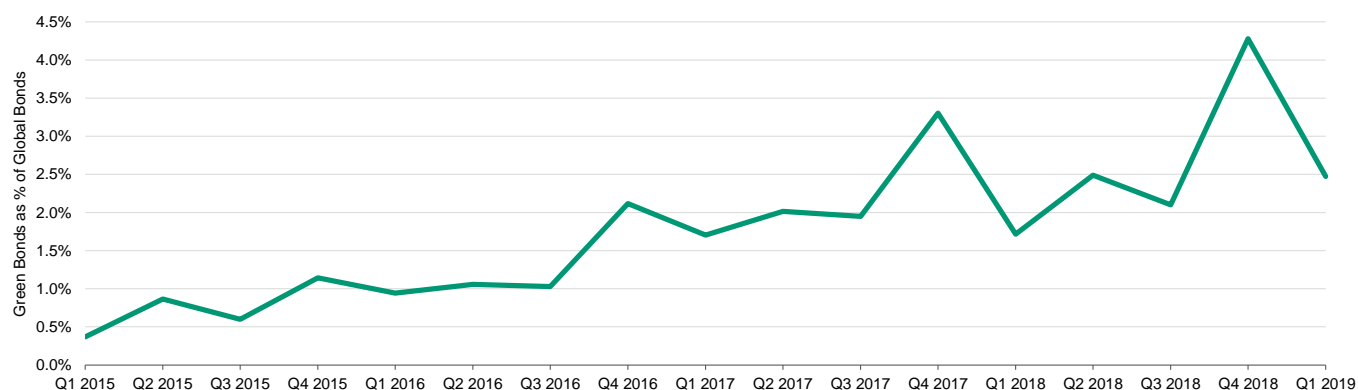
Green bond issuance was consistently strong in the first quarter of 2019



Sources: Climate Bonds Initiative, Moody's Investors Service

This strong issuance compared to Q1 2018 occurred despite a 3.2% decline in overall global issuance, according to Dealogic, continuing a trend under which green bonds have increased their share as a percentage of total bond issuance globally (see Exhibit 2). Green bonds accounted for 2.5% of total first-quarter global bond issuance, up from 1.7% in the first quarters of both 2017 and 2018. We expect this trend to persist in the long run as the market continues to mature.

Exhibit 2

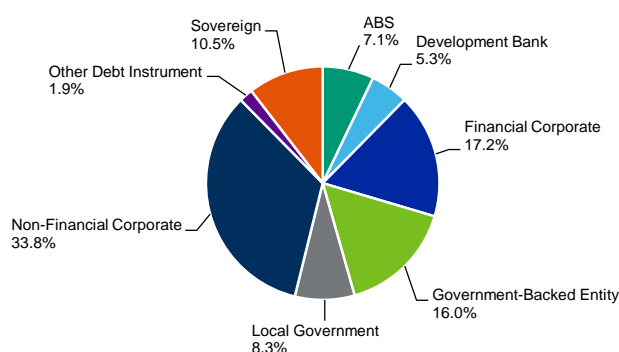
Green bonds are gaining global market share

Sources: Climate Bonds Initiative, Dealogic, Moody's Investors Service

Corporates were strong contributors to overall issuance in the first quarter, with \$15.9 billion of non-financial corporate issuance and \$8.1 billion of financial corporate issuance accounting for 34% and 17% of total volume, respectively (see Exhibit 3). Non-financial corporate issuance was particularly strong and compared with 18% for the whole year of 2018. Local government and government-backed entities accounted for a combined 24% of issuance, up from 15% for the whole of 2018.

Notable sectors in which issuance declined include development banks, which accounted for just 5% of issuance during the quarter, and asset-backed securities (ABS), which accounted for 7% compared with 15% for the whole of 2018. The latter primarily reflects relatively slow \$2.5 billion issuance by [Federal National Mortgage Association](#) (Fannie Mae, Aaa stable), which has averaged almost \$6 billion of quarterly issuance over the past two years.

Exhibit 3

Non-financial corporates led the way in green bond issuance in the first quarter

Sources: Climate Bonds Initiative, Moody's Investors Service

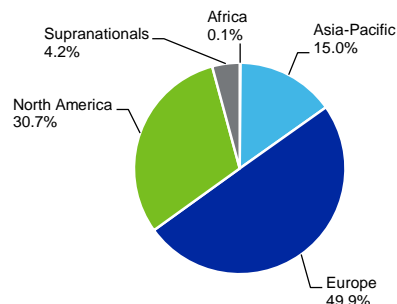
Seven non-financial corporate issuers brought green bond tranches of \$1 billion or more to market in the first quarter. The largest of these was [MidAmerican Energy Company](#) (A1 stable), which issued a \$1.5 billion green bond in January. The first quarter also saw two notable telecoms green bonds, including a €1 billion green bond from [Telefonica S.A.](#) (Baa3 stable) and a \$1 billion green bond from [Verizon Communications Inc.](#) (Baa1 positive), issued just a few days apart in February.

