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Global Evidence and LAC Perspectives

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Infrastructure and Energy Sector

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Executive Summary

This technical note examines the presence and magnitude of sovereign greeniums—the yield discount that green bonds command relative to conventional bonds—with a focus on Latin American and Caribbean (LAC) markets. Using panel regression analysis of bond pricing data, this note finds that LAC sovereign green bonds trade at an average discount of 2.2 basis points compared to similar conventional bonds, which is modest but statistically significant. This greenium is smaller than the 6.3 basis points observed in advanced economies, reflecting differences in market depth, investor base composition, and institutional frameworks. The findings suggest that while LAC sovereigns can achieve financing benefits from green bond issuance, success depends critically on credible frameworks, external verification, and programmatic issuance strategies.

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Introduction

Adapting to the consequences of climate change and minimizing damage from climate-related natural disasters usually necessitates an increase in government spending, among other things, which must be accommodated within a country's overall budgetary structure. Financial innovation can then play a crucial role in financing these interventions and the development of green finance has been one of the most important financial breakthroughs in the domain of sustainable finance during the last 15 years.

Green bonds are often structured similarly to traditional "plain vanilla" bonds, with the distinction that the bond contains a "use of proceeds" clause stating that the funds would be utilized for green investments. The financial industry is becoming increasingly important in accelerating the transition to sustainability and carbon neutrality as these innovative finance instruments allow policymakers to tap wider capital markets for the financing of Sustainable Development Goal–related projects.

While there are several potential benefits from tapping sovereign climate bond financing, a central pecuniary benefit for green bond issuers has been that these bonds could exhibit a positive green premium (*greenium*), that is, a lower yield relative to a similar conventional bond. In other words, if a green bond is issued at a lower yield than a non-green bond of the same issuer with similar characteristics (currency, maturity, etc.), the issuer realizes a greenium. This concept has drawn significant attention as governments explore green bonds to fund climate and sustainability initiatives. A positive greenium implies investors accept a lower return (higher price) due to the bond's green label, potentially reflecting factors like high demand from environmental, social, and governance (ESG) focused investors or perceived reputational benefits. Conversely, in theory, one might expect no pricing difference since green bonds carry the same credit risk and rank pari passu with conventional bonds, or even a negative greenium given that the issuance amount and liquidity are smaller than conventional bonds. The existence of a greenium is thus an important empirical question with policy implications: a persistent greenium can lower sovereign financing costs for green projects and signal strong investor appetite for sustainable debt, but it also raises questions about market efficiency and the balance of supply and demand for green assets.

This technical note analyzes the presence and magnitude of the sovereign greenium, with a special focus on Latin American and Caribbean (LAC) sovereign issuers. We review recent empirical literature on sovereign green bond pricing globally (including advanced and emerging markets) and summarize findings from studies that employ methods such as propensity score matching, panel regressions, and event studies. We then present stylized facts on LAC sovereign green bond issuance (which countries have issued, in what volumes, currencies, maturities, etc., and how investors have responded). Next, we compare greenium estimates in LAC versus developed markets, highlighting differences in magnitude and discussing potential explanations (e.g., differences in investor base composition, institutional quality, or ESG disclosure standards).

Literature Review

Methodologies

Academic and industry studies have proliferated to empirically estimate the greenium. The fundamental challenge is isolating the yield difference attributable to the "green" label from other bond characteristics

(credit quality, maturity, liquidity, etc.). In the literature and market research, there are two common approaches to estimating the greenium. One approach is the matching or "twin" bond method (e.g., Larcker and Watts, 2020) which often relies on matching each green bond with an otherwise identical conventional bond by the same issuer. Other studies have employed cross-sectional and panel regression analysis (e.g., Hachenberg and Schiereck, 2018), where bond yield spreads or issuance yields are regressed on a green bond indicator along with controls for maturity, credit rating, liquidity, and other yield determinants. Some recent studies refine this by fitting yield curves (e.g., Fandella and Cociancich, 2024, used a Nelson–Siegel–Svensson yield curve model). A few papers use event studies (e.g., stock price reactions to green bond announcements) to gauge whether issuing a green bond confers value, an indirect way to infer if investors view the financing as favorable. While outside the scope of bond yield itself, such studies (e.g., Flammer, 2021; Tang and Zhang, 2020) generally find positive stock market reactions, consistent with a perceived benefit to issuing green debt. Additionally, researchers have started examining related instruments like green loans and sustainability-linked bonds for analogous "sustainability premiums". These often use similar yield-spread comparisons or matching methods.

Greenium in Corporate Bond Markets

Corporate bonds (issued by private companies) were among the first to carry the green label and constitute a large portion of the green bond market[4]. They span sectors from energy and utilities to financials. A number of studies do find a modest but significant greenium for corporate bonds in certain markets or subsamples. For example, Gianfrate and Peri (2019) examined 121 green bonds and found that corporate green bonds in their European sample had yields 20–23 basis points (bps) lower than comparable non-green bonds (for non-corporate issuers such as supranationals they found around 14–17 bps lower). Zerbib (2019) similarly found using a global sample that green bonds traded at slightly higher prices (about a few bps yield difference on average) than synthetic conventional equivalents, and he noted this greenium tended to be larger for certain subsets such as green bonds issued by financial institutions and those with lower credit ratings. Consistent with these findings, MacAskill et. al. (2021) conducted a meta-review of studies up to 2019 and reported average greeniums on the order of 1–9 bps.

On the other hand, several studies find little to no greenium for corporate bonds, or only conditional effects. Flammer (2021), in a widely cited study of global corporate green bonds from 2013–2018, found no significant yield difference between green and non-green bonds on average and concluded that the main benefit of issuing corporate green bonds is in signaling a firm's environmental commitment (as evidenced by positive stock reactions and improved environmental performance post-issuance) rather than lowering the cost of debt. Similarly, Hachenberg and Schiereck (2018) report a negligible greenium (around 1 bp) for corporate bonds, implying that green bonds were essentially priced the same as conventional bonds in their sample.

Finally, there is some evidence suggesting that the greenium for corporates appears only under certain conditions. Bachelet et al. (2019) found that any greenium was concentrated in bonds with external certification or verification (and in bonds issued by public sector entities), whereas uncertified corporate green bonds showed no significant premium. Kapraun et al. (2021) also found the greenium was not universal: they identified a significant greenium only for large, euro-denominated corporate bonds, whereas smaller corporate issues did not have a clear pricing benefit. This suggests market depth and

[4] As documented subsequently, this is largely different in LAC.

investor base (the euro green bond market, for instance, has many dedicated ESG investors) can affect outcomes.

Greenium in Municipal Bond Markets

The municipal bond market (especially in the United States) has been another area of analysis. Municipal bonds are issued by local governments, cities, states, and related entities, often tax-exempt, and finance infrastructure (which may include green projects like water, transportation, renewable energy).

Studies of U.S. municipal green bonds have yielded mixed evidence, with a slight trend toward a small greenium in recent years. Ehlers and Packer (2017) show that some inaugural green bonds (e.g., those issued around 2014–2016) exhibited a greenium of around 18 bps. Baker et al. (2022) conducted a comprehensive analysis of nearly 4000 U.S. municipal bonds issued 2013–2018 and found that, in the secondary market, green municipal bonds traded at yields about 5–9 bps lower than otherwise similar conventional municipal bonds. Partridge and Medda (2020) studied municipal green bond performance over time and reported an interesting pattern: no significant greenium at issuance (primary market), but a small greenium in the secondary market.

On the other hand, Karpf and Mandel (2018) find that initially the "green" label in U.S. municipal bonds was actually associated with an initial penalty for issuers: green bonds exhibited a negative greenium of about 8 bps at issuance but reverted in later years. Larcker and Watts (2020) show that only a minority of municipal green bonds in their sample showed a statistically significant yield advantage, and on average the pricing was almost the same. They attributed this to careful matching, suggesting that many earlier findings of greenium could be explained by incomplete matching or by green bonds being associated with slightly different issuers/characteristics.

One caveat is that the credit profile and tax considerations tend to dominate the pricing of municipal bonds as they often appeal for their tax-exempt status and local credit quality above all, making the green aspect a secondary factor. As a result, many municipal green bonds trade in line with regular bonds (no greenium), especially if the issuer is well-known and frequently in the market (where there's ample demand for all its bonds).

Greenium in Sovereign Bond Markets

As sovereign green bond issuance is a relatively new phenomenon, only recent analyses have shifted the focus to sovereign issuers. Doronzo et. al. (2021) describe the market evolution, and discuss costs and benefits of sovereign green bond issuance. They mention that the issuance of sovereign green bonds can encourage other issuers to enter the green bond market as it provides a market benchmark. They also argue that green bonds tend to be issued with a long maturity, so the refinancing risk is lower, and the benefit could be larger for emerging or less-developed countries that have less stable demand for extra-long maturities.

Ando et al. (2022, 2024) assemble a comprehensive database of sovereign green bonds and estimate that, on average, advanced economy sovereign green bonds have about a 4 bps yield discount relative to similar conventional bonds, while the greenium for emerging market sovereigns (EMs) is larger at roughly 11 bps. This suggests that investors are indeed willing to pay a premium for sovereign green bonds, and that this effect may be more pronounced in EMs. Interestingly, Ando et al. (2022, 2024) also find the greenium has grown over time, consistent with a maturing market where investor demand for green assets has

intensified. Another insight from the country-level results is that while most countries feature a greenium, a few did not, implying that a green label alone is not always sufficient to guarantee a pricing benefit, and country-specific factors (like investor base or credibility of the green spending plans) likely matter

Grzegorczyk and Wolff (2022) inspected sovereign green bonds issued in the European Union and, using a matching method, they estimate that the average greenium ranges from 3 to 16 bps. D'Amico et al. (2023) focus on the case of Germany and exploit the twin structure of German sovereign green bonds. They use a dynamic term-structure model to remove market risk factors and estimate a frictionless (e.g., accounting for liquidity and safety premiums between green and conventional bonds) sovereign risk-free greenium, their greenium estimate is around 4 bps. MacAskill et al. (2021) in fact highlighted that greeniums are most evident for government-issued, investment-grade bonds that adhere to defined green bond standards and reporting.

Cioli et al. (2024) explicitly compare sovereign versus corporate greeniums in a global. They confirm that a greenium exists on average but report that corporate green bonds exhibit a higher greenium than sovereign green bonds. This result is especially pronounced in developed markets, where greenium was evident for both corporates and sovereigns but larger for corporates. In emerging markets, by contrast, they find that greenium is not universally present or significant.

Data Sources

Green bond databases differ fundamentally in their inclusion criteria and verification rigor (ICMA, 2017). Bloomberg tags the "Green Bond" label when an issuer self-labels its bond as green or declares its compliance with the GBPs on the use of proceeds, it does not require external reviews, and excludes certain uses (e.g., coal/nuclear). The Green Bond Database by Environmental Finance employs the broadest definition, listing virtually all bonds that are simply self-labeled as "Green" by the issuer. Dealogic includes bonds as long as they are self-labeled as Green/Social/Sustainable and attempts to classify use of proceeds into specific green categories (such as renewable energy, energy efficiency, and clean transportation) broadly aligned with GBP categories, though external review and detailed reporting are not requirements. The Climate Bonds Initiative (CBI) maintains a fundamentally different and more stringent approach. CBI lists only bonds that are broadly aligned with both the Green Bond Principles and CBI's own taxonomy, the Climate Bonds Standard (CBS), which provides a science-based framework for determining eligible use of proceeds grounded in climate science and Paris Agreement targets. CBI database is the most exclusive, containing only issuances that have undergone full, independent third-party certification to confirm alignment with the science-based CBSs. The London Stock Exchange Group (LSEG), formerly Eikon, is another database that provides green bond data, which includes bonds that self-label or reference GBPs, subjects them to analyst verification of 100% green use of proceeds, and applies a CBI-certified flag to the subset meeting the CBS.

To clarify the practical implications of these differences: (i) Bloomberg, Environmental Finance and Dealogic rely primarily on issuer self-labeling, meaning any issuer can tag a bond as "green" by declaring its intent to use proceeds for environmentally-oriented projects consistent with GBP categories; this produces a broad universe but may include bonds with varying degrees of environmental rigor, as neither database requires external verification or detailed ongoing reporting. (ii) The CBI database is the most restrictive, containing only bonds that CBI has independently screened and determined to be broadly

aligned with both the GBPs and the CBSs. (iii) LSEG (Eikon) uses a high-rigor definition aligned with the CBSs. For sovereign green bonds specifically, the difference narrows considerably because nearly all sovereign issuances obtain second-party opinions and align with both GBPs and stricter environmental standards, yielding comparable coverage across these platforms.

