

Sovereign Green, Social, Sustainability, and Sustainability-Linked Bonds: An Evaluation of Promises and Prospects in Developing Countries



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1 Introduction

The world is woefully off-track for meeting the Agenda for Sustainable Development by 2030, including the Addis Ababa Action Agenda on Financing for Development (FfD), the Paris Climate Agreement, and Kunmin-Montreal Global Biodiversity Framework (GBF). Financing needs for meeting related targets range from USD 3.3-4.5 trillion per year for the 2030 Agenda for Sustainable Development to USD 2.5-3 trillion per year for developing countries (UNSDG, 2023). The Paris Agreement goals require an estimated USD 3-6 trillion per year until 2050, with current global climate finance reaching USD 1.3 trillion annually, driven by a significant acceleration in mitigation finance (Bunchner et al., 2023). The targets to bridge the biodiversity financing gap require a range of additional funding of USD 120-150 billion to USD 700 billion-1 trillion per year by 2030 (European Parliament, 2024).

The sources of these needed funds are far from obvious. The Conference of Parties 15 (COP 15) decision in 2009 to mobilize USD 100 billion in climate finance per year by 2020 (UNFCCC 2009, Decision 2/CP.15, Copenhagen¹), updated to 2025, are seldom met, and are predominantly in the form of loans.² Other targets are also perennially unmet, such as donor countries' Overseas Development Assistance (ODA) commitments that have averaged 0.33% of Gross National Income (GNI), with only five countries meeting or exceeding the target of 0.7% (OECD, 2023).

Notwithstanding this, the state of urgency is growing. Climate-induced disasters have devastating economic impacts on developing countries and cost, at times, 100% and even in excess of 200% of the GDP of affected countries (IMF, 2023). The fiscal implications of such events are substantial, especially for emerging markets and developing economies (EMDEs), which are disproportionately affected as compared to advanced economies.

As recognized by the UN Secretary General³, existing international financial architecture has not been able to provide and support the necessary stable and long term financing needed, and instead, is plagued by inequities and inefficiencies which results in higher borrowing costs for developing countries and “vast variation in countries’ access to liquidity in times of crisis,” resulting in a two-track world of “haves and have-nots” (UN Secretary General, 2023, p. 3). Borrowing expensively on private markets is often the only choice for developing countries.

The 2023 Financing for Sustainable Development Report (FSDR) indicates that developing countries continue to face significantly higher costs for external borrowing compared to developed nations (UN, 2023). Least developed countries dedicate close to 15% of domestic revenue to interest payments alone, as compared to 3.5% in developed economies, drastically curtailing fiscal space where it is most needed (Spiegel & Schwank, 2022). In 2023, borrowing costs for developing countries vary significantly - many African countries face borrowing costs that are four times higher than those of the United States and eight times higher than those of the wealthiest European economies (UN, 2023). Specific instances include countries like Zambia and Ghana, which faced double-digit borrowing costs, (OECD, 2024), or face

¹ UNFCCC (2010). Framework Convention on Climate Change. [Link](#)

² Climate finance is defined as “local, national, or transnational financing – drawn from public, private, and alternative sources of financing – that seeks to support mitigation and adaptation actions that will address climate change.” (OECD, 2015). In 2020, USD 83.3 billion was jointly mobilized by developed countries, predominantly as mitigation finance, and predominantly in the form of loans, mostly destined for Middle-Income Countries (MICs) and countries in Asia (OECD, 2024). In 2022, developed countries provided and mobilized a total of USD 115.9 billion in climate finance for developing countries, exceeding the annual USD 100 billion goal for the first time (OECD, 2024).

³ UN Secretary General, Our Common Agenda Policy Brief 6, Reforms to the International Financial Architecture, May 2023, p. 3. [Link](#)

expensive IMF funding where borrowing costs exceed 8% when including various surcharges and fees, especially during times of high global interest rates (Centre for European Reform, 2023).

High and unsustainable debt burdens are worsening, posing a threat to public investments in energy, education, and other basic needs. In 2023, the number of people facing acute food insecurity globally reached approximately 258 million, an increase from the previous years due to factors such as persistent conflicts, economic shocks, and extreme weather events (World Food Programme, 2023). Three decades of poverty reduction efforts are being reversed, with close to 90 million more people in extreme poverty as compared to pre-pandemic levels, and with a projection that 7% of the world's population (approximately 574 million) will be in extreme poverty in 2030 (Inter-Agency Task Force on Financing for Development, 2023, p. 3). All the while, over 3 billion people face government spending more on interest payments alone than on health or education (Inter-Agency Task Force on Financing for Development, 2023).

One of the newer innovations to attempt to raise more finance for investments to achieve Sustainable Development Goals (SDGs) and Paris climate goals are green, social, sustainability, and sustainability-linked (hereafter called GSS+) sovereign bonds (Climate Bonds Initiative, 2023; OECD, 2021; World Bank, 2020). The ability of sovereign GSS+ bonds to help close the financing gap will largely depend on whether they can lower the cost of capital, allow for longer maturities, more liquidity, and increase the scale of financing to SDG investments in developing countries. Multiple sources cast doubts on whether this form of financing is suitable for scaling up to meet climate and development goals, specifically questioning its stability, affordability, and repayability.⁴

This paper maps out the key trends and characteristics of sovereign GSS+ bond issuances in emerging and developing countries (as defined in the Annex). We look at the evidence to date, as well as several recommendations on how sovereign GSS+ bonds and the market for these bonds could be reformed to offer credible and reliable lending at the scale and scope that is needed.

Given that sovereigns are signatories to international climate targets, there is an expectation that their ambitions should align with financing commitments. Moreover, the transparency and disclosure pathways that bonds provide offer the private sector a clear mechanism for demonstrating impact.

2 The Growth of the Sovereign GSS+ Bond Market

Within the broader universe of assets deemed to yield environmental, social, or governance (ESG) benefits, are green, social, and sustainability (GSS) bonds, and more recently sustainability-linked bonds (SLB). The market was initially developed by supranational organizations such as the European Investment Bank, World Bank, and corporates. Sovereigns only entered fairly recently (Cheng et al., 2022) and are the focus of this paper. Nevertheless, since the first green sovereign issuance by Poland in 2016, sovereigns have been a growing component of the GSS+ bond market. The overall, cumulative amount of GSS+ bonds issued from all types of issuers reached USD 3.7 trillion at the end of 2022 of

⁴ We build on the work of Cheng et al. (2022) and Giraldez and Fontana (2022) who identify a series of potential risks and structural considerations for sovereigns. Weidemaier and Gulati (2021) identify the extent of greenwashing in the overall GSS+ market. A recent OECD (2023) report analyzes the range of challenges to scaling up the GSS+ bond issuance by public sectors in developing countries.

which the sovereign share is approximately 8-9% (Climate Bonds Initiative, 2022).⁵

Thematic or labelled bonds are a broader category of debt instruments designed to finance projects with specific environmental, social, or sustainability objectives. These bonds provide investors with the opportunity to support projects that align with their values and contribute to broader societal goals. Within this category, there are several types of bonds, each with distinct labels based on their intended use of proceeds or changes in structural and financial characteristics. Regardless of the issuer, the remit of these bonds is laid out below (ICMA, 2021; OECD, 2021).

In order to better understand GSS+ bonds, Table 1 provides an overview of their key characteristics. It summarises the unique objectives, eligible projects, and structural features of each bond type, as defined by leading market guidelines (ICMA, 2021; OECD, 2021, 2024).⁶

Table 1: Overview of Various Types of GSS+ Bonds

Bond Type	Key Characteristics and Eligible Categories
Green Bonds	- Green Bonds are any type of bond instrument where the amount raised (proceeds) or an equivalent amount is used to finance or refinance, in part or in full, new and/or existing eligible Green Projects. Green Bonds are supposed to contribute to specific environmental objectives, such as those relating to climate change mitigation or adaptation, or conservation. - Eligible categories could include projects relating to renewable energy, energy efficiency improvements, clean transportation, sustainable water management, waste management, biodiversity, green infrastructure, etc.
Social Bonds	- Social Bonds are any type of bond instrument where the amount raised (proceeds) or an equivalent amount is used to finance or refinance, in part or full, new and/or existing eligible Social Projects that aim to address specific social issues or ameliorate social ills for target populations. - Eligible categories could include projects relating to water and sanitation or essential social services such as affordable housing, education, healthcare, food security, and employment generation.
Sustainability Bonds	- Sustainability Bonds are any type of bond instrument where the amount raised (proceeds) or an equivalent amount is used to finance or refinance, in part or in full, new and/or existing eligible combinations of Green and Social Projects. - Eligible categories could include broader projects than those typical in Green or Social bonds. They offer a broader scope of potential opportunities, as the project categories eligible for sustainability bonds often encompass those included in both green and social bond categories.

⁵ According to Cheng et al., (2022), the share of sovereigns within the total GSS+ space was slightly lower, ranging from 4.2% at the end of 2019 to 7.5% by the end of June 2022.

⁶ Funds remain fungible as proceeds or 'equivalent amounts' could be used to finance GSS+ expenditures.

Bond Type	Key Characteristics and Eligible Categories
Sustainability-Linked Bonds	Sustainability-Linked Bonds are any type of bond instrument whose structural characteristics vary according to whether predefined objectives are met. SLBs are performance-based instruments in which issuers explicitly commit to outcome-based improvements within a specific timeline. The performance targets might include reducing carbon emissions, improving energy efficiency, or achieving certain social outcomes.

Source: ICMA, 2021; OECD, 2021, 2024.

Between 2017 and 2023, over 125 GSS+ sovereign bonds were issued by 47 countries, according to LSEG and Bloomberg Data. The composition of sovereign issuers is changing over time. While the main issuers are developed countries (shown in Figure 1), emerging and developing country issuances have increased from 2% in 2018 to 22% in 2023 (Figure 1). Several factors are driving this change. There has been a growing demand from global investors for sustainable and responsible investment opportunities, pushing more countries to issue GSS+ bonds to meet this demand (Climate Bonds Initiative, 2022). Institutions like the World Bank and regional development banks have increased their support for emerging markets by providing technical assistance, capacity building, and sometimes partial guarantees, making it easier for countries to enter the GSS+ bond market (World Bank, 2023). Growing global awareness of the urgent need to address climate change and social inequalities has prompted more countries to commit to Sustainable Development Goals and seek funding through GSS+ bonds. Lastly, uneven global financial architecture provides limited opportunities for climate-vulnerable countries to adequately cover their social and environmental needs, enabling GSS+ sovereign bonds to form part of the mainstreaming of private finance in meeting development goals (Standing, 2023).

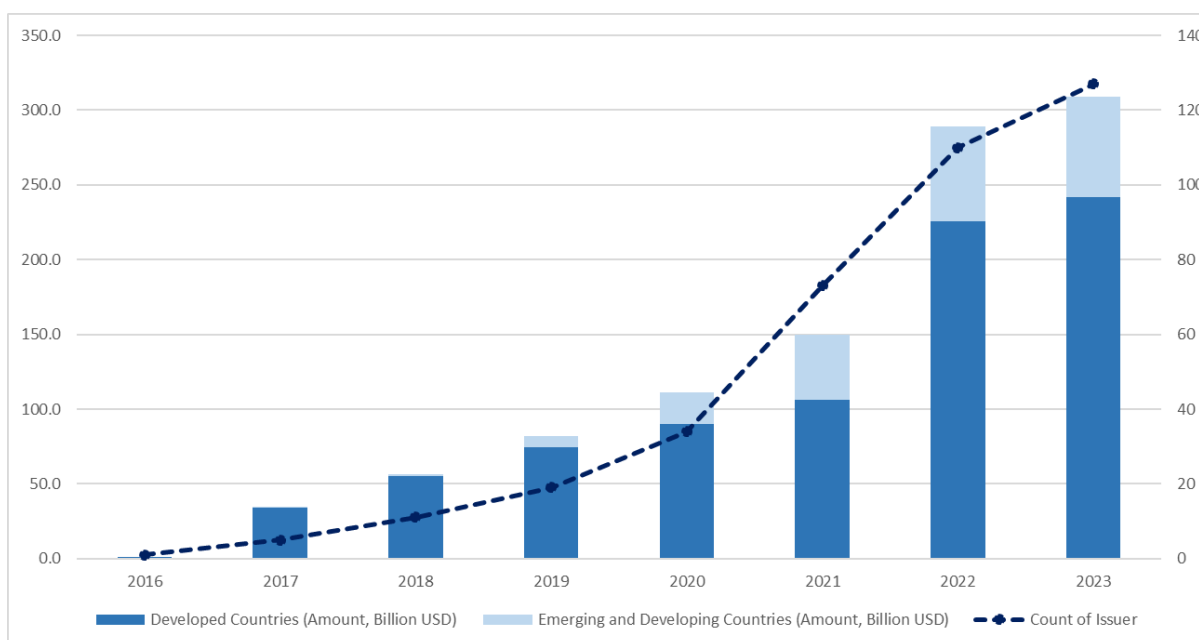


Figure 1: GGS+ Sovereign Bonds, All Countries, Cumulative Amount Issued, 2016-2023 (USD Billion)

Source: Authors' elaboration from LSEG and Bloomberg Database.