European issuers accounted for approximately half of total green bonds in the first quarter, supported by over \$8 billion of volume from French issuers alone (see Exhibit 4). French issuance was strongly supported by the largest issuer during the quarter, [Societe du Grand Paris](#) (Aa2 positive), which brought €2.1 billion of green bonds to market across three tranches, including a €2 billion tranche issued in March. A €1.7 billion green bond issued by the [Government of France](#) (Aa2 positive) in February also supported strong European and

French issuance. France was one of three sovereigns to issue green bonds during the quarter: the [Government of Poland](#) (A2 stable) issued a €2 billion green bond in March and the [Government of Indonesia](#) (Baa2 stable) issued a \$750 million green bond in February.

Exhibit 4

European issuers accounted for half of total green bonds in the first quarter



Sources: Climate Bonds Initiative, Moody's Investors Service

North American issuers were also significant contributors to issuance in the first quarter, accounting for 31%, or \$14.5 billion, up from 23% for the whole of 2018. This volume was largely driven by \$11.2 billion of US-based issuance, supported by the issuances by Fannie Mae, MidAmerican Energy and Verizon. Other significant issuance by US-based issuers included a €1 billion green bond issued by [Citigroup Inc.](#) (A3 stable) in January.

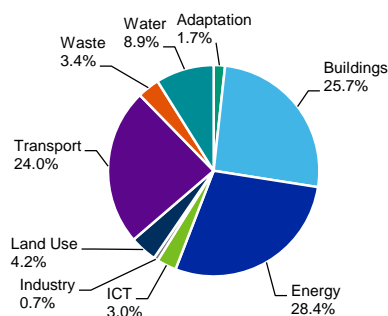
Green bonds from Asia-Pacific issuers represented just 15% of total first-quarter issuance, down from 29% for the whole of 2018. This largely reflects a decline in issuance by Chinese issuers, with the \$2.2 billion of total China-based issuance significantly trailing the average quarterly issuance of \$7.8 billion for 2018. Beyond China, other Asia-Pacific issuers accounted for almost \$5 billion of combined volume, with the largest deals coming from the Republic of Indonesia, noted above, and the [Queensland Treasury Corporation](#) (Aa1 stable), which issued an AUD1.25 billion green bond in March.

With Europe dominating issuance, euro-denominated green bonds accounted for 48% of the total volume, followed by US dollar-denominated issuance at 24%. Notably, Swedish krona-denominated issuance accounted for 11% of the total volume, supported by 36 individual transactions totaling more than \$5 billion.

In terms of use of proceeds, energy and buildings continued to lead in the first quarter, accounting for 28% and 26% of issuance, respectively (see Exhibit 5). Notably, however, transport green bonds accounted for 24% of issuance, a significant increase compared with previous quarters. Diversification of use of proceeds is likely to continue as a growing variety of issuers participate in the green bond market.

Exhibit 5

Energy, buildings and transport drive first-quarter green bond use of proceeds

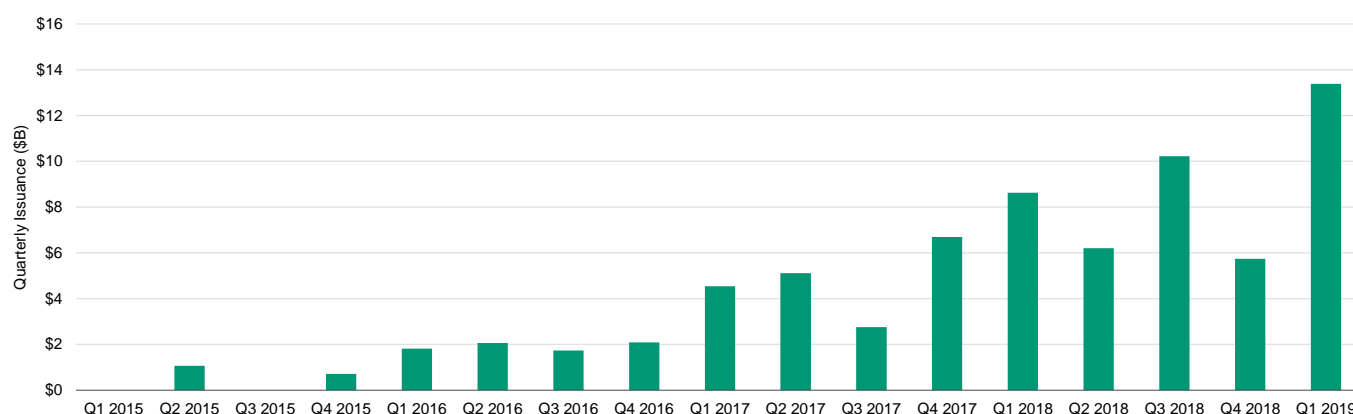


Sources: Climate Bonds Initiative, Moody's Investors Service

Beyond green bonds, social and sustainability bonds continue to gain in prominence and grow at an accelerated rate (see Exhibit 6). Combined social and sustainability bond issuance totaled \$13.4 billion in the first quarter, eclipsing the previous quarterly record of \$10.2 billion in the third quarter of 2018. If the social and sustainability bond markets continue at the first quarter's pace and eclipse \$53 billion of combined issuance for 2019, this would represent a 74% increase over annual 2018 issuance. By way of comparison, the green bond market grew by just 7% annually last year.