The analysis in this note relies on LSEG as it is consistent with the CBSs and has been used extensively in the literature of the sovereign green bond (for example, Doronzo, Siracusa, and Antonelli 2021).

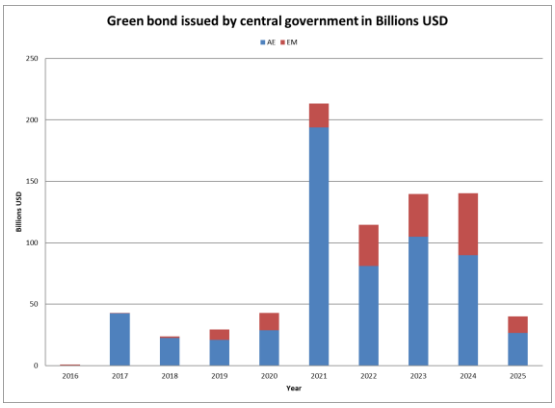
Sovereign Green Bond Issuance

The literature often cites the bond issued by the European Investment Bank in 2007 as the first green bond (Cortellini and Panetta 2021; OECD 2021). The World Bank issued the first labeled green bond in 2008. Since 2007, international organizations, municipalities, and private sectors have increased the issuance. Until 2015, although the annual total issuance of green bonds had reached $40 billion, no issuance by central governments was recorded. In 2016, building on the momentum of the Paris Agreement adopted in 2015, Poland became the first issuer of sovereign green bonds.

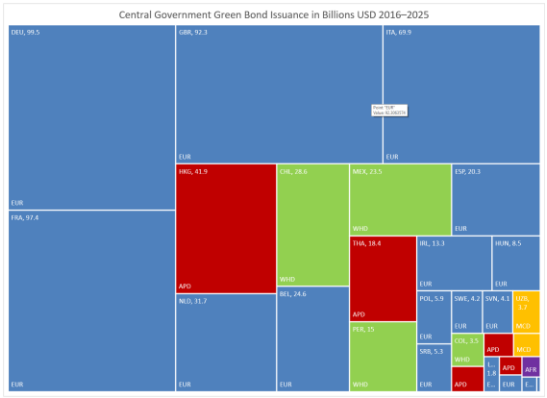
A wide range of sovereigns has issued green bonds since 2016. Figure 1, panel 2, shows the green bond in LSEG issued by the central government. The list of green bonds used for the figure is provided in Annex 1. Poland was the first country to issue a sovereign green bond in 2016, followed by France in 2017, and the issuance recorded nearly $141 billion in 2024 (peaked at $213 billion in 2021). Most issuance was by advanced economies until July 2025 (Figure 1, panel 1). Geographically, the cumulative issuance from 2016 to 2025 is mostly concentrated in European countries ($481 billion), followed by Western hemisphere countries ($70 billion), Asian Pacific countries ($66 billion), the Middle East and Central Asian countries ($6 billion), and African countries ($1.2 billion). Although the holder's information is not available from LSEG, Doronzo et. al. (2021) suggest that real money investors, such as pension funds, sovereign funds, and insurance companies, invest their money with a long-term perspective and a buy-and-hold strategy in Europe.

Figure 1. Green bonds issued by central government in billions of US dollars.

Panel 1. Across years

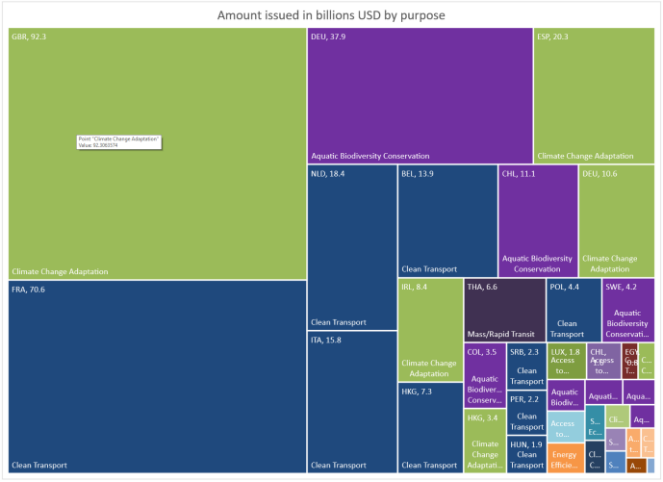


Panel 2. Cumulative from 2016-2025



Source: LSEG and author's calculations.

Figure 2. Green bond issued amount by purpose.



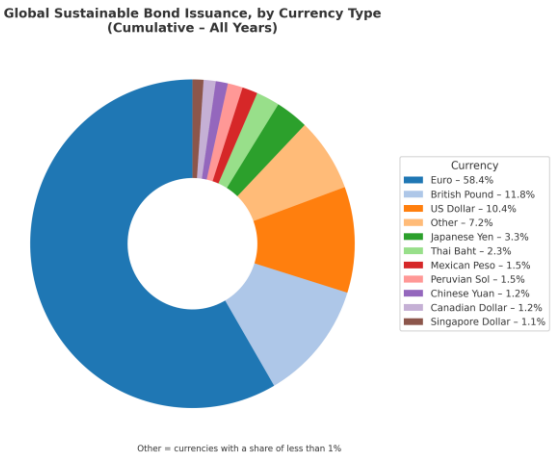
Source: LSEG and author's calculations.

The main purpose of issuing green bonds in the sample is clean transport (Figure 2). The classification of purpose is not necessarily mutually exclusive, but the available data in LSEG shows that clean transport is the main purpose of green bonds, with total issuance at $138 billion. The share of climate change adaptation and aquatic biodiversity conservation is also significant, with total issuances of $137 and $61 billion respectively. One caveat is that the purpose of green bonds is classified by LSEG and may not reflect all purposes of each bond issued.

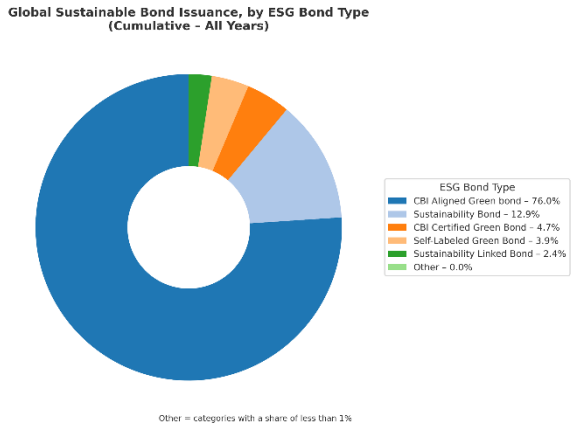
The currency composition and instrument typology of sustainable sovereign bond issuance remain highly concentrated (Figure 3). Euro-denominated instruments account for nearly 60 percent of global issuance, followed by the British pound and U.S. dollar at approximately 12 and 10 percent, respectively (Figure 3, Panel 1). This skew reflects the early leadership of European sovereigns in developing green bond markets and the dominance of euro-area institutions in setting sustainability standards. From an instrument perspective, certified green bonds represent the bulk of activity, though a growing share is attributed to broader sustainable development-linked frameworks (Figure 3, Panel 2). The fragmentation across ESG bond types underscores the need for greater harmonization in labeling and verification practices, while the currency concentration may expose the market to liquidity risks or mispricing outside core currency zones. Broader participation and standardization could support deeper, more resilient sustainable sovereign debt markets.

Figure 3. Green bonds issued by central government in billions of US dollars.

Panel 1. Across years



Panel 2. Cumulative from 2016-2025



Source: LSEG and author's calculations.

Evolution of Sovereign Green Bonds in LAC

Green bond issuance by sovereigns in Latin America and the Caribbean is a recent but rapidly evolving development. Chile's entry into the market in 2019 marked a turning point, and several LAC nations have since issued green or other sustainable bonds. This subsection summarizes key facts: which LAC countries have issued sovereign green bonds (or similar thematic bonds such as social, sustainable, or sustainability-linked bonds), in what volumes and currencies, with what maturities, and how investors have responded in terms of demand.

Chile. Chile's inaugural sovereign green bond issuance in June 2019 marked a milestone in sustainable finance, positioning the country as the first in Latin America—and globally among the first—to adopt a dual-tranche issuance structure in both US dollars and euros. The operation was notable not only for its innovation and scale but also for the exceptional market reception it garnered. The dollar-denominated tranche achieved a record-low yield of 3.53 percent (the lowest yield ever for a 30-year USD bond in Chile's history) and was oversubscribed 12.8 times, while the euro tranche priced at an unprecedented 0.58 percent yield with 4.7 times oversubscription. These outcomes underscore the significant investor appetite for credible green assets, especially in a context of growing climate risks and volatile financial conditions. Chile's success was anchored in a robust governance framework: a Green Bond Framework independently validated by Vigeo Eiris, project certification from the Climate Bonds Initiative, and an inter-ministerial approach to project selection. Notably, the issuances contributed to Chile's broader strategic goals by diversifying its investor base toward institutions with green mandates and extending its yield curve through the establishment of new benchmarks. The case of Chile illustrates how strong institutional capacity, transparency, and multilateral support—such as that provided by the IDB—can enable emerging market economies to access international markets on favorable terms while advancing climate objectives. It also highlights the potential role for sovereign green bonds in public debt management strategies that align fiscal needs with environmental goals.

This success paved the way for Chile to return to market repeatedly: in 2020, Chile issued additional green bonds and also began issuing sustainable bonds in 2021. By mid-2025, Chile had issued a cumulative USD 28 billion in sovereign thematic bonds since 2019, of which $7.6 billion were green and $20.4 billion sustainable bonds, reflecting an explicit strategy to integrate climate and sustainability objectives into debt management.

Mexico. Mexico became the world's first sovereign to issue a Sustainable Development Goals (SDG) bond in September 2020. This USD 880 million 7-year SDG-linked sovereign bond was tied to a broad SDG spending framework (covering eligible green and social expenditures). The issue was nearly 6.5× oversubscribed (247 investors placed orders), pricing at a yield of 1.603% (Euro Mid-swaps +75 bps)–a very favorable outcome for a BBB-rated sovereign at the time: International Financing Review (IFR) primary market reported on the day of issuance that Mexico priced the bond at a spread of 83 bps over mid-swaps. Mexico's SDG bond attracted a diverse investor base, particularly in Europe, and established a "SDG Sovereign Bond Framework" with support from the UNDP. Mexico has since conducted additional sustainable-bond issuances, including Samurai bond in yen and peso-denominated sustainable bonds for local market development. To date, Mexico's sovereign ESG-bond cumulative issuance remains at about USD 23.5 billion.

Colombia. Colombia issued its first sovereign green bond in September 2021, becoming the first LAC country to issue a local-currency sovereign green bond. The Colombian government raised approximately USD 3 billion through this 10-year peso-denominated green bond, issued via the regular domestic auction system. Demand was robust: the auction was 4.3 times covered. The bond ("TES Verde") was issued at a yield of 7.18 percent, slightly inside the yield of a conventional TES of similar maturity, suggesting a small greenium in the local curve.

Peru. Peru's inaugural sustainable bond issuance in 2021 marked a landmark step in the country's effort to integrate environmental priorities into its sovereign debt strategy, both to finance green public investment and to expand its presence in the ESG segment of global capital markets. As part of a broader USD 4 billion transaction conducted in October 2021, Peru issued a USD 1 billion sustainable bond with a 15-year tenor, alongside a USD 2.25 billion 50-year conventional bond. The sustainable bond was priced with a coupon of 3 percent and a yield of 3.005 percent, reflecting solid investor demand with a peak order book exceeding USD 3.25 billion for the sustainable tranche. The transaction marked Peru's debut in the sustainable bond space and was conducted under its newly launched Sustainable Bond Framework, which aligns with ICMA's Green and Social Bond Principles. According to the 2021 Allocation and Impact Report, 33 percent of the proceeds from the sustainable bond were allocated to green-eligible expenditures, amounting to approximately USD 330 million. Within this green allocation, the majority (about 58 percent) was directed toward Clean Transportation. Another 38 percent was allocated to projects under Sustainable Management of Natural Resources and Land Use, especially for flood risk mitigation and hydrometeorological defense infrastructure, such as riverbank protections and overflow control projects, reflecting Peru's acute vulnerability to climate-related disasters. Peru has issued additional sustainable bonds in 2023, amounting to a cumulative total of USD 15 billion.