Among labelled sovereign bonds, mostly green bonds were issued from 2016 to 2019 and remain dominant until 2023 (Figure 2). Sovereign social bonds and sustainability bonds were first issued in 2020. Social bonds received a boost in 2021 after the COVID-19 pandemic because of the increased social needs (Cheng, et al., 2022).

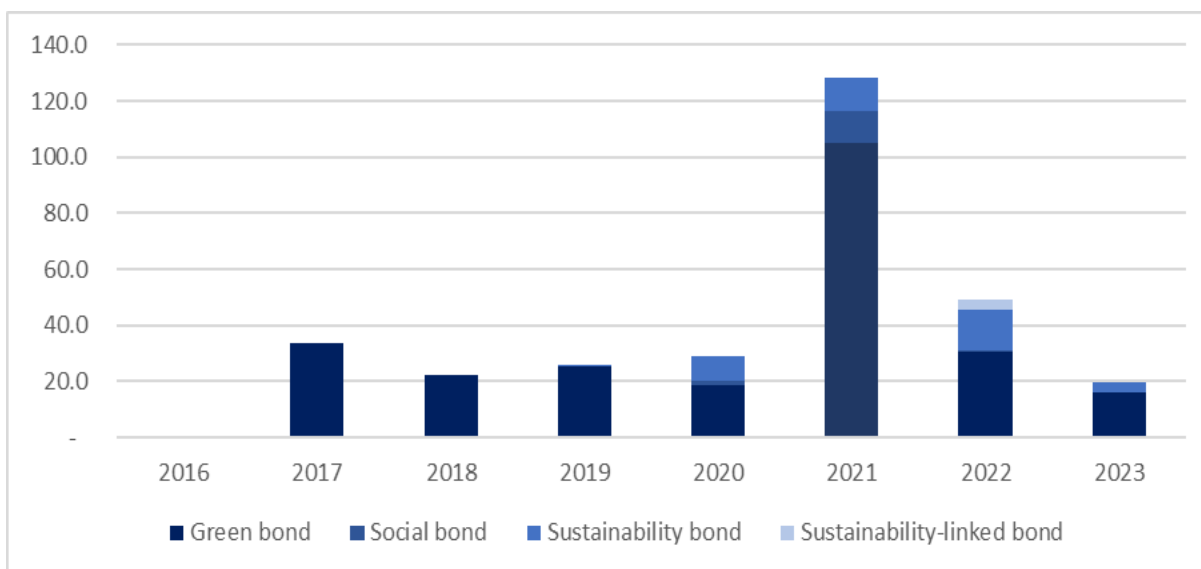


Figure 2: GSS+ Sovereign Bonds, All Countries, Issued by Type, 2016-2023 (USD Billion)

Source: Authors' elaboration from LSEG and Bloomberg Database.

The largest portion of the cumulative amount raised, 82 %, of GSS+ sovereign bonds, are Green bonds followed by Sustainability (13%), Social (4%), and Sustainability-linked (1%) bonds as shown in Figure 3 (left). In terms of number of issuances, more individual Green sovereign bonds have been issued (60%), followed by Sustainability (28%), Social (10%), and Sustainability-linked (2%) bonds (Figure 3, right).

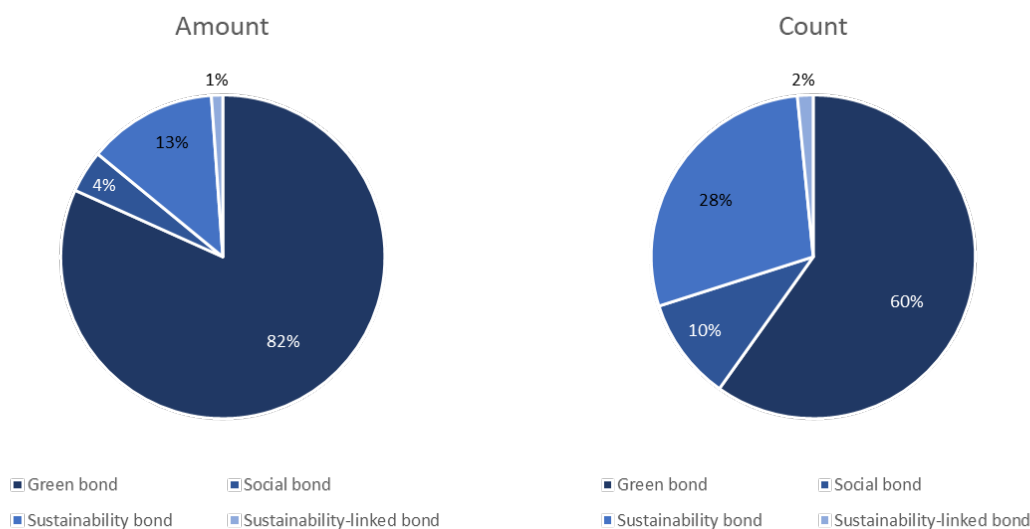


Figure 3: Sovereign GSS+ Bonds, All Countries, Issued by Type, Cumulative 2016-2023

Source: Authors' elaboration from LSEG and Bloomberg Database.

In emerging and developing countries⁷ – the focus of the rest of the paper – the greatest cumulative amounts have been raised using Sustainability bonds (48%), followed by Green (29%), Social (18%), and Sustainability-linked bonds (5%) (Figure 4, left), which follows the number of bonds issued (Figure 4, right). The appetite for further issuances is high according to a 2023 World Bank survey (cited in OECD, 2023). Some countries (e.g., South Africa and Namibia) have issued sub-sovereign bonds (municipal and corporate GSS+) rather than sovereign bonds (OECD, 2023).

GSS+ instruments use two distinct mechanisms to try to channel capital to further development and climate goals. The primary route is through the Use of Proceeds and the more recent route, through Key Performance Indicators.

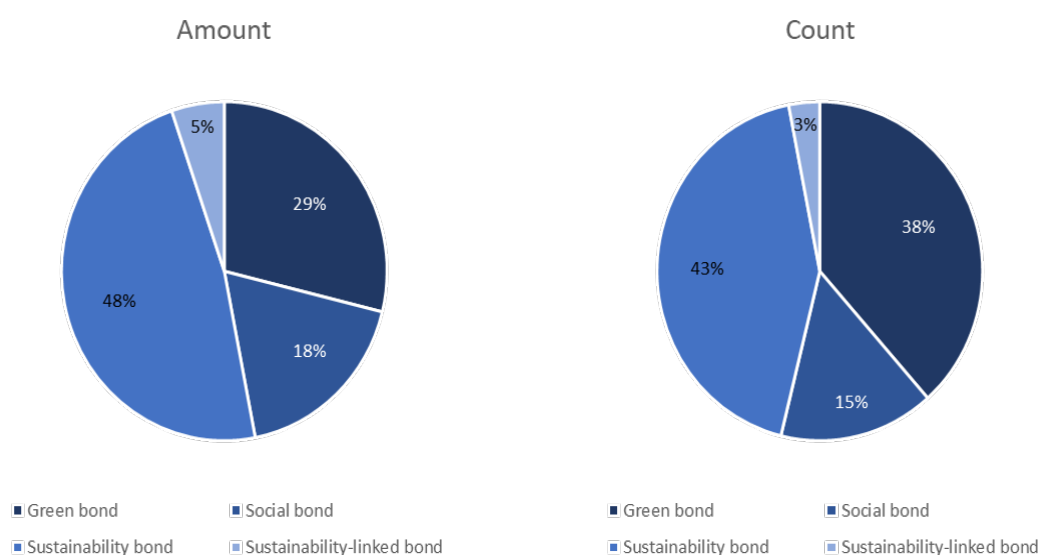


Figure 4: Sovereign GSS+ Bonds, Emerging and Developing Countries, by Type, Cumulative 2017-2023

Source: Authors' elaboration from LSEG and Bloomberg Database.

The sovereign GSS+ bond market was initially dominated by green bonds, whose proceeds were earmarked to finance projects with environmental benefits. More recently, non-environmental goals such as affordable housing have been increasingly marketed via 'social' and 'sustainable' bonds (Figure 2). These bonds rely on using the proceeds for a specific environmental or social benefit. Whether a project is green or contributes to a social or sustainable outcome is laid out by the issuer and, usually, follows a set of voluntary guidelines issued by the International Capital Market Association (ICMA), a trade association of capital market participants.

Initially, this criticism was most prominent in the corporate GSS+ sphere, with ample examples of such bonds being used to finance oil companies and airports drawing widespread criticism (Flood, 2022). Sovereign GSS+ issuances have attracted similar concern as discussed below.

As the architecture for sustainable bonds continues to evolve, the secondary route for channelling funds is using outcome-based indicators such as Key Performance Indicators (KPIs) and Sustainability Performance Targets (SPTs).

⁷ In what follows, we examine a list of 21 emerging and developing that have issued sovereign GSS+ bonds with details in the Annex. For the purpose of this article, we are focusing on GSS+ sovereign bonds issued by national governments, as distinct from sub-sovereign issuances.

Sustainability-linked bonds (SLBs), also referred to as KPI bonds, tie a structural characteristic of the bond, such as the coupon, to the issuer's fulfilment of a pre-defined sustainability target within an agreed timeframe.

Table 2: Overview of Use of Proceeds, KPIs, and SPTs of SLB Bonds

Type	Description	Drawbacks	Possible Benefits
Use of Proceeds	Using Green, Social, and/or Sustainability bonds for their intended purpose involves earmarking the issuances through their Use of Proceeds, for specific investments with environmental and/or social benefits.	- No set definition of what counts as green, social, or sustainable. - Funds can be raised to finance a portion of one's activities, without dislodging or altering environmentally or socially detrimental activity.	- May help finance environmentally positive projects contribute to achieving the Sustainable Development Goals. - May provide better terms of finance.
Key Performance Indicators (KPIs) & Sustainability Performance Targets (SPTs)	- SLBs can be used for general-purpose funds that commit to achieving predefined Key Performance Indicators (KPIs) and assessed against Sustainability Performance Targets (SPTs) set by the issuer. - KPIs should be a credible selection of relevant environmental, social, and/or governance challenges that are measurable and externally verifiable. - One or more targets should be attached to each KPI and this should be such that it represents an improvement over a predefined timeline.	- Precise definitions, such as the use of science-based targets, calculation methodology, and the portion of activity to which the target is applicable, are recommended in voluntary guidelines of the sovereign national bond framework or the ICMA but are not mandatory for each issuance. - The ambition or realism of the SPT and KPI targets cannot be verified. - Issuer not bound by the type of use.	- May lower cost of funding. - May provide flexibility in how to allocate bond proceeds while promoting sustainability objectives. - May create strong financial incentives for issuers to meet sustainability targets. - Frequent disclosure may build trust among investors and promotes accountability between issuers and investors.

Source: Authors' elaboration, ICMA, 2021.

Most importantly, bonds that rely on KPIs do not require that the proceeds of the bonds be used for specific eligible projects, as with the GSS bonds. While the proceeds of SLBs can be used for a variety of purposes, including general budget support or debt refinancing, they are typically tied to specific sustainability KPIs. Misaligning the use of proceeds with these sustainable targets, such as using them for unrelated government expenditures, could undermine the credibility of both the issuer and the bond. In the sovereign market, Chile and Uruguay are the first two countries to issue SLBs, doing so in 2022 (LSEG and Bloomberg Data, 2023), discussed in greater detail below.

3 Financial Characteristics of EME Sovereign GSS+ Bonds

Emerging market countries have issued increasing amounts of GSS+ bonds, with a total of over USD 70 billion from 2017 to 2023. We examine a list of 21 emerging and developing countries that have issued GSS+ sovereign bonds detailed in the Annex. On aggregate, amounts issued have grown (Figure 5) and are predominantly in foreign currency. Close to 80% have been issued in US Dollars, Euros, and Japanese Yen (Figure 6). Countries with larger and more developed domestic markets, such as India or Thailand, have issued GSS+ bonds in domestic currency. Currency denomination matters for foreign exchange rate risk, and ease of repayment and refinancing.