Exhibit 6

Combined social and sustainability bond issuance continues to grow rapidly



Sources: Dealogic, Moody's Investors Service

Sustainable investing assets continue to grow

The continued development of the larger sustainable investment universe will support green bond market growth in the long run. Investor demand for green and sustainable investing products continues to grow, and has to date outpaced the supply of such products. According to the Global Sustainable Investment Alliance's recently released 2018 Global Sustainable Investment Review, assets under management using sustainable, responsible and impact (SRI) investing strategies stood at \$30.7 trillion globally at the start of 2018, a 68% increase compared with four years earlier (see Exhibit 7).²

Japan has been the fastest growing region, while in Europe, where nearly half of global sustainable assets are managed, the market is showing signs of maturation. Although total SRI assets under management in Europe have continued to grow, their share of the overall professionally managed assets in the region fell to 49% in 2018 from 59% in 2014, a trend the Global Sustainable Investment Alliance suggests may reflect stricter standards in the region. SRI assets have continued to gain market share in North America, however, rising to 51% from 31% in Canada between 2014 and 2018, and to 26% from 18% in the United States.

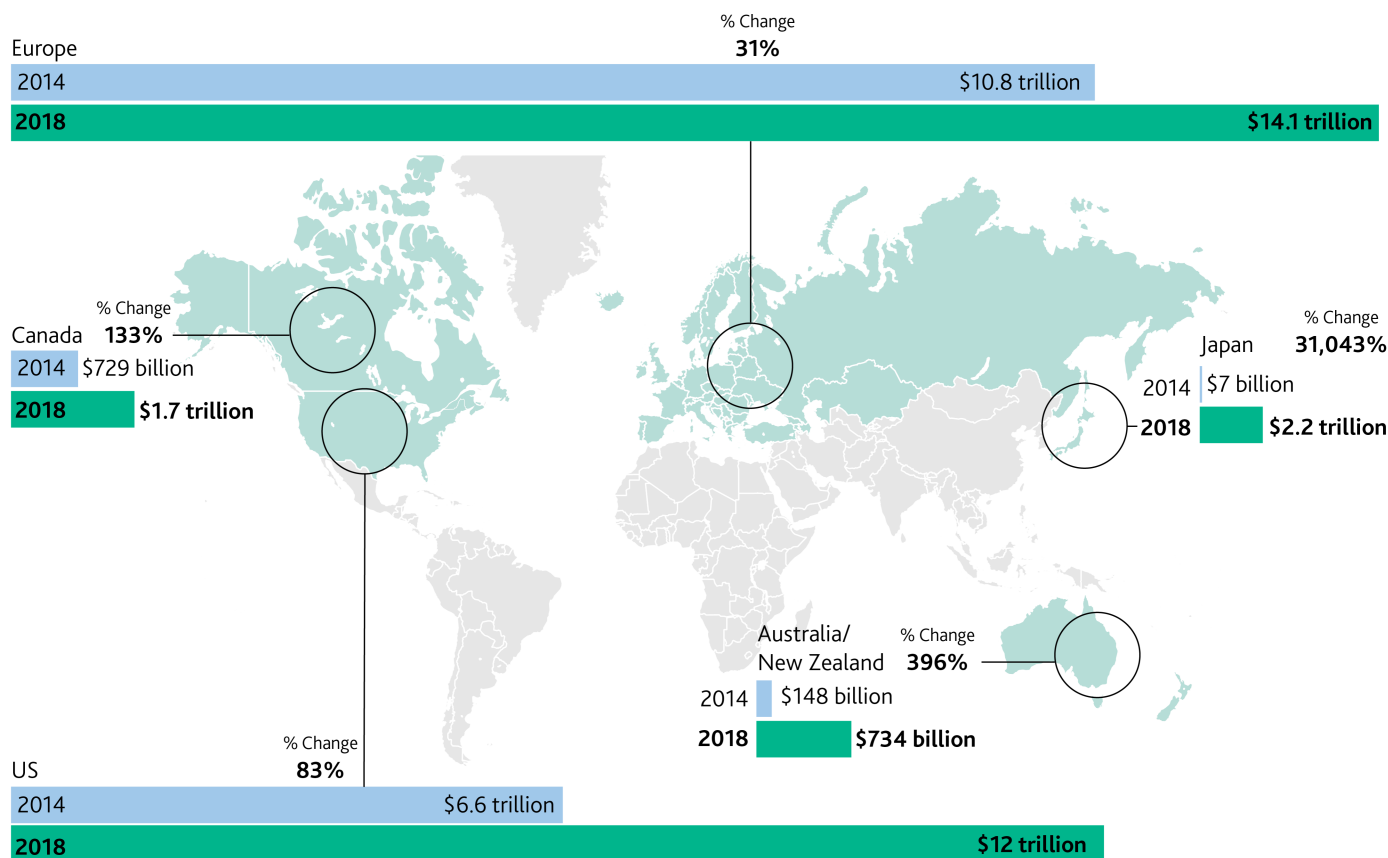
As investors increasingly look to incorporate Environmental, Social and Governance (ESG) factors into their investment strategies, more businesses are voluntarily disclosing key information in these areas. For example, the United Nations Global Compact, which publishes a set of principles for corporate sustainability, saw the number of participating companies that voluntarily report on their work to embed these principles in their operations increase to 5,017 in 2013 from 167 in 2004.³ Meanwhile, many issuers are now [linking their business objectives to the United Nations Sustainable Development Goals \(SDGs\)](#), a trend we expect will continue as companies increasingly align their business models with sustainable development scenarios. Correspondingly, sustainability reporting practices will continue to evolve in terms of extent and quality.