Uruguay. Uruguay broke new ground in 2022 by issuing the world's first sovereign Sustainability-Linked Bond (SLB) featuring both climate mitigation and nature-based adaptation performance targets. The USD 2 billion dual-tranche deal links coupon payments to the country's progress on reducing greenhouse gas emissions intensity and preserving native forest area. If Uruguay fails to meet either of these targets by

2025 and 2030 respectively, a 25-bps step-up in the coupon is triggered. Unlike traditional green bonds, SLBs do not earmark proceeds for specific environmental uses; instead, they tie financial conditions directly to performance outcomes. The issuance attracted strong investor demand, with order books nearly five times oversubscribed, and priced modestly inside initial guidance (the 2034 tranche priced at 5.75 percent, approximately 170 bps over USTs). While officials suggested the bond priced 15–20 bps tighter than a comparable conventional issuance, SLBs have yet to consistently demonstrate a greenium in the traditional sense, as the step-up mechanism may be viewed by investors as a compensatory upside rather than a pricing concession. Nonetheless, Uruguay's deal was widely praised as a credible and transparent model for outcome-linked sovereign finance, offering a path for other countries seeking to align borrowing with measurable climate commitments.

Brazil. Brazil advanced its ESG sovereign strategy with back-to-back issuances of sustainable bonds in 2023 and 2024, signaling a sustained commitment to mobilizing thematic finance for its climate and development agenda. In November 2023, Brazil issued its inaugural USD 2 billion, 7-year ESG sovereign bond under its Sustainable Finance Framework, with a 6.5 percent coupon and use-of-proceeds spanning both green and social categories. The issuance attracted strong investor interest, with the order book nearly three times oversubscribed and about 75 percent allocated to U.S. and European investors. Notably, the bond priced at a spread approximately 15 basis points tighter than a comparable conventional bond issued earlier in 2023, and only slightly wider than Mexico's curve, despite Brazil holding a sub-investment grade rating. While Brazilian officials pointed to this as evidence of a sovereign greenium, disentangling pricing effects in EM sovereigns remains difficult due to multiple confounding factors and relative scarcity of labeled comparables. Building on this momentum, Brazil returned to the market in June 2024 with a second ESG-labeled issuance: a USD 2 billion, 8-year bond that priced at a 3.75 percent coupon. This euro-denominated transaction marked Brazil's first ESG issuance in euros and broadened the investor base further, with nearly 50 percent of allocations going to European ESG-dedicated funds. According to the Treasury, the spread was around 120 bps over the mid-swap curve, which officials again claimed reflected favorable pricing relative to Brazil's non-ESG benchmarks. Both issuances fall under Brazil's Sustainable Finance Framework, which aligns with international standards (such as ICMA's Green Bond Principles and Social Bond Principles), and includes eligible expenditures on clean transport, renewable energy, biodiversity, and social inclusion.

Dominican Republic. In July 2024, the Dominican Republic became the first country in the Caribbean to issue a sovereign green bond in international markets, placing USD 1.5 billion in 12-year notes due 2036 under its newly established Green Bond Framework. The bond, which priced at a yield of approximately 6.70 percent, was reportedly met with strong investor interest—particularly from U.S. and European ESG-focused asset managers—and formed part of a broader external financing strategy for the year. Proceeds are earmarked for renewable energy, climate adaptation infrastructure, and environmental protection, in line with the country's Nationally Determined Contributions (NDCs). While the Dominican Republic has previously issued bonds with credit enhancements from development institutions, this green bond was issued without such guarantees, underscoring growing investor confidence in its sustainability agenda.

Honduras. In November 2024, Honduras tapped international debt markets with its first-ever sovereign sustainable bond, issuing USD 700 million in 10-year notes at an 8.625 percent coupon, under its newly developed Green, Social, and Sustainable Bond Framework. The transaction marked the sovereign's first issuance in four years and was more than four times oversubscribed, signaling robust investor demand despite Honduras's non-investment grade status. Under the framework, around 10 percent of net

proceeds were allocated to green-eligible expenditures (such as sustainable resource management and climate adaptation) while the remaining funded social initiatives including health, education, and housing. While investors did not appear to pay a conventional greenium at issuance (there is no reference point in this case), the deal was praised as a credible step in expanding ESG sovereign debt access to smaller, sub-investment-grade economies.

Guatemala. In August 2024, Guatemala entered the sovereign sustainable debt market with a dual-tranche deal totaling USD 1.4 billion, comprising USD 800 million in sustainable notes due 2037 (6.55 percent coupon) and USD 600 million in general-purpose notes due 2031 (6.05 percent coupon). The sustainable tranche was issued under Guatemala's Sustainable Financing Framework, aligned with ICMA Green, Social, and Sustainability Bond Principles, and earmarks proceeds for both eligible green and social expenditures. The issuance attracted robust investor interest, being reported as 3–4 times oversubscribed by market sources. Guatemala's sovereign issuance underlines a fast-developing ESG framework, reinforced by government transparency commitments: the Framework includes detailed governance components such as project selection, management of proceeds, annual allocation and impact reporting, and second-party external reviews. While the overall amount was modest relative to regional benchmarks, the sovereign debut marks Guatemala as a late but meaningful entrant into sustainable finance among Central American frontier markets.

Argentina. In November 2023, Argentina marked the official approval of a Sovereign Sustainable Financing Framework, aligned with ICMA's Green and Social Bond Principles and related international standards. The Framework permits issuance—both domestically and abroad—of green, social, or sustainability bonds or loans, with proceeds earmarked for environmental and social projects such as water resource management, biodiversity conservation, energy efficiency, renewable energy, sustainable mobility, and vulnerable group empowerment Argentina. Argentina's first-ever sovereign sustainability bond raised around USD 121 million in 2022, funding two aqueduct projects and education technology under its framework, demonstrating demand despite overall issuance scale remaining modest.

Stylized Facts

- Currency and Market: Most LAC sovereign green bonds to date have been issued in hard currency (EUR or USD) to tap global investor pools. Chile, Mexico, Brazil, and Dominican Republic all issued in international markets. The exception is Colombia's local-currency green bonds, which are pioneering in building a domestic green yield curve (aided by Colombia's relatively developed local bond market and regulatory support). As of 2025, local-currency sovereign green issuance in LAC remains rare.
- Maturities: LAC sovereign green bonds have spanned medium to long maturities. Chile's green issues included a 30-year, leveraging investor willingness to lend long-term for green projects. Others like Mexico (7-year) and Dominican Republic (12-year) were in mid-range tenors. Many green bonds are longer-dated on average, as green projects often have long horizons and issuers seek to lock in low rates.
- Investor Base: In nearly all cases, demand was dominated by international investors, particularly those from Europe and North America with dedicated ESG mandates. For instance, Chile's 2019 green bonds drew a majority of orders from Europe, and Peru's 2021 social bond saw 80 percent European buyer participation. Brazil's 2023 green bond had 75 percent of allocations to U.S. and

European investors. This underscores that LAC local investor bases, while growing in ESG awareness, are relatively smaller, so attracting foreign capital is key. The presence of development bank support (IDB, World Bank) through technical assistance or guarantees has helped build credibility and broaden investor reach for debut issuers. An interesting consequence of this investor base is the oversubscription levels which signal scarcity of such assets and contribute directly to pricing inside the conventional curve.

- Greenium: The issuance outcomes strongly suggest that LAC sovereigns have obtained greeniums in many cases. While it's hard to quantify precisely without a synthetic comparator for each, secondary market behavior provides clues: for example, Chile's green bonds have consistently traded at lower yields than its regular government bonds after issuance.
- Market Development Role: LAC sovereign green bonds have often been first-of-their-kind in their subregions (Chile in Latin America, Dominican Republic in Caribbean/Central America, etc.), and governments have used them strategically to promote sustainable finance domestically. For example, Chile's program catalyzed corporate and sub-sovereign green issuance in Chile (a crowding-in effect), and Colombia's sovereign green bonds coincided with several Colombian companies issuing green bonds, potentially leveraging the sovereign benchmark. This echoes the benchmark role of sovereign green bonds highlighted in the literature. Indeed, one IDB study (Cunha et al., 2023) finds that establishing a sovereign "ESG yield curve" in LAC tends to encourage more corporate ESG bond issuance in the following months, as it provides price reference and investor confidence.

Estimating the Sovereign Greenium in LAC

Some countries (e.g., Germany, Denmark) have issued twin bonds to provide a benchmark of the sovereign greenium. Twin bonds consist of a conventional bond and a green bond that share the same maturity date and coupon. The main difference is that the use of proceeds from the green bond is limited to green projects. Since twin bonds are not available in other countries, greenium needs to be estimated with a different approach. In this exercise we estimate greenium using panel regression analysis, comparing the differences in the yield of green and conventional bonds. This section presents summary statistics of green (or similar thematic bonds such as social, sustainable, or sustainability-linked bonds) vs. conventional bonds, regression specification and empirical results.

Summary statistics. The sample includes 143 green bonds issued by 42 countries. Note that although there are 305 sovereign green bonds in the raw sample, only 143 green bonds are included in the estimation by considering countries that have issued a conventional bond denominated in the same currency as that of the green bond.[5] That is, if a country has issued a USD-denominated green bond but does not have an outstanding USD-denominated conventional bond, the green bond is dropped from the sample. Out of the 143 green bonds, the minimum maturity is 2 years, the maximum is 50 years.[6] The

[5] This criterion makes sure that the sample is enough to compare the green and non-green bonds in each country by eliminating the singleton green bonds. For instance, comparison between a green bond in USD vs. a conventional bond in JPY would be subjected to a large omitted variable bias. Also, including a currency dummy would not solve this issue as some countries might only issue green bond in one currency and conventional bonds in a different one.
[6] The average maturity of the 143 green bonds is 13 years.

conventional bond counterparts for each country in the sample are selected to cover the relevant years. The minimum maturity for conventional bonds is set as the minimum of the green bond minus 7 years, and the maximum maturity is set as the maximum of the green bond plus 7 years. Tables A1.1 and A1.2 show the total number of countries and bonds considered when constructing the sample. Table 1 shows the green bonds considered in LAC. The final sample comprises 2433 conventional bonds and 143 green bonds issued by 42 countries.

Table 1. LAC green bonds in the sample.

