REPORT

Emerging Market Green Bonds

IFC-Amundi Joint Report

JUNE 2025

About IFC

IFC—a member of the World Bank Group—is the largest global development institution focused on the private sector in emerging markets. We work in more than 100 countries, using our capital, expertise, and influence to create markets and opportunities in developing countries. In fiscal year 2024, IFC committed a record $56 billion to private companies and financial institutions in developing countries, leveraging private sector solutions and mobilizing private capital to create a world free of poverty on a livable planet. For more information, visit www.ifc.org.

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Amundi, the leading European asset manager, ranking among the top 10 global players, offers its 100 million clients—retail, institutional and corporate—a complete range of savings and investment solutions in active and passive management, in traditional or real assets. This offering is enhanced with IT tools and services to cover the entire savings value chain. A subsidiary of the Crédit Agricole group and listed on the stock exchange, Amundi currently manages more than €2.2 trillion of assets. With its six international investment hubs, financial and extra-financial research capabilities and long-standing commitment to responsible investment, Amundi is a key player in the asset management landscape. Amundi clients benefit from the expertise and advice of 5,700 employees in 35 countries.

Cover photo: © Adobe Stock. Green forest lizard (Calotes calotes) in the Sinharaja Rain Forest Reserve, Sri Lanka.

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Acknowledgments

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Foreword

This *Emerging Market Green Bonds* report takes the collaboration between Amundi, a leading European asset manager, and the International Finance Corporation (IFC), part of the World Bank Group into its seventh year. It reflects on a market for green, social, sustainability, and sustainability-linked (GSSS) bonds that has seen a year of significant milestones as well as emerging challenges.

Global GSSS bond sales reached an all-time high above $1 trillion in 2024, up 3 percent from the previous year. But the asset class's share of total fixed income issuance declined to 2.2 percent from 2.5 percent in 2023. Within emerging markets, GSSS bond sales fell 14 percent year-on-year, but still increased their share of overall bond issuance outside China, to a record high above 5 percent, outpacing both China and developed markets.

This consolidation of the asset class is encouraging and is testament to the role it plays in financing development and its different strands, such as technological upgrades, energy security, and efficiency. IFC and Amundi have both been active participants in this. IFC is a longstanding issuer of green bonds and continues to offer technical support to both issuers and investors. Amundi is also dedicated to the growth of this market in partnership with IFC managing dedicated funds.

In another sign of the GSSS bond market's maturity, this report highlights significant diversification. While green bonds have long dominated emerging market issuance, there is a growing shift toward sustainability bonds, especially among multilateral institutions and issuers outside China. Social bond sales have stabilized to represent around 6 percent of overall GSSS bond issuance in emerging markets between 2022 and 2024. In contrast, sustainability-linked bonds experienced a sharp decline, reflecting mounting criticism of their design shortcomings and weak penalty structures.

Looking ahead, the long-term outlook for GSSS bond issuance in emerging markets remains robust, underpinned by increasingly competitive renewable energy technologies and ongoing commitments by governments and investors in Europe and Asia. However, the short-term outlook is uncertain, given elevated market and economic volatility at the time of writing. Notably, a surge in the amount of debt that needs refinancing will support the market, with $100 billion of GSSS bonds coming due in 2025 and $120 billion in 2026, compared with less than $50 billion in 2024.

The insights and data presented in this report aim to inform stakeholders and guide strategic decision-making in the realm of sustainable finance. We extend our gratitude to our partners, contributors, and the broader community committed to advancing sustainable development through innovative financial solutions.

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Executive Summary

Elevated Uncertainty Complicates Short-Term Forecasts, Despite a Robust Long-Term Outlook

At the time of writing (April 2025), the global economy faces heightened levels of uncertainty, making it challenging to forecast near-term issuance of green, social, sustainability, and sustainability-linked (GSSS) bonds in emerging markets.[1] That said, some underlying market drivers are apparent, such as a likely pickup in new issuance to refinance existing debt that is reaching maturity. GSSS bonds are a relatively young asset class, established with the first green bond transactions more than a decade ago. Approximately $330 billion of those bonds will soon come to maturity and will need to be replaced over the next three years. On the other hand, three factors are likely to constrain new GSSS bond sales. First, weaker global economic growth amid turmoil in the global trading system. Second, recent regulatory changes in Europe such as new rules on how funds are named that are intended to curb greenwashing (misstating the extent to which financial instruments meet sustainability criteria), could reduce the number of sustainable funds that buy GSSS assets. Third, interest in sustainable investing may have peaked in several countries, adding uncertainty to projected flows of finance to fund technological upgrades and sustainable development in emerging markets.

Over the longer term, the outlook for GSSS bonds in emerging markets is more robust. Annual investments in clean energy that deliver greater efficiency and more secure energy supply are likely to double in the coming years, creating a strong foundation for sustainable finance markets. This growth is likely to be supported by an increasingly competitive renewable energy sector and ambitious commitments by multilateral institutions and other development finance institutions aligned with COP29 targets.

Global GSSS Bond Issuance Reached $1 Trillion, a Record High, in 2024

This analysis shows that global GSSS bond issuance hit an all-time high of over $1 trillion in 2024 on a gross basis, up 3 percent from a year earlier. However, the asset class's share of total fixed income issuance declined to 2.2 percent in 2024 from 2.5 percent the previous year. Nevertheless, this remains well above the level of 0.6 percent seen in 2018.

Within emerging markets, GSSS bond sales fell 14 percent year-on-year. Much of this decline can be attributed to lower issuance in China as local borrowers attracted to cheaper financing shifted to conventional bonds in the onshore market. Another factor behind the market retreat was a 23 percent contraction in overall fixed income issuance in emerging markets outside China amid weaker economic growth in Asia and Europe. Despite this, GSSS bond penetration, or the asset class's share of the broader bond market, amounted to more than 5 percent in emerging markets outside China, a new record and ahead of the rates seen in China and in developed markets.

In terms of pricing, the so-called green premium or "greenium" (a yield discount for issuers of GSSS bonds that reflected high investor demand for sustainable assets as opposed to conventional bonds) more than halved to an estimated 1.2 basis points in 2024, according to Amundi calculations. For emerging markets, meanwhile, the greenium effectively disappeared in 2024 as supply caught up with demand for this type of asset.

Increasing Diversification

Cumulative global GSSS bond issuance over the last seven years (2018–2024) reached $5.1 trillion. Over this period, emerging market issuers contributed around $800 billion to the tally, or about 16 percent. A key driver behind this growth is the energy transition away from traditional carbon-based power generation toward newer and more efficient technologies. Clean energy investments in emerging markets have surged over 70 percent since 2018, with China alone experiencing a 170 percent increase. Investor appetite has also intensified markedly. Sustainable funds have hit $3.6 trillion of assets under management in 2024—up from $1.4 trillion in 2018—with fixed income allocations within investment portfolios rising to 22 percent. Additionally, multilateral institutions channeled $238 billion of climate finance to emerging markets between 2016 and 2022, according to the OECD.

The GSSS bond market is also experiencing significant diversification. Although green bonds have long dominated GSSS emerging market bond issuance, there is a growing shift toward sustainability bonds (see Box 1). This trend is pronounced among multilateral institutions and, more generally, among issuers outside China that are seeking the flexibility of sustainability bonds to finance both environmental and social projects. After a period of decline since the COVID-19 pandemic as demand for healthcare funding contracted, social bond sales have stabilized to represent 6 percent of overall GSSS bond issuance in emerging markets between 2022 and 2024. In contrast, sustainability-linked bonds experienced a sharp decline. This may reflect mounting criticism of their design shortcomings and weak penalty structures which do not always effectively incentivize issuers to meet the sustainability targets set out in the assets' terms.

Part 1

Introduction

Thematic bonds meet demand from many international investors for exposure to assets linked to the pursuit of developmental, environmental, or social goals. Likewise, emerging market borrowers have found such bonds an attractive way of attaining finance for economic development and technological upgrades.

Since the first green bonds were issued more than a decade ago, the market has diversified following the emergence of related fixed income instruments, namely social, sustainability, and sustainability-linked bonds.[2] These four bond types that constitute the GSSS (or sustainable) bond asset class, have posted cumulative global gross issuance of $5.5 trillion since 2012. The original green bonds category still accounts for the bulk of that, with $3.3 trillion issued over the period. Notably, emerging market issuers have contributed 16 percent of the cumulative total, or $850 billion, placing their transaction volumes ahead of multilateral development banks (MDB), which account for $781 billion, or 14 percent of the total.

Rising investor demand for sustainable products was the chief driver of the asset class's growth over the period, which coincided with efforts to implement and finance an energy transition from fossil fuels toward more efficient and cleaner technologies. Meanwhile, GSSS bond issuance in recent years also reflected widespread political backing for more sustainable development.

However, the asset class is currently undergoing a structural shift. Firstly, to combat greenwashing, the European Union and the United Kingdom have tightened rules on the naming of funds. This is likely to reduce the number of investment funds qualifying as sustainable under the new criteria. According to Morningstar,[3] between 30–50 percent of funds categorized as prioritizing environmental, social, and governance (ESG) issues in the EU may need to change their names. Secondly, support for sustainable investing may be waning in some countries. In the United States, several banks and asset managers recently withdrew from corporate groupings or alliances committed to climate action.

This pressure on sustainable investing belies relatively strong performance, at least over the longer term. Sustainable funds have generally outperformed their conventional peers over the past seven years, notwithstanding relative weakness in the latter months of 2024. For example, $100 invested in December 2018 would be $136 in December 2024 at median sustainable fund returns, compared with $131 based on median traditional fund returns.[4] Moreover, global sustainable funds recorded net inflows of new money from investors throughout 2024, with a jump in the fourth quarter.[5] However, these aggregate figures mask diverging trends. While the United States experienced net

Box 1

GSSS Bonds—Definitions and Guidelines

Green bonds

Fixed-income instruments with proceeds earmarked exclusively for projects with a positive environmental impact. The Green Bond Principles (established in 2014 and last updated in June 2022) developed by the International Capital Market Association (ICMA) have four components: use of proceeds, process for project evaluation and selection, management of proceeds, and reporting. Several countries and jurisdictions have developed guidelines for green bond issuance, many of which align with the Green Bond Principles. Blue bonds are a sub-category of green bonds specifying that proceeds are used for financing water-related sustainable projects.

Social bonds

Proceeds from social bonds are directed toward projects that aim to achieve positive social outcomes, especially, but not exclusively, for a target population. ICMA's Social Bond Principles (introduced in 2017, last updated in June 2023) have four components analogous to the Green Bond Principles: use of proceeds, the process for project evaluation and selection, management of proceeds, and reporting.

Sustainability bonds

Sustainability bonds are debt instruments that raise money to finance or refinance a combination of green and social projects. The Sustainability Bond Guidelines established by ICMA (last updated in June 2021) are aligned with the core components of both Green and Social Bond Principles.

Sustainability-linked bonds (SLBs)

These instruments are performance-based bonds whereby their financial or structural characteristics, such as the coupon rate, are adjusted depending on whether the issuer achieves predefined sustainability objectives. These are measured through key performance indicators and assessed against sustainability performance targets. Failure by the issuer to meet those goals may result in a higher coupon. These bonds can also be structured to reward better-than-expected performance with a lower coupon. Unlike social or green bonds, proceeds are not earmarked for specific projects. In June 2020, ICMA published the Sustainability-Linked Bond Principles (last updated in June 2024), providing guidelines on structuring features, disclosure, and reporting.

outflows over the past two years, Europe continued to see net inflows, albeit at a slower pace than before. Even so, most of the U.S. outflows were driven by equities, with fixed income being the only asset class consistently recording net inflows. Additionally, recent survey data further underscore consistent investor interest in sustainable investing.[6]

Against this backdrop, global GSSS bond issuance reached an all-time high of over $1 trillion in 2024—3 percent more than in 2023 and representing 2.2 percent of total bond issuance. This is lower than in 2023 when the share reached 2.5 percent, but well above the 0.6 percent seen in 2018.

In emerging markets, GSSS bond issuance declined 14 percent in 2024. This downturn stemmed from two factors. First, China experienced weakness in sustainable bond issuance, with local borrowers shifting to conventional bonds in the onshore market where borrowing costs were lower. In addition, tighter eligibility criteria for onshore green bonds may have also limited the availability of projects suitable for the allocation of proceeds raised through these instruments.[7] Second, emerging markets outside China saw a broader contraction in overall fixed income issuance, particularly in the Emerging Asia-Pacific and Emerging Europe and Central Asia regions, on account of weakening economic growth. Despite these challenges, the penetration of GSSS bonds in emerging markets outside China continued to grow, reaching over 5 percent of total fixed income issuance in 2024, a record high that outpaced both China and developed markets.

Turning to bond pricing, the global green premium, or the yield advantage for issuers of GSSS bonds over conventional bonds whereby investor demand for green assets drives down borrowing costs, declined to 1.2 basis points in 2024, down from 2.5 a year earlier, according to Amundi's calculations. This aligns with evidence presented in other studies[8] as well as with self-reported data from investors.[9] Although statistically significant, the global "greenium" is small in economic terms. In emerging markets, meanwhile, Amundi estimates that the green premium is essentially zero (statistically insignificant). This apparent easing of supply pressure may reflect the weaker net inflows of investor money into global sustainable funds observed over the last year.

Looking ahead, Amundi expects GSSS bond issuance to continue to grow over time. On the supply side, the costs of renewable technologies and electricity storage continue to fall, a trend that may be even steeper in emerging markets.

Amundi projects GSSS bond sales in emerging markets to continue growing at a healthy pace in 2025–2026, although volatile financial markets and global economic uncertainty are impacting movements in borrowing costs making precise forecasts very difficult. Nevertheless, a surge in the amount of debt that needs refinancing will also support the market with $100 billion of GSSS bonds coming due in 2025 and $120 billion in 2026, compared with less than $50 billion in 2024.

These two factors may help offset some of the negative drivers discussed earlier, notably, weaker economic growth in some of the larger markets (including China) and declining appetite for sustainable investing in some markets. Moreover, some of the regulatory trends outlined above are unlikely to have a significant impact on the asset class. Specifically, new restrictions are not likely to apply to green bonds issued under the European Green Bond Standard, and for other sustainable bonds such restrictions will be implemented on specific projects or bonds rather than the issuer.

Part 2

Performance

Performance, 2018–2024

Emerging market debt delivered positive returns to investors in 2024. In dollar terms, emerging market sovereign debt (as measured by the JPM EMBI Global Diversified Index) returned 6.5 percent, while emerging market corporate debt (tracked by the JPM CEMBI Broad Diversified Index) advanced 7.6 percent, compared with 9 percent in 2023. A range of factors contributed to the momentum, including monetary easing in various jurisdictions, targeted stimulus measures in key economies like China, and the unwinding of the carry trade.

Nevertheless, it was a challenging year for the subcategory of emerging market GSSS bonds. Looking at emerging market corporate bonds in particular, the EM Credit Green, Social and Sustainability Bond Diversified Index (GESSIE EM CREDIT DIV) returned 3.48 percent in 2024, underperforming the broader emerging market corporate debt index by 4.15 percentage points. (see Table 1.)