As demand for responsible investing strategies grows and as more issuers focus on sustainability, new and innovative financial products will continue to enter the marketplace. For example, the labeled bond market in recent years [has expanded to include social and sustainability bonds](#) which allow issuers to finance projects beyond those with green or climate objectives. There has also been growth in ESG-linked loans, which tie the interest rate on a loan to the borrowing company's performance on specified ESG metrics. In early 2018, for example, Dutch bank [ING Bank N.V.](#) (Aa3 stable, baa1⁴) issued such a loan to Wilmar International, a Singaporean palm oil producer.⁵

Exhibit 7

Sustainable investment assets under management continue to grow strongly globally

Global SRI assets by region, \$ trillion and % change



Sources: Global Sustainable Investment Alliance, Moody's Investors Service

In March 2019, the Loan Market Association, the Asia Pacific Loan Market Association and the Loan Syndications and Trading Association published the Sustainability Linked Loan Principles, voluntary recommended guidelines to be applied to loan instruments and/or contingent facilities seeking to incentivize the borrower's achievement of defined sustainability performance targets.⁶ We expect ESG-linked loans to grow in popularity following the publication of these guidelines, in the same way that the development of applicable standards by the International Capital Market Association has supported green, social and sustainability bond markets.⁷

Draft EU Green Bond Standard published in March

On March 6, 2019, the Green Bond Standard subgroup of the EU Technical Expert Group (TEG) on Sustainable Finance issued its interim report on a proposal for a new EU Green Bond Standard (GBS).⁸ The report presents the TEG's progress in one of the key areas of the European Commission's Action Plan on Financing Sustainable Growth, published in March 2018.⁹

The TEG sets out 11 policy recommendations in the report, including four relating to the establishment of the EU GBS and seven related to supporting the adoption of the EU GBS. The recommendations, centered around addressing barriers to further green bond market development, include the following:

- » Create a voluntary EU Green Bond Standard
- » Monitor the impact and consider further supporting action, including possible legislation, after an estimated period of three years
- » Develop a legislative proposal for a centralized accreditation regime for external green bond verifiers, potentially to be operated by the European Securities and Markets Authority (ESMA)

- » Establish a market-based voluntary accreditation committee for external verifiers of green bonds for a transition period
- » Investors, particularly institutional investors, are encouraged to adopt the requirements of the EU GBS when designing their green fixed-income investment strategies, and to actively communicate their commitment and expectations to green bond issuers and underwriters
- » Adopt an ambitious disclosure regime for institutional investors
- » Consider promoting the greening of the financial system by expressing and implementing a preference for EU green bonds
- » Develop credit-enhancement guarantees for sub-investment-grade green bonds
- » The TEG encourages all types of bond issuers to issue future green bonds in compliance with the requirements of the EU GBS
- » The TEG recommends that the European Commission considers setting up a grant scheme to offset the additional cost of external verification for issuers
- » Promote adoption of the EU GBS through the EU eco-label for financial products

Beyond these recommendations, the report also contains a draft form of the EU GBS. In addition to outlining the standard's scope and objectives and defining an EU green bond, the draft form outlines four key components of the EU GBS. These include (1) defining which projects are green, including linking them back to the EU taxonomy framework that is currently under development; (2) formalizing the concept of an issuer's green bond framework and outlining its key components; (3) highlighting the key components of an issuer's green bond reporting and recommending that this reporting be provided at least annually until full allocation of bond proceeds, and thereafter in the event of any material changes; and (4) suggesting that issuers appoint an accredited external reviewer to confirm the credentials of the EU green bond.

Under the draft EU GBS, green bond projects will include those projects (a) contributing substantially at least one of the EU's environmental objectives namely (i) climate change mitigation, (ii) climate change adaptation, (iii) sustainable use and protection of water and marine resources, (iv) transition to a circular economy, waste prevention and recycling; (v) pollution prevention and control and (vi) protection of healthy ecosystems, while (b) not significantly harming any of the other objectives and (c) complying with the minimum social safeguards represented by the principles and rights set out in the eight fundamental conventions identified in the International Labour Organization's declaration on Fundamental Rights and Principles at Work.¹⁰

Once the EU taxonomy framework is in force and technical screening criteria have been developed in the taxonomy for specific environmental objectives and sectors, green projects must align with these criteria. For the period when the taxonomy is not in place or where these technical screening criteria are not developed, an accredited external reviewer shall then either confirm alignment with the technical criteria, or alternatively that the projects nonetheless meet the requirements under the EU taxonomy framework (i.e. that they (a) contribute substantially to at least one of the EU's environmental objectives, (b) do not significantly harm any of the other objectives and (c) comply with the minimum social safeguards).