Issuer Country	Issue Date	Maturity Date	Issue Price	Coupon	Issuer Rating	Coupon Currency	ESG Bond Type	Amount Issued (USD)
Chile	6/25/2019	1/25/2050	99.439	3.5	AA-	USD	CBI Certified Green Bond	2318357000
Chile	7/2/2019	7/2/2031	100	0.83	AA-	EUR	CBI Certified Green Bond	2299088449
Chile	1/27/2020	1/27/2032	99.784	2.55	AA-	USD	CBI Certified Green Bond	1500000000
Chile	1/29/2020	1/29/2040	99.142	1.25	AA-	EUR	CBI Certified Green Bond	1492609974
Mexico	9/18/2020	9/18/2027	98.337	1.35	A+	EUR	Sustainability Bond	882145377
Chile	1/22/2021	1/22/2061	99.636	3.1	AA-	USD	CBI Aligned Green bond	2000000000
Chile	1/22/2021	1/22/2051	98.814	1.25	AA-	EUR	Sustainability Bond	1470242295
Chile	4/15/2021	4/15/2053	100	3.5	AA-	USD	Sustainability Bond	1500000000
Mexico	7/12/2021	8/12/2036	99.888	2.25	A+	EUR	Sustainability Bond	1470242295
Peru	11/2/2021	1/15/2034	99.165	3	A	USD	Sustainability Bond	2250000000
Peru	11/2/2021	1/15/2072	96.173	3.6	A	USD	Sustainability Bond	1000000000
Chile	1/31/2022	1/31/2034	99.932	3.5	AA-	USD	Sustainability Bond	1500000000
Chile	1/31/2022	1/31/2027	99.94	2.75	AA-	USD	Sustainability Bond	1500000000
Chile	1/31/2022	1/31/2052	99.05	4	AA-	USD	Sustainability Bond	1000000000
Chile	3/7/2022	3/7/2042	99.92	4.34	AA-	USD	Sustainability Linked Bond	2000000000
Mexico	8/19/2022	5/19/2033	98.123	4.875	A+	USD	Sustainability Bond	2203576000
Mexico	9/8/2022	9/8/2042	100	2.52	A+	JPY	Sustainability Bond	21693444
Mexico	9/8/2022	9/8/2037	100	2.28	A+	JPY	Sustainability Bond	27116805
Uruguay	10/28/2022	10/28/2034	98.523	5.75	A	USD	Sustainability Linked Bond	2199975998
Chile	7/5/2023	7/5/2034	99.212	4.125	AA-	EUR	Sustainability Linked Bond	882145377
Mexico	7/24/2023	5/24/2035	93.77559	8	A+	MXN	Sustainability Bond	1232926646
Mexico	1/25/2024	5/25/2032	100	4.4899	A+	EUR	Sustainability Bond	2352387673
Dominican Republic	7/1/2024	6/1/2036	99.195	6.6	Ba2	USD	CBI Aligned Green bond	750000000
Guatemala	8/6/2024	2/6/2037	100	6.55	BB	USD	Sustainability Bond	800000000
Guatemala	8/6/2024	8/6/2031	100	6.05	BB	USD	Sustainability Bond	600000000
Mexico	8/29/2024	8/28/2034	100	2.27	A+	JPY	Sustainability Bond	56267371
Mexico	8/29/2024	8/26/2044	100	2.93	A+	JPY	Sustainability Bond	31184326
Honduras	11/27/2024	11/27/2034	100	8.625	Ba1	USD	Sustainability Bond	700000000

Table A1.3 shows the average bid-ask spread of green and conventional bonds by country. Table A1.4 shows the summary statistics of yield-to-maturity, spread and maturity of the green and conventional bonds in the sample, separately for advanced economies (AEs), EMDEs (excluding LAC) and LAC economies. Below we document some of the most salient features we observe in our sample:

- **Liquidity.** In 32 out of the 42 countries included in our sample, the average bid-ask spread for green bonds is higher than for conventional bonds. Thus, green bonds are slightly less liquid as expected.
- **Maturity.** The average maturity is similar for green bonds: 13 years for green bonds and 14 years for conventional bonds (Table A1.5).
- **Yield.** The summary statistics are consistent with the presence of greenium: the average yield of green bonds is 62.64 bps lower than conventional bonds in AEs, 254.25 bps lower in EMDEs (excluding LAC) and 11.07 for LAC countries. The regression analysis will test the significance of this greenium.

Baseline methodology. The following panel regression specification is estimated:

$$Y_{ijt} = \alpha_j + \beta \times green\ bond_{ij} + \gamma_1 \times tenor_{ijt} + \gamma_2 \times bid\ ask\ spread_{ijt} + \alpha_j + \alpha_t + e_{ijt}$$

where the dependent variable is the *Z-spread* of bond i in country j at time t, beta is the coefficient on the *green bond dummy variable*. Z-Spread is defined as the number of additional bps to the Treasury yield curve so that the net present value of the bond equals the market price of the bond. Compared to yield to maturity, the Z-Spread uses the entire yield curve in valuation and thus provides a more realistic valuation of the bond.

The baseline control variables include the remaining maturity *Tenor* to control for term premium, *bid-ask spread* to control for liquidity, country fixed effects α_j to control for time invariant country characteristics, and time fixed effects α_t to control for common time-varying movement in yields. We are interested in the estimate of β as it measures the significance of the greenium: the difference in the yield suggested by Z-spread of green versus conventional bonds controlling for maturity and liquidity differences.

Table 2. Greenium estimation.

Dependent = Z spread	*(1) All*	*(2) EUR/USD*	*(3) AEs*	*(4) EMDEs*	*(5) EMDEs (excl. LAC)*	*(6) LAC*
Green	-1.31**	-6.04***	-6.29***	2.68***	0.67	-2.22***
	(0.54)	(0.62)	(0.19)	(0.87)	(1.11)	(0.35)
Remaining Tenor (months)	0.21***	0.36***	0.34***	0.16***	0.15***	0.31***
	(0.01)	(0.00)	(0.00)	(0.01)	(0.01)	(0.00)
Bid-Ask Spread (BPS)	0.54***	0.60***	0.94***	0.24	0.27	-1.30***
	(0.13)	(0.14)	(0.02)	(0.18)	(0.18)	(0.06)
Country FE	Y	Y	Y	Y	Y	Y
Week FE	Y	Y	Y	Y	Y	Y
Currency FE	Y	Y	Y	Y	Y	Y
R^2	0.79	0.79	0.71	0.81	0.81	0.82
Bond-Day	1,503,958	735,153	499,552	1,004,406	933,829	70,577
Bonds	2,575	1,087	746	1,829	1,718	111
Green Bonds	143	89	44	99	71	28
Countries	42	33	13	29	22	7

*Notes: SEs clustered at time level in parentheses. * P < 0.1, ** P < 0.05, *** P < 0.01*

Greenium estimate. The estimated average greenium is 1.31 bps as shown in Column (1) of Table 2. Columns (3) and (4) show that the average greenium in AEs is larger at 6.29 bps compared to 2.68 bps in EMDEs. To ensure that the estimated greenium is not coming from currency risk premia, Column (2) shows the estimate when the sample is comprised of euro- and USD- denominated bonds. The result is robust in terms of statistical significance: the estimated greenium amounts to 6.04 bps. In contrast to the result for

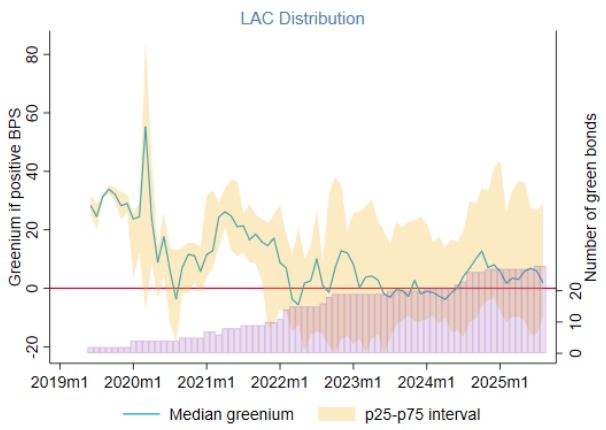
EMDEs, the average greenium in LAC is 2.22 bps as shown in Column (6).[7] There can be various reasons behind the difference, and formal analysis of the determinants with richer data is warranted and left for future research.

Synthetic estimation method. As an alternative method, we estimate the yield of a counterfactual conventional bond that has the same characteristics as a green bond. First, a regression of Z-Spread on tenor, bid-ask spread and weekly fixed effects using conventional bonds is run for each country. Then, the Z-Spread of a counterfactual conventional bond is predicted using the relevant information from the green bond and the coefficients obtained from the regressions.

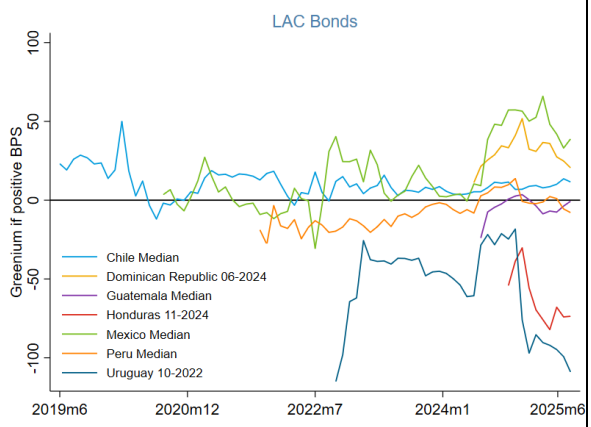
As shown in Figure 4, this approach allows us to track the greenium estimates over time. The median estimated greenium in LAC (Panel 1) is mostly positive and decreases over time despite of a larger dispersion that might be due to more bonds being issued. However, this masks some heterogeneity as revealed in Panel 2. Table 2 shows the list of LAC green bonds in our sample.

Figure 4. Synthetic Greenium estimation.

Panel 1. Greenium and number of green bonds in LAC



Panel 2. Greenium country by country in LAC



Source: LSEG and author's calculations.

Conclusions

This note documents a statistically significant—yet economically modest—sovereign greenium on average, with important cross-country and cross-market heterogeneity. In panel regressions controlling for tenor, liquidity, and fixed effects, we estimate an average discount of about –1 to –6 basis points, with advanced economies around –6 bps and EMDEs closer to –3 bps; LAC sovereigns exhibit a small greenium near –2 bps, consistent with the broader EMDE pattern. A complementary country-level synthetic method

[7] Ando et al (2024) finds that the greenium is larger en EMDEs than in AEs. This difference is driven by our bond sample. Table A1.9 in the Appendix shows that if conducting the same estimation but using only their green bond sample (even for the our same time period), we would recover a larger greenium for EMDEs as in Ando et al (2024).

confirms the sign and highlights a declining median LAC greenium over time alongside widening dispersion, as issuance broadened to newer names and currencies.

Three messages emerge. First, sovereign green bonds tend to price inside conventional curves, especially in deep, euro-area markets and for issues with strong verification/reporting, aligning with recent international evidence. Second, magnitude varies systematically: market depth, investor base composition, verification, issue size, and currency all correlate with stronger premia; where these are weaker—as often in LAC—the greenium is present but modest. Third, heterogeneity within LAC is real: early adopters with robust frameworks and repeated issuance see more persistent benefits, while debut or smaller deals see noisier outcomes.

Policy implications for debt managers are practical. The results support programmatic issuance under credible frameworks, external reviews and post-issuance reporting, and, where feasible, twin-style structures to improve transparency and benchmark formation. For LAC, sequencing matters: anchor hard-currency benchmarks to access global ESG demand, then expand to local-currency lines as domestic investor depth and analytics improve. Building a consistent issuance cadence and data transparency can strengthen order books, enhance secondary-market liquidity, and gradually increase the pricing benefit.

Successful sovereign green bond issuance hinges on transparent alignment with the Green Bond Principles. The foundation is a public Green Bond Framework that: (1) defines Use of Proceeds in line with national climate strategies (e.g., NDCs), setting clear eligibility criteria, exclusion lists (e.g., fossil fuels), and any refinancing look-back period; (2) establishes a robust Process for Project Evaluation and Selection, with clearly defined roles across the debt management office, ministries of finance and environment, and inter-agency working groups, and secures a pre-issuance Second-Party Opinion (SPO) from an independent, reputable reviewer (e.g., Sustainalytics, CICERO) attesting full GBP alignment; (3) details Management of Proceeds, including ring-fencing mechanisms or equivalent ledger-based tracking in the public accounts, assigned responsibilities, internal controls, and time-bound treatment of unallocated balances (typically 24–36 months); and (4) commits to annual Reporting until full allocation, disclosing proceeds allocation by eligible category (distinguishing new financing from refinancing), and publishing decision-useful impact metrics (e.g., CO_2 emissions avoided, MW of renewable capacity installed) using harmonized templates (e.g., ICMA Handbook), with stated baselines, calculation methodologies, and uncertainty ranges—ideally accompanied by external assurance of post-issuance allocation and impact reports. Where applicable, the framework should map eligible expenditures to recognized taxonomies (e.g., EU Taxonomy, CBI Sector Criteria) or voluntary labels (e.g., EU Green Bond Standard), and for programmatic issuance, it must include a clear reopening (tap) policy ensuring that subsequent increases under the same ISIN follow identical eligibility, governance, tracking, and cumulative allocation/impact reporting at the bond level.

References

Ando, S., Fu, C., Roch, F., & Wiriadinata, U. (2022). Sovereign Climate Debt Instruments: An Overview of the Green and Catastrophe Bond Markets. IMF Staff Climate Note 2022/004. (International Monetary Fund, Washington, DC).

Ando, S., Fu, C., Roch, F., & Wiriadinata, U. (2024). How Large is the Sovereign Greenium? *Oxford Bulletin of Economics and Statistics*.