The emerging-market GSSS bond market is still evolving so it remains difficult to make meaningful comparisons with the longer-established traditional bond market. That said, data show that GSSS bonds tend to outperform in volatile "risk-off" environments, such as during the COVID-19 pandemic, and underperform in more buoyant market conditions as seen in 2024. In recent years, with core interest rates remaining high in response to inflationary pressure, most high-yield emerging market issuers still find it too costly to tap the capital market. What this implies is that recent issuance volumes were weighted toward investment grade borrowers. It is for this reason that the relative performance of GSSS versus conventional bonds in emerging markets mimics that of investment-grade relative to high-yield bonds in developed markets (see Table 1).

Still, GSSS bonds also make sense from a financial perspective for issuers and investors alike, even putting aside the long-term benefits of supporting environmental initiatives and social advancement. GSSS issuers tend to be of a better credit quality, making them attractive as defensive assets in times of volatility. Additionally, GSSS bond issuers typically issue longer duration bonds, which we would expect to outperform in an environment where yields are falling over the medium term.

Green Premium

The focus of much debate in sustainable finance markets, and a key motivation for borrowers to pick GSSS structures over conventional bonds, is the perception that high demand for these assets means they are cheaper to issue. Essentially, investors who prioritize environmental issues, regulatory incentives, or alignment with corporate sustainability goals have swallowed lower yields on the debt they buy in comparison with equivalent conventional bonds.

TABLE 1

Emerging Market GSSS Bonds Tend to Outperform the Market in Risk-Off Environments

	2018	2019	2020	2021	2022	2023	2024
Green Bonds — All (1)	-3.60%	7.47%	14.16%	-9.16%	-25.42%	11.85%	-3.11%
GSSS Bonds — All (2)	-3.44%	6.99%	11.06%	-7.29%	-21.16%	10.25%	-1.54%
EM GSSS Bonds — Corporates (3)	-1.82%	10.65%	8.27%	-2.40%	-14.71%	8.62%	3.48%
EM Bonds — Sovereigns (4)	-4.26%	15.04%	5.26%	-1.80%	-17.78%	11.09%	6.54%
EM Bonds — Corporates (5)	-1.65%	13.09%	7.13%	0.91%	-12.26%	9.09%	7.63%
EM Corporate Bonds: GSSS vs. Total (3–5)	-0.17%	-2.44%	1.14%	-3.31%	-2.45%	-0.47%	-4.15%
US Bonds: Investment—Grade (6)	-2.26%	13.99%	9.91%	-1.14%	-15.31%	8.35%	2.39%
US Bonds: High-Yield (7)	-2.07%	13.98%	6.32%	5.49%	-11.00%	13.27%	8.25%
US Bonds: IG vs. HY (6–7)	-0.19%	0.01%	3.59%	-6.63%	-4.31%	-4.92%	-5.86%
European Bonds: Investment-Grade (8)	-1.31%	6.16%	2.65%	-0.86%	-12.44%	7.91%	4.64%
European Bonds: High-Yield (9)	-4.29%	10.75%	2.06%	3.40%	-9.71%	11.72%	7.77%
European Bonds: IG vs. HY (8–9)	2.98%	-4.59%	0.59%	-4.26%	-2.73%	-3.81%	-3.13%

Source: Amundi, Bloomberg

Note 1: (1) JPM Green Bond Index; (2) JPM Green, Social and Sustainability Bond Index (GESSIE, the global aggregate benchmark); (3) GESSIE's hard currency only emerging markets benchmark (GESSIE EM Credit DIV); (4) JPM EMBI Global Diversified Index; (5) JPM CEMBI Broad Diversified Core Index. (6) to (9) are carve-outs from the JPM Global Corporate Index (GCI), a comprehensive suite of fixed-income benchmarks. The GCI series tracks global corporate debt issuances in dollars, euros, and sterling, covering both investment-grade and high-yield bonds across developed and emerging markets. (6) and (7) correspond, respectively, to the investment-grade and high-yield categories of the GCI U.S. Domestic, specifically for dollar issuances with the country of risk identified as the United States. (8) and (9) pertain, respectively, to investment-grade and high-yield issuances denominated in euros from Western Europe.

Note 2: This Table shows absolute returns on an annual basis, from 2018 to 2024, for each bond category. Data is unadjusted for duration. The sixth row shows the relative performance of GSSS vs. total corporate bonds, calculated as the difference between (5) and (3). The ninth row shows the relative performance of investment-grade vs. high-yield bonds in the United States, calculated as the difference between (6) and (7). Finally, the last row shows the relative performance of investment-grade vs. high-yield bonds in Western Europe, calculated as the difference between (8) and (9).

However, measuring this green premium is challenging and especially so in emerging markets where data is sparser and variations between bond yields fluctuate more widely than in developed markets. Nevertheless, Amundi's calculations suggest that the greenium is in decline as demand for the assets retreats.

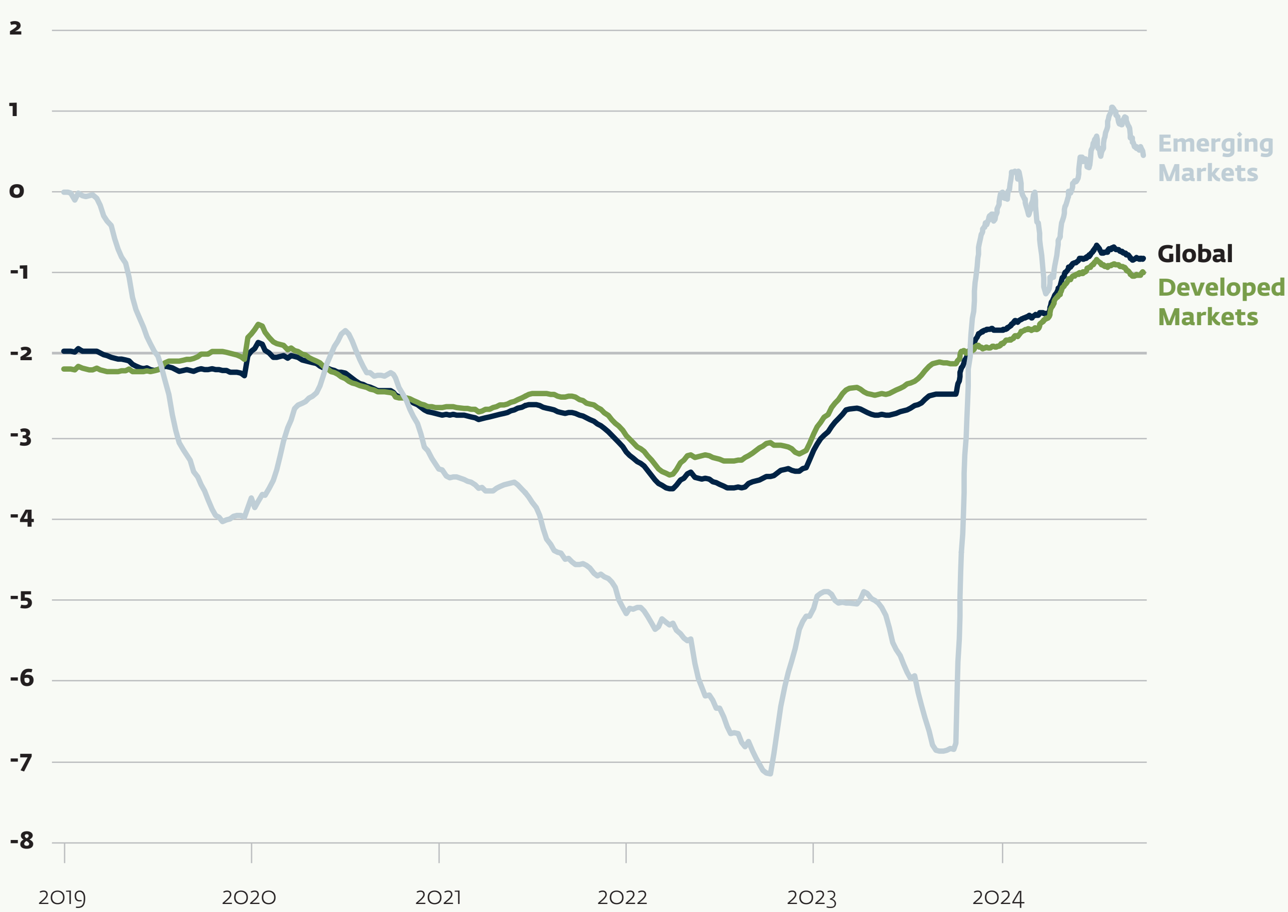
Amundi estimates that the global greenium halved to approximately 1.2 basis points in 2024, from 2.5 basis points in 2023 (see Exhibit 1 and Table 2). Although statistically significant, the tighter global greenium suggests its economic relevance remains limited. Similarly, in developed markets, the greenium—also statistically significant—fell to 1.3 basis points in 2024, down from 2.2 in 2023.

In emerging markets, meanwhile, the greenium is essentially zero, albeit on a statistically insignificant measure reflecting limited data and high variability even though the number of observable green bond transactions has more than doubled from 42 in 2023 to 93 in 2024.

Historical data reveal a trend of widening global green premiums starting in 2019, followed by a narrowing that began in the second half of 2022, alongside a global shift toward tighter monetary policy. In a higher interest rate environment, investors increasingly prioritize yield over

Exhibit 1

Weaker Demand Drives Global Greenium Compression...



Source: Amundi

Note: This Exhibit shows the weekly difference in spread (measured in basis points) between a green bond and a comparable traditional bond from the same issuer, currency, seniority, and modified duration. A negative spread implies the green bond is trading at a premium above the comparable traditional bond used as benchmark. The green premium or "greenium" refers to the observation that green bonds have historically traded at lower yields than their traditional bond counterparts. Annex B details the methodology used to make these estimates.

sustainability characteristics. Additionally, as green bond markets mature, the initial scarcity premium may erode. For example, the proliferation of green bonds in developed markets has diluted the novelty premium that once distinguished them.

The evolving dynamics of the green premium carry significant implications. For issuers, particularly in emerging markets, the potential cost savings of green bonds remain uncertain but could grow as markets expand and data quality improves. For investors, the shrinking premium underscores the need to balance financial returns with environmental objectives.

TABLE 2

…Down to Just 1.2 Basis Points in 2024

● Significant at 99% ● Significant at 95% ● Significant at 90%

	2019	2020	2021	2022	2023	2024
Developed Markets						
Mean	-2.06	-2.31	-2.61	-3.32	-2.20	-1.32
Standard Deviation	8.6	11.2	7.1	15.8	18.1	11.0
Average Observation	170	221	278	350	453	734.0
t-stat	-3.13	-3.08	-6.17	-3.94	-2.59	-3.27
Emerging Markets						
Mean	-3.39	-2.31	-4.45	-6.81	-5.41	0.25
Standard Deviation	8.9	11.5	9.8	20.4	22.1	14.3
Average Observation	21	27	30	37	42	93
t-stat	-1.72	-1.05	-2.49	-2.02	-1.58	0.17
Global						
Mean	-3.39	-2.31	-4.45	-6.81	-2.47	-1.15
Standard Deviation	8.9	11.5	9.8	20.4	18.5	11.4
Average Observation	191	248	308	387	494	828
t-stat	-5.25	-3.16	-7.99	-6.55	-2.98	-2.91

Source: Amundi

Note: This Table shows the summary statistics for each of the years when the greenium was estimated. Highlighted t-stats indicate statistically significant estimates: Dark, medium and light green refer to estimates that are significant at, respectively, 99%, 95% and 90%. Otherwise (i.e., not highlighted), estimates are not statistically significant at conventional levels. Annex B details the methodology used to make these estimates.

Part 3

Global Trends

The GSSS Bond Market 2018–24: Drivers and Challenges

Since 2018, global issuance of GSSS bonds has totaled $5.1 trillion, of which green bonds account for around 60 percent, or $3 trillion. Notably, emerging market issuers have contributed around $800 billion—16 percent—putting them ahead of multilateral development banks (MDB), which accounted for $730 billion, or a 14 percent share.

The need to fund economic transitions toward more efficient and secure energy structures accompanied by surging demand for sustainable investments fueled much of that growth in the asset class. More funding from MDBs and developed country governments for climate adaptation and adoption of sustainable technologies also helped nurture GSSS bond issuance in emerging markets. Furthermore, regulatory reforms and greater alignment of standards between developed and emerging markets played a critical role by improving transparency for both issuers and investors.

Energy Transitions

An acceleration in investment in the energy transition accounts for much of the GSSS bond issuance growth witnessed in recent years. According to the International Energy Agency, clean energy investments in emerging markets have risen over 60 percent since 2018, representing over half of total energy investments since 2020, and 60 percent in 2024.[10] Overall, investments in clean energy in emerging markets reached $1 trillion in 2024, an all-time high and well above those in fossil fuels (Exhibit 2). Much of the momentum came from China, where renewable energy investments surged by about 170 percent over the same period. In 2023 alone, China commissioned as much solar photovoltaic as the entire world combined in 2022.[11]

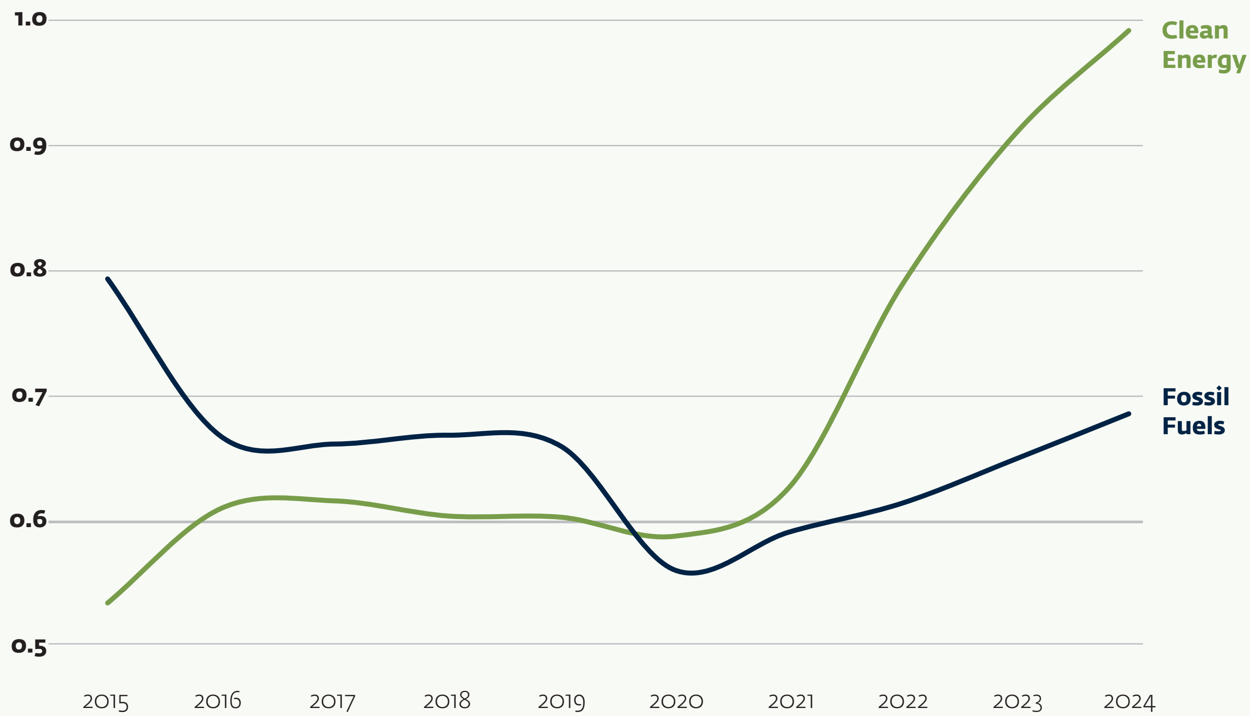
Higher Sustainable Fund Assets Under Management

Meanwhile, growing investor demand for sustainable investments also provided a significant boost to the asset class. Notably, sustainable investment funds saw assets under management reach $3.6 trillion in 2024, making up 6.8 percent of the global total (Exhibit 3).[12] While lower than in 2023 (7.3 percent), this figure is 2.5 times greater than in 2018, when sustainable funds accounted for less than 5 percent of assets under management.