The draft GBS also defines green projects to include eligible green physical and financial assets as well as the share of working capital reasonably attributed to their operation; eligible green capital expenditures; eligible green operating expenditures related to improving or maintaining the value of eligible assets; and eligible green expenditures from sovereigns, sub-sovereigns and public agencies. For expenditures, there is a maximum three-year look-back period prior to issuance of the green bond, while there is no specific look-back period for assets. The draft reports suggests that this approach broadens the scope of eligible green projects relative to current market norms.

According to the report, the draft EU GBS integrates the existing management of proceeds concept under the Green Bond Principles while simplifying the concept so that issuers need only track equivalent amounts to eligible green projects, as opposed to creating a separate account or sub-account for green bond proceeds. The report states that this may reduce the complexity for issuers around tracking procedures, and that this may be especially helpful for sovereign issuers as such tracking procedures may be incompatible with the legal parameters of government finance and national budgets.

Given the linkage of green projects to the European Commission's sustainable finance taxonomy under discussion, the effects of the EU GBS on the green bond market's growth will be at least somewhat linked to this taxonomy. [As we wrote in January](#), the taxonomy's ultimate impact on green bond market growth will depend on its final form. If it is restrictive and significantly limits the eligible number of green projects, issuers may be discouraged from issuing green bonds. However, if it allows for a wide array of green projects and new technologies while at the same time allaying market fears relating to "greenwashing," it may ultimately have a positive effect on the market's long-term development.

Green sukuk and sustainable investing principles overlap, driving good long-term potential despite a slow start

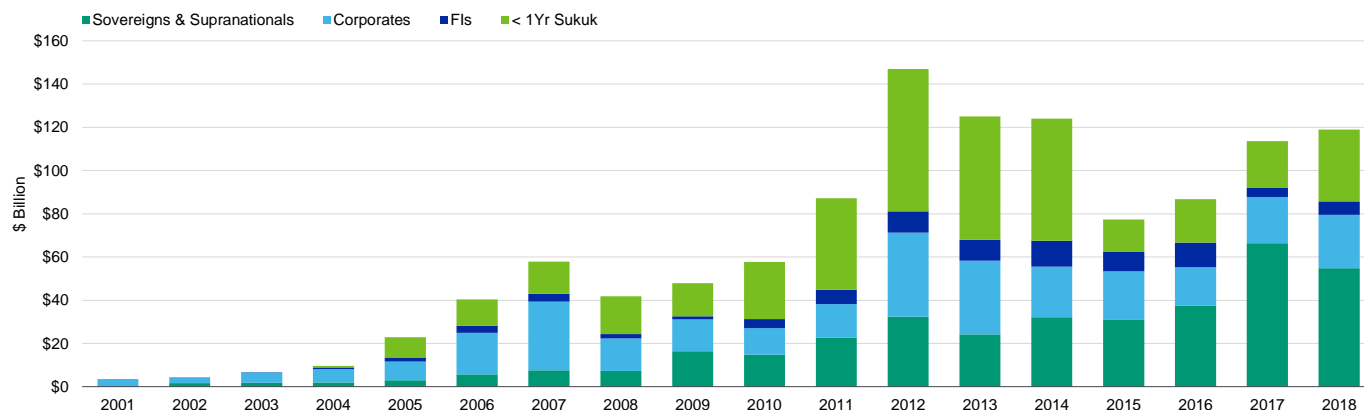
While the global green bond market reaches new annual highs, the green sukuk market is still in its infancy, with only a handful of issuances to date following the world's first green sukuk in 2017 issued by Tadau Energy (Edra Power), a corporate based in Malaysia. As of March 2019, green sukuk's share of overall issuances (green bonds and sukuk) remained very small, at less than 1%.

This low level can be explained by the fact that the sukuk market is relatively small compared with global bond issuance volumes, despite growing by 5% in 2018 to around \$119 billion (see Exhibit 8). Of this, around \$86 billion had longer maturities (over one year at the time of issuance), the second highest volume of long-term issuances to date after the \$92 billion issued in 2017. Recent growth in issuance has been largely driven by short-term issuances from Malaysia. Global sovereign sukuk issuance, including long- and short-term sukuk issued by national governments, central banks and supranational organizations, declined by 5% to \$78 billion in 2018 from \$82 billion in 2017.