Bachelet, M. J., Becchetti, L., & Manfredonia, S. (2019). The green bonds premium puzzle: The role of issuer characteristics and third-party verification. *Sustainability*.

Baker, M., Bergstresser, D., Serafeim, G., & Wurgler, J. (2022). The pricing and ownership of US green bonds. *Annual Review of Financial Economics*.

Cioli, V., Bianchini, R., Giannozzi, A., & Roggi, O. (2024). Does Greenium Exist? A Comparison between Sovereign and Corporate Bonds. *International Journal of Business and Management*.

Cortellini, G., & Panetta, I. (2021). "Green Bond: A Systematic Literature Review for Future Research Agendas." *Journal of Risk and Financial Management*.

D'Amico, S., Klausmann, J., & Pancost, A. (2023). The Benchmark Greenium, SSRN Working Paper No. 4128109.

Doronzo, R., Siracusa, V. & Antonelli, S. (2021). Green bonds: The Sovereign Issuer's Perspective Markets, Infrastructures, Payment Systems, Working Paper No. 3, Bank of Italy.

Ehlers, T., & Packer, F. (2017). Green bond finance and certification. *BIS Quarterly Review* (September).

Fandella, P., & Cociancich, V. (2024). Uncovering the greenium: Investigating the yield spread between green and conventional bonds. *Investment Management and Financial Innovations.*

Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*.

Gianfrate, G., & Peri, M. (2019). The green advantage: Exploring the convenience of issuing green bonds. *Journal of Cleaner Production*.

Grzegorczyk, M., & Wolff, G. (2022). Greeniums in Sovereign Bond Markets. Bruegel Working Paper 17/2022.

Hachenberg, B., & Schiereck, D. (2018). Are green bonds priced differently from conventional bonds? *Journal of Asset Management.*

Kapraun, J., Latino, C., Scheins, C., & Schlag, C. (2021). (In)-credibly green: Which bonds trade at a green bond premium? *SSRN Working Paper No. 3347337*.

Karpf, A., & Mandel, A. (2018). The changing value of the "green" label on the US municipal bond market. *Nature Climate Change.*

Larcker, D. F., & Watts, E. (2020). Where's the greenium? *Journal of Accounting and Economics*.

MacAskill, S., Roca, E., Liu, B., Stewart, R.A., & Sahin, O. (2021). Is there a green premium in the green bond market? Systematic literature review revealing premium determinants. *Journal of Cleaner Production*.

Organisation for Economic Co-operation and Development. (2021). "Scaling Up Green, Social, Sustainability and Sustainability-linked Bond Issuances in Developing Countries." *OECD Publishing, Paris*.

Partridge, C., & Medda, F. R. (2020). The evolution of pricing performance of green municipal bonds. *Journal of Sustainable Finance & Investment.*

Tang, D., & Zhang, Y. (2020). Do shareholders benefit from green bonds? *Journal of Corporate Finance*.

Zerbib, O. D. (2019). The effect of pro-environmental preferences on bond prices: Evidence from green bonds. *Journal of Banking & Finance.*

Annex 1. Summary Statistics

Table A1.1: Total number of green and conventional bonds without limiting sample by maturity to G-7, G+7

Country	Conventional	Green
Andorra	1	2
Australia	18	1
Austria	210	7
Belgium	14	9
Benin	4	1
Chile	17	12
China	19	2
Cote d'Ivoire	4	1
Cyprus	19	1
Denmark	7	2
Dominican Republic	28	1
Egypt	46	2
France	101	3
Germany	127	9
Guatemala	18	2
Honduras	4	1
Hong Kong	40	13
Hungary	226	11
Iceland	4	1
India	1060	8
Indonesia	64	6
Ireland	29	2
Italy	278	5
Latvia	12	1
Lithuania	26	1
Luxembourg	10	1
Malaysia	45	1
Mexico	32	9
Netherlands	13	1
Peru	7	2
Philippines	20	3
Poland	25	5
Qatar	14	2
Romania	81	2
Saudi Arabia	5	2
Serbia	24	2
South Korea	3	1
Spain	175	1
Sweden	11	2

Switzerland	9	1
Thailand	72	3
Uruguay	2	1

Table A1.2: Total number of green and conventional bonds limiting sample by maturity to G-7, G+7

Country	Conventional	Green
Andorra	1	2
Australia	15	1
Austria	157	7
Belgium	11	9
Benin	3	1
Chile	16	12
China	15	2
Cote d'Ivoire	4	1
Cyprus	13	1
Denmark	6	2
Dominican Republic	18	1
Egypt	31	2
France	41	3
Germany	123	9
Guatemala	15	2
Honduras	4	1
Hong Kong	40	13
Hungary	226	11
Iceland	4	1
India	1005	8
Indonesia	56	6
Ireland	22	2
Italy	274	5
Latvia	10	1
Lithuania	22	1
Luxembourg	8	1
Malaysia	28	1
Mexico	23	9
Netherlands	8	1
Peru	7	2
Philippines	20	3
Poland	25	5
Qatar	8	2
Romania	68	2
Saudi Arabia	3	2
Serbia	21	2
South Korea	3	1

Spain	31	1
Sweden	7	2
Switzerland	7	1
Thailand	34	3
Uruguay	1	1

Table A1.3: Average bid-ask spread of non-green and green bonds

Country	Conventional	Green	Difference
Andorra	23.35	9.28	14.07
Australia	1.53	1.39	0.14
Austria	9.23	4.16	5.07
Belgium	1.66	6.39	-4.73
Benin	32.62	19.69	12.93
Chile	6.20	5.17	1.02
China	13.82	5.06	8.76
Cote d'Ivoire	15.96	12.52	3.43
Cyprus	24.96	5.72	19.24
Denmark	6.70	3.38	3.32
Dominican Republic	15.69	9.37	6.33
Egypt	17.95	26.18	-8.23
France	5.33	1.13	4.20
Germany	5.48	1.76	3.73
Guatemala	16.44	11.64	4.79
Honduras	42.44	11.62	30.82
Hong Kong	10.66	6.63	4.03
Hungary	9.56	7.48	2.08
Iceland	8.87	5.99	2.88
India	8.61	2.22	6.38
Indonesia	8.09	8.80	-0.71
Ireland	5.00	2.64	2.36
Italy	6.58	2.38	4.20
Latvia	9.11	6.51	2.60
Lithuania	15.88	26.67	-10.79
Luxembourg	3.83	3.19	0.65
Malaysia	2.51	8.96	-6.45
Mexico	5.73	6.89	-1.16
Netherlands	1.24	3.20	-1.95
Peru	6.57	5.00	1.57
Philippines	7.19	5.19	2.00
Poland	5.74	5.56	0.18
Qatar	4.18	3.52	0.66
Romania	17.61	8.22	9.38
Saudi Arabia	4.40	3.75	0.65

Serbia	18.89	19.67	-0.77
South Korea	5.01	6.06	-1.05
Spain	7.52	2.59	4.93
Sweden	5.56	9.27	-3.71
Switzerland	8.43	7.34	1.09
Thailand	9.77	7.33	2.44
Uruguay	11.35	10.85	0.50

Table A1.4: Summary Statistics by AE and Green

	Green	Yield	Z Spread	Maturity
AEs	N	246.17	39.26	14.37
AEs	Y	183.53	4.82	14.20
EMDEs (excl. LAC)	N	633.78	61.62	15.02
EMDEs (excl. LAC)	Y	379.53	112.14	10.91
LAC	N	444.34	163.58	13.01
LAC	Y	433.27	167.97	19.53

Table A1.5: Bond maturity by country

	Green	N	Maturity	Min	p25	p50	p75	Max
AEs	N	702	13	1	7	10	17	34
AEs	Y	44	14	5	10	12	21	30
EMDEs	N	1730	14	1	7	11	20	40
EMDEs	Y	99	13	2	7	10	15	50
EMDEs (excl. LAC)	N	1647	14	1	7	12	20	37
EMDEs (excl. LAC)	Y	71	11	2	5	10	12	30
LAC	N	84	11	2	9	10	12	40
LAC	Y	28	17	5	11	12	20	50
All	N	2432	14	1	7	11	19	40
All	Y	143	13	2	7	10	15	50
Total		2575	14	1	7	11	19	50

Table A1.6: Total number of green and conventional bonds without limiting sample by maturity to G-7, G+7

Country	Conventional	Green
Chile	17	12
Dominican Republic	28	1
Guatemala	18	2
Honduras	4	1
Mexico	32	9
Peru	7	2

Uruguay	2	1

Table A1.7: Total number of green and conventional bonds limiting sample by maturity to G-7, G+7

Country	Conventional	Green
Chile	16	12
Dominican Republic	18	1
Guatemala	15	2
Honduras	4	1
Mexico	23	9
Peru	7	2
Uruguay	1	1

Table A1.8: Average bid-ask spread of non-green and green bonds

Country	Conventional	Green	Difference
Chile	6.20	5.17	1.02
Dominican Republic	15.69	9.37	6.33
Guatemala	16.44	11.64	4.79
Honduras	42.44	11.62	30.82
Mexico	5.73	6.89	-1.16
Peru	6.57	5.00	1.57
Uruguay	11.35	10.85	0.50

Table A1.9: Greenium Estimation using the sample in Ando et al (2024)

Dependent = Z spread	*(1) All*	*(2) EUR/USD*	*(3) AEs*	*(4) EMDEs*	*(5) EMDEs (excl. LAC)*	*(6) LAC*
Green	-9.46***	-8.52***	-6.69***	-24.38***	-39.89***	-4.58***
	(0.77)	(0.86)	(0.18)	(1.68)	(2.31)	(0.36)
Remaining Tenor (months)	0.27***	0.27***	0.20***	0.42***	0.51***	0.35***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.02)	(0.00)
Bid-Ask Spread (BPS)	1.85***	1.86***	0.76***	2.26***	1.73***	-0.13
	(0.27)	(0.27)	(0.02)	(0.44)	(0.37)	(0.12)
Country FE	Y	Y	Y	Y	Y	Y
Week FE	Y	Y	Y	Y	Y	Y
Currency FE	Y	Y	Y	Y	Y	Y

R^2	0.80	0.80	0.76	0.81	0.83	0.90
Bond-Day	339,616	333,495	248,314	91,302	73,834	17,468
Bonds	416	408	319	97	81	16
Green Bonds	21	20	13	8	6	2
Countries	14	13	9	5	4	1

Annex 2. List of Green Bonds

From LSEG, there were 305 sovereign ESG bonds as of July 2025.

Issuer	Maturity Date	Issue Date	Coupon	Currency	Issued Amount (USD Million)	ESG Bond Type	Use of Proceeds
Poland	12/20/2021	12/20/2016	0.5	Euro	880.5	CBI Aligned Green bond	Clean Transport
France	6/25/2039	01/31/2017	1.75	Euro	42620.896	CBI Aligned Green bond	Clean Transport
Fiji	11/1/2022	11/01/2017	4.0	Fijian Dollar	8.806	CBI Aligned Green bond	Clean Transport
Fiji	11/1/2030	11/01/2017	6.3	Fijian Dollar	35.224	CBI Aligned Green bond	Clean Transport
Niger	12/22/2022	12/22/2017	13.48	Nigerian Naira	6.98291178929766	CBI Certified Green Bond	Energy Efficiency
Poland	8/7/2026	02/07/2018	1.125	Euro	1174.0	CBI Aligned Green bond	Clean Transport
Belgium	4/22/2025	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2026	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport

Belgium	4/22/2027	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2028	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2029	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2030	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2031	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2032	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2033	03/05/2018	0.0	Euro	0.0	Self-Labeled Green Bond	Clean Transport
Belgium	4/22/2033	03/05/2018	1.25	Euro	13911.9	CBI Aligned Green bond	Clean Transport
Lithuania	5/3/2028	05/03/2018	1.2	Euro	79.832	CBI Aligned Green bond	Energy Efficiency
Seychelles	10/11/2028	10/11/2018	6.5	US Dollar	15.0	CBI Aligned	Land Preservation

