Research Institute
ESG Thematic Research

September 24, 2024
Marketing material

The corporate green bond renaissance

Financing climate transition plans

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IN A NUTSHELL

— Green bonds, social bonds, sustainability bonds and sustainability-linked bonds have grown a combined 43% CAGR between 2014 and 2023 to represent approximately 14% of the global fixed income market.[1]

— Green bonds are the most popular segment of sustainable debt instruments in the fixed income universe, with issuance accounting for 55% of the entire sustainable bond market. The next largest category being sustainability bonds at 20%.[2]

— Within the green bond universe, corporate green bonds capture approximately half of the total ESG-labelled universe.[3] We expect this dominance to persist as green bonds become an important instrument for companies' climate transition planning and target setting to achieve net zero.

— The lion's share of green bond proceeds is directed towards renewable energy, green buildings, energy efficiency and clean transportation projects. Lagging far behind is the use of proceeds for water, land use, biodiversity, the circular economy and climate adaptation projects. This imbalance may be rectified as governments, particularly in Europe, promote nature restoration and the circular economy.

— Two of the most important factors driving the green premium, whereby a green bond is priced with a yield below the conventional bond, is the credibility of the green bond and the issuer.[4] The EU Green Bond Standard which applies from this December, should help to strengthen credibility within the green bond market and hence encourage the appearance and persistence of a green premium, or greenium.

— Large carbon emitting companies in Europe are often faced with higher borrowing costs, which can be mitigated when these companies invest in activities that promote sustainability[5]. This would imply a financial incentive for corporates to adopt climate transition plans, set targets for net zero and possibly issue green bonds.

— For investors, there is evidence[6] that green bond issuance can not only increase institutional investor appeal for the issuer, but that it can also benefit equity returns of the issuer.

Introduction

In this paper, we focus on corporate green bond issuances to show how this segment has become one of the most important parts of the ESG-labelled fixed income universe. This paper is organised into three sections. The first section examines the current market landscape and specifically the characteristics of corporate green bonds. The second section explores the distinct yield characteristics of green bonds relative to conventional bonds. The final section assesses how standards are being developed to enhance the integrity of green debt instruments.

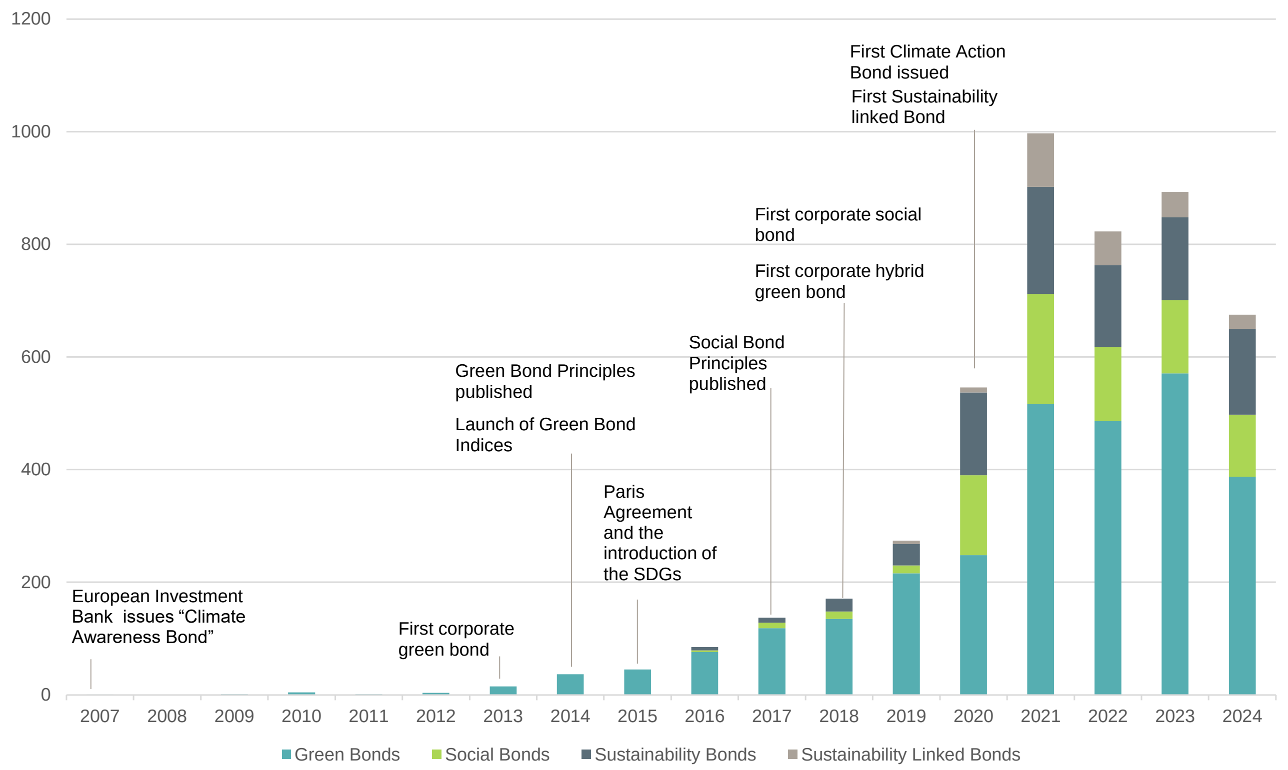
[1] Environmental Finance (March 2024)
[2] Barclays Research (August 2024)
[3] Barclays Research (August 2024)
[4] European Central Bank (September 2022). Pricing of green bonds: drivers and dynamics of the greenium
[5] De Nederlandsche Bank (August 2024). Carbon-intensive companies pay ever higher market interest rates
[6] Journal of Corporate Finance (April 2020). Do shareholders benefit from green bonds