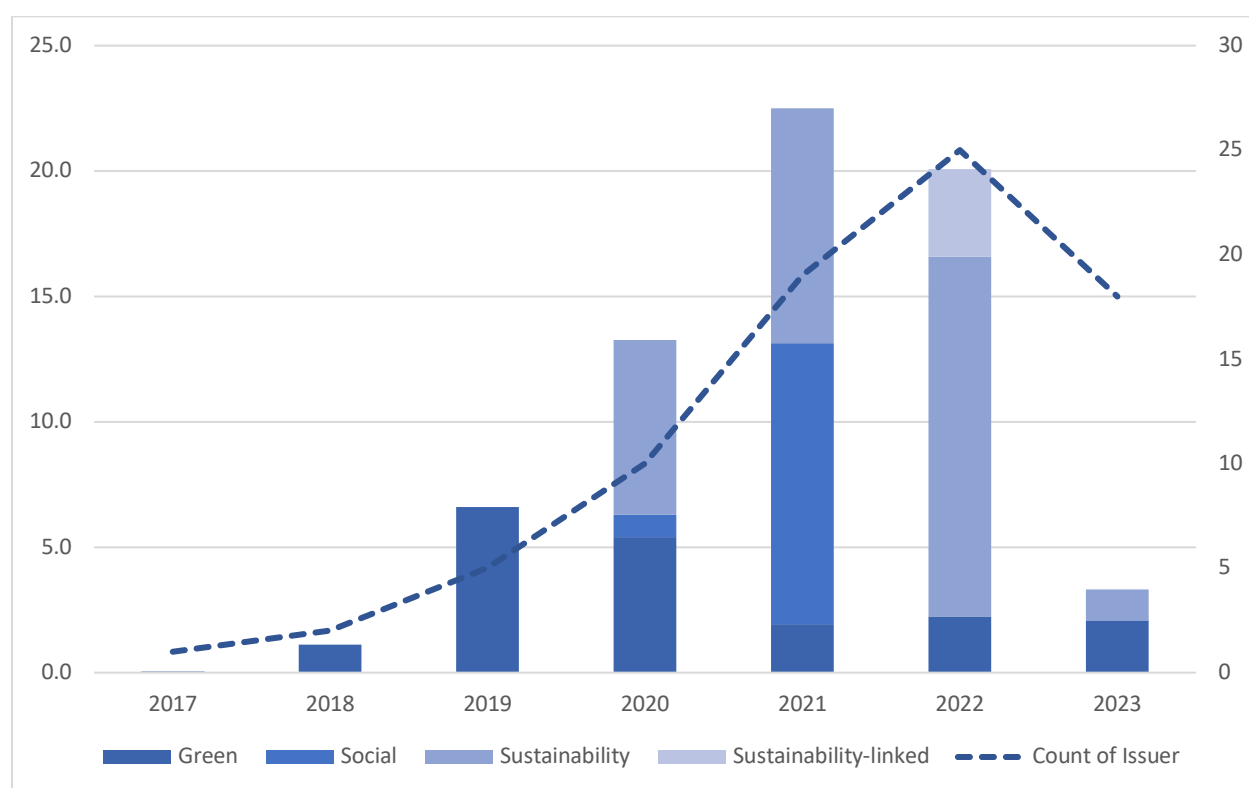


Figure 5: GSS+ Sovereign Bonds in EMEs, Amounts Issued by Type (USD Billion)

Source: Authors' calculation using LSEG and Bloomberg Database.

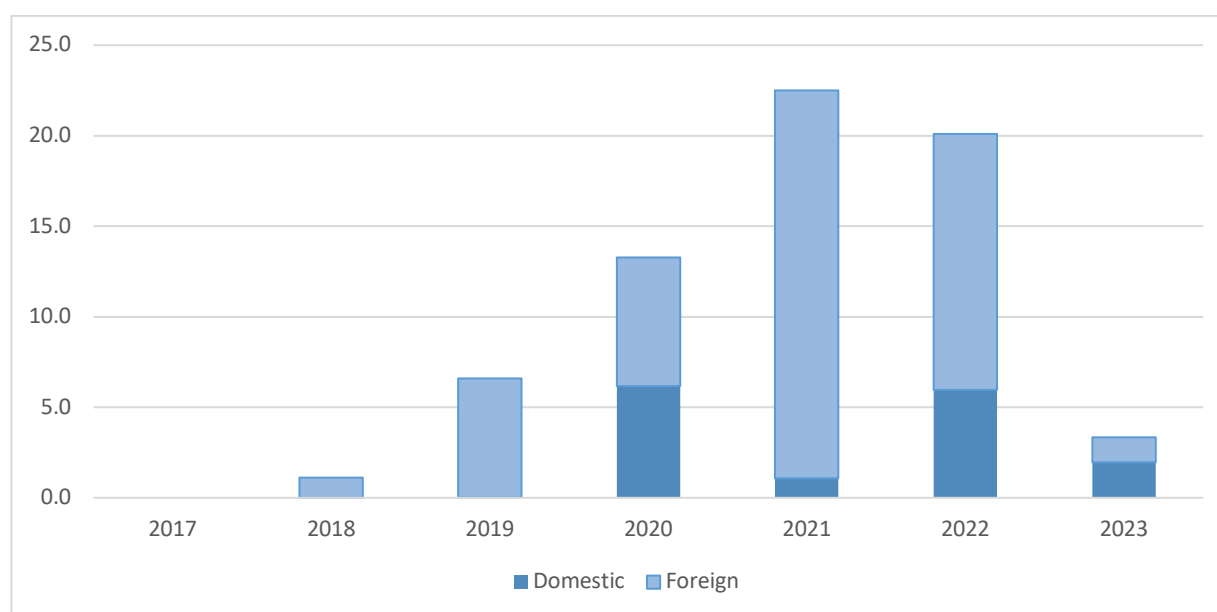


Figure 6: GSS+ Sovereign Bonds in EMEs, By Currency (USD Billion)

Source: Authors' calculation using LSEG and Bloomberg Database.

GSS+ sovereign bonds issued by EMEs have a range of maturity and coupon structures (Figure 7).

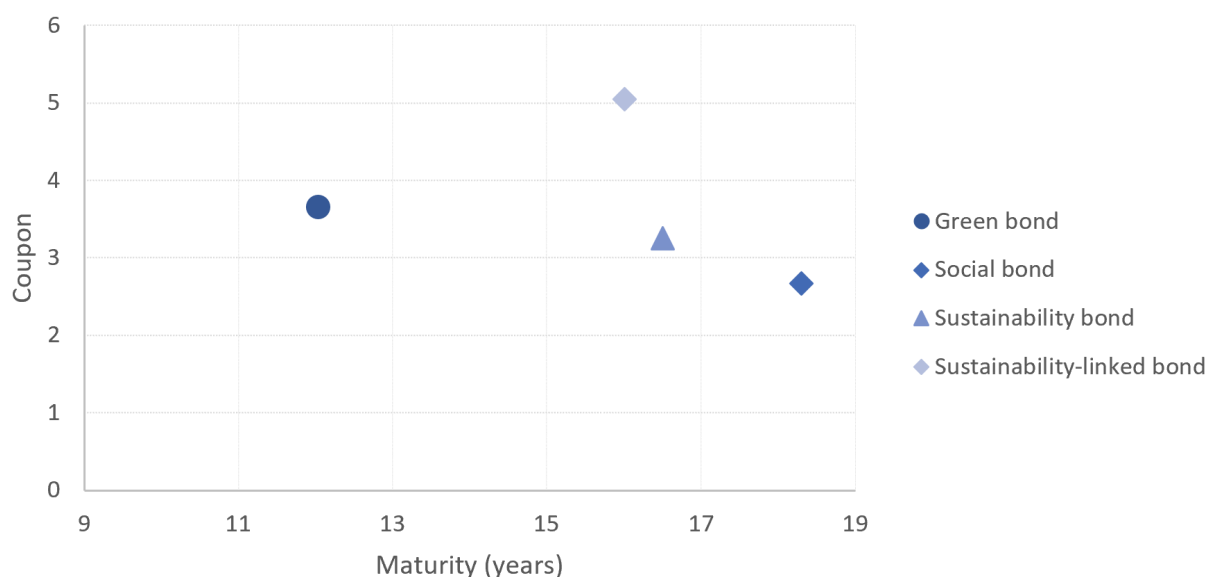


Figure 7: Average Coupon and Maturity of Emerging Market Countries GSS+ Sovereign Bonds

Source: Authors' calculation using LSEG and Bloomberg Database.

As seen in Figure 7, green bonds in our sample have lower maturity, on average, than other GSS bonds; and SLBs have a higher coupon, on average, than other GSS+ bonds. Green bonds often finance specific environmental projects, which typically have shorter development and operation cycles, leading to a preference for shorter maturities that align with the project's timeline. Investors in green bonds may prefer shorter maturities to reduce exposure to long-term risks, such as regulatory changes, technological advancements, or shifts in market demand for green technologies. At the

time of writing, no emerging market country has issued a social bond or sustainability-linked bond in domestic currency (Figure 8).⁸ Borrowing costs have ranged the most for sustainability bonds in domestic currency.

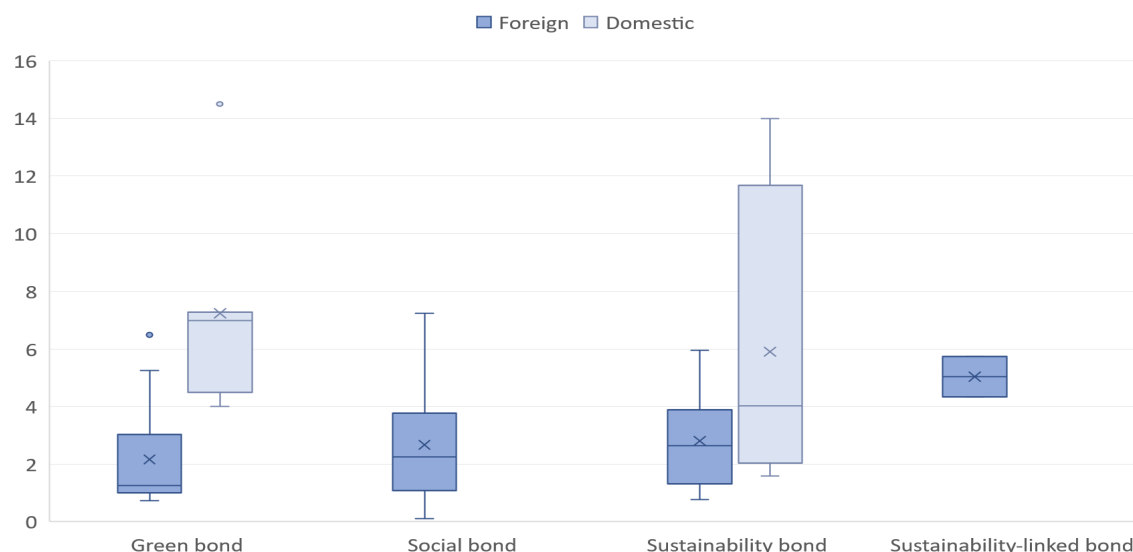


Figure 8: Range of Coupon for Different Types of GSS+ Sovereign Bonds Issued by EMEs, by Currency

Source: Authors' calculation using LSEG and Bloomberg Database.

A more granular breakdown of GSS+ sovereign bonds can be seen in Figure 9, which presents variation in coupon and maturity distributions by currency type within our sample.⁹

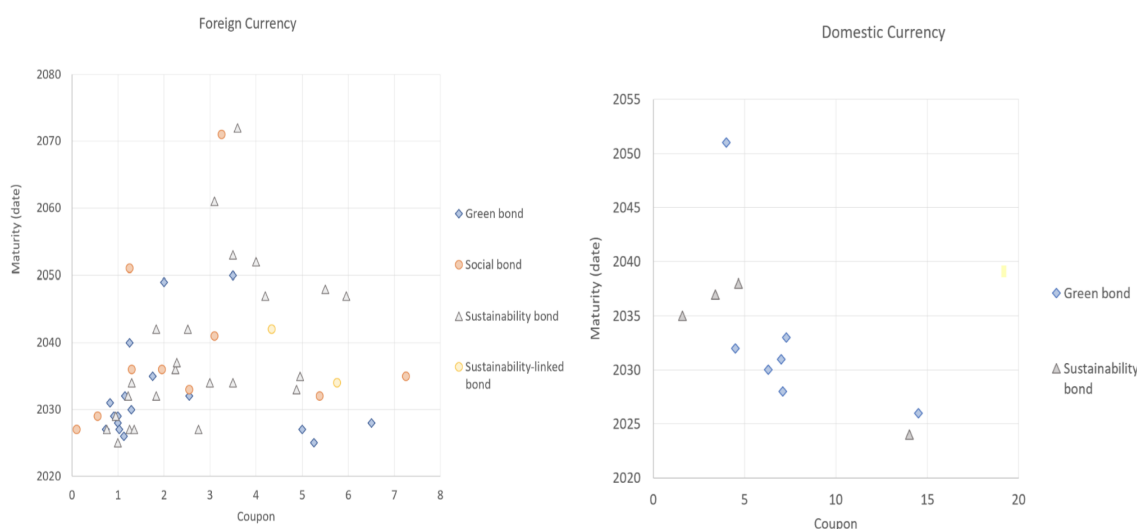


Figure 9: EME GSS+ Sovereign Bonds, Maturity and Coupon by Currency and Bond Type

Source: Authors' calculation using LSEG and Bloomberg Database.

⁸ Chile issued its first SLB in Chilean pesos in July 2023. The amount in local currency is equivalent to about 2,200 million dollars, has a 5.3% annual coupon and will mature in November 2037. Rwanda issued its first SLB in local currency in September 2023, but this was not the sovereign but the Rwanda Development Bank.

Note: Chile's first sovereign local currency SLB was not included in the database as it was issued after the writing of this report.

⁹ Chile's first sovereign local currency SLB was not included in the database as it was issued after the writing of this report.

4 Challenges Facing EME Sovereign GSS+ Bonds

4.1 Are developing countries that have issued GSS+ sovereign bonds raising more capital at lower costs, and with longer maturities, compared to conventional bond financing?