						Green bond	
Ireland	3/18/2031	10/17/2018	1.35	Euro	8391.85766	CBI Aligned Green bond	Climate Change Adaptation
Poland	3/7/2029	03/07/2019	1.0	Euro	1761.0	CBI Aligned Green bond	Clean Transport
Poland	3/8/2049	03/07/2019	2.0	Euro	587.0	CBI Aligned Green bond	Clean Transport
Netherlands	1/15/2040	05/23/2019	0.5	Euro	18420.49438	CBI Certified Green Bond	Clean Transport
Hong Kong	5/28/2024	05/28/2019	2.5	US Dollar	1000.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	5/28/2024	05/28/2019	2.5	US Dollar	1000.0	CBI Aligned Green bond	Clean Transport
Niger	6/13/2026	06/13/2019	14.5	Nigerian Naira	9.79828595317726	Self-Labeled Green Bond	Eligible Green Projects
South Korea	6/19/2024	06/19/2019	2.0	US Dollar	500.0	Sustainability Bond	Clean Transport
Chile	1/25/2050	06/25/2019	3.5	US Dollar	2318.357	CBI Certified Green Bond	Aquatic Biodiversity Conservation

Chile	7/2/2031	07/02/2019	0.83	Euro	2294.80019	CBI Certified Green Bond	Aquatic Biodiversity Conservation
China	11/4/2019	08/02/2019	0.0	Chinese Yuan	1427.19624994768	CBI Aligned Green bond	Energy Efficiency
Chile	1/27/2032	01/27/2020	2.55	US Dollar	1500.0	CBI Certified Green Bond	Aquatic Biodiversity Conservation
Chile	1/29/2040	01/29/2020	1.25	Euro	1489.825958	CBI Certified Green Bond	Aquatic Biodiversity Conservation
Hungary	6/5/2035	06/05/2020	1.75	Euro	1761.0	CBI Aligned Green bond	Clean Transport
Thailand	12/17/2035	08/19/2020	1.585	Thai Baht	6555.349412492271	Sustainability Bond	Mass/Rapid Transit
Germany	8/15/2030	09/09/2020	0.0	Euro	12914.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Sweden	9/9/2030	09/09/2020	0.125	Swedish Krona	2104.48782027674	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Sweden	9/9/2030	09/09/2020	0.125	Swedish Krona	2104.48782027674	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Luxembourg	9/14/2032	09/14/2020	0.0	Euro	1761.0	Sustainability Bond	Access to Essential Services

Hungary	9/17/2027	09/18/2020	1.03	Japanese Yen	104.97087904645801	CBI Aligned Green bond	Clean Transport
Hungary	9/18/2030	09/18/2020	1.29	Japanese Yen	30.475416497 3588	CBI Aligned Green bond	Clean Transport
Mexico	9/18/2027	09/18/2020	1.35	Euro	880.5	Sustainability Bond	Sustainable Economic Growth
Egypt	10/6/2025	10/06/2020	5.25	US Dollar	750.0	CBI Aligned Green bond	Clean Transport
Egypt	10/6/2025	10/06/2020	5.25	US Dollar	750.0	CBI Aligned Green bond	Climate Change Adaptation
Germany	10/10/2025	11/06/2020	0.0	Euro	9979.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Chile	1/22/2061	01/22/2021	3.1	US Dollar	2000.0	Sustainability Bond	Aquatic Biodiversity Conservation
Hong Kong	2/2/2051	02/02/2021	2.375	US Dollar	500.0	CBI Aligned Green bond	Clean Transport
Hong Kong	2/2/2051	02/02/2021	2.375	US Dollar	500.0	CBI Aligned Green bond	Clean Transport
Hong Kong	2/2/2026	02/02/2021	0.625	US Dollar	1000.0	CBI Aligned Green bond	Clean Transport

Hong Kong	2/2/2026	02/02/2021	0.625	US Dollar	1000.0	CBI Aligned Green bond	Clean Transport
Hong Kong	2/2/2031	02/02/2021	1.375	US Dollar	1000.0	CBI Aligned Green bond	Clean Transport
Hong Kong	2/2/2031	02/02/2021	1.375	US Dollar	1000.0	CBI Aligned Green bond	Clean Transport
Italy	4/30/2045	03/10/2021	1.5	Euro	15849.0	CBI Aligned Green bond	Clean Transport
France	6/25/2044	03/23/2021	0.5	Euro	28023.38	CBI Aligned Green bond	Clean Transport
Chile	4/15/2053	04/15/2021	3.5	US Dollar	1500.0	Sustainability Bond	Aquatic Biodiversity Conservation
Hungary	4/28/2051	04/28/2021	4.0	Hungarian Forint	572.047152208038	CBI Aligned Green bond	Climate Change Adaptation
Andorra	5/6/2031	05/06/2021	1.25	Euro	587.0	Sustainability Bond	Sustainable Development Projects
Germany	8/15/2050	05/18/2021	0.0	Euro	14968.5	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Slovenia	7/1/2031	07/01/2021	0.125	Euro	1455.696604	Sustainability Bond	Access to Essential Services

Chile	10/1/2028	07/02/2021	5.0	Chilean Peso	1557.14730613516	Sustainability Bond	Access to Essential Services
Mexico	8/12/2036	07/12/2021	2.25	Euro	1467.5	Sustainability Bond	Aquatic Biodiversity Conservation
Uzbekistan	7/19/2024	07/19/2021	14.0	Uzbekistani Sum	198.779810014209	Sustainability Bond	Access to Essential Services
Uzbekistan	7/19/2024	07/19/2021	14.0	Uzbekistani Sum	198.779810014209	Sustainability Bond	Access to Essential Services
Benin	1/22/2035	07/22/2021	4.95	Euro	587.0	Sustainability Bond	Aquatic Biodiversity Conservation
Benin	1/22/2035	07/22/2021	4.95	Euro	587.0	Sustainability Bond	Aquatic Biodiversity Conservation
Germany	8/15/2031	09/10/2021	0.0	Euro	10566.0	CBI Aligned Green bond	Climate Change Adaptation
Isle of Man	9/14/2051	09/14/2021	1.625	British Pound	537.36	Sustainability Bond	Access to Essential Services
Spain	7/30/2042	09/14/2021	1.0	Euro	20342.02127	CBI Aligned Green bond	Climate Change Adaptation
United Kingdom	7/31/2033	09/22/2021	0.875	British Pound	53444.4822	CBI Aligned Green bond	Climate Change Adaptation
Indonesia	3/23/2034	09/23/2021	1.3	Euro	587.0	Sustainability Bond	Sustainable Development Projects

Serbia	9/23/2028	09/23/2021	1.0	Euro	1174.0	CBI Aligned Green bond	Clean Transport
Serbia	9/23/2028	09/23/2021	1.0	Euro	1174.0	CBI Aligned Green bond	Clean Transport
Colombia	3/26/2031	09/29/2021	7.0	Colombian Peso	1150.6911377100698	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
Colombia	3/26/2031	09/29/2021	7.0	Colombian Peso	1150.6911377100698	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
Colombia	3/26/2031	09/29/2021	7.0	Colombian Peso	1150.6911377100698	CBI Aligned Green bond	Aquatic Biodiversity Conservation
South Korea	10/15/2026	10/15/2021	0.0	Euro	821.8	CBI Aligned Green bond	Climate Change Adaptation
United Kingdom	7/31/2053	10/22/2021	1.5	British Pound	38861.8752	CBI Aligned Green bond	Climate Change Adaptation
Peru	1/15/2034	11/02/2021	3.0	US Dollar	2250.0	Sustainability Bond	Clean Transport
Peru	1/15/2072	11/02/2021	3.6	US Dollar	1000.0	Sustainability Bond	Aquatic Biodiversity Conservation
Hong Kong	11/24/2026	11/24/2021	0.0	Euro	1467.5	CBI Aligned Green bond	Climate Change Adaptation

Hong Kong	11/24/2031	11/24/2021	1.75	US Dollar	1000.0	CBI Aligned Green bond	Clean Transport
Hong Kong	11/24/2041	11/24/2021	1.0	Euro	587.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	11/30/2024	11/30/2021	2.8	Chinese Yuan	348.777187181741	CBI Aligned Green bond	Clean Transport
Hong Kong	11/30/2026	11/30/2021	3.0	Chinese Yuan	348.777187181741	CBI Aligned Green bond	Climate Change Adaptation
Latvia	1/23/2030	12/13/2021	0.25	Euro	704.4	Sustainability Bond	Aquatic Biodiversity Conservation
Hungary	12/16/2024	12/14/2021	3.28	Chinese Yuan	139.510874872696	CBI Aligned Green bond	Climate Change Adaptation
Denmark	11/15/2031	01/21/2022	0.0	Danish Krone	2554.9856832698797	CBI Aligned Green bond	Clean Transport
Hungary	5/27/2032	01/26/2022	4.5	Hungarian Forint	1062.28122500963	CBI Aligned Green bond	Climate Change Adaptation
Chile	1/31/2027	01/31/2022	2.75	US Dollar	1500.0	Sustainability Bond	Access to Essential Services
Chile	1/31/2034	01/31/2022	3.5	US Dollar	1500.0	Sustainability Bond	Access to Essential Services

Chile	1/31/2052	01/31/2022	4.0	US Dollar	1000.0	Sustainability Bond	Access to Essential Services
Andorra	2/23/2027	02/23/2022	1.25	Euro	587.0	Sustainability Bond	Access to Essential Services
Hungary	2/25/2027	02/25/2022	0.73	Japanese Yen	316.944331572531	CBI Aligned Green bond	Clean Transport
Hungary	2/22/2029	02/25/2022	0.91	Japanese Yen	31.829879452796998	CBI Aligned Green bond	Clean Transport
Hungary	2/25/2032	02/25/2022	1.15	Japanese Yen	52.824055262 0886	CBI Aligned Green bond	Clean Transport
Chile	3/7/2042	03/07/2022	4.34	US Dollar	2000.0	Sustainability Linked Bond	General Purpose
Canada	12/1/2029	03/29/2022	2.25	Canadian Dollar	3649.90145266078	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Philippines	3/29/2047	03/29/2022	4.2	US Dollar	1000.0	Sustainability Bond	Access to Essential Services
Philippines	4/22/2027	04/22/2022	0.76	Japanese Yen	352.160368413924	Sustainability Bond	Capital expenditure/Financing expenses
Philippines	4/20/2029	04/22/2022	0.95	Japanese Yen	33.8615738859542	Sustainability Bond	Capital expenditure/Financing expenses
Philippines	4/22/2032	04/22/2022	1.22	Japanese Yen	48.083434918055	Sustainability Bond	Access to Essential Services

Philippines	4/22/2042	04/22/2022	1.83	Japanese Yen	40.6338886631451	Sustainability Bond	Access to Essential Services
Mexico	3/21/2024	05/04/2022	11.29	Mexican Peso	1166.7836509907702	Sustainability Bond	Access to Essential Services
Mexico	3/16/2028	05/04/2022	7.99	Mexican Peso	1029.64202796825	Sustainability Bond	Access to Essential Services
Hong Kong	5/19/2025	05/18/2022	2.5	Hong Kong Dollar	2548.0303725220397	CBI Aligned Green bond	Climate Change Adaptation
Austria	5/23/2049	05/31/2022	1.85	Euro	9568.1	CBI Aligned Green bond	Clean Transport
France	7/25/2038	06/01/2022	0.1	Euro	9247.598	CBI Aligned Green bond	Clean Transport
Mexico	7/10/2025	07/22/2022	8.21	Mexican Peso	1170.0232168889402	Sustainability Bond	Access to Essential Services
Singapore	8/1/2072	08/15/2022	3.0	Singapore Dollar	5230.697166055121	CBI Aligned Green bond	Climate Change Adaptation
Mexico	5/19/2033	08/19/2022	4.875	US Dollar	2203.576	Sustainability Bond	Aquatic Biodiversity Conservation
Germany	10/15/2027	09/07/2022	1.3	Euro	10566.0	CBI Aligned Green bond	Clean Transport
Mexico	9/8/2025	09/08/2022	1.0	Japanese Yen	201.137748882568	Sustainability Bond	Eligible Social Expenditures