Exhibit 8

Global sukuk issuance grew marginally in 2018

Sukuk issuance, \$ billion



Sources: IFIS, Bloomberg, Moody's Investors Service

The most recent green sukuk was issued by the Government of Indonesia in February 2019. The \$750 million issuance followed a \$1.25 billion five-year sukuk, the world's first sovereign green sukuk, which was brought to market in February 2018. The proceeds were assigned to finance green projects such as renewable energy, sustainable transport, waste management and green buildings.

In addition to Tadau Energy and Indonesia, other green sukuk issuers have included Quantum Solar Park (Semenanjung Sdn Bhd) and Mudajaya Group Berhad (Sinar Kamiri), both of which are corporates based in Malaysia (see Exhibit 9).

Exhibit 9

Selection of green sukuk issuances to date

Issuer Name	USD Amount Issued (millions)	Currency	Issue Date	Maturity Date	Country
Tadau Energy (Edra Power)	58	MYR	7/27/2017	7/27/2033	Malaysia
Quantum Solar Park (Semenanjung Sdn Bhd)	236	MYR	10/6/2017	4/6/2035	Malaysia
Mudajaya Group Berhad (Sinar Kamiri)	63	MYR	1/30/2018	1/30/2036	Malaysia
Republic of Indonesia	1,250	USD	3/1/2018	3/1/2023	Indonesia
Republic of Indonesia	750	USD	2/20/2019	8/20/2024	Indonesia

Sources: Climate Bonds Initiative, Moody's Investors Service

We expect the strong growth in the Islamic finance sector over the past 10 years to continue, reflecting that it remains underrepresented in the global financial system while demand for Shariah-compliant financial instruments is increasing. This growth should translate into stronger prospects for green sukuk issuance, primarily by sovereigns and financial institutions. Corporate and asset-backed sukuk activity has been relatively muted recently because of more attractive conventional market opportunities. However, these sectors are expected to be a source of growth underpinning the industry's long-term potential.

The green sukuk market will benefit from buoyant demand for green paper in general as institutional investors seek to integrate sustainability into their asset allocation and risk management practices. Although sukuk can be relatively complex compared with bonds, familiarity with and understanding of the instrument is increasing, and there are no barriers to investors, both Islamic and conventional (pension funds, asset managers, financial institutions and others), to investing in these issuances.

Islamic finance principles prohibit investments in certain industries that are forbidden (haram), such as tobacco, alcohol, gambling and weapons, as well as a range of other products and activities. As a result, Islamic finance products are selected to avoid these industries, to ensure compliance with Shariah principles, similar to some practices used in sustainable investment. In common with investors in Shariah-compliant products, some sustainable investors use screening strategies to avoid certain activities and products to better align themselves with the values and goals of developing a sustainable society that minimizes damage to the environment.

Moody's publishes proposed framework to assess carbon risks for high-risk corporate sectors

On May 7, 2019, [Moody's published a Request for Feedback](#) on a proposed carbon transition risk assessment tool for rated non-financial companies (carbon transition assessments, or CTAs).

Our proposed CTAs are intended to provide market participants with a greater level of visibility and transparency into how we assess carbon transition risk, and to provide a relative ranking of issuers operating within selected sectors identified under the framework. CTAs will also serve as a research tool for systematic analysis of carbon transition and its potential to influence credit risk. CTAs are not credit ratings.

CTAs will incorporate a materiality assessment, a geographic mapping of technology, market and policy risks, and an assessment of risk mitigation measures that have been – or are being – put in place. They will consist of four key risk components – the company's current carbon profile, the company's exposure to technology risk in the medium-term, the mitigation strategies the company is undertaking in the near- to medium-term, and the company's long-term exposure to rapid low carbon transition scenarios.

Our CTAs are forward-looking, and incorporate the current positioning of businesses, the plans to mitigate risks and the implications of a longer term stress scenario. Thus, companies with substantial current exposure may still achieve a relatively strong CTA on account of credible medium or long-term strategies to position their company for the carbon transition. Our CTA also uses a scenario-based approach that assumes the transition to a low-carbon economy is taking place, and we assess a company's position in managing through this change.

CTAs will be expressed using a ten-point scale ranging from CT-1 (advanced positioning for carbon transition) through CT-10 (poor positioning for carbon transition). We intend to publish sector-specific frameworks for the 15 sectors we have identified as having very high or high exposure to carbon transition risk.

We believe green bond issuance will continue to grow as companies seek to mitigate the impact of carbon transition effects. Over time, companies will increasingly align their business models with a low-carbon future, using green bond proceeds to finance capital

investments supporting these business model shifts. We have already seen many green bonds issued by utility companies, for example, a growing number of whom have financed investments in renewable energy projects with green bonds.