1 / Market landscape

Green bonds dominate the sustainability bond universe

The sustainable bond market encompasses green bonds, social bonds, sustainability bonds and sustainability-linked bonds. Combined their issuance has grown by 43% CAGR between 2014 and 2023 to represent approximately 14% of the global fixed income market.[7] While the Covid-19 pandemic led to a pick-up in social bond issuance by public sector entities in response to the health emergency, green bonds continue to constitute around 50% of the total sustainable finance debt market[8].

Figure 1: Sustainable bond market issuance volume per year in USD bn



Source: Barclays Research, Bloomberg Finance LP (August 2024). Data up to September 2024 includes estimates from Bloomberg Finance

Corporates make up the lion's share of green bond issuers

While corporates have dominated the issuance of green bonds over the past few years, this was not always the case. From the first green bond issuance in 2007, sovereigns and supra-nationals such as the World Bank were typically leading the way. According to a recent IMF study[9], the number and size of corporate green bond issuance in a country increases after a sovereign bond issue. In addition, where a sovereign bond issuance occurs, it can improve the quality of green verification standards in the corporate bond market. This then supports best practice when it comes to green bond reporting and verification. In addition, sovereign bond issuance can also improve liquidity and yield spreads for corporate bonds.

Today, corporates account for around a half of the annual issuance of green bonds,[10] Figure 2. We expect the dominance of corporate green bond issuance to persist as more and more companies set climate transition plans which will need to be funded, possibly through green bonds. Such transition plans outline how a company is aligning its business operations with a 1.5°C pathway, which includes its strategy to reduce greenhouse gas emissions using science-based targets. According to CDP[11], the number of companies setting climate transition plans has grown to just over 5,900 in 2023, an increase of 44% over the previous year with approximately 8,200 more companies planning to create a climate transition plan by 2025.

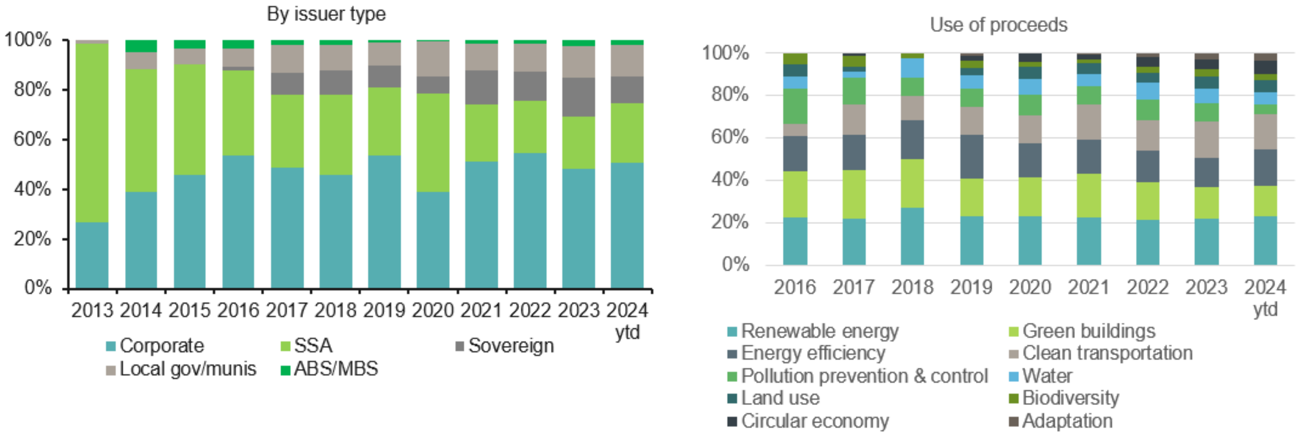
Given the sizeable investments required for the energy transition and to reach the 2030 UN Sustainable Development Goals, corporate green bond issuance can provide a useful indicator as to where investment flows are being channelled. This can be tracked by examining the financing objectives of a specific green (or social) bond programme. We find that a majority of green

[7] Environmental Finance (March 2024)
[8] Barclays Research (August 2024)
[9] IMF (June 2024). Sovereign Green Bonds: A Catalyst for Sustainable Debt Market Development?
[10] Barclays Research (August 2024)
[11] CDP (June 2024). 1.5°C still the goal: businesses disclosing climate transition plans jumps nearly 50%

bond proceeds are directed towards renewable energy, green buildings, energy efficiency and clean transportation projects, which combined typically capture around 75% of the green bond proceeds earmarked by green bonds, Figure 2.