Mexico	9/8/2027	09/08/2022	1.25	Japanese Yen	161.181091697142	Sustainability Bond	Eligible Social Expenditures
Mexico	9/8/2032	09/08/2022	1.83	Japanese Yen	100.907490180144	Sustainability Bond	Eligible Social Expenditures
Mexico	9/8/2037	09/08/2022	2.28	Japanese Yen	27.0892591087634	Sustainability Bond	Eligible Social Expenditures
Mexico	9/8/2042	09/08/2022	2.52	Japanese Yen	21.671407287010698	Sustainability Bond	Eligible Social Expenditures
Italy	4/30/2035	09/13/2022	4.0	Euro	16471.22	CBI Aligned Green bond	Clean Transport
Thailand	6/17/2037	09/19/2022	3.39	Thai Baht	8348.79406307978	Sustainability Bond	Clean Transport
Belgium	4/22/2039	09/21/2022	2.75	Euro	10723.316	CBI Aligned Green bond	Clean Transport
Malaysia	3/31/2038	09/30/2022	4.662	Malaysian Ringgit	2370.79184447606	Sustainability Bond	Clean Transport
Philippines	10/13/2047	10/13/2022	5.95	US Dollar	750.0	Sustainability Bond	Climate Change Adaptation
Austria	2/23/2023	10/20/2022	0.0	Euro	1174.0	CBI Aligned Green bond	Climate Change Adaptation
Chile	5/1/2034	10/24/2022	7.0	Chilean Peso	1038.09820409011	Sustainability Bond	Access to Essential Services
Switzerland	10/26/2038	10/26/2022	1.5	Swiss Franc	3345.2440865626604	CBI Aligned Green bond	Clean Transport
Indonesia	10/15/2030	10/27/2022	7.375	Indonesian Rupiah	846.719803801349	Sustainability Bond	Food Security and Sustainable Food Systems

Uruguay	10/28/2034	10/28/2022	5.75	US Dollar	2199.975998	Sustainability Linked Bond	Refinance/Financing expenses
Hungary	11/17/2025	11/16/2022	3.75	Chinese Yuan	279.021749745393	CBI Aligned Green bond	Climate Change Adaptation
Hungary	2/22/2027	11/21/2022	5.0	Euro	1174.0	CBI Aligned Green bond	Climate Change Adaptation
New Zealand	5/15/2034	11/22/2022	4.25	New Zealand Dollar	5968.895	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Mexico	3/19/2026	12/02/2022	7.99	Mexican Peso	1006.96506668106	Sustainability Bond	Sustainable Economic Growth
Belarus	12/12/2025	12/08/2022	12.5	Russian Ruble	62.9722921914358	Self-Labeled Green Bond	Energy Efficiency
Hong Kong	1/11/2028	01/11/2023	4.5	US Dollar	1000.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	1/11/2028	01/11/2023	4.5	US Dollar	1000.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	1/11/2033	01/11/2023	4.625	US Dollar	1000.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	1/11/2033	01/11/2023	4.625	US Dollar	1000.0	CBI Aligned	Aquatic Biodiversity Conservation

						Green bond	
Hong Kong	1/11/2025	01/11/2023	3.875	Euro	880.5	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	1/11/2025	01/11/2023	3.0	Chinese Yuan	697.554374363482	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	1/11/2026	01/11/2023	4.375	US Dollar	500.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	1/11/2026	01/11/2023	4.375	US Dollar	500.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	1/11/2028	01/11/2023	3.3	Chinese Yuan	697.554374363482	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	1/11/2030	01/11/2023	3.875	Euro	587.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	1/11/2053	01/11/2023	5.25	US Dollar	500.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	1/11/2053	01/11/2023	5.25	US Dollar	500.0	CBI Aligned Green bond	Climate Change Adaptation
Slovenia	3/11/2033	01/11/2023	3.625	Euro	1467.5	Sustainability Bond	Access to Essential Services

Ireland	10/18/2043	01/12/2023	3.0	Euro	4716.1341	CBI Aligned Green bond	Climate Change Adaptation
Israel	1/17/2033	01/17/2023	4.5	US Dollar	2000.0	CBI Aligned Green bond	Climate Change Adaptation
Philippines	1/17/2048	01/17/2023	5.5	US Dollar	1250.0	Sustainability Bond	Access to Essential Services
India	1/27/2028	01/27/2023	7.1	Indian Rupee	925.12286788089	CBI Aligned Green bond	Aquatic Biodiversity Conservation
India	1/27/2033	01/27/2023	7.29	Indian Rupee	925.12286788089	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	2/16/2024	02/16/2023	4.05	Hong Kong Dollar	101.921214900882	CBI Aligned Green bond	Climate Change Adaptation
Austria	5/25/2023	02/23/2023	0.0	Euro	1672.864298	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Austria	4/17/2023	03/16/2023	0.0	Euro	58.7	CBI Aligned Green bond	Climate Change Adaptation
Switzerland	10/26/2038	03/22/2023	1.5	Swiss Franc	435.45546049320603	Self-Labeled Green Bond	Clean Transport
Cyprus	4/13/2033	04/13/2023	4.125	Euro	1174.0	Sustainability Bond	Access to Essential Services

Italy	10/30/2031	04/13/2023	4.0	Euro	15292.022702	CBI Aligned Green bond	Climate Change Adaptation
Turkey	7/13/2030	04/13/2023	9.125	US Dollar	2500.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Austria	5/23/2029	04/25/2023	2.9	Euro	7531.590376	CBI Aligned Green bond	Climate Change Adaptation
Mexico	5/4/2053	04/28/2023	6.338	US Dollar	2941.388	Sustainability Bond	Employment Generation/Alleviate Unemployment
Germany	2/15/2033	05/03/2023	2.3	Euro	14088.0	CBI Aligned Green bond	Clean Transport
Austria	8/24/2023	05/25/2023	0.0	Euro	1761.0	CBI Aligned Green bond	Climate Change Adaptation
Indonesia	5/24/2030	05/26/2023	1.2	Japanese Yen	99.5530272247054	Self-Labeled Green Bond	Climate Change Adaptation
Indonesia	5/26/2033	05/26/2023	1.43	Japanese Yen	40.6338886631451	Self-Labeled Green Bond	Climate Change Adaptation
Hong Kong	6/7/2026	06/07/2023	4.25	US Dollar	500.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation

Hong Kong	6/7/2026	06/07/2023	4.25	US Dollar	500.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2028	06/07/2023	4.0	US Dollar	750.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2028	06/07/2023	4.0	US Dollar	750.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2033	06/07/2023	4.0	US Dollar	1000.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2033	06/07/2023	4.0	US Dollar	1000.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2025	06/07/2023	2.7	Chinese Yuan	837.065249236178	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	6/7/2027	06/07/2023	3.375	Euro	880.5	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2028	06/07/2023	2.95	Chinese Yuan	837.065249236178	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/7/2032	06/07/2023	3.75	Euro	880.5	CBI Aligned Green bond	Aquatic Biodiversity Conservation

Hong Kong	6/7/2033	06/07/2023	3.3	Chinese Yuan	418.532624618089	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Peru	8/12/2033	06/12/2023	7.3	Peruvian Sol	6591.558972911959	Sustainability Bond	General Purpose
Peru	8/12/2033	06/12/2023	7.3	Peruvian Sol	2591.70428893905	Sustainability Bond	Energy Efficiency
Peru	8/12/2033	06/12/2023	7.3	Peruvian Sol	2591.70428893905	Sustainability Bond	Energy Efficiency
Germany	8/15/2053	06/20/2023	1.8	Euro	14088.0	CBI Aligned Green bond	Clean Transport
Chile	7/5/2034	07/05/2023	4.125	Euro	880.5	Sustainability Linked Bond	General Purpose
Chile	1/5/2036	07/05/2023	4.95	US Dollar	1649.852623	Sustainability Linked Bond	Clean Transport
Chile	1/5/2054	07/05/2023	5.33	US Dollar	1481.658578	Sustainability Linked Bond	Clean Transport
Chile	11/1/2037	07/21/2023	5.3	Chilean Peso	2043.4028859130099	Sustainability Linked Bond	Climate Change Adaptation
Mexico	5/24/2035	07/24/2023	8.0	Mexican Peso	1241.8335942983601	Sustainability Bond	Sustainable Development Projects
Austria	11/30/2023	08/24/2023	0.0	Euro	1827.123202	CBI Aligned Green bond	Climate Change Adaptation

Switzerland	10/26/2038	09/27/2023	1.5	Swiss Franc	409.22244589833895	Self-Labeled Green Bond	Clean Transport
Denmark	11/15/2033	10/03/2023	2.25	Danish Krone	2857.8395896919496	CBI Aligned Green bond	Clean Transport
Hong Kong	10/12/2026	10/10/2023	4.75	Hong Kong Dollar	2548.0303725220397	CBI Aligned Green bond	Climate Change Adaptation
Uzbekistan	10/12/2026	10/12/2023	16.25	Uzbekistani Sum	337.925677024155	CBI Aligned Green bond	Clean Transport
Uzbekistan	10/12/2026	10/12/2023	16.25	Uzbekistani Sum	337.925677024155	CBI Aligned Green bond	Clean Transport
Egypt	10/17/2026	10/16/2023	3.51	Chinese Yuan	488.288062054437	Sustainability Bond	Eligible Green Projects
Chile	10/1/2039	10/19/2023	3.4	Chilean Unidad de Fomento	989.2297609773591	Sustainability Linked Bond	Climate Change Adaptation
Netherlands	1/15/2044	10/19/2023	3.25	Euro	13275.536822	CBI Aligned Green bond	Climate Change Adaptation
Chile	10/1/2034	10/26/2023	5.8	Chilean Peso	1816.67185715769	Sustainability Linked Bond	Climate Change Adaptation
Fiji	11/8/2026	11/08/2023	1.0	Fijian Dollar	2.2015	Self-Labeled	Aquatic Biodiversity Conservation

						Green Bond	
Fiji	11/8/2038	11/08/2023	4.2	Fijian Dollar	6.6045	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
India	11/13/2028	11/13/2023	7.25	Indian Rupee	578.2017924255571	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Brazil	3/18/2031	11/20/2023	6.25	US Dollar	2000.0	Sustainability Bond	Climate Change Adaptation
Argentina	5/23/2025	11/23/2023	4.25	Argentinian Peso	121.41533990465	Sustainability Bond	Climate Change Adaptation
Austria	2/29/2024	11/30/2023	0.0	Euro	2142.7784604000003	CBI Aligned Green bond	Climate Change Adaptation
India	12/11/2033	12/11/2023	7.24	Indian Rupee	578.2017924255571	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Austria	6/28/2024	12/29/2023	0.0	Euro	130.828212	CBI Aligned Green bond	Climate Change Adaptation
France	6/25/2049	01/23/2024	3.0	Euro	17512.558	CBI Aligned Green bond	Clean Transport
India	1/23/2054	01/23/2024	7.37	Indian Rupee	1156.40358485111	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Switzerland	10/26/2038	01/24/2024	1.5	Swiss Franc	261.197785606442	Self-Labeled Green Bond	Clean Transport

Hungary	7/25/2029	01/25/2024	4.0	Euro	1761.0	CBI Aligned Green bond	Climate Change Adaptation
Mexico	5/25/2032	01/25/2024	4.4899	Euro	2348.0	Sustainability Bond	Access to Essential Services
Côte d'Ivoire	1/30/2033	01/30/2024	7.625	US Dollar	1100.0	Sustainability Bond	Aquatic Biodiversity Conservation
Côte d'Ivoire	1/30/2033	01/30/2024	7.625	US Dollar	1100.0	Sustainability Bond	Aquatic Biodiversity Conservation
Hong Kong	2/7/2026	02/07/2024	3.8	Hong Kong Dollar	254.803037252204	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	2/7/2026	02/07/2024	4.625	US Dollar	200.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	2/7/2026	02/07/2024	3.5	Euro	93.92	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	2/7/2026	02/07/2024	2.9	Chinese Yuan	209.266312309044	CBI Aligned Green bond	Climate Change Adaptation
Japan	12/20/2033	02/15/2024	0.7	Japanese Yen	5414.46566436408	CBI Certified Green Bond	Clean Transport
Oman	3/22/2031	02/22/2024	5.375	Euro	2606.28	Self-Labeled Green Bond	Climate Change Adaptation