Identifying whether there is a measurable difference between the terms of traditional bonds and GSS+ bonds is the subject of extensive research (Ando et al., 2023; De Ridder & Wolff, 2022; Herbert, 2023). The existence of a ‘greenium’, a lower yield when compared to a similar conventional bond, is a major motivating factor behind the large promise of sovereign GSS+ bonds. However, whether GSS+ bond issuances receive better terms appears somewhat inconclusive.¹⁰ A key reason behind the difficulty in accurately capturing whether terms are in fact better is that rarely are there issuances which are identical and which differ only by the GSS+ characteristics, especially in EMEs.¹¹

To evaluate whether sovereign GSS+ bonds in EMEs can advance a solution to large funding gaps, high cost of capital, and short maturity of funding, we examine the distribution of coupons, maturities, and amounts issued within our sample. We compare each individual GSS+ sovereign bond issued by EMEs within our sample and compare it to the average of the total population of similar bonds issued by that country as defined in the Annex. Figures 10, 11, and 12 compare the amounts raised, the coupon, and maturity of GSS+ sovereign bonds issued by EMEs with the “average” issuance for that country. While an imperfect comparison, we create a benchmark for stylized observations about the scope for GSS+ sovereign bonds by EMEs to provide better terms than conventional bond finance. In this way, we gain a sense of whether EME sovereign GSS+ bonds raise more finance, at better terms, and with longer repayment dates as compared to what ordinarily is raised, prior to further empirical research.

Can countries raise more funds through GSS+ sovereign bonds than conventional bond financing? Figure 10 illustrates the range of differences between each GSS+ issuance size and the weighted average size of all sovereign bond issuances by that country in a similar currency (see Annex for details). By plotting the range of comparisons, we see how individual issuances fare at raising more finance than “normal.” The blue dot represents the USD amount of the GSS+ sovereign bond and the green dot represents the USD amount of the weighted average size of all sovereign bonds issuances (GSS+ and non-GSS+). Towards the top of the Figure, GSS+ sovereign bonds are issued in USD amounts that are smaller than comparator amount. As we move down the Figure, where the blue dot is to the right of the green dot (for some of the issuances by Chile, Hungary, Thailand, and Peru), the amount issued through each sovereign GSS+ bond is significantly greater than the weighted average size of their sovereign bond issuances. Thus, in most instances, sovereign GSS+ bonds in our sample have raised smaller amounts than average issuance size.

¹⁰ Direct comparisons are difficult – rarely are bonds issued with identical terms differing only according to GSS+ characteristic. Ando et al., (2023) and De Ridder & Wolff, (2022) find small positive sovereign premiums in green bonds, but the European Securities and Markets Authority (ESMA) studied the whole ESG bond market and found that there is no systematic greenium in the secondary market (Herbert, 2023).

¹¹ In one example, Colombian green bond was issued on the same day as plain vanilla bond to test the market, found a significant greenium (World Bank, 2022). Given that GSS bonds are contractually equivalent in terms of creditor rights as plain vanilla bonds, market arbitrage could erode any temporary greenium. This could differ in the case of SLB bonds.



Figure 10: Amounts Raised by Individual GSS+ Sovereign Bonds Compared to Average Issuance (in USD)
Source: Authors’ calculation using LSEG and Bloomberg Database.

Can developing countries raise funds through GSS+ sovereign bonds with a smaller coupon than conventional bond financing? Figure 11 illustrates the comparison between the coupons of the individual sovereign GSS+ bonds in our sample and the weighted average coupon for that country's overall sovereign bond issuances.¹² Towards the top of the Figure, the range of differentials is negative. Towards the top of the Figure, the GSS+ bonds issued by Ecuador, the Philippines, and Hungary were issued with a coupon that far exceeded the average coupon on their sovereign bonds. However, towards the bottom of the Figure are individual bond issuances where the coupons of GSS+ sovereign bonds are lower than the average coupons on their other bonds, indicating that these GSS+ sovereign bonds were able to raise funds at better financial terms than "normal." For instance, in Guatemala, Nigeria, and Benin, we see minimal differences between the coupons of their GSS+ bonds and the weighted coupons on their other bonds, suggesting that GSS+ bonds are priced similarly to their other bonds.

Can developing countries raise funds through GSS+ sovereign bonds with a longer maturity than conventional bond financing? Figure 12 compares the maturities of sovereign GSS+ bonds in our sample with the average maturities of that country's other sovereign bond issuances. Measured in years, GSS+ sovereign bonds have longer maturity when the blue dot is to the right of the green dot (towards the bottom of the Figure). For instance, Mexico, Chile, and Peru show longer maturities for GSS+ bonds compared to the weighted average maturities of their other bond issuances. On the other hand, the Philippines and Hungary have GSS+ bonds with shorter maturities compared to the average of their bonds. In the case of the coupon and maturity, there exists a range of positive and negative differences between individual GSS+ bond issuances and group averages.

¹² We only compare coupon rates rather than Yield-to-Maturity which captures the cost of capital more accurately.



Figure 11: Individual GSS+ Issuances Compared with the Country's Other Issuances in the Same Currency (Coupon)

Source: Authors' calculation using LSEG and Bloomberg Database.

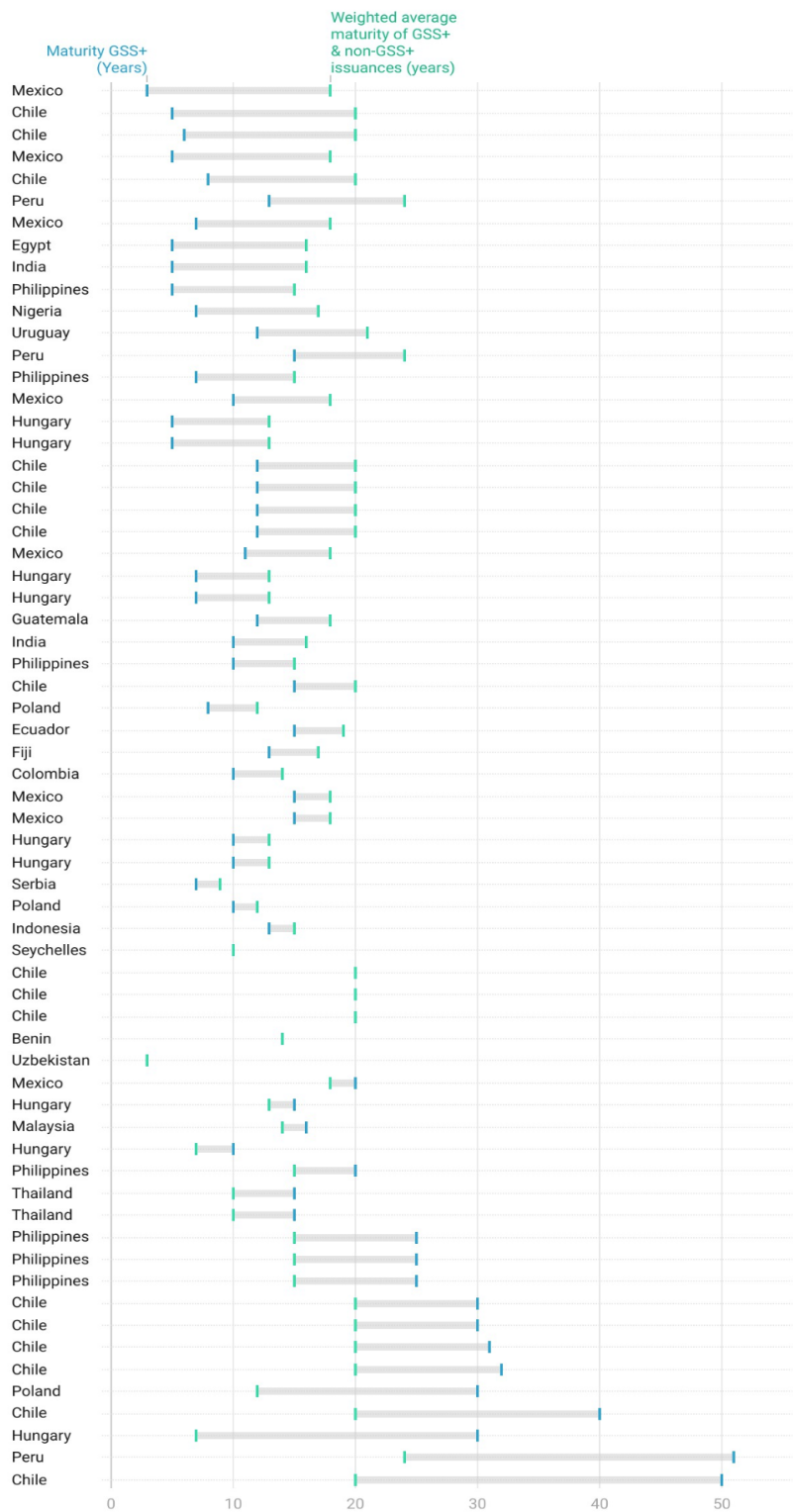


Figure 12: Individual GSS+ Sovereign Bonds Maturity Compared to the Country's Other Issuances in the Same Currency (Years)

Source: Authors' calculation using LSEG and Bloomberg Database.

Without further empirical investigation it is hard to be conclusive about whether these GSS+ sovereign bonds are borrowing significantly more, cheaper, and for longer than “normal.” It appears, however, from this stylistic presentation, that on the whole, the GSS+ sovereign issuances were smaller than the average. Notable exceptions were certain Latin American countries that issued several GSS+ in amounts greater than their average issuance size (Figure 10). In terms of cost of borrowing, the evidence is mixed, and the range of differences fairly equally spread (Figure 11). In terms of maturity, GSS+ bonds appear to be overall issued for shorter maturity periods than the average comparable maturity. Three times more countries in the sample borrowed at lower maturity than average, with five countries including Hungary, Philippines, Mexico, Peru, and Chile borrowing both for longer and shorter periods (Figure 12).¹³

Besides the coupon, there are indirect costs that accompany this form of borrowing such as additional administrative expenses, regarding monitoring and reporting, which are examined in Sections below. Legal costs are an additional expense for GSS+ bond issuances. More research is needed to investigate any price differentials in the secondary markets. Whether GSS+ sovereign bonds trade at different yields than comparable benchmark bonds depends on many factors, including the outcomes of the project or sectors financed. Some studies suggest that GSS+ bonds trade at a lower yield due to strong investor demand for sustainable investments (World Bank, 2023; OECD, 2023).

It is essential to analyse how the yields of GSS+ sovereign bonds of EMEs behave in the secondary market over time compared to similar non-GSS+ bonds, factoring in the influence of macroeconomic conditions, regulatory changes, and market sentiment towards sustainability. Given the limited evidence available, further research is needed to examine the maturity structures of GSS+ sovereign EME bonds and explore how extended maturities impact their liquidity and trading patterns in the secondary market.

4.2 Do GSS+ sovereign bonds issued by developing countries receive a better credit rating than the sovereign’s benchmark bond?

We examined whether GSS+ sovereign bonds in EMEs received a better rating than the country's equivalent benchmark bond. We compared the countries' credit ratings to the individual sovereign GSS+ bond (Table 4) and found that overall, ratings were the same. Despite the range of differences seen in Figures 10, 11, and 12, the country's credit rating strongly influences the rating of the individual bond rather than its green, or sustainable credential. In fact, in only a few cases did we see any positive divergence. In only one country, Seychelles, the GSS+ bond received a higher individual credit rating as compared to the benchmark country credit rating, and this has been attributed to the credit enhancement by MDBs. Seychelles' green bond rating is 'AAA' compared to its country credit rating BB-.

The reason for Seychelles' bond rating, aimed at marine conservation and sustainable fisheries, could be attributed to its backing by international partnerships and support from organisations such as the World Bank and Global Environment Facility (GEF), which provided additional security to investors. This type of support acts as a form of credit

¹³ The OECD's report reveals that sovereign sustainable bonds generally offer longer maturities compared to conventional bonds. Specifically, in advanced economies, the average term-to-maturity is extended by five years, while in emerging markets and developing economies, the extension is about one and a half years (OECD, 2023).

enhancement similar to guarantees seen in cases like the Rwanda Development Bank bond. However, credit enhancement for sovereign issuances is inherently more challenging due to the complexities of sovereign credit risk. In the Seychelles' case, complementary measures such as debt-for-nature swaps, which were positively received by the international community and rating agencies (World Bank, 2019), offer a different form of risk mitigation that may help strengthen investor confidence but whose broader consequences have been criticised by civil society.

Table 4 compares the credit rating of individual GSS+ sovereign bonds within our sample, with the country's benchmark rating. We see that a country's credit rating primarily determines its cost of capital, and issuing bonds with positive credentials, such as GSS+ bonds, does not significantly alter this overall credit rating. Even though there is growing demand for sustainable investments, investors still prioritize the country's overall creditworthiness.