At the same time, we see only a small share of green bond programmes focused on climate adaptation and nature-related projects. However, given the increasing focus by investors and corporates in the areas of biodiversity, water, land use and the circular economy, these projects may become a more important area of green bond programmes in the future.

Figure 2: Global green bond market by issuer type and use of proceeds



Source: Barclays Research, Bloomberg Finance LP (August 2024)

Given the predominance of green bond proceeds targeting renewable energy, energy efficiency and clean transportation, Figure 3 outlines specific examples of corporate green bond programmes by sector and the various relevant project and funding objectives.

Figure 3: Case studies of corporate bond issuance and Use of Proceeds (UoP)

Utilities

Tennet Holding

- Electricity transmission system provider
- Project category: Renewable energy
- UoP: Construction and operation of interconnectors between transmission systems

Orsted

- Energy company engaged in the production of power and heat
- Project category: Renewable energy
- UoP: (onshore) wind generating and solar power project, including integrated power storage components

Real Estate

Prologis

- REIT that invests in logistic facilities
- Project category: Green building, renewable energy, energy efficiency
- UoP: Green building certifications (investment, refurbishment), solar panel installation, wind-related energy projects, energy storage systems

Digital Realty

- REIT that owns, operates and invests in carrier-neutral data centers
- Project category: Green building, renewable energy, energy efficiency
- UoP: Green building certifications (investment, refurbishment), investments in energy and water efficiency

Consumer goods

ZF Group

- Technology company that supplies systems for passenger cars, commercial vehicles and industrial technology
- Project category: Clean transportation, renewable energy, pollution prevention and control, energy efficiency
- UoP: Portfolio of green assets, green capital expenditure and green R&D

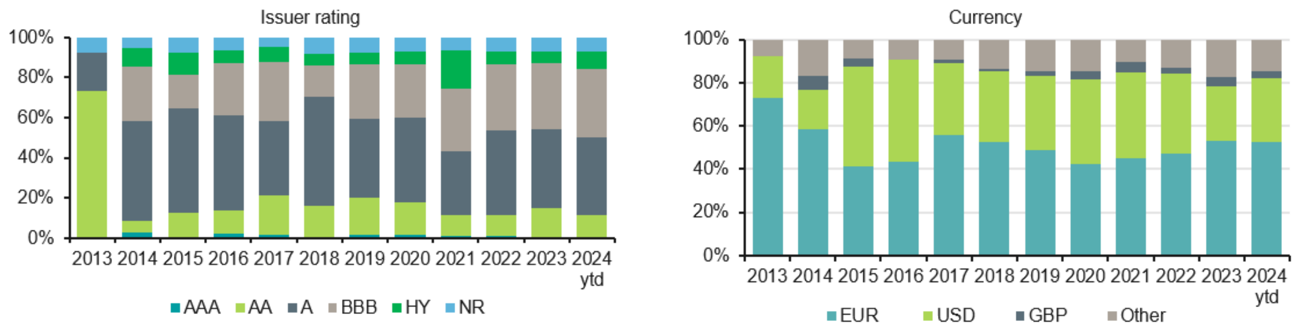
Volkswagen

- Automobile manufacturer
- Project category: Clean transportation
- UoP: development and manufacturing of all-electric passenger and light commercial vehicles

UoP stands for Use of Proceeds; project categories as defined by ICMA Green Bond Principles. The selected examples are indicative and illustrative only. They do not constitute investment advice
Source: SPOs of the respective issuer (Tennet, Orsted, Prologis, Digital Realty, ZF Group, Volkswagen)

When it comes to the credit rating, Figure 4, more than four-fifths of the green bond market falls within the investment grade category. From a currency perspective, euro-denominated green bonds tend to account for more than half of the annual green bond issuance and including the US dollar this rises to approximately 80%.