Particularly relevant for GSSS bonds is the increased share of fixed income funds within overall sustainable funds, reaching 22 percent in 2024. A potential convergence to the 26 percent share of traditional fixed income funds now seems plausible.

Exhibit 2

Capital Expenditure in Clean Energy in Emerging Markets Reaches $1 Trillion in 2024



Source: IEA

Note: This Exhibit shows annual investments (trillions of dollars, at market exchange rates for 2023) in clean energy and fossil fuels in emerging markets (including China) in 2015–24. Clean energy includes clean fuels, transitional fossil fuels, nuclear, renewables, storage, electricity networks, fossil fuels with CCUS (carbon capture, utilization and storage) and end-use.

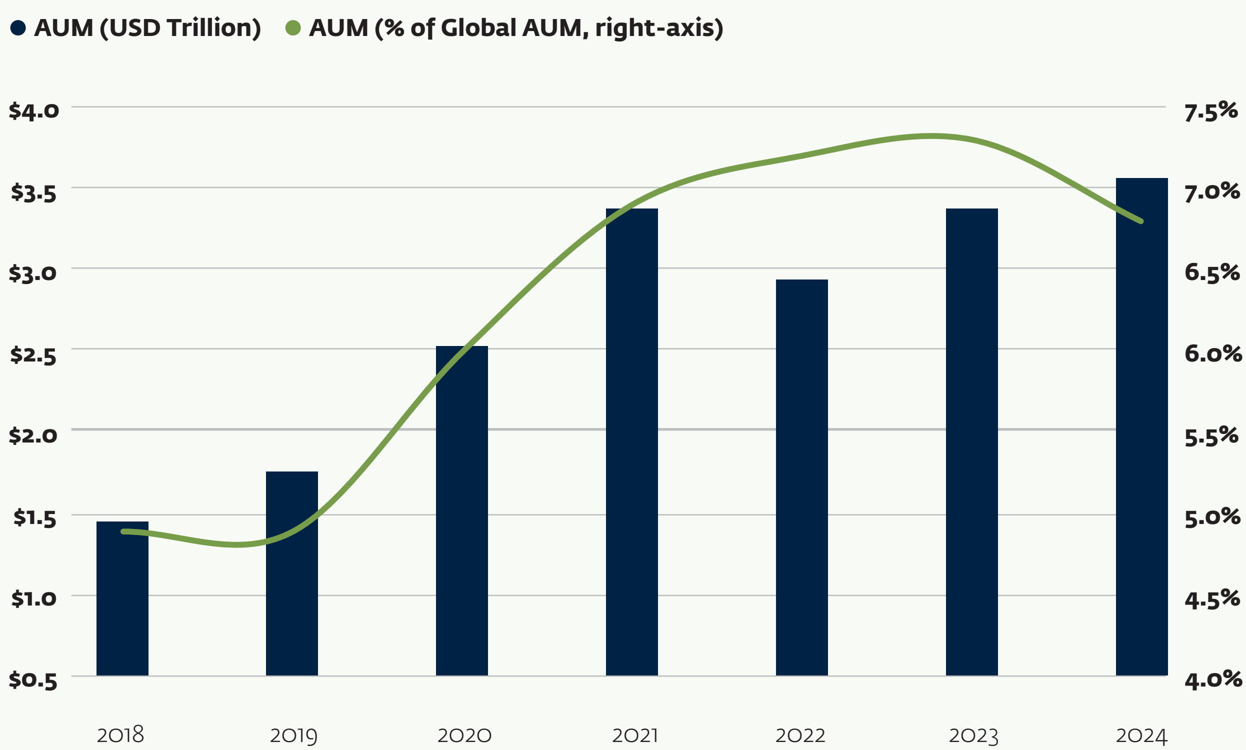
MDB Involvement

In parallel, climate finance flowing from developed to emerging markets has risen significantly over the same period, whether provided bilaterally by governments or multilaterally through MDBs. Since December 2009, they have cumulatively provided around $700 billion, of which $450 billion has come between 2018 and 2022.[13] Notably, MDBs have increased their contribution over time, reaching 44 percent of the total in 2022.

Since 2018, MDBs have increased the issuance of GSSS bonds eightfold overall, and by nine times when focusing specifically on those MDBs that primarily invest in emerging markets. The World Bank Group accounted for 50 percent of all GSSS bonds issued by MDBs in 2024, and 40 percent of multilaterals' cumulative issuance since 2018.

Exhibit 3

Sustainable Funds' Assets Under Management Reached $3.6 Trillion in 2024



Source: Morgan Stanley's Institute for Sustainable Investing

Note: This Exhibit shows the evolution of global sustainable fund assets under management (AUM) in 2018-24, both in absolute terms (trillions of dollars) and as a percentage of total global assets under management. Sustainable funds are those classified as such by Morningstar.

Regulation

GSSS bonds gained traction more recently in emerging economies than in developed markets and this has shaped the regulatory landscape. European and international bodies established a series of principles that not only regulated the issuance of GSSS bonds in their own regions but also set benchmarks for emerging market countries to follow.[14] Today, most emerging market regulations are aligned with key standards from the International Capital Market Association (ICMA)—including the Green Bond Principles (2014), Social Bond Principles (2017), Sustainability Bond Guidelines (2020), Sustainability Linked-Bond Principles (2020), and the Harmonized Framework for Impact Reporting (2015).

IFC has played a role. For instance, its Guidelines for Blue Finance released in 2022 did not only promote the financing of the blue economy, but also laid the groundwork for subsequent publications like the Biodiversity Finance

Reference Guide and ICMA's guidebook on blue economy bonds.[15] The publication of these guidelines seems to have triggered an increase in the number of issuers referring to them[16] as well as in the proportion of green, social and sustainability (GSS) bonds including biodiversity conservation as a use of proceeds[17].

In addition to these international standards, several significant regulations driven by the European Union have influenced emerging market frameworks. The EU Green Bond Standard, published in 2021, and the European Taxonomy, which came into force in July 2020, have both served as important reference points for regulatory development across emerging markets. We highlight some of these in Box 2.

Collectively, these initiatives have shaped the landscape of sustainable bonds in emerging markets. To assess the quantitative impact of these frameworks on the number (and volume) of green bond issuances, Amundi uses a comprehensive dataset covering green bond transactions across 70 emerging markets from 2012 to 2024, of which 65 launched a green bond framework at some point within this period. Amundi's results show a discontinuity at the threshold (i.e., the year when the framework is published), followed by a permanent increase in the average number of green bonds issued annually in emerging markets, rising by a factor of seven, or three times when excluding China (Exhibit 4). As a result, most green bonds in the sample (72.3 percent of bonds on average, or 73.5 percent when measured in dollar terms) were issued after the establishment of a regulatory framework. Amundi's findings suggest a positive correlation, highlighting the positive impact that well-structured frameworks can have on the frequency (and size) of green bond deals, affirming the role of robust regulation in driving market growth.

Box 2

Noteworthy Regulatory Initiatives in Emerging Markets by Region

Over time, many emerging economies have crafted their own guidance and regulations to bolster the growth of the GSSS bond market. A closer look at regional initiatives reveals diverse approaches that have contributed to increased issuance volumes and enhanced investor confidence.

Asia & Pacific (including China)

Asia claims the biggest share of emerging market GSSS bond issuance with 53 percent of the 2024 total, though this drops to 12 percent if it excludes China. Regulatory developments include the establishment of the ASEAN Green Bond Standards in 2018, which are designed to align with the EU's Taxonomy and standardize reporting for Green, Social, and Sustainability bonds.[43] The subsequent release of the ASEAN Taxonomy in 2021 further harmonized guidance for sustainable investments across the region.[44] To address discrepancies between regional standards and those in Europe, the EU-China Common Ground Taxonomy was introduced as a cross-border initiative.[45] More recently, the Singapore-Asia Taxonomy emerged, notable for being the first to introduce a "transition" category, thereby acknowledging the need for financing pathways that support economic transitions.

Nationally, several countries have also made significant strides. For example, in September 2023, the Securities Commission in the Philippines became the first regulator to issue blue finance guidelines. Other nations, including Bangladesh, Sri Lanka, Indonesia, and Thailand, have developed their own frameworks for climate, biodiversity, and transition

Box 2 continued

financing, further embedding sustainable finance into local regulatory practices.

In the Islamic finance sector, green sukuks—bond-like instruments that adhere to Sharia law and finance environmentally beneficial projects—have seen significant growth. Starting with the first sukuk issuance in Malaysia, subsequent transactions have followed guidance from ICMA, the Islamic Development Bank, and the London Stock Exchange Group. In March 2018, Indonesia launched its Green Bond and Sukuk Framework in line with both ICMA's Green Bond Principles and the ASEAN Green Bond Standards,[46] while Saudi Arabia has instituted its own program for sukuk denominated in Saudi riyals.[47]

Latin America & Caribbean

Latin America has also played a crucial role, contributing 24 percent of total green bond issuance in emerging markets as of 2024. The region's momentum was boosted when, in July 2022, countries in the region formed a Working Group on Sustainable Finance Taxonomies.[48] A year later, a Common Framework for Sustainable Finance Taxonomies was published to serve as a guide for countries within Latin America and the Caribbean. Complementing these efforts, the Inter-American Development Bank developed the Green Bond Transparency Platform to enhance harmonization and reporting, thereby increasing investor confidence.

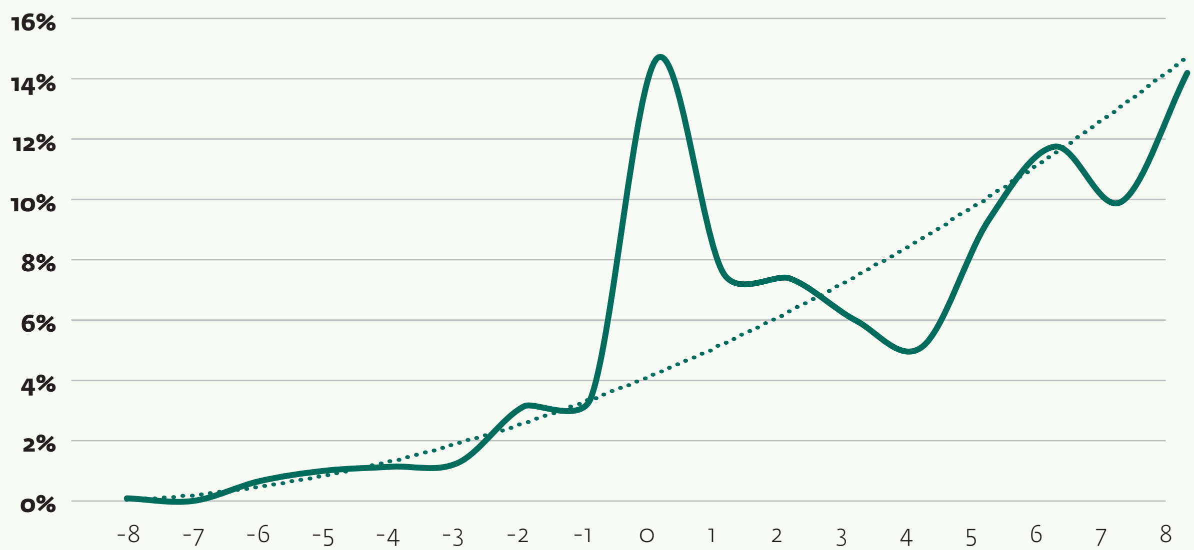
Africa

In Africa, regulatory advancements have been equally notable. The South African Green Finance Taxonomy, launched in April 2022, was designed to align investments with the United Nations' Sustainable Development Goals. The African Development Bank also contributed by launching a sustainable bond program in 2023 which adheres to ICMA principles and aims to support the continent's transition to green initiatives while addressing pressing developmental challenges.[49]

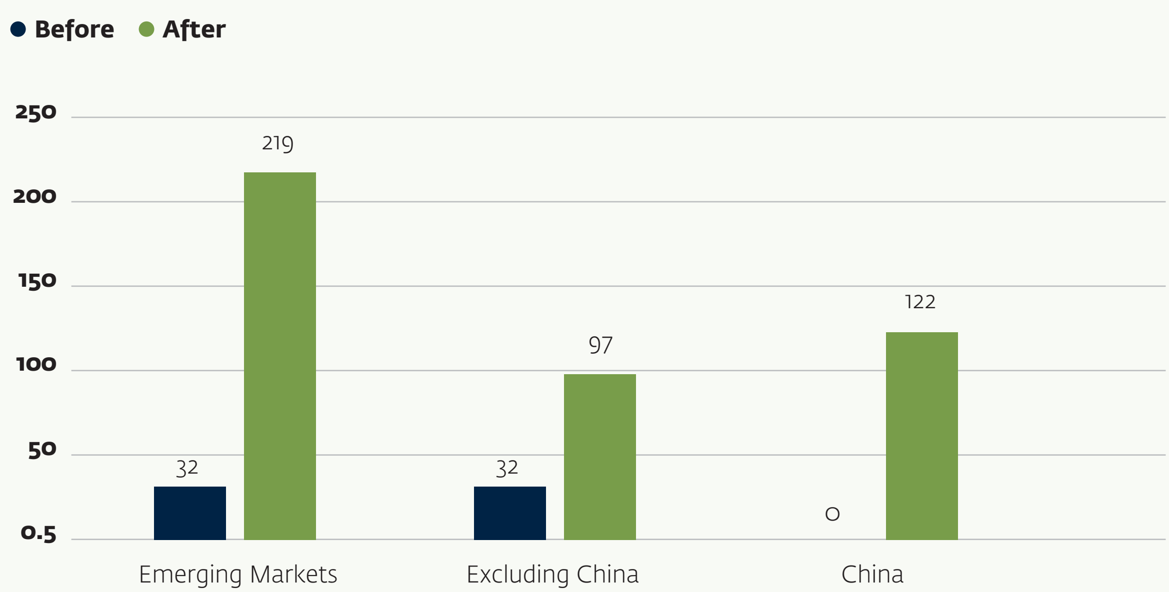
Since 2018, IFC's Green Bond Technical Assistance Program (GB-TAP) has bolstered the market by providing hands-on support through executive training, potential issuance assistance, and policy development guidance across 12 countries. To date, nations such as South Africa, Colombia, Morocco, Egypt, Georgia, Kenya, Ghana, Vietnam, Bangladesh, Sri Lanka, and Thailand have benefited from this program.