Oman	3/22/2031	02/22/2024	5.375	Euro	2606.28	Self-Labeled Green Bond	Climate Change Adaptation
Oman	2/22/2036	02/22/2024	5.625	Euro	2348.0	CBI Aligned Green bond	Climate Change Adaptation
Oman	2/22/2036	02/22/2024	5.625	Euro	2348.0	CBI Aligned Green bond	Climate Change Adaptation
Japan	12/20/2028	02/28/2024	0.3	Japanese Yen	5416.49735879724	CBI Certified Green Bond	Clean Transport
Austria	5/23/2024	02/29/2024	0.0	Euro	2355.2201	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Canada	3/1/2034	03/05/2024	3.5	Canadian Dollar	4379.88174319293	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Mexico	5/6/2027	03/12/2024	8.0	Mexican Peso	1396.7928297608098	Sustainability Bond	Access to Essential Services
Mexico	3/14/2030	03/12/2024	7.99	Mexican Peso	1981.53447438043	Sustainability Bond	Environmentally Sustainable Products
Iceland	3/21/2034	03/21/2024	3.5	Euro	880.5	CBI Aligned Green bond	Climate Change Adaptation
Germany	4/12/2029	05/03/2024	2.1	Euro	7631.0	CBI Aligned Green bond	Clean Transport

Austria	5/7/2025	05/07/2024	0.0	Euro	426.09156	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Philippines	5/14/2049	05/14/2024	5.6	US Dollar	1000.0	Sustainability Bond	Access to Essential Services
Italy	10/30/2037	05/21/2024	4.05	Euro	16436.0	CBI Aligned Green bond	Clean Transport
Austria	8/29/2024	05/23/2024	0.0	Euro	2267.883892	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Indonesia	5/27/2031	05/27/2024	1.57	Japanese Yen	13.5446295543817	Self-Labeled Green Bond	Climate Change Adaptation
Indonesia	5/26/2034	05/27/2024	1.91	Japanese Yen	46.0517404848977	Self-Labeled Green Bond	Climate Change Adaptation
Indonesia	5/27/2044	05/27/2024	2.55	Japanese Yen	109.71149939049201	Self-Labeled Green Bond	Climate Change Adaptation
Japan	3/20/2034	05/29/2024	1.0	Japanese Yen	4737.9114181227105	Self-Labeled Green Bond	Clean Transport
Qatar	5/29/2029	05/29/2024	4.625	US Dollar	1000.0	Self-Labeled Green Bond	Climate Change Adaptation
Qatar	5/29/2029	05/29/2024	4.625	US Dollar	1000.0	Self-Labeled	Climate Change Adaptation

						Green Bond	
Qatar	5/29/2034	05/29/2024	4.75	US Dollar	1500.0	Self-Labeled Green Bond	Climate Change Adaptation
Qatar	5/29/2034	05/29/2024	4.75	US Dollar	1500.0	Self-Labeled Green Bond	Climate Change Adaptation
Uzbekistan	5/29/2027	05/29/2024	5.375	Euro	704.4	Sustainability Bond	Aquatic Biodiversity Conservation
Uzbekistan	5/29/2027	05/29/2024	5.375	Euro	704.4	Sustainability Bond	Aquatic Biodiversity Conservation
India	6/3/2034	06/03/2024	0.0	Indian Rupee	0.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Singapore	6/1/2054	06/03/2024	3.25	Singapore Dollar	3357.014599110003	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Serbia	6/12/2034	06/12/2024	6.0	US Dollar	1500.0	Sustainability Bond	Access to Essential Services
Serbia	6/12/2034	06/12/2024	6.0	US Dollar	1500.0	Sustainability Bond	Access to Essential Services
Australia	6/21/2034	06/14/2024	4.25	Australian Dollar	5908.5	CBI Aligned Green bond	Climate Change Adaptation
Brazil	1/22/2032	06/27/2024	6.125	US Dollar	2000.0	Sustainability Bond	Aquatic Biodiversity Conservation

Dominican Republic	6/1/2036	07/01/2024	6.6	US Dollar	750.0	CBI Aligned Green bond	Access to Essential Services
Dominican Republic	6/1/2036	07/01/2024	6.6	US Dollar	750.0	CBI Aligned Green bond	Access to Essential Services
Japan	6/20/2029	07/19/2024	0.5	Japanese Yen	4736.556955167281	Self-Labeled Green Bond	Clean Transport
Hong Kong	7/24/2026	07/24/2024	2.6	Chinese Yuan	279.021749745393	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	7/24/2027	07/24/2024	4.25	US Dollar	1000.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	7/24/2027	07/24/2024	4.25	US Dollar	1000.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	7/24/2029	07/24/2024	2.7	Chinese Yuan	279.021749745393	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	7/24/2031	07/24/2024	3.375	Euro	880.5	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	7/24/2034	07/24/2024	2.8	Chinese Yuan	279.021749745393	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	7/24/2044	07/24/2024	3.05	Chinese Yuan	279.021749745393	CBI Aligned	Climate Change Adaptation

						Green bond	
Hong Kong	7/24/2054	07/24/2024	3.15	Chinese Yuan	279.021749745393	CBI Aligned Green bond	Climate Change Adaptation
India	8/5/2034	08/05/2024	6.9	Indian Rupee	196.28771321191098	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Guatemala	8/6/2031	08/06/2024	6.05	US Dollar	600.0	Sustainability Bond	Aquatic Biodiversity Conservation
Guatemala	8/6/2031	08/06/2024	6.05	US Dollar	600.0	Sustainability Bond	Aquatic Biodiversity Conservation
Guatemala	2/6/2037	08/06/2024	6.55	US Dollar	800.0	Sustainability Bond	Aquatic Biodiversity Conservation
Guatemala	2/6/2037	08/06/2024	6.55	US Dollar	800.0	Sustainability Bond	Aquatic Biodiversity Conservation
Mexico	7/16/2026	08/23/2024	7.99	Mexican Peso	630.095567193996	Sustainability Bond	Sustainable Development Projects
Mexico	10/19/2028	08/23/2024	8.0	Mexican Peso	1279.62852977701	Sustainability Linked Bond	Sustainable Economic Growth
Austria	11/28/2024	08/29/2024	0.0	Euro	2394.4673896	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Mexico	8/27/2027	08/29/2024	1.43	Japanese Yen	657.5917648652311	Sustainability Bond	Eligible Social Expenditures
Mexico	8/28/2029	08/29/2024	1.72	Japanese Yen	218.068535825545	Sustainability Bond	Eligible Social Expenditures

Mexico	8/28/2031	08/29/2024	1.88	Japanese Yen	67.723147771908 4	Sustainability Bond	Eligible Social Expenditures
Mexico	8/28/2034	08/29/2024	2.27	Japanese Yen	56.210212650684	Sustainability Bond	Eligible Social Expenditures
Mexico	8/26/2044	08/29/2024	2.93	Japanese Yen	31.152647975077 9	Sustainability Bond	Eligible Social Expenditures
Philippines	9/5/2049	09/05/2024	5.175	US Dollar	900.0	Sustainability Bond	Access to Essential Services
Indonesia	9/10/2032	09/10/2024	3.65	Euro	880.5	Sustainability Bond	Access to Essential Services
Hungary	9/12/2034	09/12/2024	2.35	Japanese Yen	8.804009210348099	CBI Aligned Green bond	Clean Transport
Oman	10/8/2027	10/11/2024	2.1	Japanese Yen	148.990925098199	CBI Aligned Green bond	Climate Change Adaptation
Oman	10/11/2029	10/11/2024	2.63	Japanese Yen	24.380333197887	CBI Aligned Green bond	Climate Change Adaptation
Oman	10/10/2031	10/11/2024	3.14	Japanese Yen	50.115129351212204	CBI Aligned Green bond	Climate Change Adaptation
Thailand	6/17/2040	11/25/2024	2.7	Thai Baht	3494.12492269635	Sustainability Linked Bond	Clean Transport
Honduras	11/27/2034	11/27/2024	8.625	US Dollar	700.0	Sustainability Bond	Access to Essential Services

Hondura s	11/27/2 034	11/27/2 024	8.625	US Dollar	700.0	Sustainab ility Bond	Access to Essential Services
Austria	2/27/20 25	11/28/2 024	0.0	Euro	0.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
India	12/2/20 34	12/02/2 024	6.79	Indian Rupee	1156.40358485 111	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Austria	3/27/20 25	12/12/2 024	0.0	Euro	645.7	CBI Aligned Green bond	Climate Change Adaptation
India	12/16/2 054	12/16/2 024	6.98	Indian Rupee	1734.60537727 667	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hungary	3/22/20 40	01/14/2 025	4.875	Euro	1174.0	CBI Aligned Green bond	Climate Change Adaptation
Italy	4/30/20 46	01/15/2 025	4.1	Euro	5870.0	CBI Aligned Green bond	Clean Transport
Philippin es	2/4/203 2	02/04/2 025	3.625	Euro	1174.0	Sustainab ility Bond	Access to Essential Services
Philippin es	2/4/205 0	02/04/2 025	5.9	US Dollar	1000.0	Sustainab ility Bond	Access to Essential Services
Mexico	2/18/20 27	02/21/2 025	7.99	Mexican Peso	1191.080395	Sustainab ility Bond	Sustainable Development Projects

Uzbekistan	2/25/2029	02/25/2025	5.1	Euro	587.0	Sustainability Bond	Aquatic Biodiversity Conservation
Uzbekistan	2/25/2029	02/25/2025	5.1	Euro	587.0	Sustainability Bond	Aquatic Biodiversity Conservation
Austria	2/26/2035	02/26/2025	0.6825	Swiss Franc	440.362355	CBI Aligned Green bond	Climate Change Adaptation
Canada	3/1/2032	02/26/2025	3.0	Canadian Dollar	1459.960581	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Austria	5/30/2025	02/27/2025	0.0	Euro	2348.0	CBI Aligned Green bond	Climate Change Adaptation
Saudi Arabia	3/5/2032	03/05/2025	3.375	Euro	1761.0	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
Saudi Arabia	3/5/2032	03/05/2025	3.375	Euro	1761.0	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
Saudi Arabia	3/5/2037	03/05/2025	3.75	Euro	880.5	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
Saudi Arabia	3/5/2037	03/05/2025	3.75	Euro	880.5	Self-Labeled Green Bond	Aquatic Biodiversity Conservation
Austria	9/25/2025	03/27/2025	0.0	Euro	1467.5	CBI Aligned Green bond	Climate Change Adaptation

China	4/10/2028	04/10/2025	1.88	Chinese Yuan	418.532625	CBI Aligned Green bond	Clean Transport
China	4/10/2030	04/10/2025	1.93	Chinese Yuan	418.532625	CBI Aligned Green bond	Clean Transport
Germany	2/15/2035	04/10/2025	2.5	Euro	4696.0	CBI Aligned Green bond	Clean Transport
Austria	5/22/2040	05/22/2025	0.84	Swiss Franc	276.799195	CBI Aligned Green bond	Climate Change Adaptation
Austria	8/28/2025	05/30/2025	0.0	Euro	2348.0	CBI Aligned Green bond	Clean Transport
Indonesia	6/2/2045	06/02/2025	3.26	Japanese Yen	25.057565	Self-Labeled Green Bond	Climate Change Adaptation
Hong Kong	6/10/2030	06/10/2025	4.125	US Dollar	1000.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	6/10/2030	06/10/2025	4.125	US Dollar	1000.0	CBI Aligned Green bond	Climate Change Adaptation
Hong Kong	6/10/2033	06/10/2025	3.125	Euro	1174.0	CBI Aligned Green bond	Aquatic Biodiversity Conservation
Hong Kong	6/10/2045	06/10/2025	2.6	Chinese Yuan	558.043499	CBI Aligned	Clean Transport

						Green bond	
Austria	6/13/2045	06/13/2025	1.0075	Swiss Franc	157.27227	CBI Aligned Green bond	Climate Change Adaptation
Slovenia	7/2/2035	07/02/2025	3.125	Euro	1174.0	Sustainability Linked Bond	Energy Efficiency
Poland	7/7/2037	07/07/2025	3.875	Euro	1467.5	CBI Aligned Green bond	Climate Change Adaptation
Japan	6/20/2030	07/16/2025	1.0	Japanese Yen	2030.33997	Self-Labeled Green Bond	Clean Transport
Côte d'Ivoire	7/17/2035	07/17/2025	2.33	Japanese Yen	338.615739	Sustainability Bond	Access to Essential Services
Austria	7/22/2037	07/22/2025	0.855	Swiss Franc	207.599396	CBI Aligned Green bond	Clean Transport
Austria	2/26/2035	08/11/2025	0.6825	Swiss Franc	283.090086	Self-Labeled Green Bond	Climate Change Adaptation