Figure 4: Global green bonds by rating and currency



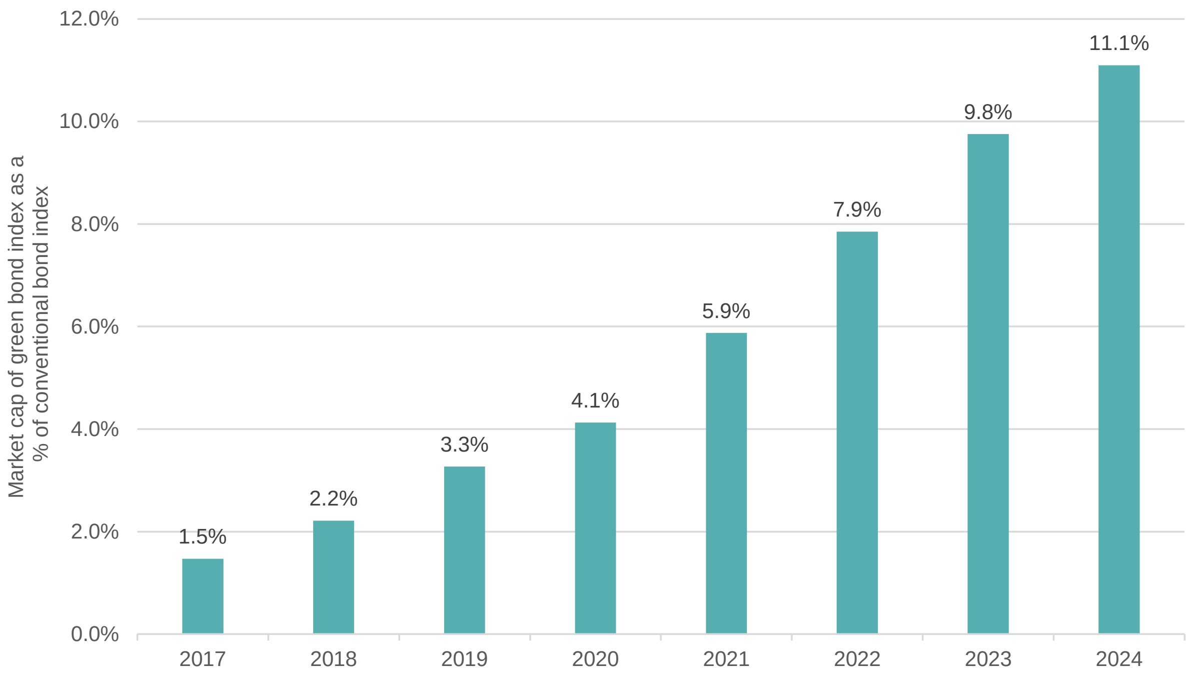
Source: Barclays Research, Bloomberg Finance LP (August 2024)

Corporate green bonds are capturing a rising share of the total corporate bond market

The growing importance of the corporate green bond market is reflected in the rising market capitalisation of the (euro) green bond market compared to the overall conventional bond market. According to this measure[12], green bonds outstanding are equal to just over one-tenth of the conventional bond market, compared to 3.3% at the end of 2019, Figure 5.

Alongside corporate climate transition plans, regulation, particularly in Europe, may also help spur further growth in the corporate green bond market. For example, the EU Corporate Sustainability Reporting Directive which came into force last year sets out reporting obligations relating to sustainability and for those companies with climate transition plans and the requirement to disclose and report their transition plans according to the EU Taxonomy. This ensures there is a common definition as to what is defined as environmentally sustainable activities.

Figure 5: Market cap of corporate green bonds as percentage of conventional corporate bonds



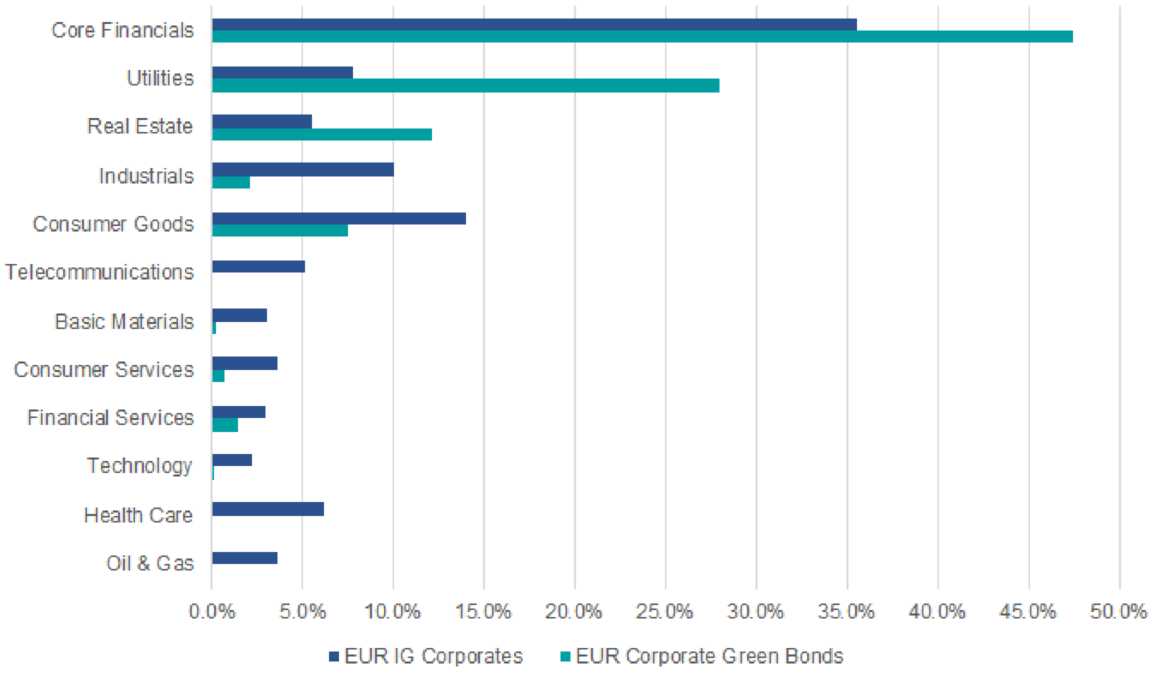
Source: Bloomberg Finance LP (Data refers to August 2024 and previous years relate to end year). Conventional Index: Bloomberg Euro Aggregate Corporate Total Return Index Value Unhedged EU (LECPTREU Index). Green bond: Bloomberg MSCI Euro Corporate Green Bond 5% Capped Index (I35197EU Index)