Exhibit 4

Frameworks Seem to Drive Green Bond Issuance



Average Green Bond Issues Per Year, Before & After the Framework's Publication



Source: Amundi

Note: This Exhibit shows the evolution of green bond issues (in number) during the eight years before and after implementing a green bond framework in 65 (out of a sample of 70) emerging markets. The upper panel shows the proportion of average issues per country and year over that period, with a visible discontinuity at the time the framework is implemented (year zero). The lower panel shows the average number of issues per country and year, before and after implementing the framework (including the year when the implementation takes place), differentiating between China and other emerging markets.

Structural Constraints

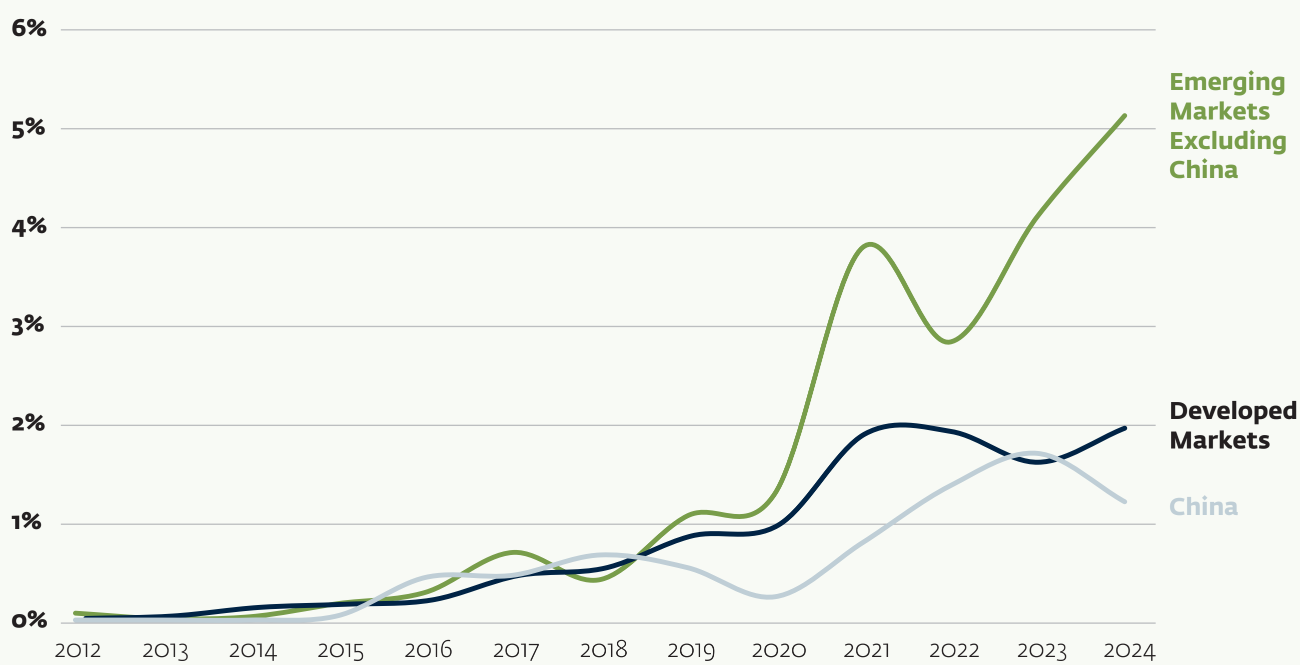
Some structural factors constrain further growth in the asset class in emerging markets, notably a lack of capital market depth, higher currency volatility compared with developed markets, and a larger share of micro enterprises and small firms.

Lack of Capital Market Depth

The share of total fixed income issuance attributed to GSSS bonds in emerging markets outside China has grown to over 5 percent in 2024 (Exhibit 5). That surpasses not just the proportion in China, where they account for 1.2 percent, but also the 2 percent share in developed markets.

Exhibit 5

Penetration of GSSS Bonds in Emerging Markets Outside China Reaches Record High



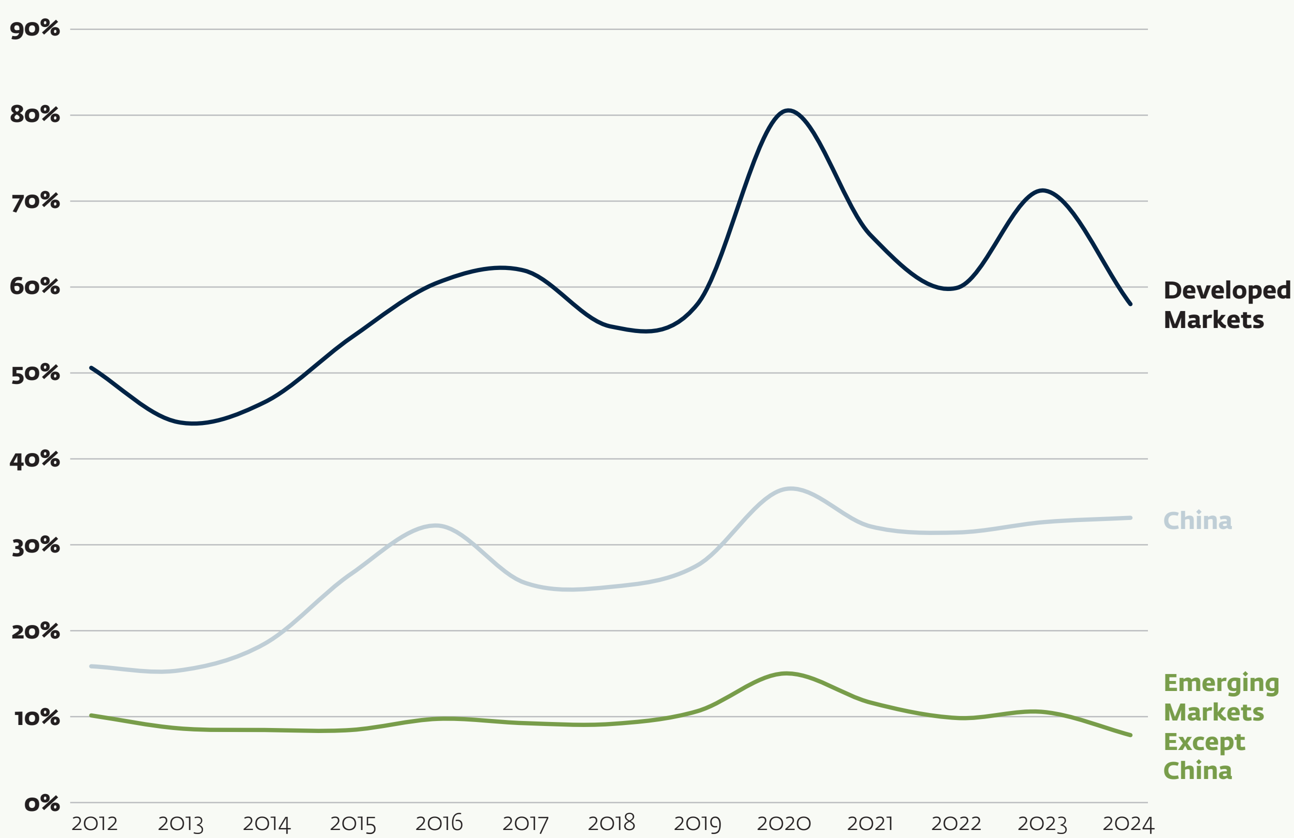
Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the evolution of GSSS bonds issued annually in emerging markets as a percentage of total bonds issued in 2012–24. Instruments with maturities under one year are excluded. See Annex B for details on the underlying data.

However, the opposite is true when considering the size of their respective economies. This discrepancy is largely due to the relatively thin capital markets that characterize emerging markets outside China, evidenced by a lower ratio of overall fixed income issuance to nominal GDP—8 percent in 2024—relative to both China, where the ratio is 33 percent, and developed markets where it stands at 58 percent (Exhibit 6). As a result, underdeveloped capital markets remain a barrier to further expansion of GSSS bonds over time in emerging markets, especially outside China.

Exhibit 6

Largely Underdeveloped Capital Markets Constrain GSSS Bond Growth in Emerging Markets



Source: Bloomberg, IMF

Note: This Exhibit shows the evolution of total bonds issued annually in emerging markets as a percentage of nominal GDP in 2012-24. Instruments with maturities under one year are excluded.

Currency Volatility

The difficulty in emerging markets of borrowing at scale in local currencies is commonly referred to as “original sin.”[18] This situation translates into mismatches, as foreign currency is used to finance projects that generate income in domestic currency. This is, in turn, a plausible cause of “debt intolerance,”[19] another widely held view according to which emerging market borrowers have trouble handling debt levels that would be easily manageable in developed markets.

However, there is also evidence that the so-called original sin has been dissipating, with emerging market entities increasingly able to borrow in their own currency.[20] This is partly due to a composition effect, as some of the largest emerging markets (such as China) also have large domestic funding markets.

Still, 75 percent of the GSSS bonds issued in emerging markets outside China in 2024 were denominated in a developed-market currency—mostly dollars and euros—with the remaining 25 percent denominated in local currencies. This split has remained broadly constant over time.

Firm Size and the Depth of GSSS Bond Markets

For capital markets to function effectively, financial instruments must be sufficiently liquid, a quality that is directly related to the size of the issuer. In emerging markets, the firm size distribution is skewed toward small companies,[21] meaning that the pool of potential private sector issuers is smaller than in developed markets. Consistent with this, the number of fixed income issuers per country in emerging markets is only a fraction of that in developed markets.[22] The limited number of larger, more liquid issuers restricts the scale and depth of the GSSS bond market in these regions.

The GSSS Bond Market 2018–2024: Trends by Bond Type

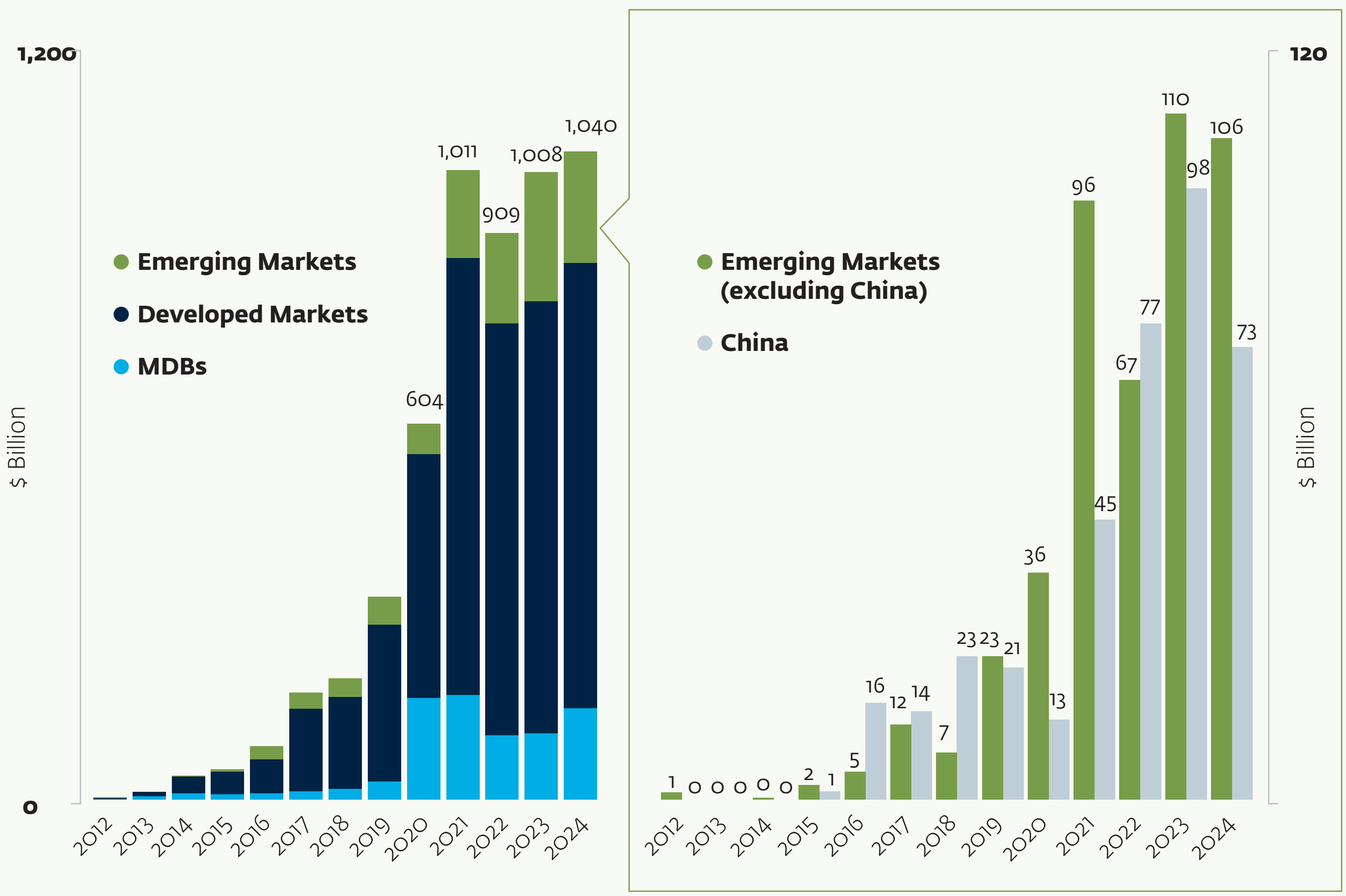
In 2024, overall GSSS bond issuance in emerging markets dropped by 14 percent to around $180 billion (Exhibit 7), primarily because the green and sustainability-linked segments underperformed. Meanwhile, both sustainability and social bonds saw improved performance. This headline figure, however, conceals two distinct dynamics. First, China experienced significant weakness in sustainable bond issuance, with local issuers shifting to sales of conventional bonds in the onshore market on the back of lower borrowing costs. In addition, tighter eligibility criteria for onshore green bonds may also have limited the availability of projects suitable for the allocation of GSSS bond proceeds.[23] Second, emerging markets outside China experienced a 23 percent year-on-year decline in overall fixed income issuance, largely due to slower economic growth in the East Asia & Pacific excluding China, and the Europe & Central Asia regions.

When incorporating developed markets and MDBs into the analysis, the global picture shifts slightly. Developed markets saw a 3 percent increase, buoyed by strong green bond issuance (as well as by sustained transition bond issuance in Japan), while MDBs grew by 38 percent. As a result, global GSSS bond issuance edged up by 3 percent to over $1 trillion in 2024, a new record. However, as a percentage of total fixed income issuance, global GSSS bond issuance declined to 2.2 percent in 2024 from 2.5 percent the previous year.

Since 2018, annual GSSS bond issuance in emerging markets has increased sixfold, reaching around $800 billion cumulatively over the period ($850 billion since 2012; see Exhibit 8). Green bonds represent two-thirds of the total over the period, although there has been noticeable diversification into other GSSS bonds—particularly sustainability bonds outside of China (see Exhibit 9). Green and sustainability bonds altogether accounted for over 85 percent of all GSSS bonds issued in emerging markets in 2024.