Table 3: Ratings for Selected GSS+ Bond Issuances Compared with the Country's Benchmark Bond Rating

Country	ISIN	Bond Rating	Country Rating	Higher/Lower/Same	Credit Company
Benin	XS2366832496	B+	B+	Same	Fitch
Chile	US168863DY16	A-	A-	Same	Fitch
Colombia	COL17CT03797	BB+	BB+	Same	Fitch
Ecuador	XS2241075014	B-	B-	Same	Fitch
Egypt	XS2241075014	B	B	Same	Fitch
Fiji	FJ0406990632	B+	B+	Same	S&P
Guatemala	USP5015VAK28	BB	BB	Same	Fitch
Hungary	XS2558594391	BBB	BBB	Same	Fitch
India	IN0020220144	BBB-	BBB-	Same	Fitch
Indonesia	XS2387734317	BBB	BBB	Same	Fitch
Malaysia	MYBGT2200033	BBB+	BBB+	Same	Fitch
Mexico	US91087BAT70	BBB-	BBB-	Same	Fitch

Country	ISIN	Bond Rating	Country Rating	Higher/Lower/Same	Credit Company
Nigeria	NGFGB2026S27	B-	B-	Same	Fitch
Peru	US715638DW93	BBB	BBB	Same	Fitch
Philippines	US718286CU95	BBB	BBB	Same	Fitch
Poland	XS1960361720	A-	A-	Same	Fitch
Serbia	XS2388561677	BB+	BB+	Same	Fitch
Seychelles	XS1885544236	AAA	BB-	Higher	Fitch
Thailand	TH0623A3H605	BBB+	BBB+	Same	Fitch
Uruguay	US760942BE11	BBB	BBB	Same	Fitch
Uzbekistan	XS2365392450	BB-	BB-	Same	Fitch

Source: Authors' calculation using LSEG and Bloomberg Database.

4.3 How to align with funds stated objectives?

To ascertain whether the design of GSS+ sovereign bonds achieve stated objectives we examine the details of how the bonds are presented. We examined the sectors mentioned in the bond prospectuses Use of Proceeds, using Chile's and Benin's Case Studies

i. Case 1: Chile's Green and Social Bonds?

Figure 13 below details the range of sectors and SDGs mentioned in a single bond prospectus.

	Chile Green Bond	Chile Social Bond
Which Sectors does the Bond Prospectus Refer to?	• Aquatic Biodiversity Conservation • Clean Transport • Energy Efficiency • General Purpose • Green Construction/Buildings • Renewable Energy Projects • Sustainable Management of Land Use • Sustainable Management of Living Natural Resources • Sustainable Water or Wastewater Management • Water & Sewer	• Primary / Secondary Education • Higher Education • Employment Generation / Alleviate Unemployment • Food Security and Sustainable Food Systems • Social Housing / Affordable Housing • Social – Financing for SME / Microfinance
Which SDGs does the Bond Prospectus Refer to?	• Goal 3 – Good Health and Well Being • Goal 6 – Clean Water and Sanitation • Goal 7 – Affordable and Clean Energy • Goal 9 – Industry, Innovation and Infrastructure • Goal 11 – Sustainable Cities and Communities • Goal 13 – Climate Action • Goal 14 – Life Below Water • Goal 15 – Life On Land	• Goal 1 – No Poverty • Goal 2 – Zero Hunger • Goal 3 – Good Health and Well Being • Goal 4 – Quality Education • Goal 8 – Decent Work • Goal 11 – Sustainable Cities and Communities

Figure 13: Chile's Green and Social Bond Summary Box (with ISIN US168863DL94 and XS2369244327 Respectively)

Source: Authors' elaboration from bond prospectuses.

The individual bond prospectuses define which sectors are eligible and which SDGs are relevant. As indicated in Figure 13, in both cases, the range is extensive. These bonds align with Chile's Bond Framework, whose purpose is to enable expenditures to meet Chile's 2030 Agenda commitments and Nationally Determined Contributions (NDCs) under the Paris Climate Agreement (Chile's Green Bond Framework, 2019). Technical assistance from the World Bank and support from various international organizations promote the bonds and enhance investor confidence.

ii. Case 2: Benin's Sustainability Bond

Benin is the only country classified as least developed and low income that has issued a GSS+ sovereign bond. Funds raised are intended exclusively for the financing of various social and environmental projects contributing to Benin's commitments to achieving the SDGs (Benin's SDG Bond Allocation Report, 2021). Four pillars (Population, Prosperity, Planet, and Partnerships) have been built around these goals which are broken down into 12 categories of eligible expenditures.

	Benin Sustainability Bond
Which Sectors does the Bond Prospectus Refer to?	• Aquatic Biodiversity Conservation • Infrastructure to Reduce Greenhouse Gas Emissions • Renewable Energy Projects • Sustainable Water or Wastewater Management • Terrestrial Biodiversity Conservation
Which SDGs does the Bond Prospectus Refer to?	• Goal 1 – No Poverty • Goal 2 – Zero Hunger • Goal 3 – Good Health and Well Being • Goal 4 – Quality Education • Goal 5 – Gender Equality • Goal 6 – Clean Water and Sanitation • Goal 7 – Affordable and Clean Energy • Goal 8 – Decent Work and Economic Growth • Goal 9 – Industry, Innovation and Infrastructure • Goal 10 – Reduced Inequalities • Goal 11 – Sustainable Cities and Communities • Goal 12 – Responsible Consumption and Production • Goal 13 – Climate Action • Goal 14 – Life Below Water • Goal 15 – Life On Land

Figure 14: Benin's Sustainability Bond Summary Box (with ISIN XS2366832496)

Source: Authors' elaboration from bond prospectuses.

iii. Case3: Uruguay's and Chile's Sustainability-Linked Bonds (SLB)

In contrast to the Use of Proceed bonds, Sustainability-Linked Bonds (SLBs) are directed to achieve predefined targets, irrespective of how the proceeds are used. They can be used for general purposes in contrast to GSS bonds whose issuance is tied to a specific purpose (see Table 1).¹⁴ Two developing countries have issued SLB sovereign bonds, Uruguay and Chile. Chile's SLB prospectus sets out goals with respect to two Key Performance Indicators (KPIs) with the connection of the Sustainability Performance Targets (SPTs):

SPT	KPI
• SPT-1.1: Achieving annual greenhouse gas (GHG) emissions of 95 metric tons of carbon dioxide equivalent (MtCO₂e) by December 31, 2030. • SPT-1.2: Achieving a maximum GHG budget of 1,100 MtCO₂e between January 1, 2020 and December 31, 2030.	• KPI-1: Absolute GHG Emissions.
• SPT-2.1: Generate 60% of the total electricity by end of 2032 from non-conventional renewable sources.	• KPI-2: Share of non-conventional renewable energy generation in the National Electric System.

Figure 15: Chile's SLB Summary Box (with ISIN US168863DY16)

Source: Authors' elaboration from Chile's SLB bond prospectus.

¹⁴ SLBs more broadly have received institutional recognition and support with the European Central Bank deciding to accept SLBs as collateral for further borrowing from the ECB, and the EU itself a major location of the growth of this market (ECB, 2020).

Under the terms of the notes, from and including March 7, 2034, the interest rate payable on the notes will be increased by either 12.50 or 25 basis points, in each case, unless (i) Chile has delivered an officers' certificate to the trustee at least 30 days prior to March 7, 2034 certifying that each of the SPT Events has been satisfied and (ii) the satisfaction of each SPT Event has been confirmed in the Verification Reports. Uruguay issued its SLB in 2022, following the establishment of its Sovereign SLB Framework which describes Uruguay's sustainable development strategic priorities and sets out goals with respect to two Key Performance Indicators (KPIs) as follows:

SPT	KPI
- SPT-1.1: Achieving a reduction of at least 50% in Aggregate Gross GHG Emissions, expressed in CO₂eq per real GDP unit, by 2025 (the Observation Year) compared to 1990. - SPT-1.2: Achieving a reduction of more than 52% in Aggregate Gross GHG Emissions, expressed in CO₂eq per real GDP unit by the Observation Year compared to 1990.	KPI-1: GHG Emissions expressed in CO₂eq per real GDP unit.
- SPT-2.1: Maintaining at least 100% of the Native Forest Area covering Uruguay's territory by the Observation Year compared to 2012. - SPT-2.2: Achieving an increase of more than 3% in the Native Forest Area (i.e., the Native Forest Area covering Uruguay's territory should be more than 103%) by the Observation Year compared to 2012.	KPI-2: Native Forest Area with respect to a reference year.

Figure 16: Uruguay's SLB Summary Box (with ISIN US760942BE11)

Source: Authors' elaboration from Uruguay's SLB bond prospectus.

The structural characteristic of the bond will change if the aforementioned goals are not met. The interest rate will be adjusted upward or downward by up to 30 basis points, depending on whether Uruguay satisfies or fails to satisfy the SPTs. If individual SPTs are met, interest payable will decrease by 15 bps, and if they are not, it will increase. The step-up occurs in 2025, substantially earlier than the maturity date, and the step-down is based on possible over-performance.¹⁵

Sustainalytics provides a Second-Party Opinion (SPO) for Chile's and Uruguay's SLB Framework. This involves reviewing the bond's alignment with the SLB principles developed by the ICMA. For Chile, they verify the selection of KPIs, the calibration of SPTs, the bond characteristics, reporting practices, and review and verification processes. Specific KPI targets are reviewed and assessed in 2030 and 2032. If targets are not met, the bond's coupon rate will increase from 2034 until maturity. For Uruguay, Sustainalytics verifies KPIs related to reducing greenhouse gas emissions and maintaining native forest areas, the calibration of SPTs linked to these KPIs, bond characteristics including step-up and step-down provisions, and reporting and verification mechanisms. These verifications aim to ensure that the bonds meet high standards of transparency and accountability, aligning with sustainability goals and providing assurance to investors. The annual reporting by the UNDP aims to ensure transparency and accountability in meeting the KPIs.

¹⁵ Further details of the Contingent Payoff Structure for each KPI can be found in Uruguay's Bond Prospectus and SSLB Framework (2022).

In both of these cases, Chile's and Uruguay's SLB bonds were issued at a coupon rate that was greater than the average comparator coupon. If SLBs can be issued initially substantially below market rate, with a step-up structure bringing the cost of borrowing to market rate, then there is a mechanism being built for accessing funds at rates otherwise untenable. This does not appear to be the case currently. While the immediate financial terms of SLBs issued by Chile and Uruguay may not appear significantly better than traditional bonds, the question remains as to whether broader objectives including signalling strong commitment to sustainability, attracting ESG-focused investors, encouraging sustainable practices, and promoting innovative financing mechanisms are met (Addleshaw Goddard, 2022). Beyond cost savings, as these stated objectives align with long-term strategic goals, they could signal the creation of sustainable economic and environmental benefits. But what is the evidence in practice?

Previous concerns about the GSS bond market included a lack of tangible economic impact. Specifically, issuances in GSS bonds did not necessarily lead to significant reductions in environmentally harmful activities. Similarly, the SLB market has faced a range of criticisms (Ehlers et al., 2020). Critics point out that SLBs often lack stringent standards and robust verification processes, leading to skepticism about their actual impact (Ehlers et al., 2020; Climate Bonds Initiative, 2021). There are serious concerns that SLBs can be issued to finance projects orthogonal to meeting climate goals (Erlandsson, 2020). Given the common practice of greenwashing across the ESG and climate finance space, from both public and private sources, there is little - if any - assurance that the sovereign GSS+ segment of the market in EMEs is exempt from this problem, see for instance, Rajwanshi (2019) and Gambetta (2021), and the recent worrying reports of public and development bank misdirected funds (Williams, 2023; Rumney et al., 2023). Funds meant for sustainable and developmental projects are often misallocated due to insufficient transparency and oversight, which can lead to resources being diverted to less impactful or even unrelated projects (Williams, 2023). Development banks sometimes struggle to align their financial disbursements with the strategic goals of sustainable development. There are instances where the funds are allocated based on political or administrative convenience rather than need (Rumney et al., 2023).

Experience from the corporate bond market offers important lessons for the sovereign market, as similar challenges are likely to reappear. Notably, green bond labels in the corporate space have not been consistently associated with lower or declining carbon emissions at the firm level (Ehlers et al., 2022). The current system of green bond labels does not necessarily guarantee reduced carbon intensity (Bolton et al., 2020; Ehlers et al., 2022). The dominance of corporate issuers to date adds complexity to creating a robust, transparent framework for sovereign green bonds, where similar pitfalls may emerge. In the corporate green bond market, there is a lack of credibility and rigour to monitor projects selected and use of net proceeds, which do not use science-based approaches to monitor how green bonds link to science-based climate and sustainability targets that are subsequently transparently reported. This problem presents challenges in scaling up the sovereign GSS+ bond markets in a way that ameliorates these problems.¹⁶

¹⁶ It is hard to see how obstacles and problems facing the much larger corporate market would not also apply in the sovereign market. Certain examples of corporate SLBs, such as the SLB issued by Canadian oil sands company, raise concerns not only about greenwashing, but also from an investor's perspective with the future return profile of instruments whose future yield may change for the worse. Other common concerns include doubts as to how climate or other targets in bond issuance will result in actions to meet those targets (Walenta, 2019).

The scale and impact of sovereign bonds are much larger, affecting entire populations, thus the stakes are higher, and the misuse of funds can have broader implications for national development and sustainability goals. For sovereign issuances, it remains a key challenge for investors to verify whether the promised environmental, social, and sustainability benefits are delivered. There may not appear to be strong incentives for sovereign issuers and investors to rigorously monitor and report on the use of proceeds and the achievement of sustainability targets, which complicates investor trust. However, for sovereign issuers, reputation risk plays a significant role. Failure to meet sustainability commitments or demonstrate credible reporting could adversely impact future issuances of GSS+ bonds. The reputational damage from failing to meet these sustainable targets would make it harder for sovereign issuers to attract investors for future GSS+ bonds.