To get a better understanding of the corporate green bond market, we compare euro investment grade (IG) corporates versus euro corporate green bond indices across sectors, rating and duration. When it comes to sector exposure, the conventional corporate bond market is roughly equally distributed, except for core financials, which makes up approximately a third of the market, Figure 6.

12 "Bloomberg Barclays MSCI Euro Corporate Green Bond 5% Capped" is used as the proxy for the green bonds market and "Bloomberg Euro Investment Grade Corporate Index" for the conventional bond market

In contrast, the green bond market is dominated by utilities, banking and real estate, which account for almost 90% of the corporate green bond market, compared to just about half of the conventional bond market. The large share of utilities and real estate, tallies with the disproportionate share of green bond use of proceeds related to renewables, green buildings and energy efficiency projects. Meanwhile, the large share of core financials may reflect the role banks play as intermediaries, issuing green bonds and using the proceeds to fund environmental initiatives.

Figure 6: Euro IG Corporates vs Euro Corporate Green Bonds



Source: Euro Corporate IG = BBG Euro Aggregate Corporate Index (LEURAGCORP); EUR Corporate Green Bonds = Bloomberg Barclays MSCI Euro Corporate Green Bond 5% Capped Index. As of August 30, 2024

2 / Market characteristics: The greenium

The term greenium, or green premium, describes the idea that investors are willing to pay a premium to hold a green bond rather than a conventional bond. This is reflected in better funding conditions for green bond issuers, thus lower yields for green bonds[13].

When examining the characteristics between the European sovereign and the corporate bond market we find:

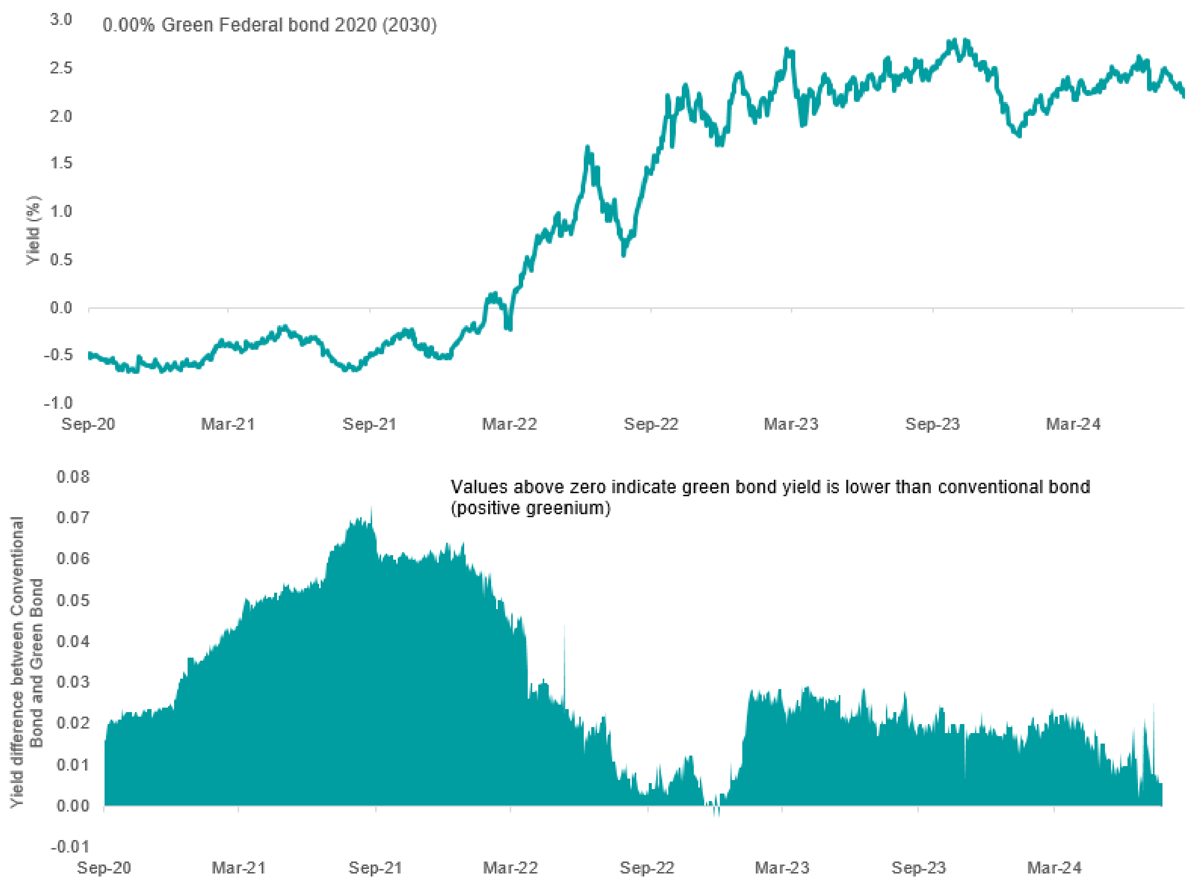
1) Within the sovereign bond market, a greenium has been a long standing feature of this market but its size in basis points is on the wane
2) A similar trend can be found in the corporate bond market, but the greenium is often a function of the credibility of the green bond and/or the issuer
3) The investment returns profile of green corporate bond almost matches that of conventional bond