Exhibit 7

Global GSSS Bond Issuance Reaches New Record in 2024 Above $1 Trillion



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

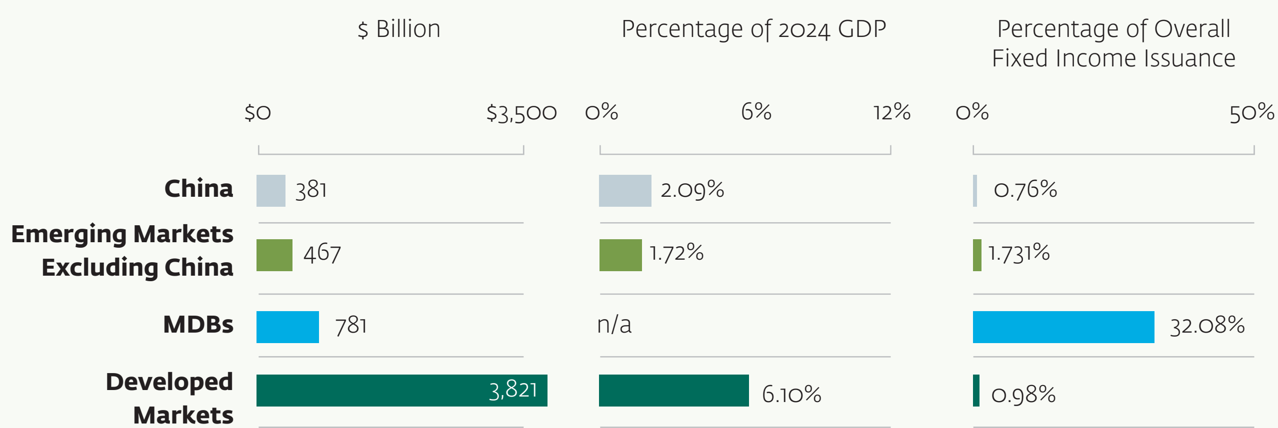
Note: This Exhibit shows total GSSS bonds issued per annum (billions of dollars). The left panel shows global issuance, broken down into developed markets, emerging markets, and multilateral development banks. The right panel shows GSSS bond issuance in emerging markets split between China and the rest. See Annex B for details on the underlying data.

This shift away from green bonds is being driven by public sector issuers, especially sovereigns, that tend to prefer sustainability bonds because they offer more flexible financing that supports both environmental and social projects. This versatility not only helps them address broad policy priorities but also enables access to a growing pool of sustainability-focused investors, potentially lowering financing costs.

Social bonds have stabilized at a close to 10 percent share, contributing an average of 6 percent to overall GSSS issuance in emerging markets in 2022–24, following the easing of healthcare funding needs seen during the COVID-19

Exhibit 8

Emerging Market GSSS Bond Issuance Since 2012 Reaches $850 Billion



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC, IMF

Note: This Exhibit shows cumulative GSSS bond issuance since 2012, on an absolute basis (billions of dollars), as a percentage of 2024 nominal GDP, and as a percentage of total bonds issued cumulatively over the same period. Data are global, broken down into developed markets, multilateral development banks, China, and emerging markets other than China. See Annex B for details on the underlying data.

pandemic. Meanwhile, despite their earlier popularity, the issuance of sustainability-linked bonds in emerging markets has recently weakened for reasons discussed below.

This evolving landscape also highlights a secular decline in China's share of overall GSSS bond issuance in emerging markets—from over 76 percent in 2018 to just 41 percent in 2024. While China remains dominant in green bonds, other emerging markets are diversifying GSSS bond issuance. This broader approach has been largely driven by Chile and Mexico and, more recently, Saudi Arabia and the United Arab Emirates.

Green Bonds

In 2024, green bonds in emerging markets experienced a 27 percent decline to $99 billion, with pronounced drops in both China, due to the factors discussed earlier, and the Middle East & North Africa, reflecting higher interest rates and some normalization after the 'halo effect' of Dubai hosting the COP28 summit in 2023.[24] This contrasts with 10 percent growth in developed markets and an even stronger 43 percent advance by MDBs, leaving global green bond issuance 3 percent higher in 2024. Within emerging markets, issuance drivers diverged by region. Non-financial corporates led the charge in China, while sovereign issuers led in other emerging markets.

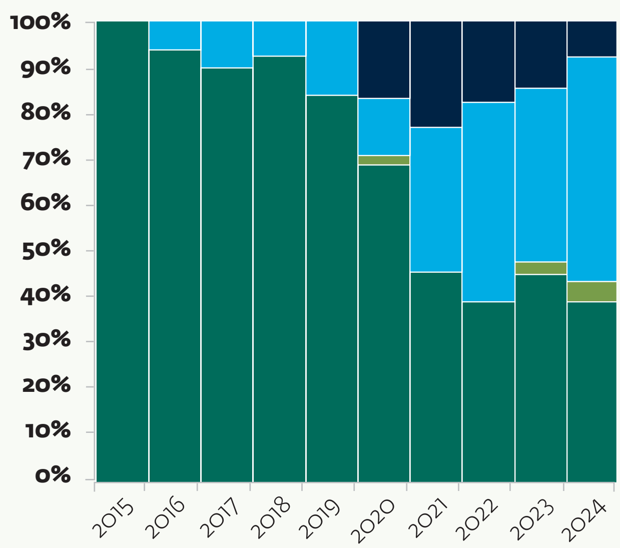
Over the past seven years, green bond issuance in emerging markets has more than quadrupled. This was largely fueled by robust growth in emerging markets outside China, particularly in the Middle East & North Africa region, even though China has maintained its sizable role over time with 60 percent of total emerging market issuance in 2024. Moreover, private-sector issuers have consistently represented over 80 percent of total green bond issuance

Exhibit 9

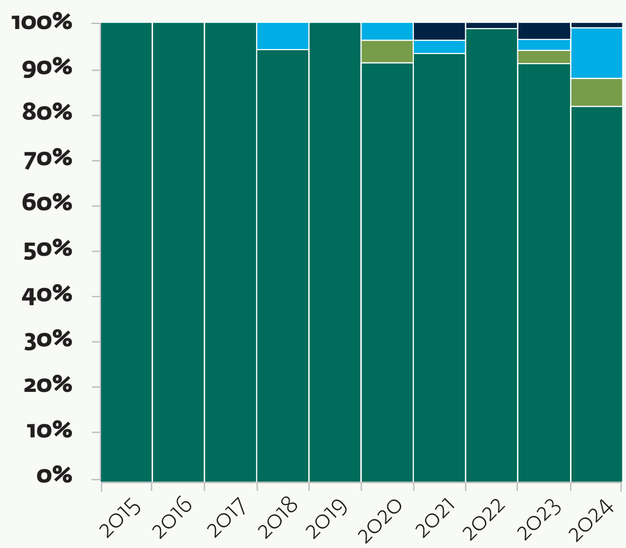
Emerging Market and MDB Issuers Are Increasingly Diversifying into Sustainability Bonds

Transition **Sustainability-Linked** **Sustainability** **Social** **Green** **MDBs**

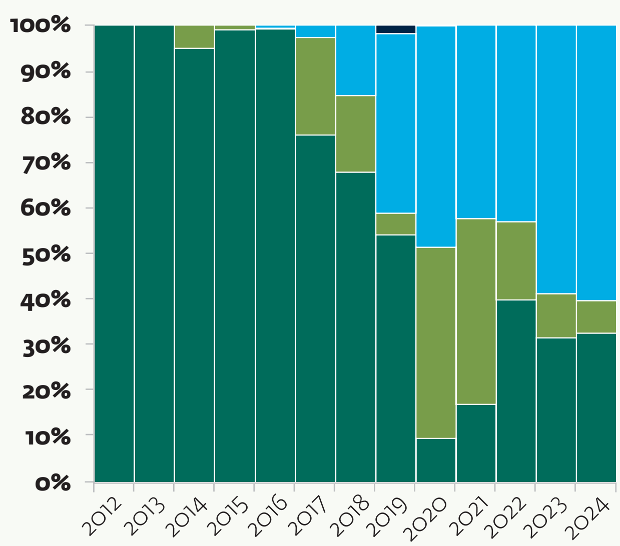
Emerging Markets Excluding China



China



MDB



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the contribution of each bond type to overall GSSS bond issuance (percent of total), per annum, in emerging markets—China and the rest—as well as by multilateral development banks. See Annex B for details on the underlying data.

since 2018, despite the public sector—primarily sovereign issuers—doubling its share during the same period. Green bonds in emerging markets are principally issued in three currencies—the Chinese yuan, euros, and dollars—which together account for over 90 percent of the market.

Social Bonds

Social bond issuance in emerging markets increased by 10 percent to $15 billion in 2024. This was partly due to 57 percent year-on-year growth in China, albeit from a low base. Social bond issuance in developed markets dropped 9 percent due to the tapering of crisis-driven, pandemic-era social financing as emergency needs continued to subside. MDBs were up by 3 percent. Global social bond issuance fell by 7 percent in 2024, but the asset class's rate of decline as a share of the overall market seems to have stabilized below 10 percent. In 2022–2024, social bonds accounted for an average of 6 percent of annual GSSS issuance in emerging markets.

Emerging markets outside China accounted for over 70 percent of these bonds issued in emerging markets. The Latin America & Caribbean region—particularly Chile and Mexico—led the way, and the East Asia & Pacific (excluding China) region—particularly India—followed closely.

The public sector has accounted, on average, for two-thirds of total social bond issuance in emerging markets since 2012. Importantly, there has been a shift toward hard currencies over time. Half of all social bonds issued between 2018 and 2024 were denominated in dollars and euros.

Sustainability Bonds

Sustainability bonds issued in emerging markets experienced a 39 percent increase to $56 billion in 2024. This was driven by the East Asia & Pacific (excluding China) region, particularly the Philippines. Issuance in developed markets was down 4 percent reflecting stronger green bond growth. Sales by MDBs advanced more than 40 percent, driving a 24 percent growth rate at the global level in 2024.

Over the past seven years, the Latin America & Caribbean region has led sustainability bond issuance in emerging markets. However, participation is now growing in other regions—particularly in East Asia & the Pacific (excluding China), Europe & Central Asia, and more recently, in the Middle East & North Africa. China's involvement in this segment, as with all GSSS categories other than green bonds, has been marginal. While private sector issuers, especially financial institutions, continue to lead in this space, the public sector, driven by sovereign issuers, has gained ground. The proportion of sustainability bonds denominated in hard currencies has increased over time, from one-third before 2018 to two-thirds currently.

Sustainability-Linked Bonds (SLBs)

In 2024, SLB issuance in emerging markets declined 53 percent to under $9 billion, driven primarily by strong contractions in China and the Latin America & Caribbean region. With developed market issuance also down by 3 percent and MDBs not issuing these instruments at all, overall SLB issuance fell globally by 46 percent in 2024. In emerging markets, non-financial corporates saw reduced issuance, and notably, sales by sovereigns fell 90 percent.

Over the past seven years, SLB issuance has leaned toward emerging markets outside China—especially in the Latin America & Caribbean region, which has accounted for two-thirds of total issuance. Private-sector issuers, particularly non-financial corporates, have consistently led the market, despite a modest increase in sovereign participation in earlier periods (a trend absent in 2024). Unlike other GSSS sub-asset classes, the proportion of local currency-denominated SLBs has steadily risen, averaging 40 percent over the last two years.

The weak performance of SLBs in emerging markets stems from a combination of design shortcomings and credibility concerns. Firstly, the coupon step-ups—meant to penalize failure to meet sustainability targets—are often set too low, providing minimal financial disincentive for not hitting these targets. This limited penalty encourages a check-box approach, where issuers may prioritize technical compliance over the achievement of meaningful sustainability outcomes. Moreover, if the step-ups were increased to create a stronger incentive, the risk of incurring higher costs might deter issuers from opting for SLBs in the first place. Additionally, when SLBs constitute only a small fraction of an issuer's overall debt portfolio, the pressure to drive meaningful operational changes is further diminished. Finally, alternative structures—such as step-down mechanisms or penalties applied to principal repayment at maturity—have not gained traction because they often introduce added complexity and undesirable financial implications. Together, these factors have diluted the perceived effectiveness and appeal of SLBs.

By Region

China's role declined from 76 percent of all GSSS bonds issued in emerging markets during 2018 to just over 40 percent in 2024 (see Exhibits 10 and 11). This is the result of recent weakness in China's GSSS bond volumes, but also of growing issuance in emerging markets outside China, with the Latin America & Caribbean region–Chile, Mexico and Brazil in particular–now accounting for one-quarter of the total. Looking across bond types, China leads green bond issuance in emerging markets, while Latin America & Caribbean is the main player in social, sustainability, and SLB issuance.

Something similar has happened in developed markets, where the relative market weight of the United States has also declined, from close to 40 percent of total developed-economy GSSS bond sales between 2016–2017, to 16 percent in 2024. This has been offset, however, by an expanding issuer base notably from Korea, Japan, Italy, and the United Kingdom.

MDBs have cumulatively issued an amount of GSSS bonds that is lower but close to that from emerging markets. The largest issuer has been the World Bank Group, accounting for a third of overall issuance by multilateral institutions since 2012 (40 percent since 2018).

By Issuer

Over the past seven years, private sector issuers (non-financial corporates and financial institutions) have accounted for over 70 percent of the issuance of GSSS bonds (see Exhibit 12).