For these reasons, to further build investor confidence, it is essential to establish credible standards and rigorous monitoring frameworks that ensure transparency and accountability in how funds are used. For GSS and SLB bonds to offer improved terms, such as lower interest rates and longer maturities, stronger standards and verification processes must be established. Robust, universally accepted standards and third-party verification mechanisms are essential to enhance the credibility and attractiveness of these bonds. If this relies on donors to play the crucial role in supporting the development and implementation of these standards, then the growth of the GSS+ market in and of itself is not sufficient to provide the promised gains.

4.4 Is reporting sufficient to promote transparency, public accountability, and avoid sovereign greenwashing?

Whether funds raised through GSS+ sovereign bonds align with climate and sustainable development objectives rests upon a range of issues regarding transparency and public accountability. One problem with Use of Proceeds bonds, evident in the example of Chile and Benin, is that the bond prospectus leaves open a very large range of possible projects for financing. As put more broadly by the OECD, “The proliferation of sustainability definitions coupled with a lack of data impedes transparency and accountability of the impact of resources. There is no universally agreed definition of sustainability in financial or capital markets.” (OECD, 2022). Given the context-specific nature of what sustainability means, and varied means to report on it, a number of regional and local Principles, Standards, and Frameworks are appearing, and whether these will remain aligned with the ICMA is an ongoing challenge (OECD, 2023). How much finance will go to each expenditure that has been selected, how this meets each of the listed goals, and how this is translated into outcomes is not always evident for investors or the public at the time of issuance. While generous in scope, there is little transparency or understanding about how much finance would flow to each of the goals mentioned in the prospectus.

Reporting would go some way to address the issues of transparency and accountability, and is required through an annual report, an improvement to regular sovereign bond financing, which typically does not require any reporting on the use of proceeds. The bond issuer establishes the reporting requirements as part of the bond issuance process. The reporting is primarily intended for investors who need to know how their funds are being used and what impact they are achieving. It also serves other stakeholders interested in the transparency and accountability of the bond issuer. However, not all reports in our sample were publicly available and accessible. Of the ones that were, Benin provided a

comprehensive and exhaustive example for its inaugural issuance, detailing the amounts that went to each sector and SDG goal (Republic of Benin, 2022). However, more broadly, it was hard to find consistent annual reporting for the use of proceeds of the issuance. This leaves annual reporting, as a means for quality assurance and accountability, not being used adequately, leaving little for the public to evaluate. Self-reporting is susceptible to greenwashing and it is not always possible to verify the accuracy of annual reports. Relatedly, reporting, while being fundamental to the credibility of issuances, adds additional administrative burden and drains scarce financial and technical resources. Excessive reporting, demanded by investors, could strain developing countries' capacity to respond to growing demands for issuances.

There is not enough information on matured sovereign GSS+ bonds to be able to fully evaluate their impact - only three sovereign GSS+ bonds in EMEs have already matured. Poland issued the world's first sovereign green bond in 2016 which matured in 2022, and the net proceeds were used for refinancing and financing six *eligible* sectors for new commitments or refinancing outlays from previous budget cycles (Moody's, 2019). Moody's comments that the governance structure was enhanced by the adoption of a green bond framework which also included explicit exclusion criteria which cannot be financed (Moody's, 2019). Despite the exclusion criteria, there is no formal way to evaluate projects, nor is there any transparent rigor to the selection process. Actual ex post disclosure on the use of proceeds was limited, with no additional details on the methodologies, calculations, and assumptions applied to calculate benefits (Moody's, 2019).

There are few assessments of the matured green bonds issued by Fiji and Nigeria. Ex post disclosure of net use of proceeds was not found. However, anecdotal evidence from local news presented evidence that although Nigeria's green bond was earmarked for an afforestation programme, years later only a tiny fraction of the funds went to their earmarked destination, through a poorly implemented reforestation programme (Mojeed, 2022; Premium Times, 2022). Local reports in Fiji express similar discontent concerning the ultimate use of funds, as families were left to fend for themselves after devastating cyclones destroyed homes and crops with little government support available, leading to local outcry regarding lack of accountability about green bond proceeds (Chaudhry, 2021). This is despite the fact that both issuers had received support from World Bank, Global Green Growth Initiative, and others to ensure proper use and monitoring proceeds. Further research will be needed once more sovereign GSS+ bonds mature to evaluate their long-term impacts and effectiveness.

Given the importance of financing structure on whether targets are achieved, SLBs appear to have more consequential reporting requirements.¹⁷ As SLBs are performance based, they can more readily overcome the concern that sovereign GSS bonds make great promises in their issuance but fail to deliver and follow up as they mature. In this respect, KPI and outcome-oriented issuances can be seen to provide a solution to concerns about greenwashing. However, as SLBs are not tied to a specific project and can be used for general purpose budget support, they can be used for purposes antithetical to meeting sustainability goals, including the refinancing of previously issued debt.

¹⁷ According to the ICMA Principles, both Use of Proceeds and SLB bonds include pre and post issuance reporting requirements. As mentioned above, in the case of Uruguay, for instance, Sustainalytics provides the SPO and states that the UNDP will issue verification reports, to verify the KPIs and report on progress annually (Sustainalytics, 2022).

Developing indicators and methodologies to calculate the performance of the KPIs need to be based on transparent data which may be particularly difficult in countries where good quality data is scarce, adding to overall reporting challenges. Decisions over methodologies open potential for disagreements and thus how performance will be measured, requiring a public scrutiny and consensus. This is particularly relevant when considering issuances aimed with more complex targets, such as climate adaptation and building resilience to climate disasters, which are hard to assess and quantify. Developing effective metrics for these areas remains a significant challenge.

We can conclude, therefore, that without clear ex-ante information on how funds will be allocated and without ex-post data on project outcomes, investors and the public cannot ascertain whether their investments are genuinely contributing to the associated Sustainable Development Goals (SDGs). This can happen through clear, stringent criteria and transparency in the allocation of bond proceeds and by narrowing down the range of eligible projects and ensuring that they meet specific, science-based criteria. Reporting needs to fulfil robust accountability measures, so as to allow for public scrutiny of raised funds. GSS+ sovereign bonds are more likely to secure better terms if issuances are accompanied by robust, transparent criteria for project evaluation and comprehensive ex post disclosure on the use of proceeds. The current gaps in these areas, as highlighted by Moody's, likely hinder the ability of these bonds to consistently achieve more favorable terms. Addressing these issues is crucial to enhance investor confidence and improve the financing conditions for sustainable projects.

5 Recommendations

Sovereign GSS+ bonds should be designed to be able to comfortably achieve longer maturity, lower cost of capital, and increase the scale of funding for emerging and developing countries. To qualify as a sovereign GSS+ bond, maturities should be at least 30 to 40 years and interest rates should be low, reflecting the generation-long investment needed to meet Sustainable Development Goals (SDGs) with payouts extending beyond 30 years

5.1 The role of de-risking

Organizations such as the IMF, OECD, and World Bank provide technical assistance and guidance to assist governments to issue GSS+ bonds.¹⁸ These bonds should have maturities well over 30-40 years, at low rates, and be a source of stable, long-term financing. However, despite these efforts, achieving significant and consistently favorable financing terms and buffering these instruments from capital market volatilities has not materialized. Multilateral Development Banks play a crucial role in de-risking investments through guarantees and other financial instruments, which aim to reduce the perceived risk for private investors and thus encourages investment in long-term sustainable projects.

One such way is through the use of partial credit guarantees, used to 'de-risk' sovereign bonds. For instance, the World Bank provided a credit guarantee for Seychelles' sovereign bond,¹⁹ and a concessional loan of a further \$5 million through the Global Environment Facility (GEF) to cover part of the interest payments to investors.²⁰ The financial benefit

¹⁸ Reference to: IMF's latest *Guidance Note for Sovereign Debt Managers*, and, the OECD's *Scaling up GSS+ Bonds in Developing Countries*.

¹⁹ World Bank (2018). Seychelles: Introducing the World's First Sovereign Blue Bond. [Link](#)

²⁰ World Bank (2018). Seychelles Launches World's First Sovereign Blue Bond. [Link](#)

to investors is thus secured, but it is unclear how such mechanisms prevent the debt from piling up on the borrower. The Inter-American Development Bank provided a partial credit guarantee for Ecuador's sovereign social bond – the world's first.²¹ Further examples of promotion and de-risking mechanisms of leveraging guarantees and technical assistance from MDBs are provided in Table 5.

The efforts by international partners to promote and attract private investors to these bonds obfuscates the degree to which the label on their own is sufficient to guarantee better terms. If credit rating agencies 'require' a guarantee or other additional terms to signal a safer investment, then the prospect for sovereign GSS+ bonds is to rely on indirect subsidization to be attractive to buyers.

De-risking involves guarantees, insurance, and technical assistance from MDBs and other institutions to provide the necessary assurances.²² To create a robust financial product that effectively mobilizes private capital under specific terms, it is essential to ensure that de-risking mechanisms are implemented strategically. Rather than aiming simply for "more private finance" to deliver sustainable goals, the focus of how to design a more effective GSS+ sovereign debt market should be on developing rigorous standards (see OECD 2023). Establishing a robust structure to determine bond qualification is essential. This includes bond designs, auditing implementation, and ensuring that projects meet stringent sustainability criteria.

Table 4: Financial Terms and De-risk Mechanisms of Selected Bonds

Country	Financial Term	Use of Proceeds	De-risk Mechanisms
Chile's Green Bond	- Year: 2019 - Amount: USD 1.5 billion - Maturity: 12 years - Interest rate: 2.55%	Renewable energy projects, sustainable transportation, efficient water management.	Technical assistance from the World Bank and support from various international organizations helped enhance investor confidence.
Uruguay's SLB	- Year: 2022 - Amount: USD 1.5 billion - Maturity: 11 years - Interest rate of 5.75% (linked to achieving sustainability targets)	Sustainable agriculture, renewable energy, conservation efforts.	Verification by Sustainalytics and annual reporting by the UNDP to ensure transparency and accountability in meeting the KPIs.
Fiji's Green Bond	- Year: 2017 - Amount: FJD 100 million (approx. USD 50 million) - Maturity: 5 years - Interest rate: 4%	Renewable energy projects, reforestation, climate-resilient infrastructure.	Support from the World Bank and the Global Green Growth Institute, providing technical assistance and enhancing transparency.

²¹ IDB (2020). Ecuador Issues World's First Sovereign Social Bond, With the Support of an IDB Guarantee. [Link](#)

²² De-risking may also contain its own internal challenge – as developed by Gabor (2023).

Country	Financial Term	Use of Proceeds	De-risk Mechanisms
Nigeria's Green Bond	- Year: 2017 - Amount: NGN 10.69 billion (approx. USD 29.7 million) - Maturity: 5 years - Interest rate: 13.48%	Afforestation, renewable energy projects, sustainable transport.	Support from the World Bank and other international organizations to ensure proper use and monitoring of proceeds.

Source: World Bank, 2017; Sustainalytics, 2022

5.2 Incentivizing outcomes

SLBs are criticized for lack of transparency over how targets will be achieved, whether the targets represent ambitious enough objectives, and whether the step-up or step-down structure is sufficient to incentivize behaviors. It is uncertain if the penalties are high enough to create material financial incentives for meeting Sustainability Performance Targets (SPTs) (Berrada et al., 2022; Cheng et al., 2022). The penalty applied for missing the SPTs in SLBs (beyond sovereigns) has almost overwhelmingly been in the form of a step-up arrangement, with only a few exceptions, one of which is Uruguay's sovereign SLB bond.

In practice, however, it remains to be seen what impact missing a target of the SLBs will have. Will missed targets prompt a sell from investors' side? If so, will this be contagious to other sovereign bonds. Will secondary market price differ markedly after the missing of a penalty, and will there be other financing or reputational implications? Suppose that the targets in the SLB are missed and the pricing of that bond changes in the secondary market. Bondholders will profit from an environmental failure. This will draw criticism from the public, but also from other investors who are motivated by ethical investing. It remains to be seen how much a missed performance target will matter. Evidence from the first SLB bond (an EU countries' state-owned enterprise) to miss its targets have not raised eyebrows (Practical ESG, 2023), with a rating agency stating that missing targets is likely to be judged as "unrelated to ... operating performance" nor an indication of "a change of strategy or a weakening of its sustainability focus." (Practical ESG, 2023). If this maps onto the sovereign SLB market too, the question is why charge a penalty for missed targets if it makes little difference. Evidence from Italian energy company, Enel, that missed its SLB target triggering a step-up in financing cost has provided an opportunity to test the market. A missed target signals, according to SustainFitch (2024), an indication of ambitious targets, amid growing investor skepticism towards the SLB market.