Sovereign greenium

We first examine the greenium within the sovereign space, using twin-bonds issued by the Federal government of Germany. The twin bond concept is essentially the government issuing two bonds with identical coupon and maturity dates, but one focuses on financing green projects while the other for conventional use. The twin-bonds thus enable an easy like-for-like comparison and an ability to establish whether a greenium exists in the market. Courtesy of the additional transparency on allocated green spending in the Federal budget, green Federal securities should enjoy a lower yield than conventional Federal securities.

In Figure 7, we track the yield of the 2030 Green Federal Bond issued by Germany, alongside the yield of its conventional twin. We find that up until the first quarter of 2022 the Green federal bond yield was trading in negative territory after which the yield has climbed steadily to reach 2.0% by the fourth quarter of 2022 and has remained close to this level ever since. The lower image in Figure 7 tracks the greenium whereby values above zero indicate the green bond yield is lower than the conventional bond yield, and hence a positive greenium. We find that there has been positive and persistent greenium although it has been trending lower over time.

Figure 7: Sovereign greenium: twin bunds

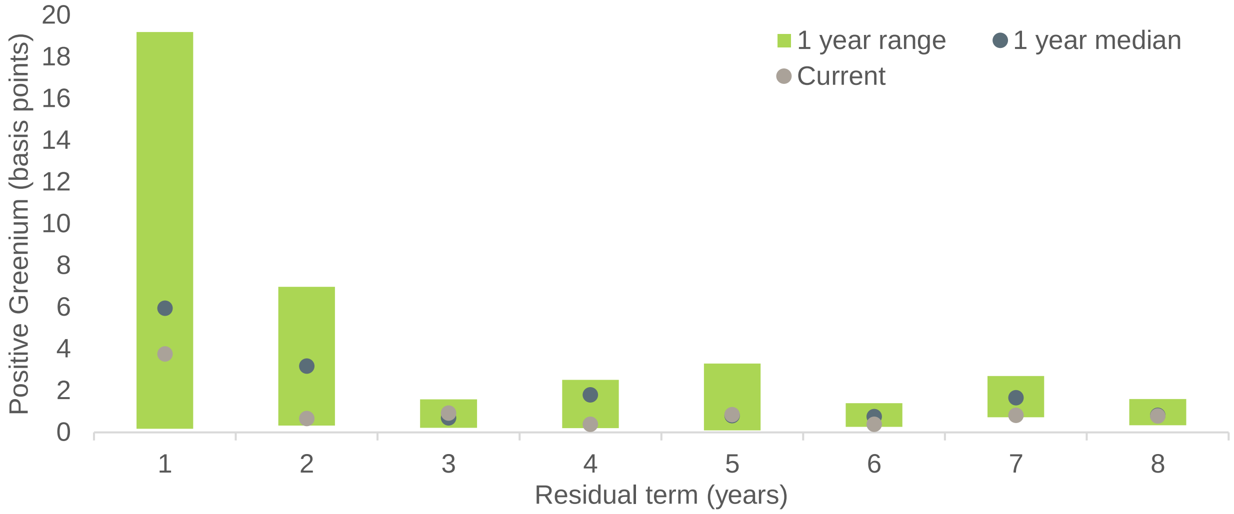


Source: Bloomberg Finance LP (July 2024)

[13] European Central Bank (September 2022). Pricing of green bonds: drivers and dynamics of the greenium

To see if this trend of "declining sovereign greenium" is specific to this bond or has occurred across multiple Federal Bonds issued by the German government, we examined across off other twin-bonds, Figure 8. We find that, the current greenium is at the lower end of its 12 months' range. This seems to support the idea that for sovereign bonds a positive greenium exists but its size is moderating.

Figure 8: Trailing twelve months sovereign greenium: across eight German Federal twin-bonds



Past performance is not a reliable indicator of future returns
Source: Bloomberg Finance LP (August 2024)

Corporate greenium

To assess the greenium for corporate bonds, we start by examining the option-adjusted spread (OAS) spread between a green and a conventional bond index. The reason to examine the OAS instead of the yield reflects that frequently bonds embed options that impact the bond's value, while yields might not always accurately reflect a bond's monetary value or be comparable. Rather than simply looking at the discounted cash flows of a bond between its issuance and maturity, the OAS adjusts the bond's z-spread for its embedded options[14].