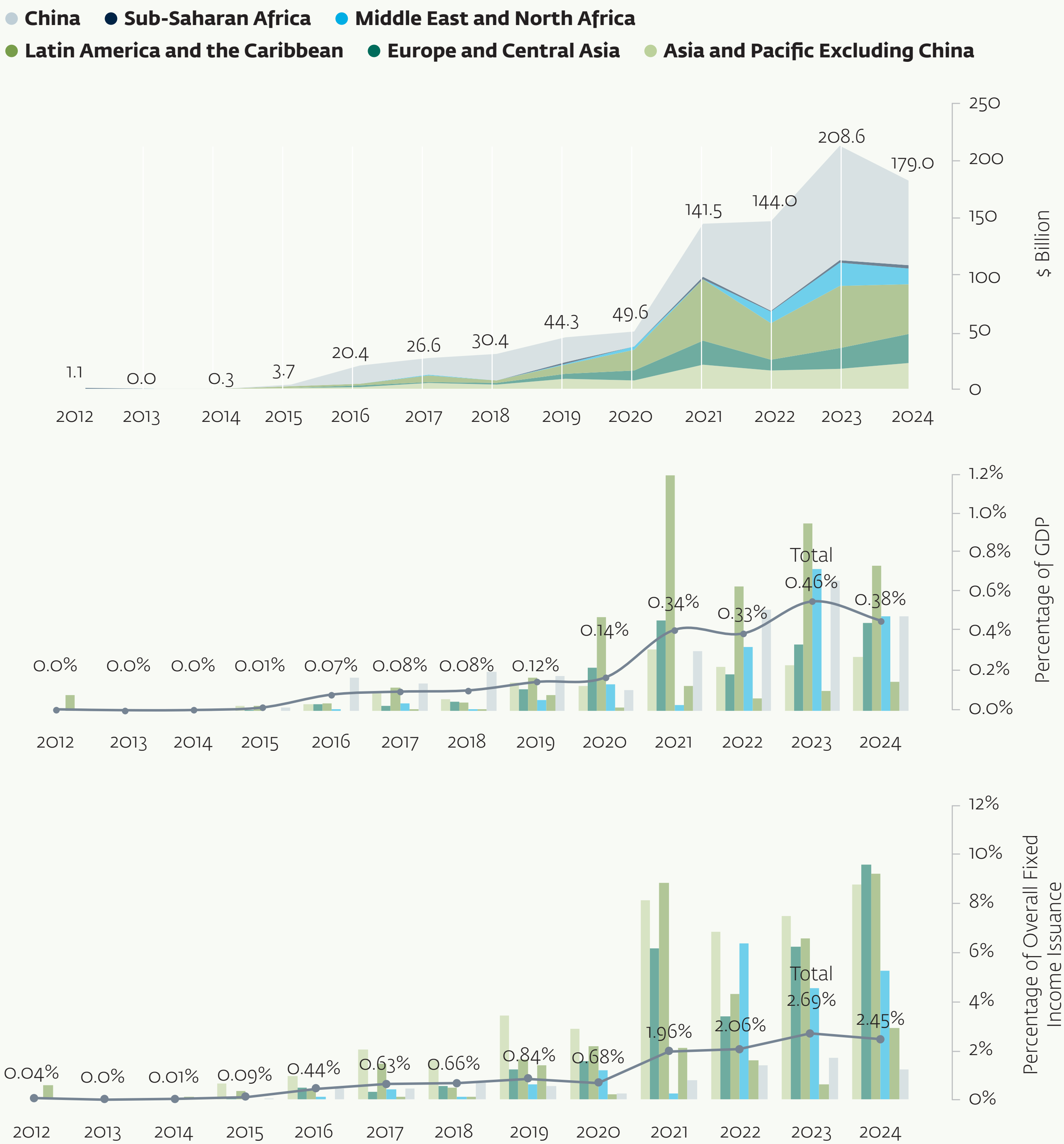
In 2024, trends in GSSS bond issuance in emerging markets varied significantly by issuer type and bond category. Non-financial corporates boosted their issuance by 35 percent, with notable gains in green and sustainability bonds. They also boosted the issuance of social bonds but from a low base, while reducing SLB sales by a third. In contrast, financial institutions saw a 29 percent drop in issuance, mainly driven by weak green bond activity. These institutions have historically favored green bonds. Sales by municipal issuers, on the other hand, were broadly flat, with higher sustainability bond issuance offsetting weak green and social issuance and no SLBs. Sovereigns experienced a 35 percent decrease, as stagnant sustainability bond issuance, and very weak activity elsewhere weighed on their performance. Historically, sovereigns have preferred green bonds, accounting for about 40 percent of their issuance since 2018, with social and sustainability bonds sharing the remainder. Agencies have also favored green bonds, amounting to two-thirds of their volumes, while gradually incorporating sustainability and social bonds, yet virtually no SLBs.

As the public sector gained ground gradually in emerging market GSSS bond issuance, from around 10 percent of the total in 2018, to 25 percent in 2024, private sector issuers–split 50/50 between non-financial corporates and financial institutions–continue to lead.

Finally, although they do not count as emerging market issuers, most MDBs allocate their resources to projects based in developing economies.[25] In a sense, they serve as conduits for developed market investors to allocate capital to emerging markets that they would not otherwise venture into.[26] It is for this reason that it can make sense to discuss MDBs alongside that of emerging markets. In the context of GSSS bonds, MDBs bucked emerging markets' overall

Exhibit 10

China Remains the Largest GSSS Bond Issuer in Emerging Markets...



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC, IMF

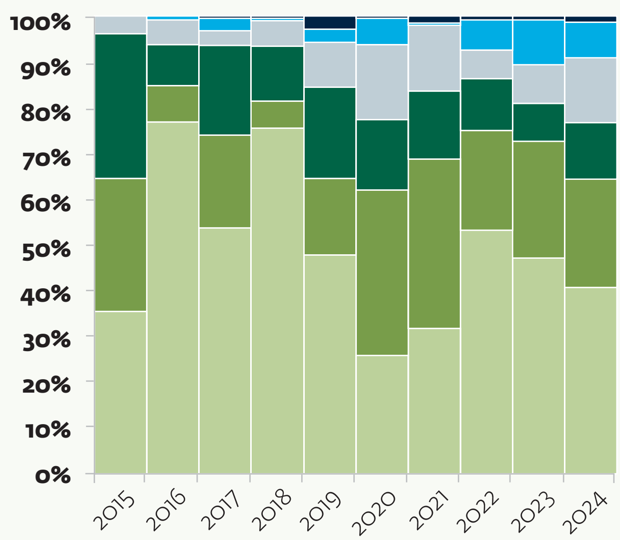
Note: This Exhibit shows the contribution of each region to overall GSSS bond issuance per annum in emerging markets. The data are shown in absolute terms (billions of dollars), as a percentage of GDP, and as a percentage of total bonds issued. See Annex B for details on the underlying data.

Exhibit 11

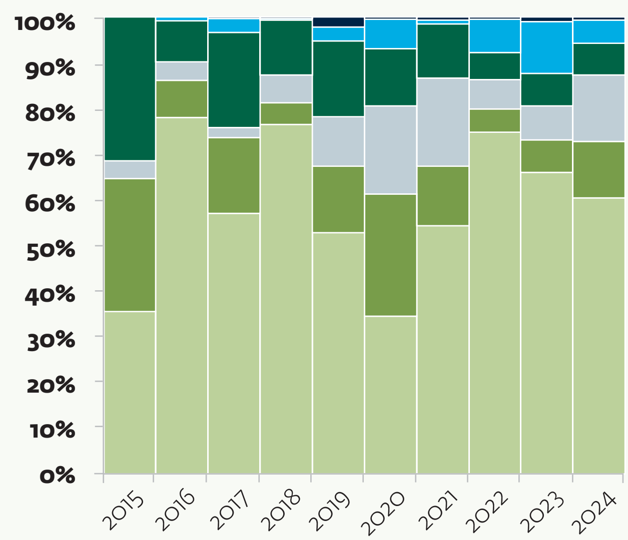
…with Other Emerging Markets Gaining Market Share Over Time

- **Sub-Saharan Africa**
- **Middle East and North Africa**
- **Europe and Central Asia**
- **Asia and Pacific Excluding China**
- **Latin America and the Caribbean**
- **China**

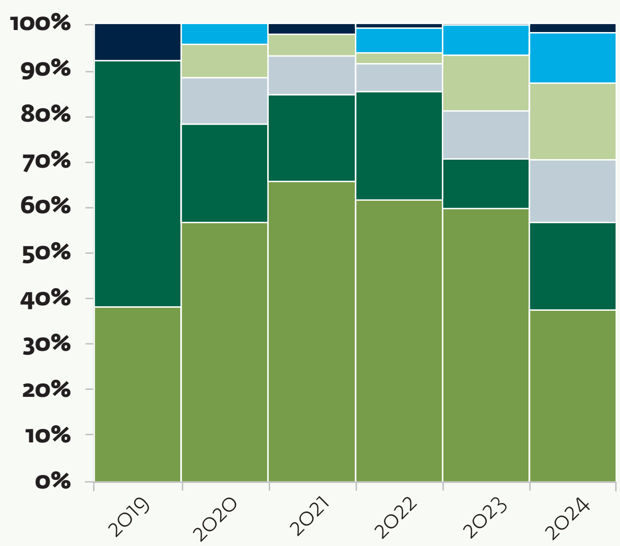
GSSS Bond Issuance, 2015-24: By Region



Green Bond Issuance, 2015-24: By Region



SSS Issuance, 2019-24: By Region

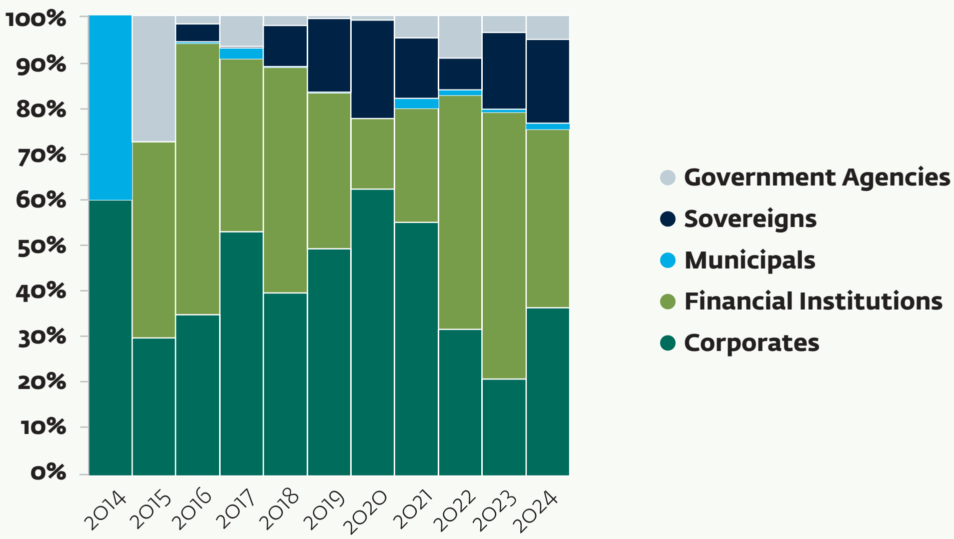


Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the contribution of each region to GSSS bond issuance in emerging markets since 2015. Data is shown as a percentage of total GSSS bond issuance in emerging markets each year, split between green and other bonds. See Annex B for details on the underlying data.

Exhibit 12

Private Sector Issuers Continue to Top GSSS Bond Issuance in Emerging Markets



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the contribution of each issuer type to overall GSSS bond issuance (percent of total) per annum since 2014. See Annex B for details on the underlying data.

weak trend by increasing issuance by 38 percent, particularly in green and sustainability bonds. Over time, MDBs have shifted their focus from exclusively green bonds before 2018 to a portfolio where sustainability bonds accounted for 60 percent of issuance over the past two years, with hard currencies (primarily dollars and euros) accounting for almost all the GSSS bonds issued.

By Use-of-Proceeds[27]

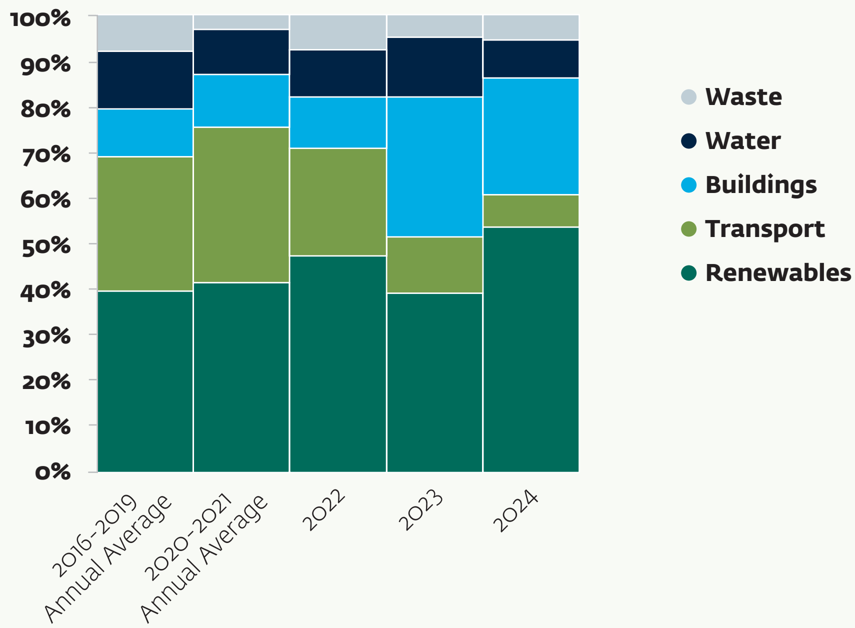
Renewables accounted for 50 percent of green bond proceeds in 2024, the largest share of any category as well as implying a meaningful jump relative to previous years (37 percent in 2023). Meanwhile, buildings remain the second most prominent use of proceeds. Collectively, renewables, buildings, and transport have consistently absorbed between 70 percent and 80 percent of the money raised through sales of green bonds (see Exhibit 13).

By Sector (Non-Financial Corporates)

Non-financial corporates claim a 40 percent market share in emerging market GSSS bond issuance since 2018. The sector mix has remained stable over time as well as across countries, with utilities and energy firms accounting for the largest share, at 60 percent in 2024 (see Exhibit 14). This is consistent with renewables accounting for the bulk of green bonds' use-of-proceeds, in line with decarbonization efforts and the increasing share of renewables in the power generation mix globally.

Exhibit 13

Renewables Continue to Account for the Bulk of Green Bonds' Use of Proceeds



Source: CBI, IFC

Note: This Exhibit shows the breakdown of green bonds' use of proceeds (percent of total) since 2016. See Annex B for details on the underlying data.

By Currency

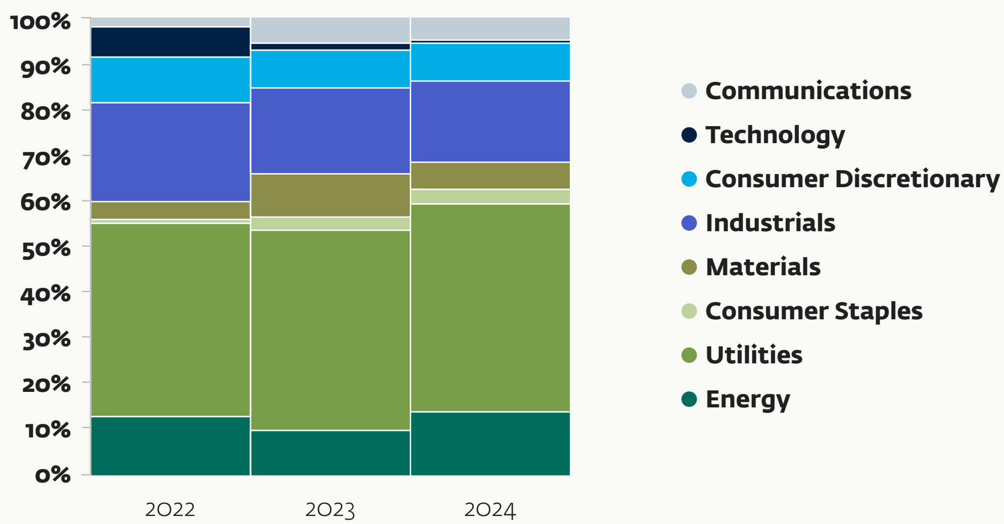
Since 2018, there has been a trend toward increased reliance on hard currencies—especially dollars and euros—for most GSSS bond types and issuer segments in emerging markets outside of China (see Exhibit 15), with the notable exception of SLBs, which are increasingly denominated in local currencies. Also, MDBs have remained committed to hard currency issuance.

For green bonds—the main category in emerging market issuance—three currencies (Chinese yuan, euros, and dollars) have consistently represented around 90 percent of the market. In China, issuers typically favor yuan, whereas issuers elsewhere in emerging markets lean toward hard currencies like dollars and euros.