Appendix: List of Moody's Green Bond Assessments (GBAs) as of 30 April 2019

Transaction	Region	Country	Sector	Amount (US\$ equivalent, millions)	Date GBA assigned	Overall assessment
American Municipal Power, Inc. (Series 2019A)	Americas	United States	Municipal	\$56	12/19/2018	GB1
Arise AB	EMEA	Sweden	Corporate	\$91	3/5/2018	GB1
Axis Bank Ltd (June 2016 issuance)	APAC	India	Financial Institution	\$500	8/13/2018	GB1
Banco Nacional de Costa Rica	Americas	Costa Rica	Financial Institution	\$500	12/12/2017	GB2
Bank of Communications	APAC	China	Financial Institution	\$4,380	11/22/2016	GB1
Cape Town, City of	EMEA	South Africa	Municipal	\$74	6/19/2017	GB1
Consortio Transmantaro S.A.	Americas	Peru	Corporate	\$400	4/3/2019	GB2
District of Columbia Water and Sewer Authority (Series 2017A)	Americas	United States	Municipal	\$100	1/20/2017	GB1
District of Columbia Water and Sewer Authority (Series 2018A)	Americas	United States	Municipal	\$100	4/5/2018	GB1
East Bay Regional Park District	Americas	United States	Municipal	\$50	11/6/2017	GB1
Fabege AB	EMEA	Sweden	Financial Institution	\$87	1/29/2018	GB1
Fransabank S.A.L.	EMEA	Lebanon	Financial Institution	\$60	2/26/2018	GB1
GEN-I Sonce d.o.o.	EMEA	Slovenia	Corporate	\$15	4/1/2019	GB1
GoodGreen 2016-1	Americas	United States	Structured Finance	\$185	10/26/2016	GB1
GoodGreen 2017-1	Americas	United States	Structured Finance	\$176	4/19/2017	GB1
GoodGreen 2017-2	Americas	United States	Structured Finance	\$283	11/6/2017	GB1
Gothenburg, City of (June 2016 issuance)	EMEA	Sweden	Municipal	\$121	5/31/2016	GB1
Gothenburg, City of (June 2017 issuance)	EMEA	Sweden	Municipal	\$138	11/22/2017	GB1
Green STORM 2016 B.V.	EMEA	Netherlands	Structured Finance	\$598	5/25/2016	GB1
Green STORM 2017 B.V.	EMEA	Netherlands	Structured Finance	\$662	5/15/2017	GB1
Hannon Armstrong (2016-2 Pass-Through Notes)	Americas	United States	Structured Finance	\$84	3/22/2017	GB1
Hannon Armstrong (2017-1 Sustainable Yield Bonds)	Americas	United States	Structured Finance	\$164	10/26/2017	GB1
HERO Funding 2016-3 A1 and A2 Notes	Americas	United States	Structured Finance	\$320	9/9/2016	GB1
Indian Renewable Energy Develop. Agency Ltd. (September 2017 issuance)	APAC	India	Financial Institution	\$300	12/11/2018	GB1
Intesa Sanpaolo S.p.A.	EMEA	Italy	Financial Institution	\$560	5/25/2018	GB1
Jacinta Solar Farm Finance, Ltd.	Americas	Uruguay	Corporate	\$65	12/18/2017	GB2
Korea Water Resources Corporation	APAC	South Korea	Corporate	\$300	8/23/2018	GB1
Latvenergo AS	EMEA	Latvia	Corporate	\$113	10/12/2016	GB1

Transaction	Region	Country	Sector	Amount (US\$ equivalent, millions)	Date GBA assigned	Overall assessment
Ligonier Valley School District	Americas	United States	Municipal	\$10	1/8/2018	GB1
Lithuania, Government of	EMEA	Lithuania	Sovereign	\$24	6/27/2018	GB1
Metropolitan Government of Nashville and Davidson County	Americas	United States	Municipal	\$89	10/11/2017	GB1
Mexico City Airport Trust (September 2016 issuance)	Americas	Mexico	Corporate	\$2,000	9/6/2016	GB5
Mexico City Airport Trust (September 2017 issuance)	Americas	Mexico	Corporate	\$4,000	9/1/2017	GB5
Monash University (Climate Bond No. 1)	APAC	Australia	Municipal	\$159	12/9/2016	GB1
Monash University (Climate Bond No. 2)	APAC	Australia	Municipal	\$51	10/24/2017	GB1
Monash University (Climate Bond No. 3)	APAC	Australia	Municipal	\$86	7/25/2018	GB1
Naranjal/Litoral Uruguay Issuers 1 and 2	Americas	Uruguay	Corporate	\$104	6/5/2018	GB1
Nigeria, Government of	EMEA	Nigeria	Sovereign	\$30	12/13/2017	GB1
Poland, Government of (December 2016 issuance)	EMEA	Poland	Sovereign	\$783	6/1/2018	GB2
Poland, Government of (February 2018 issuance)	EMEA	Poland	Sovereign	\$1,238	6/1/2018	GB2
PureCycle: Ohio LLC Project (Series 2019)	Americas	United States	Municipal	\$185	3/19/2019	GB1
Renew 2017-1	Americas	United States	Structured Finance	\$223	4/19/2017	GB1
Renew 2017-2	Americas	United States	Structured Finance	\$207	10/16/2017	GB1
Renew 2018-1	Americas	United States	Structured Finance	\$152	6/11/2018	GB1
SpareBank 1 Boligkreditt AS - Mortgage Covered Bonds (January 2018 issuance)	EMEA	Norway	Structured Finance	\$1,243	9/20/2018	GB1
SunStrong 2018-1 Issuer, LLC	Americas	United States	Structured Finance	\$400	11/28/2018	GB1
Svensk FastighetsFinansiering AB	EMEA	Sweden	Financial Institution	\$147	11/8/2017	GB1
TenneT Holding B.V.	EMEA	Netherlands	Corporate	\$1,120	5/30/2016	GB1
Upper Mohawk Valley Regional Water Finance Authority	Americas	United States	Municipal	\$9	8/10/2016	GB1
Vasakronan AB (October 2017 issuance)	EMEA	Sweden	Corporate	\$153	9/18/2018	GB1
Vonore Fiber Products LLC	Americas	United States	Municipal	\$80	4/26/2019	GB1
Wuhan Metro Group	APAC	China	Corporate	\$400	11/20/2018	GB1
Zuercher Kantonalbank	EMEA	Switzerland	Financial Institution	\$324	4/13/2018	GB1