In Figure 9, we assess the OAS of the Bloomberg MSCI Euro Corporate Green Bond 5% Capped Index. Except for a Covid-19 induced spike in early 2020, the OAS was broadly range-bound until September 2021. However, from its peak in September 2022 the spread has been moderating ever since. Using the OAS technique on the two indices[15], we see a persistent and positive greenium until the end of 2020. The appearance of a negative greenium in early 2021 peaks around September 2022, which coincides with the rising interest rate cycle. While the negative greenium has persisted, its size has also moderated over the past 18 months, However, the difference in the sectoral composition of the two indices, as mentioned earlier, is likely to contaminate the quality of comparison.

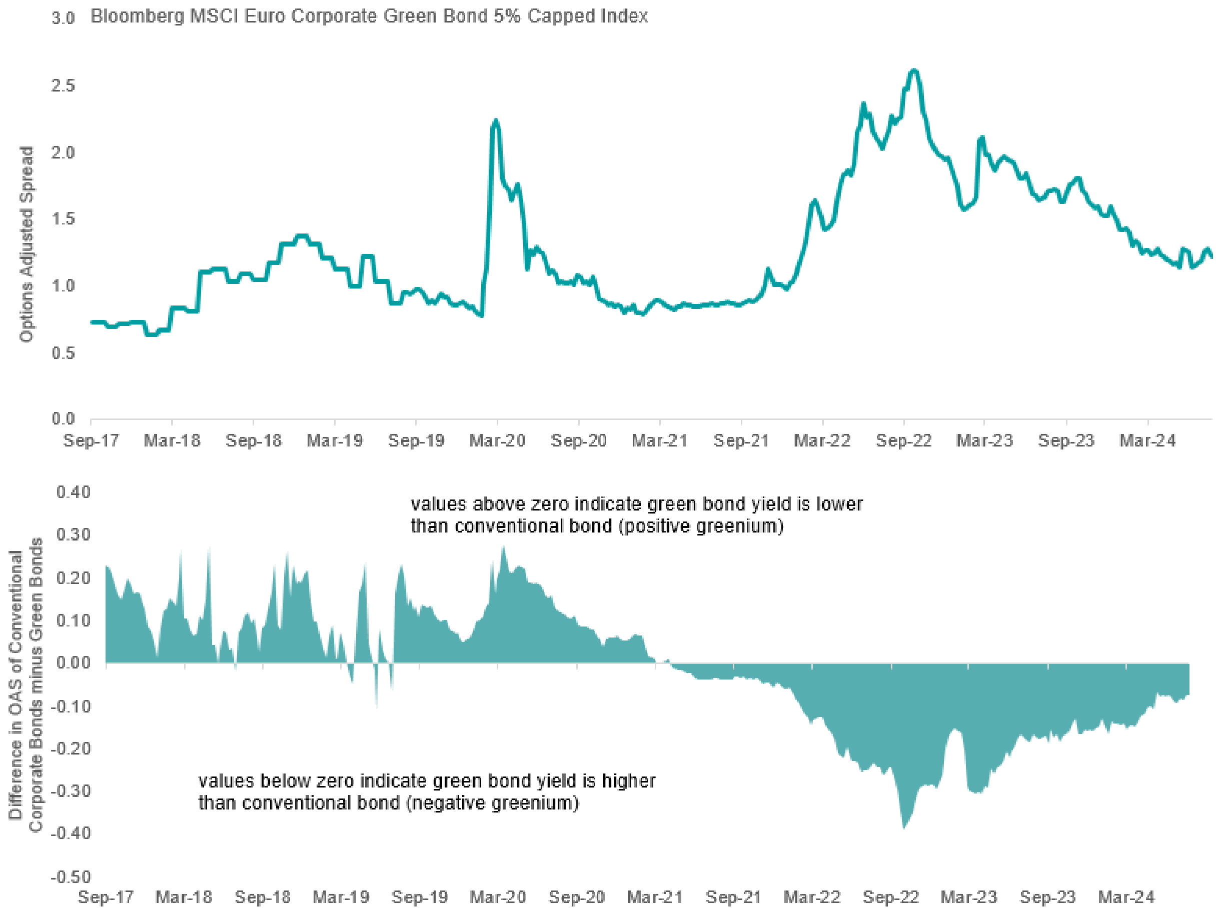
Another approach to resolve this comparison challenge is to examine twin bonds from a company with similar economic characteristics such as maturity, duration, seniority and coupon-type. To achieve this, we examined the spread between green bonds and conventional bonds of three individual issuers from three distinct sectors: utilities, automobiles and real estate. These findings show the occurrence of both positive and negative greeniums across the term structures of these three issuers. This confirms the finding that the greenium for corporate bonds is typically unstable and varies depending on factors such as issuer type, region, currency, rating and sustainability criteria.