Social bonds have also undergone a shift. Prior to 2018, few were issued in hard currencies. From 2018 to 2024, dollars and euros came to represent 55 percent of social bond issuance, particularly among borrowers in the Latin America & Caribbean region, where over two-thirds of emerging market social bonds are issued. Sustainability bonds in emerging markets generally follow a similar pattern, with emerging market issuers increasingly opting for hard currencies (representing two-thirds of the total since 2018). In contrast, SLBs have followed a different path with the share of local-currency denominated issuance rising to an average of more than 40 percent over the last two years. This is, however, due to a composition effect, with demand from local investors being relatively more resilient than that from foreign investors.

Exhibit 14

Utilities and Energy Firms Account for Most Corporates Issuing GSSS Bonds in Emerging Markets



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the contribution per sector to GSSS corporate issuance (percent of total) per annum since 2022. See Annex B for details on the underlying data.

Supranational issuers present a distinct picture. Where green bonds represented 100 percent of their GSSS bond market participation before 2018, they have shifted over time so that sustainability bonds now account for about 60 percent of their GSSS issuance in the last three years. Still, MDBs continue to favor hard currencies, with dollars and euros making up around 80 percent of their GSSS bond issuance and developed market currencies overall representing 98 percent.

By Location of the Exchange Where Bonds Are Listed

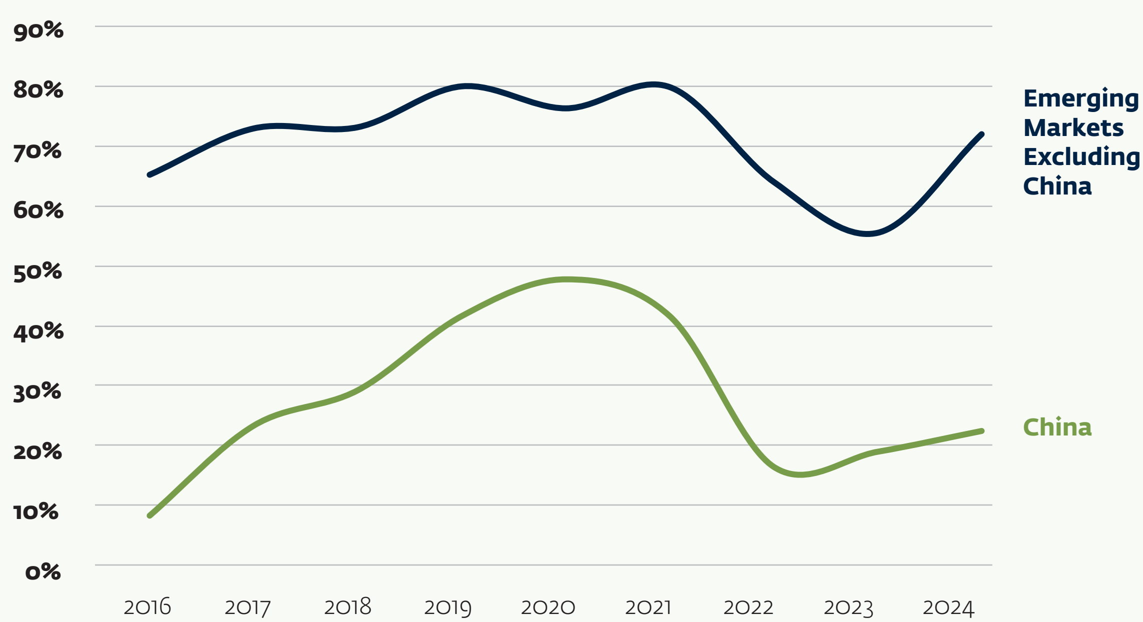
Most of the money raised by Chinese borrowers via the issuance of GSSS bonds stems from bonds listed on exchanges located in China—two-thirds in 2024—implying most of the investor base is domestic. For emerging markets outside China, the GSSS bonds listed on local exchanges represent half of the total. This is consistent with the currency composition of GSSS bonds discussed earlier and implies a larger weight of foreign investors in other emerging markets in comparison with China. This is also consistent with the "original sin" discussed earlier being less relevant in large emerging markets such as China.[28]

By Rating

Most emerging market GSSS bonds were issued without a rating from an internationally recognized agency, with the proportion still at 75 percent in 2024. This trend is

Exhibit 15

GSSS Bond Issuers in Emerging Markets Outside China Prefer Hard Currency



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the proportion of hard currency raised via GSSS bond issues relative to overall GSSS bond issuance in emerging markets as a percentage of the total. See Annex B for details on the underlying data.

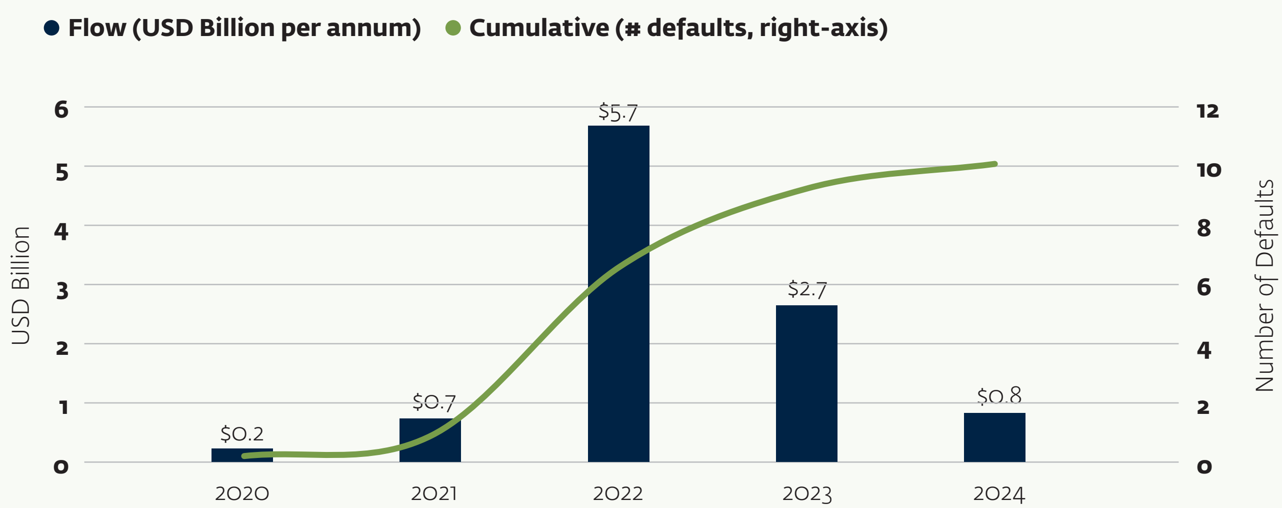
pronounced in China, where over 80 percent of GSSS bonds lacked such a rating in 2024, compared to 70 percent in other developing economies. Among the GSSS bonds that do receive ratings, most are classified as investment grade. This is, again, consistent with the observation that the foreign investor base is larger in emerging markets outside China. This difference is due to various factors, most notably local regulation in China: while ratings from approved agencies are mandatory for most bond issuance, ratings by foreign rating agencies have not been recognized until recently for regulatory purposes,[29] and are still not mandatory for most onshore bond issues today.

By Issue Size

A notable development in 2024 was the disconnect between the large fall in the dollar amount raised via GSSS bonds issued over the year and a 12 percent year-on-year increase in the absolute number of such bonds issued in China. These two observations can be reconciled given a significant decline in the largest-sized bonds in the year— down 34 percent from a year earlier. This was driven by green bonds, for which transactions valued at over $500 million dropped by half in 2024. This shift toward smaller issuances reflects, among other factors, a growing participation of smaller

Exhibit 16

China Accounts for Most Emerging Market GSSS Bond Defaults



Source: Bloomberg

Note: This Exhibit shows the number of GSSS bonds defaulted in emerging markets, and in billions of dollars, since 2020. The perimeter used for this exhibit is narrower than that used for the rest of the report. This exhibit relies on Bloomberg data, whereas the GSSS bond database includes data from several sources, including Bloomberg, Climate Bond Initiative, and Environmental Finance (see Annex B for details).

issuers, including non-state owned enterprises, which have increased their share of green bond issuance in China from 1 percent in 2021 to about 20 percent in 2024.[30]

Default Rate

Total defaults on GSSS bonds in emerging markets were as high as $10.5 billion as of the end of 2024 (Exhibit 16). Most—94 percent—occurred in China, particularly during 2022 and 2023. The remaining 6 percent of GSSS bond defaults in emerging markets through 2024 were in Chile, India, and Mexico.

Part 4

Outlook

Emerging Market GSSS Bond Outlook

Given elevated market volatility at the time of writing (April 2025) amid global economic uncertainty and tensions over international trade flows, it is difficult to make any calls on the immediate direction of future bond issuance. Nevertheless, some factors are likely to influence GSSS bond sales volumes through 2025 and beyond. Chief among these, as mentioned in the opening chapter of this report, is maturing debt. The market will see $330 billion of emerging market GSSS bond maturities over 2025–2027 that will need to be refinanced with new securities (see Exhibit 17). This is also subject to the issuers' ability to refinance amid heightened rollover risk given most of the maturing bonds were likely to have been issued when interest rates were lower.

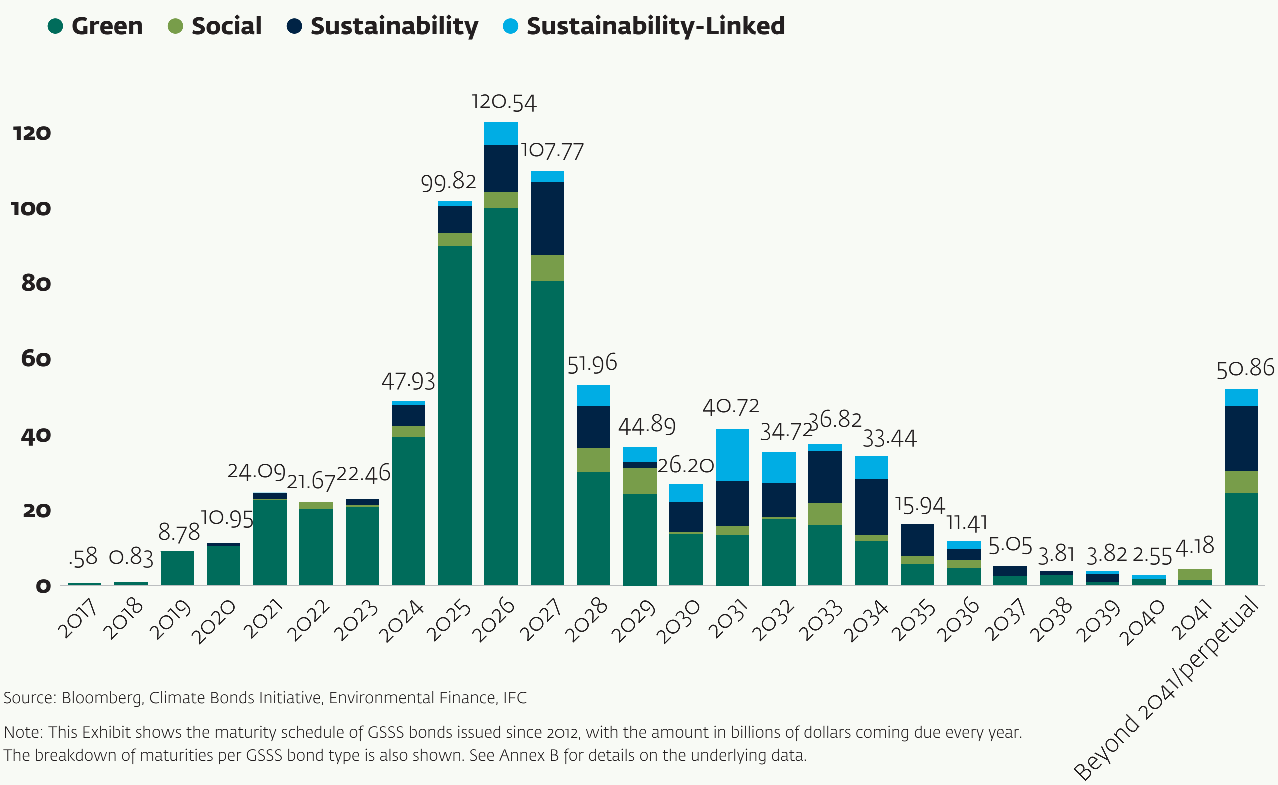
On the other hand, three factors are likely to constrain GSSS bond market growth. First, expectations of weaker economic growth globally given international tensions over trade. Second, recent regulatory changes in Europe such as new rules on naming funds aimed at curbing greenwashing could reduce the number of sustainable funds seeking to buy GSSS bonds. Third, interest in investing according to environmental, social, and governance principles may have peaked several countries, potentially putting the brakes on flows of climate finance to emerging markets.

Further out, however, the outlook for GSSS bonds remains stable. Demand for GSSS bonds from both European and Asian investors is expected to remain resilient, partly due to governments in these regions continuing to encourage sustainable finance. Second, investments in clean energy are expected to double in the coming years as countries pursue targeted emissions cuts, creating a strong foundation for sustainable finance volumes. This growth is likely to be supported by an increasingly competitive renewable energy sector and ambitious MDB commitments aligned with COP29 targets. Public development banks are also likely to become a major issuing segment.[31]

For more details about both the cyclical and structural factors underpinning the future evolution of the GSSS bond market in emerging markets, see Annex A.

Exhibit 17

A Surge in Maturities from 2025 to 2027 Will Support GSSS Bond Issuance in Emerging Markets



Source: Bloomberg, Climate Bonds Initiative, Environmental Finance, IFC

Note: This Exhibit shows the maturity schedule of GSSS bonds issued since 2012, with the amount in billions of dollars coming due every year. The breakdown of maturities per GSSS bond type is also shown. See Annex B for details on the underlying data.

Part 5

Conclusion

The emerging market GSSS bond market faces near-term challenges and retains long-term potential. Despite recent headwinds—including a decline in issuance volumes driven by shifts in China's sustainable bond market and broader economic slowdowns in key regions—the fundamentals remain strong. Structural impediments such as underdeveloped local capital markets, persistent currency volatility, and the predominance of smaller issuers continue to limit growth. However, these challenges are countered by powerful growth drivers, namely a surge in capital flows spurred by energy transitions, remaining investor demand for sustainable assets, and support from MDBs and some developed market governments.

Flexible financing instruments such as sustainability bonds, which are versatile instruments that can be used to address both environmental and social objectives, are gradually reshaping the market. The diversification away from a singular focus on green bonds, particularly among public sector issuers outside China, reflects an evolving approach to meeting the multifaceted needs of emerging economies. Moreover, as regulatory frameworks mature and data quality improves, the market is poised to reap further cost benefits, even if the green premium itself diminishes or disappears.

While short-term volatility and political uncertainties—exemplified by new regulatory measures and shifts in climate policy—pose risks, the long-term outlook remains positive for the asset class. Emerging markets are well positioned to capitalize on declining renewable energy costs and ambitious climate finance commitments, paving the way for a more resilient and sustainable economic future. Stakeholders across the board—policymakers, issuers, and investors—must continue to innovate and collaborate, ensuring that the evolving GSSS bond market fulfills its critical role in financing governments and private corporates, both financial and non-financial, that are pursuing a broad range of sustainability objectives, including energy transitions.