Moody's Green Bond Assessment (GBA)

Moody's GBA represents a forward-looking, transaction-oriented opinion on the relative effectiveness of the issuer's approach to managing, administering, allocating proceeds to and reporting on environmental projects financed with green bond proceeds. GBAs are expressed using a five-point relative scale ranging from GB1 (Excellent) to GB5 (Poor). A GBA does not constitute a credit rating.

Moody's related publications

Methodology:

- » [Green Bonds Assessment \(GBA\)](#), 30 March 2016

Sector research:

- » [Request for Feedback: Proposed framework to assess carbon risks for high-risk corporate sectors](#), 7 May 2019
- » [Covered bonds – Europe: EU energy efficiency agenda increases credit risks for noncompliant covered bond collateral](#), 17 April 2019
- » [ESG Focus: April 2019](#), 9 April 2019
- » [Cross-Sector - Kenya: Kenyan green bond guidelines pave way for increased green financing, a credit positive for banks](#), 25 February 2019
- » [Green Bonds - Global: Global green bond issuance to hit \\$200 billion in 2019](#), 31 January 2019
- » [Green Bonds – Global: Environmental impact and reporting vary by jurisdiction and asset class](#), 4 December 2018
- » [Structured finance – Global: Green finance sprouts across structured finance sectors](#), 13 November 2018
- » [Green bonds – Global: Repeat issuers drive volume as green bond market matures](#), 12 November 2018
- » [Green Bonds – Global: Adoption of UN Sustainable Development Goals to drive demand](#), 12 November 2018
- » [Green Bonds – Sovereign: Sovereign green bond market on course for critical mass, but challenges remain](#), 9 July 2018
- » [Green Bonds – Global: Global municipal green bond issuance will continue to rise](#), 19 March 2018
- » [Cross-sector – Global: FAQ: The green bond market and Moody's Green Bonds Assessment](#), 29 November 2017
- » [Green Bond Assessments – Global: Issuers exhibit strong organizational frameworks but differ on disclosure](#), 19 September 2017

Green Bond Assessments:

- » [Consortio Transmanto S.A.: Green Bond Assessment](#), 8 May 2018
- » [Vonore Fiber Products LLC: Green Bond Assessment - Series 2019 taxable revenue bonds](#), 29 April 2019
- » [Zuercher Kantonbank: Update to Green Bond Assessment](#), 26 April 2019
- » [Wuhan Metro Group Co., Ltd.: Green Bond Assessment - senior unsecured perpetual securities](#), 4 April 2019
- » [GEN-I Sonce d.o.o.: Green Bond Assessment](#), 3 April 2019
- » [Southern Ohio Port Authority - PureCycle: Ohio LLC: Green Bond Assessment](#), 19 March 2019
- » [Renew 2017-1, 2017-2 and 2018-1: Update to Green Bond Assessments](#), 13 March 2019
- » [Svensk FastighetsFinansiering AB: Update to the Green Bond Assessment](#), 12 February 2019

To access any of these reports, click on the entry above. Note that these references are current as of the date of publication of this report and that more recent reports may be available. All research may not be available to all clients.

Endnotes

- 1 Climate Bonds Initiative, ["About us."](#)
- 2 Global Sustainable Investment Alliance, ["2018 Global Sustainable Investment Review."](#)
- 3 United Nations Global Compact, [Guide to Corporate Sustainability.](#)
- 4 The ratings shown are ING Bank's deposit rating and Baseline Credit Assessment
- 5 ["Wilmar and ING collaborate on sustainable loan" \(ING\).](#)
- 6 Loan Market Association, Asia Pacific Loan Market Association and Loan Syndications and Trading Association, ["Sustainability Linked Loan Principles,"](#) March 2019.
- 7 International Capital Market Association, ["Green, Social and Sustainability bonds."](#)
- 8 European Commission, ["TEG interim report on EU green bond standard,"](#) March 6, 2019.
- 9 European Commission, ["Commission action plan on financing sustainable growth,"](#) March 8, 2018.
- 10 International Labour Organization, ["ILO Declaration on Fundamental Principles and Rights at Work."](#)

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