SLB sovereign bonds are structured around financial penalties for non-compliance. The use of financial penalties to incentivize behaviors to meet specific outcomes needs to be examined with care. There are several examples, where adding punitive charges provide little means to change but penalize countries in crisis (Laskaridis, 2022). The experience of IMF surcharges is illustrative; these are additional costs applied on top of normal interest payments that the IMF levies on its non-concessional lending when a country requires prolonged use of a large loan.²³ The IMF step-up

²³ Surcharges have received enormous criticism, ranging from economic justice organizations to Nobel Prize-winning economists (Stiglitz and Gallagher, 2022), to members of Congress (Global Action for Justice and Debt Cancellation, 2022), with repeated calls for their termination.

is significantly larger than those on SLB bonds, but the implications are relevant. If countries facing debt vulnerabilities miss SLB targets, the penalty payments pro-cyclically worsen repayment capacity as opposed to incentivize better performance. While this may not be relevant for Chile or Uruguay, it is relevant for any proposed expansion to this form of borrowing to a wider range of EMEs that *do* face heightened debt risks.

If missed performance targets become actionable in court, this would only add obstacles to dealing with sovereign debt repayment difficulties in fair, timely, and efficient ways, adding to the growth in litigation over sovereign debt in recent decades (Schmacher, Trebesch, and Enderlein, 2018).²⁴ Evidence from the green bond market is that issuers are including ever-more ambitious green promises in bond issuances and simultaneously, issuing disclaimers limiting their liability if promises are not met (Curtis et al., 2023). While more bite is not yet on the table, according to Giráldez and Fontana (2022), “the more significant risk that issuers consider in practice is harm to their reputation and credibility.” Another design flaw of SLBs is that it remains unclear how multiple state contingencies interact. State-dependent debt repayment is contingent on certain situations materializing or not.²⁵ Natural disaster clauses introduce a deferral of payment of principal and interest if a hurricane strikes. These clauses have played a greater role of late, notably the inaugural issuance by Grenada, following the devastation by Hurricane Ivan. It is not clear how innovations in state contingent instruments could be combined in SLB sovereign bonds and which clauses would take precedence.

Another design flaw of SLBs is that it remains unclear how multiple state contingencies interact. State-dependent debt repayment is contingent on certain situations materializing or not.²⁶ Natural disaster clauses introduce a deferral of payment of principal and interest if a hurricane strikes. These clauses have played a greater role of late, notably the inaugural issuance by Grenada, following the devastation by Hurricane Ivan. It is not clear how innovations in state contingent instruments could be combined in SLB sovereign bonds and which clauses would take precedence.

This is relevant for sovereign GSS+ bonds because targets may be missed due to force majeure – countries paying a cost for failing to meet targets that may have been out of their control. For instance, an extreme weather event caused by global temperature rise could lead to coral bleaching, wiping out any gains in protecting the marine environment that is a target in the SLB. To address the concern of countries paying a cost for failing to meet targets due to factors beyond their control, such as extreme weather events, the design criteria for sovereign GSS+ bonds should incorporate such considerations. Force majeure clauses should include provisions that account for events, such as natural disasters or extreme weather conditions. These clauses should allow for temporary suspension or adjustment of targets without triggering penalties. It is important to design flexible targets that can be adjusted based on unforeseen circumstances. This could involve setting a range of acceptable outcomes rather than fixed points allowing for recalibration in response to significant environmental changes.²⁷

²⁴ The danger of creating a penalty structure that ends up being insufficient is that it creates incentives to seek out ever stronger ‘sticks’ if initial ones fail. Chen et al., suggests that penalties in SLBs are purely reputational. The prospect of greater step-up structures for missed targets bear closely to the decades of external conditionality on developing countries facing few other sources of financing by international organizations, such as the World Bank and IMF, whose negative consequences are wellknown (Kentikelenis et al., 2016).

²⁵ For instance, in the case of GDP-linked bonds, repayment is linked to GDP growth.

²⁶ For instance, in the case of GDP-linked bonds, repayment is linked to GDP growth.

²⁷ To address this problem, Wang et al. (2023) introduce the feasibility and ambitiousness matrix to suggest that SLBs ought not to be tied to KPI outcomes but rather to issuer’s performance with respect to the part of the outcome that remains within the issuer’s control.

5.3 GSS+ bonds and the broader macroeconomic framework and country's debt sustainability

Issuing GSS+ sovereign bonds will only be appropriate if it increases the fiscal space available to deal with climate and development goals. To ascertain this necessitates that climate and development outlays be integrated with debt sustainability frameworks. Current attempts to do this are elementary. Appropriateness for further debt financing cannot follow income criteria, given the large share of middle-income countries that face deteriorating debt stock and liquidity indicators, severely hampering their fiscal space needed to achieve the SDGs (UNCTAD, 2023). Evaluation of whether GSS+ sovereign bonds is the most appropriate form of financing needs to place bond financing within the context of the countries' overall public financial management, the countries' fiscal framework, and sovereign debt management operations. Despite the growing capacity for public debt management, technical difficulties will remain. This entails proper integration of any new GSS+ instrument issuance alongside other obligations, gross financing needs, and repayment schedules. New sovereign bond frameworks must be developed by public debt management offices to ensure alignment with overall public debt management strategies. This depends on sufficient administrative capacity within the government to ensure that project selection is the most appropriate and to assist coordination across ministries and not just the Ministry of Finance.

In light of a dearth of grants and concessional finance, debt financing may be the only option despite debt vulnerabilities implied. GSS+ bonds may offer a promising alternative to other forms of debt financing, such as non-GSS bond financing or commercial loans. Risk mitigation strategies need to be incorporated into their design. Developing countries' increased access to international capital markets during periods of ample global liquidity exposes them to greater legal, refinancing, and exchange rate risks (Bonizzi et al., 2020). These countries are highly vulnerable to external shocks that can quickly lead to large capital outflows, explosive borrowing costs, and prohibitive refinancing costs, implying a rapid loss of market access if global conditions change. The procyclical nature of credit rating agencies further exacerbates this vulnerability (UNCTAD, 2023).

5.4 Emphasis on credibility and accessibility of external reviews

One of the overarching problems facing the GSS+ market is that its regulatory standards are voluntary. Despite more than ten years of rapid growth, there is no consensus or formal regulatory definition of what constitutes 'green', 'social', or 'sustainability' bonds (Giráldez and Fontana, 2022). Voluntary market-based guidelines have filled some of this gap, predominantly through the ICMA Guidelines and Principles, such as the Green Bond Principles, Social Bond Principles, etc., which are not mandatory.²⁸ Climate Bond Initiative, an investor focused initiative, also provides a certification scheme for bonds, although sovereigns are only a small share of their clients (King et al., 2021). While all the bonds examined are compliant with voluntary standards, the voluntary nature leaves this form of borrowing susceptible to any issuer being able to self-report the 'green-ness' of its instrument.

²⁸ The EU taxonomy promises to change this status quo. Gaining a European green bond label would require up to 85% of proceeds invested to align with the EU's taxonomy for sustainable activities. Less than 25% of existing stock of EU Green bonds issued under ICMA guidelines meet the 'gold standard' of the EU's taxonomy (Mainstreet Partners, 2024).

To ameliorate the weakness of voluntary standards, independent reports are produced to validate whether in fact those ICMA voluntary standards are met. This is fulfilled through third-party verification via Second Party Opinions (SPOs). SPOs provide an assessment of a GSS+ framework or transaction, and whether the proceeds will be used to finance or refinance environmental and social projects for alignment with third-party principles, standards, and taxonomies (S&P, 2023). The three main organizations doing this are CICERO (Oslo), Sustainalytics (Amsterdam), and Vigeo Eiris (Paris), each of which conduct their own methodology for grading how ‘green’ or ‘social’ the instrument is. In our sample, most SPOs were provided by Moody’s ESG Solution – which purchased Vigeo Eiris, and Sustainalytics, purchased by Morningstar. Hungary and India appointed Cicero Shades of Green (taken over by S&P Global Ratings), whereas Serbia appointed institutional shareholders as their SPOs. Colombia, Guatemala, Indonesia, Nigeria, Peru, and Uzbekistan do not provide any information about SPOs.

The acquisition of these smaller rating firms by large credit rating agencies is a sign of the significance placed on the second opinion reports, but also a signal of loss of independence, given the market power of the acquiring firms. It is problematic because credit ratings wield enormous power that goes largely unchecked, and in times of crisis, act procyclically, worsening a country's ability to refinance itself (Kraft, 2023).

Given the challenges, it is essential that GSS+ sovereign bonds are accompanied by a credible and customised framework for accountability. This framework should ensure transparency, independence, and reliability, thereby avoiding the pitfalls of the voluntary market and the concentrated power among a few rating agencies. For instance, independent verification processes, enhanced transparency requirements, and regular performance audits could be implemented to maintain the integrity and trustworthiness of GSS+ sovereign bonds. Such measures would mitigate the risks associated with procyclical downgrades during economic downturns, ensuring that GSS+ sovereign bonds can effectively provide affordable and stable financing for developing countries. By incorporating these accountability measures, GSS+ sovereign bonds can avoid the weakness associated with the current rating system and contribute to a more equitable and resilient financial environment for developing countries.

6 Conclusion

Aligning funds raised on private capital markets to SDG and climate goals is difficult. To establish a robust and credible GSS+ sovereign bond market, it is crucial to address several key considerations and design elements.

Sovereign GSS+ bonds, like the entire ESG market, face issues of greenwashing. To address this, we recommend moving away from voluntary and market-led standards for defining green, social, and sustainable investments. Instead, we encourage the development of statutory standards and rigorous nationally agreed development plans to which GSS+ bonds can be credibly linked, ensuring these bonds are integrated into broader development strategies. A key obstacle facing the usefulness of GSS and SLB bonds is that there is a lack of commonly agreed upon eligible projects, a finding that chimes with the concern raised by Vulturius et al., (2022). With SLBs, there is no consensus over which KPIs to use, what performance targets to set, whether these are suitable, appropriate, or ambitious enough to address climate or other sustainability needs. The wide variation in the standards and criteria for eligible projects can hinder the ability of

emerging markets to raise affordable financing through GSS and SLB bonds. Investors need clear, standardized guidelines to confidently invest in these bonds, which currently are lacking.

Implementing such national plans would involve setting clear, mandatory standards that are not solely reliant on market mechanisms. This approach could include creating robust regulatory frameworks, establishing independent oversight bodies, and mandating transparency in reporting and performance metrics. In addition, providing technical assistance to developing countries would support the effective investment on bond revenues and the development of credible standards for GSS+ sovereign bond issuance. It is important to emphasize the credibility and accessibility of external reviews, whether through Second Party Opinion, Verification, or Certification processes. Further research is needed to assess the benefits and drawbacks of different types of external reviews.

To ensure that GSS+ sovereign bonds expand affordable finance, the following design considerations are advised to be implemented. Risk mitigation mechanisms should be included to address legal, refinancing, and exchange rate risks, possibly through domestic currency issuances and legal safeguards against sudden market changes. Embedding contingency clauses that allow for adjustments in payment terms or timelines in response to external shocks can help manage sudden changes in borrowing costs and market access. Utilizing credit enhancement tools such as guarantees or insurance can improve the credit rating of GSS+ bonds, thereby reducing borrowing costs and attracting a broader range of investors. But on its own it must not create a false confidence of repayability. Implementing robust monitoring and management frameworks to continuously assess and respond to emerging risks is essential. By incorporating these considerations into the design of GSS+ sovereign bonds, it is possible to expand affordable finance for developing countries while minimizing the introduction of new risks associated with international capital markets.

Although the market for sovereign GSS+ bonds is young but growing, the existing evidence does not suggest that GSS+ bonds offer significantly improved terms of financing. Country credit ratings decisively determine the high cost of borrowing, which appears set to progressively worsen as climate crises escalate. Where individual issuances may exist at improved terms, this has often been achieved through mechanisms to de-risk bonds using public funds, donors, or multilateral development banks. While this approach can make Sovereign GSS+ bonds more attractive to investors, it is important to examine the opportunity, cost, and consequences of such de-risking measures to ensure that the use of these resources aligns with broader development and financial objectives. Using public funds to subsidize and guarantee private investments does not even consistently improve the credit rating of the instrument compared to the country's credit rating, highlighting the current warping of de-risking strategies. The primary motivation for issuing these bonds frequently appears to be reputational rather than financial.

The issuance of Use of Proceeds bonds presents significant challenges in ensuring that project selection effectively advances Sustainable Development Goals (SDGs) and climate objectives. Monitoring and reporting on the use of funds is critical to prevent greenwashing, as issuers have considerable discretion in determining and reporting eligible projects. Sovereign SLBs, which allow proceeds to be used for any purpose while aiming to achieve measurable targets with financial penalties for non-compliance, offer a different approach. The penalties for non-compliance may not be sufficient to drive significant behavioral changes, potentially serving merely as an additional income stream for investors. To enhance their attractiveness, these bonds should be issued on significantly better terms.

While sustainability-linked bonds should focus on outcomes, it is important to avoid adding financial penalties for missed targets. Such penalties could create a dangerous precedent for profiting from environmental failures and introduce policy conditionality in private financing instruments. We suggest incorporating flexibility, including use of ‘hurricane clauses’ and positive incentives for achieving or exceeding targets, establishing robust standards, and encouraging stakeholder engagement.