Annex A

Details About 'Emerging Market GSSS Bond Outlook'

Early drafts of this report included, as in previous editions, a forecast for gross GSSS bond issuance in emerging markets over the next two years (2025–2026). However, elevated financial market volatility and economic uncertainty at the time of writing (mid-April 2025) mean the macro views that underpinned these forecasts are no longer reliable. That said, other short- and long-term drivers remain valid, and we discuss them below.

Other Short-Run Factors

New Fund-Naming Rules in Europe

Mounting concerns around greenwashing have spurred regulatory changes in Europe and are set to reshape the ESG fund landscape. As a result, according to Morningstar, 30–50 percent of ESG funds in Europe are likely to rebrand in 2025, while others will adjust their objectives or portfolios to retain their ESG-related designations.

Initially, there were concerns among fund managers that the new rules might be overly restrictive for sustainable bond funds, potentially shrinking the available market for GSSS bonds and triggering divestment. For instance, the original European Securities & Market Authority (ESMA) guidelines required that any fund labeled "green" or "sustainable" met Paris-Aligned Benchmark (PAB) exclusion thresholds (above 1 percent of revenue from coal, 10 percent from oil, and 50 percent from gas). However, ESMA's clarification in December 2024 mitigated these concerns by specifying that such restrictions would not apply to green bonds issued under the European Green Bond Standard. For other sustainable bonds, fund managers can apply these exclusions on a "look-through" basis—at the project or bond level rather than the issuer level—thus ensuring that the financed economic activities exclude PAB-related activities.

While further clarification on the application of PAB thresholds is still awaited, markets have largely welcomed these measures, suggesting that the new rules will not have a material negative impact on sustainable bonds.

The United States Withdrawal from the Paris Agreement

In January 2025, the United States withdrew from the Paris Agreement for the second time.[32] The implications of this decision may include a decline, if not a complete halt, of climate finance flows.[33] This is likely to indirectly dampen GSSS bond issuance by weakening both investor confidence and emerging market capacity.

Structural (Long-Run) Factors

Energy Transition

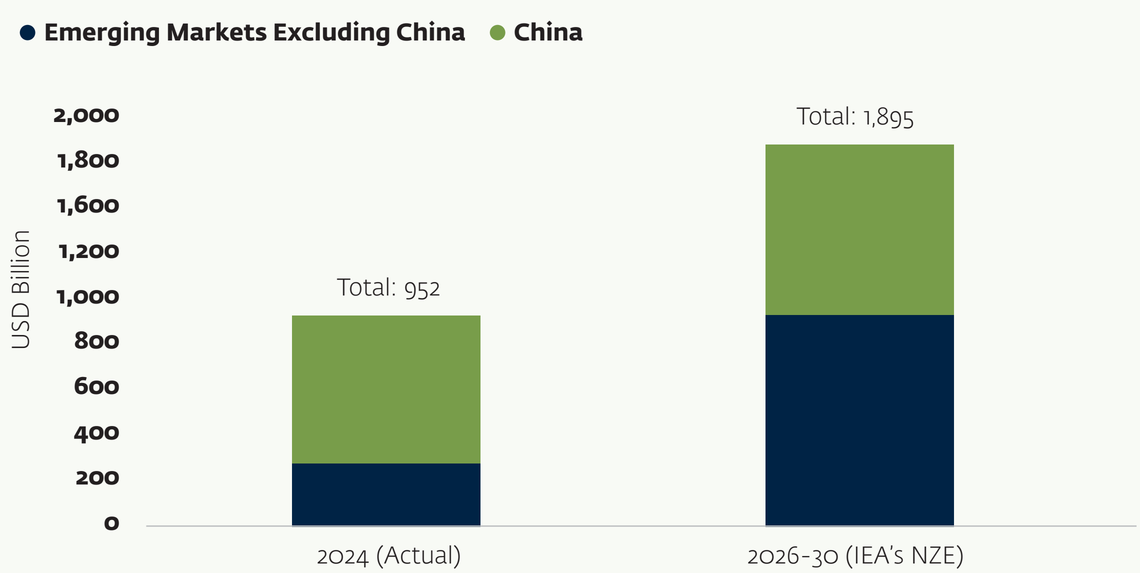
Notwithstanding potential short-term disruptions, sustainable finance is likely to be increasingly characterized over time by a greater focus on energy transitions away from fossil fuels to favor technologies that can bring greater efficiency and energy security. A key motive for governments is that increasing the weight of renewables in the energy mix has the potential to make power prices cheaper[34] which by extension can lead to social welfare gains.[35]

Climate Change

Clean energy investments are likely to rise significantly as policymakers seek to make economies more resilient in the face of extreme weather and transition toward more efficient and sustainable energy sources. According to the International Energy Agency, to achieve net zero emissions by 2050, emerging markets will need to double their annual investments in clean energy from 2026 to 2030 compared to 2024 levels (Exhibit 18). For emerging markets other than China, this increase needs to be even more pronounced, with annual investments expected to triple.[36]

Exhibit 18

Capex in Clean Energy by Emerging Markets Is Expected to Double Under the IEA's Net Zero Emissions Scenario



Source: IEA

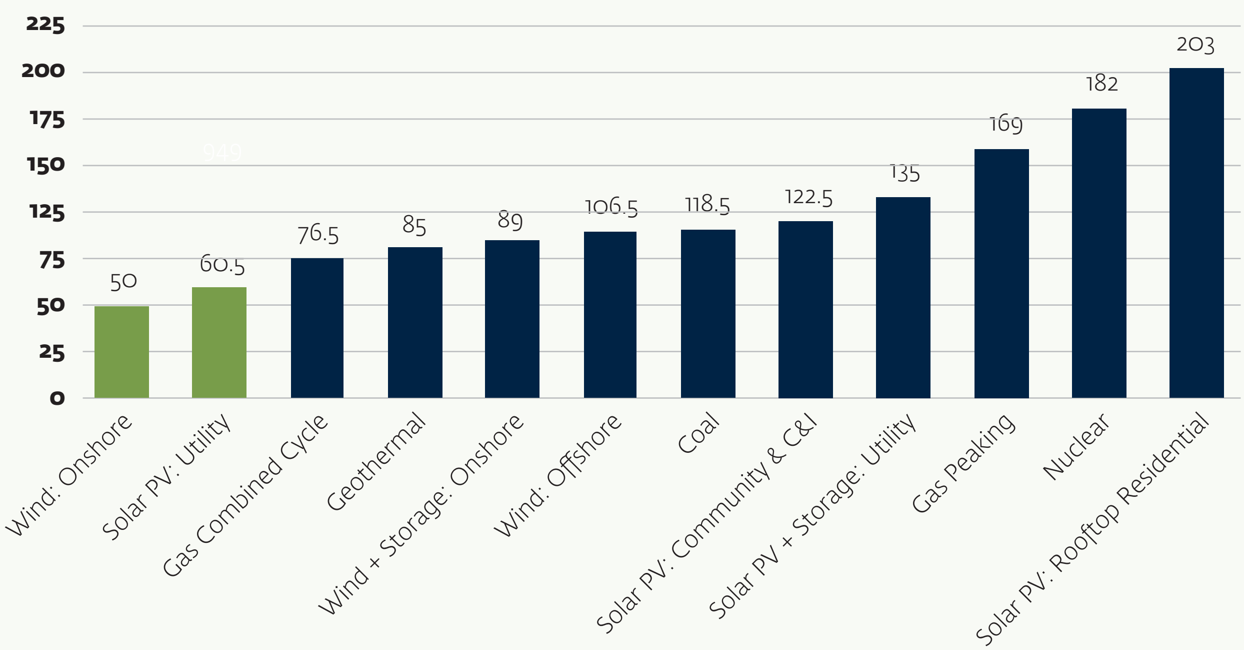
Note: This Exhibit compares investments in clean energy (billions of dollars) in emerging markets (including China) in 2024 against the annual average required in 2026–2030 to reach the IEA's Net Zero Scenario. IEA refers to the International Energy Agency.

The Economic Case for the Energy Transition

Renewable technologies, particularly utility-scale solar photovoltaic and onshore wind, are expected to increasingly replace conventional energy sources. Renewables are already the cheapest form of power generation, even without subsidies. U.S. project-level data from Lazard illustrate how renewables' advantage holds even taking into account storage costs which are critical due to the intermittent nature of renewable energy (see Exhibit 19).[37] Additionally, the cost curves for these two renewable technologies, along with storage, are projected to continue declining in real terms over coming decades (see Exhibit 20).[38] This ongoing reduction in costs is likely to enhance emerging markets' ability to attract progressively more private investment to support their energy transition.

Exhibit 19

Onshore Wind and Utility-Scale Solar Photovoltaics Are Already the Cheapest Forms of Electricity Generation…

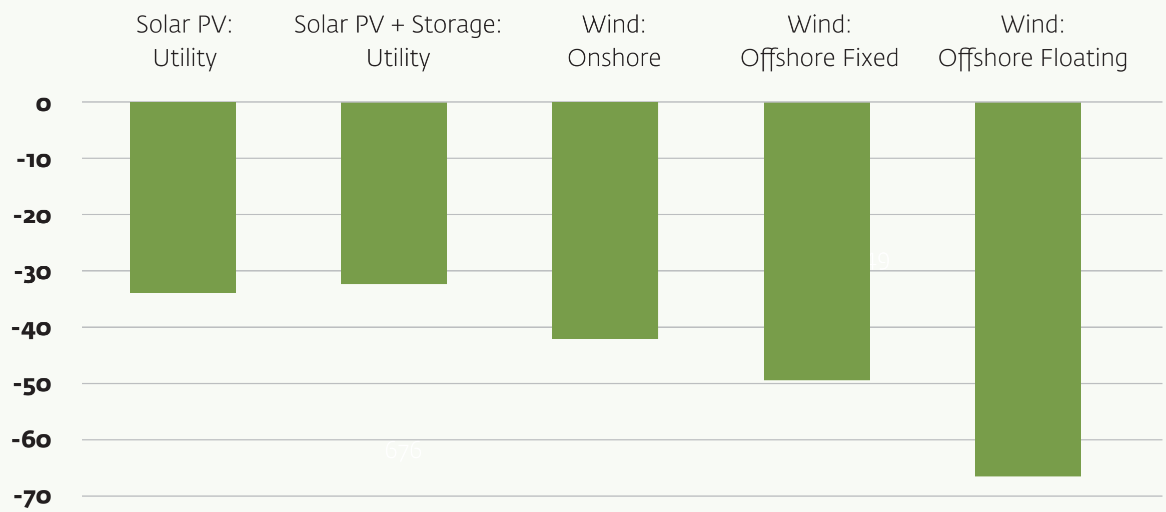


Source: Lazard

Note: This Exhibit shows the unsubsidized levelized cost of energy (LCOE) per technology in 2024, using mid-points from US data ranges per technology provided by Lazard (2024). LCOE is a measure of the average net present cost of electricity generation for a generator over its lifetime, and it is generally used to compare the cost of electricity generation across different technologies in a consistent way. PV refers to photovoltaic.

Exhibit 20

…and Their Costs Are Expected to Fall Further Over Coming Decades



Source: DNV

Note: This Exhibit shows the expected evolution (in percentage change by 2050 compared to 2023) of the global unsubsidized levelized cost of energy (LCOE) per technology, according to DNV (2024). LCOE is a measure of the average net present cost of electricity generation for a generator over its lifetime, and it is generally used to compare the cost of electricity generation across different technologies in a consistent way.

New Collective Quantified Goal

At the COP29 climate summit in November 2024, developed-market governments agreed on a new target for climate finance, known as a New Collective Quantified Goal (NCQG) and committed to mobilize at least $300 billion per year for emerging markets by 2035, three times more than the previous target. If achieved, the available resources would cover around one-quarter of the incremental capital expenditure required for clean energy investments in emerging markets to reach net zero emissions by 2050, based on the gap between 2024 investments and the required annual capital expenditure.

Around two-thirds of the NCQGs are expected to be met by multilateral institutions as they also committed during COP29 to mobilize $185 billion annually (including $65 billion from the private sector) for emerging markets by 2030. This target is particularly ambitious as it is 2.4 times higher than the overall MDB contribution to climate finance for emerging markets recorded in 2022 and is the equivalent of over 80 percent of multilaterals' $145 billion of global GSSS bond issuance in 2024.[39]

Since 2018, MDBs have increased issuance of GSSS bonds eightfold overall, and by nine times when focusing specifically on those institutions that primarily invest in emerging markets.

Annex B

Methodological Annex

GSSS Bond Database

The analysis in this report uses data consolidated from Bloomberg, the Climate Bonds Initiative, and Environmental Finance, following the bond definitions outlined above. The study complements data from these primary sources with additional data from a suite of other secondary sources, including press releases, articles, and stock market databases.

According to Bloomberg's methodology, bonds are associated with the issuer's country of risk, which comprises four factors: management location, the security's country of primary listing, the country of revenue, and the issuer's reporting currency. Categorizing a country as an emerging market aligns with criteria used by the Amundi Planet Emerging Green One (EGO) fund. This list is made up of IFC members, including countries eligible to receive International Development Association (IDA) resources and official development assistance, as defined by the Organization for Economic Cooperation and Development (OECD)'s Development Assistance Committee. Although Russia is not included in the fund's investment universe, it is included in this dataset. Bonds issued in China that do not meet international norms or standards as defined by the Climate Bonds Initiative are excluded from the dataset. The analysis also includes eligible bonds, as defined above, issued by supranational entities. Importantly, it only includes bonds with a maturity of over one year to better capture bonds issued to fund medium- to-long-term projects.

This report incorporates revised 2023 GSSS bond issuance data in both emerging and developed markets after the publication of last year's report (May 2024).

Finally, there is only a brief mention of "transition bonds" in the report. While the study does take them into account, their impact is relatively small scale with a contribution to overall GSSS issuance of less than 2 percent of global GSSS bond issuance in 2024 (up from 0.3 percent in 2023). Furthermore, this instrument is non-existent in emerging markets, which are the focus of this report, as their use remains concentrated in developed markets, particularly Japan.

Methodology for Estimating the Green Premium or Greenium

Following Ben Slimane, Da Fonseca, & Mahtani,[40] Amundi used a bottom-up approach that focuses on the intra-curve green premium, aiming to assess the difference arising from the green bond format.

Amundi collected weekly[41] data (modified duration, spreads) from April 2019 to December 2024 for the green bond constituents of the MSCI Global Green Bond Index and for their equivalent conventional bonds from the same issuer from the Bloomberg Global Aggregate Bond Index.[42] The spread of the green bond is compared to the spread of a theoretically interpolated conventional bond of the same modified duration. The green premium is therefore the difference in spread between the green bond and a comparable bond from the same issuer, currency, seniority, and modified duration.

Endnotes

1 For explanations of the individual categories of GSSS bonds, see Box 1 in the next section.
2 See Box 1 for definitions. The study includes other similar instruments issued on a smaller scale, like transition bonds and hybrid instruments that mix features from a few GSSS bonds (e.g., green & sustainability-linked or sustainability & sustainability-linked bonds) under the GSSS acronym.
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