Many low- and middle-income countries currently face dangerously elevated debt burdens, which means that traditional debt-financed climate and development policies are suitable only for a select group of financially resilient nations. SLB bonds, by applying penalty structures for missed targets in a context of growing debt vulnerabilities will be counterproductive. GSS+ sovereign bonds need to offer long maturities and low-interest rates, to facilitate patient, strategic investments in essential sectors. It is essential to recognize that the promotion of GSS+ bonds should complement, not undermine, the provision of public low-cost, long-term finance. The increase in GSS+ bonds should be accompanied by an increase in public financing to ensure a comprehensive approach to funding sustainable development. Sovereign GSS+ bonds should not be considered a replacement for critical public concessional and grant finance. Yet, it is important to recognize their role as complementary tools designed to attract investment into projects with specific environmental and social benefits.

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8 Annex I

We developed a database that includes all known GSS+ sovereign bonds issued by developing countries. Financial data collected was sourced from Thomson Reuter's LSEG,²⁹ Bloomberg Bond Terminal,³⁰ and Climate Bond Initiative.³¹ The main financial data collected is the amount issued, coupon, maturity, as well as price and yield data in the secondary market.³² Other properties related to the design of the issuances include information about the bond framework, second party opinion, certification provider, and compliance information that are gathered from individual bond prospectuses. Use of Proceeds information is collected for GSS bonds prospectuses and SPTs, KPIs, and details of step-up or step-down structures are collected for sustainability-linked bond prospectuses. We also examined the country bond frameworks through which individual bonds were embedded.

Table A1: Full List of GSS+ Bonds – Coupon, Maturity, and Amount (USD)

Bond Type	Issuer Country	Coupon	Issue Date	Maturity	Amount Issued (USD)
Sustainability bond	Benin	4.95	7/22/2021	1/22/2035	531,598,196
Sustainability bond	Brazil	6.25	11/20/2023	3/18/2031	2,000,000
Sustainability-linked bond	Chile	4.125	7/5/2023	7/5/2034	817,500
Sustainability-linked bond	Chile	5.33	7/5/2023	1/5/2054	1,481,659
Sustainability-linked bond	Chile	4.95	7/5/2023	1/5/2036	1,649,853
Green bond	Chile	0.83	7/2/2019	7/2/2031	2,078,214,042
Green bond	Chile	1.25	1/29/2020	1/29/2040	1,349,214,297
Social bond	Chile	1.25	1/22/2021	1/22/2051	1,328,995,492
Sustainability bond	Chile	3.50	4/15/2021	4/15/2053	1,500,000,000
Social bond	Chile	1.30	7/26/2021	7/26/2036	797,397,295
Social bond	Chile	0.10	7/26/2021	1/26/2027	1,063,196,393

²⁹ Thomson Reuter's LSEG: <https://www.LSEG.com/en>

³⁰ Bloomberg Terminal: <https://www.bloomberg.com/>

³¹ Climate Bonds Initiative: <https://www.climatebonds.net/>

³² We consider only sovereign bonds issued by the central government and do not include local authorities or state-owned enterprises.

Bond Type	Issuer Country	Coupon	Issue Date	Maturity	Amount Issued (USD)
Social bond	Chile	0.56	9/21/2021	1/21/2029	976,014,289
Green bond	Chile	3.50	6/25/2019	1/25/2050	2,318,357,000
Green bond	Chile	2.55	1/27/2020	1/27/2032	1,500,000,000
Sustainability bond	Chile	3.10	1/22/2021	1/22/2061	2,000,000,000
Social bond	Chile	3.10	5/7/2021	5/7/2041	2,700,000,000
Social bond	Chile	2.55	7/27/2021	7/27/2033	2,250,000,000
Social bond	Chile	3.25	9/21/2021	9/21/2071	1,000,000,000
Sustainability bond	Chile	4.00	1/31/2022	1/31/2052	1,000,000,000
Sustainability bond	Chile	3.50	1/31/2022	1/31/2034	1,500,000,000
Sustainability bond	Chile	2.75	1/31/2022	1/31/2027	1,500,000,000
Sustainability-linked bond	Chile	4.34	3/7/2022	3/7/2042	2,000,000,000
Social bond	Colombia	8.75	11/14/2023	11/14/2053	1,900,000
Social bond	Colombia	8	11/14/2023	11/14/2035	1,900,000
Green bond	Colombia	7.00	9/29/2021	3/26/2031	474,684,817
Social bond	Ecuador	7.25	1/30/2020	1/30/2035	400,000,000
Sustainability bond	Egypt	3.51	10/17/2023	10/17/2026	490,000
Green bond	Egypt	5.25	10/6/2020	10/6/2025	750,000,000
Green bond	Fiji	1	11/8/2023	11/8/2026	2,200

Bond Type	Issuer Country	Coupon	Issue Date	Maturity	Amount Issued (USD)
Green bond	Fiji	4.3	11/8/2023	11/8/2038	6,600
Green bond	Fiji	6.30	11/1/2017	11/1/2030	36,000,036
Social bond	Guatemala	5.38	4/24/2020	4/24/2032	500,000,000
Green bond	Hungary	1.75	6/5/2020	6/5/2035	1,645,657,110
Green bond	Hungary	5.00	11/21/2022	2/22/2027	1,097,104,740
Green bond	Hungary	4.00	4/28/2021	4/28/2051	391,178,146
Green bond	Hungary	4.50	1/26/2022	5/27/2032	638,708,769
Green bond	Hungary	1.29	9/18/2020	9/18/2030	33,559,549
Green bond	Hungary	1.03	9/18/2020	9/17/2027	115,594,004
Green bond	Hungary	1.15	2/25/2022	2/25/2032	58,169,885
Green bond	Hungary	0.91	2/25/2022	2/22/2029	35,051,085
Green bond	Hungary	0.73	2/25/2022	2/25/2027	349,019,315
Green bond	India	7.25	11/13/2023	11/13/2028	600,000
Green bond	India	7.24	12/11/2023	12/11/2033	605,000
Green bond	India	7.29	1/27/2023	1/27/2033	975,252,956
Green bond	India	7.10	1/27/2023	1/27/2028	975,252,956
Sustainability bond	Indonesia	1.30	9/23/2021	3/23/2034	531,598,196
Green bond	Indonesia	1.2	5/26/2023	5/24/2030	107,310,000

Bond Type	Issuer Country	Coupon	Issue Date	Maturity	Amount Issued (USD)
Green bond	Indonesia	1.43	5/25/2023	5/25/2033	43,800
Sustainability bond	Malaysia	4.66	9/30/2022	3/31/2038	2,256,317,689
Sustainability bond	Mexico	1.35	9/18/2020	9/18/2027	797,397,295
Sustainability bond	Mexico	2.25	7/12/2021	8/12/2036	1,328,995,492
Sustainability bond	Mexico	2.52	9/8/2022	9/8/2042	23,553,658
Sustainability bond	Mexico	2.28	9/8/2022	9/8/2037	29,442,072
Sustainability bond	Mexico	1.83	9/8/2022	9/8/2032	109,671,720
Sustainability bond	Mexico	1.25	9/8/2022	9/8/2027	175,180,332
Sustainability bond	Mexico	1.00	9/8/2022	9/8/2025	218,607,389
Sustainability bond	Mexico	6.338	4/28/2023	5/4/2053	2,941,388
Sustainability bond	Mexico	4.88	8/19/2022	5/19/2033	2,203,576,000
Green bond	Nigeria	14.50	6/13/2019	6/13/2026	32,615,076
Social bond	Peru	1.95	11/17/2021	11/17/2036	1,076,704,423
Sustainability bond	Peru	7.3	6/12/2023	8/12/2033	4,571,688
Sustainability bond	Peru	3.60	11/2/2021	1/15/2072	1,000,000,000
Sustainability bond	Peru	3.00	11/2/2021	1/15/2034	2,250,000,000
Sustainability bond	Philippines	1.83	4/22/2022	4/22/2042	44,451,029
Sustainability bond	Philippines	1.22	4/22/2022	4/22/2032	52,600,385

Bond Type	Issuer Country	Coupon	Issue Date	Maturity	Amount Issued (USD)
Sustainability bond	Philippines	0.95	4/22/2022	4/20/2029	37,042,524
Sustainability bond	Philippines	0.76	4/22/2022	4/22/2027	385,242,258
Sustainability bond	Philippines	4.20	3/29/2022	3/29/2047	1,000,000,000
Sustainability bond	Philippines	5.95	10/13/2022	10/13/2047	750,000,000
Sustainability bond	Philippines	5.50	1/17/2023	1/17/2048	1,250,000,000
Green bond	Poland	1.13	2/7/2018	8/7/2026	1,089,502,642
Green bond	Poland	2.00	3/7/2019	3/8/2049	544,751,321
Green bond	Poland	1.00	3/7/2019	3/7/2029	1,634,253,963
Green bond	Serbia	1.00	9/23/2021	9/23/2028	1,079,598,821
Green bond	Seychelles	6.50	10/11/2018	10/11/2028	15,000,000
Sustainability bond	Thailand	1.59	8/19/2020	12/17/2035	6,184,364,060
Sustainability bond	Thailand	3.39	9/19/2022	6/17/2037	3,063,010,501
Sustainability-linked bond	Uruguay	5.75	10/28/2022	10/28/2034	1,499,975,998
Sustainability bond	Uzbekistan	14.00	7/19/2021	7/19/2024	218,990,889

Source: Authors' elaboration, LSEG and Bloomberg Database.

Almost all of the GSS+ sovereign bonds we examined follow the voluntary guidelines provided by ICMA and CBI except for the sustainability bond issued by Uzbekistan. Individual issuances state that they have been issued following ICMA's Green Bond Principles, ICMA's Social Bond Principles, ICMA's Sustainability Bond Guidelines or other Standards such as Asean Sustainability Bond Standards for Thailand and Malaysia. Sustainability-linked bonds follow ICMA's Sustainability-linked Bond Principles.

To capture how the characteristics of emerging market GSS+ bonds compare with other bonds issued by the same country, we collected financial data on bonds issued in the same currency type (domestic or foreign) as the GSS+ sovereign bond. While capturing a ‘greenium’ is the subject of extensive empirical work with well-known difficulties, we created a comparator to facilitate a first-hand evaluation of how the terms of GSS+ sovereign bonds compare with the country’s other bond issuances in the same currency, over the same period as our sample set (post-2017). We compared similar currency denominations (domestic and foreign) GSS+ bonds with the weighted average of other similar denominations bonds by the same country. Figure 10 compares GSS+ bonds by amount size, Figure 11 by coupon, and Figure 12 by maturity.

Out of interest, we classified the range of issuances at the government level according to IMF and World Bank country groupings. Our list of 21 countries that have issued GSS+ bonds are categorized as Low Income Developing Countries (LIDC) and Emerging Market Economies (EME) by the IMF and are mostly Lower or Upper Middle Income Economies (LMIE and UMIE), and some High Income Economies (HIE), according to World Bank income classifications. There are no Low Income Economies as per World Bank in our sample, and only three LIDCs (Benin, Nigeria, and Uzbekistan). Most countries have issued a single type of GSS+ bond, but several, for instance Chile, Nigeria, Philippines, and Peru, have issued several types

Table A2: Country List and Issued GSS+ Bonds

Country list	IMF Country Group ³³	WB Income Group ³⁴	GSS+ Bond(s) Issued	Type
Benin	LIDC	LMIE	Sustainability bonds	Use of Proceeds
Chile	EME	HIE	Green bonds Social bonds Sustainability bonds Sustainability-linked bonds	Use of Proceeds Use of Proceeds Use of Proceeds KPI
Colombia	EME	UMIE	Green bonds	Use of Proceeds
Ecuador	EME	UMIE	Social bonds	Use of Proceeds
Egypt	EME	LMIE	Green bonds	Use of Proceeds
Fiji	EME	UMIE	Green bonds	Use of Proceeds
Guatemala	EME	UMIE	Social bonds	Use of Proceeds
Hungary	EME	HIE	Green bonds	Use of Proceeds
India	EME	LMIE	Green bonds	Use of Proceeds
Indonesia	EME	LMIE	Sustainability bonds	Use of Proceeds
Malaysia	EME	UMIE	Sustainability bonds	Use of Proceeds
Mexico	EME	UMIE	Sustainability bonds	Use of Proceeds
Nigeria	LIDC	LMIE	Green bonds Sustainability bonds	Use of Proceeds Use of Proceeds

³³ IMF, Country Composition of World Economic Outlook Groups: [Link](#)

³⁴ World Bank, Country and Lending Groups: [Link](#)

Country list	IMF Country Group ³³	WB Income Group ³⁴	GSS+ Bond(s) Issued	Type
Peru	EME	UMIE	Social bonds Sustainability bonds	Use of Proceeds Use of Proceeds
Philippines	EME	LMIE	Sustainability bonds Green bonds	Use of Proceeds Use of Proceeds
Poland	EME	HIE	Green bonds	Use of Proceeds
Serbia	EME	UMIE	Green bonds	Use of Proceeds
Seychelles	EME	HIE	Green bonds	Use of Proceeds
Thailand	EME	UMIE	Sustainability bonds	Use of Proceeds
Uruguay	EME	HIE	Sustainability-linked bonds	KPI
Uzbekistan	LIDC	LMIE	Sustainability bonds	Use of Proceeds

Source: Authors' elaboration, LSEG and Bloomberg Database, IMF, and World Bank.



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