Credibility of corporate green bonds

Analysis from the ECB reveals that the credibility of the green bond and the issuer are two of the most important drivers of whether a greenium exists. This typically means a positive greenum tends to exist where the green bond is verified and certified by an external review and/or the issuer type is, for example, a utility funding renewable energy projects. However, reporting on the impact of green bonds is wildly inconsistent and difficult for investors to digest. Only around 12% of issuers' reporting is at the bond-level, with details on the projects they support, according to a BloombergNEF review of US$126 billion of green bonds across 83 issuers in 15 markets. As a result, the wide dispersion of greenium (or lack of it) should not be surprising within the corporate bond market.

[14] European Central Bank (September 2022). Pricing of green bonds: drivers and dynamics of the greenium
[15] For the Conventional Index we examined the Bloomberg Euro Aggregate Corporate Total Return Index Value Unhedged and for the green bond index we used the Bloomberg MSCI Euro Corporate Green Bond 5% Capped Index

Figure 9: Measuring the corporate greenium



Source: Bloomberg Finance LP (August 2024). Conventional Index: Bloomberg Euro Aggregate Corporate Total Return Index Value Unhedged EU (LECPTREU Index). Green Bond: Bloomberg MSCI Euro Corporate Green Bond 5% Capped Index (I35197EU Index)

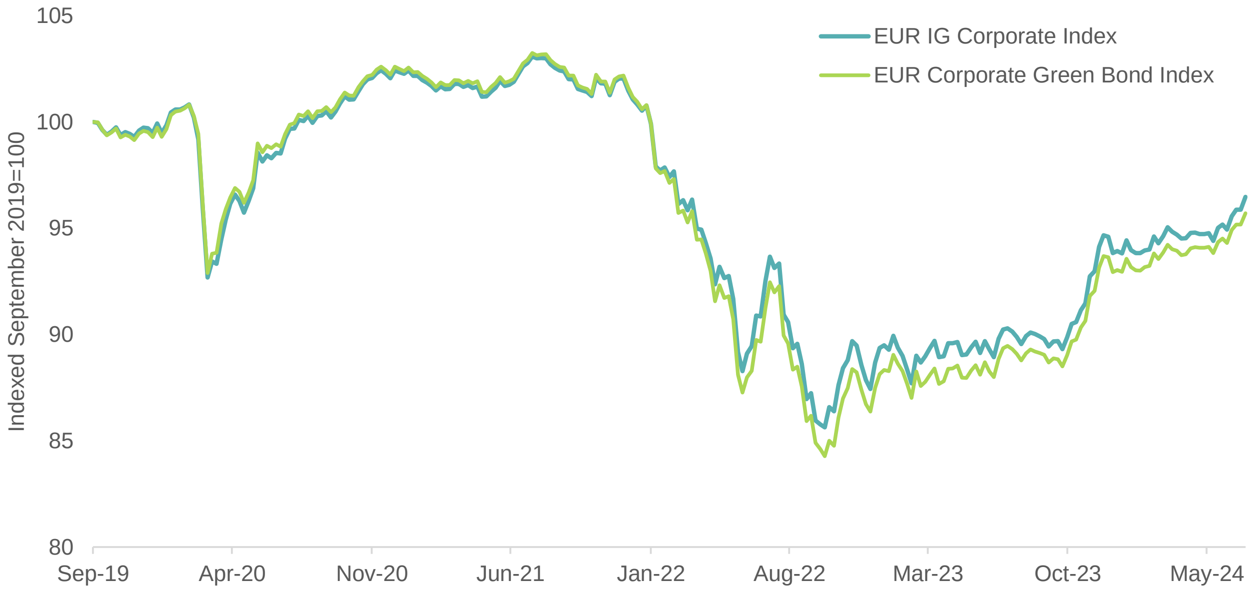
Performance of the green corporate bonds versus conventional corporate bonds

In addition to examining the development of the greenium, we assess whether the existence of the greenium implies investing in green bonds comes at the cost of financial performance. This may occur since a green bond with the same economic characteristics as a conventional bond may have a lower yield. In Figure 10, we assess the returns performance of the Euro IG corporate index and the Euro corporate green bond indices.

This shows that these two indices have been closely tracking each other for the few years up to the end of 2021 suggesting that investing in green bonds does not come at the cost of financial performance. However, we can see a slight divergence in performance from the beginning of 2022. This coincides with a tightening in the global interest rate cycle. This likely reflects the sector composition of the green bond index compared to the conventional corporate bond index with the former composed of a higher weight to the real estate sector.

We also examined the statistical relationship between monthly returns of green bonds versus conventional bonds over the last five years. Notably, the correlation is almost 1x, with barely any difference between the two despite the underlying composition of the green bond index being significantly different to the conventional bond index.

Figure 10: Performance of the euro corporate green bond index versus conventional bond



Past performance is not a reliable indicator of future returns
Source: Bloomberg Finance LP (August 2024)

3 / The way ahead

A recent study[16] has found that large carbon emitting companies in Europe are faced with higher borrowing costs as compensation for the risks these companies are exposed to, such as carbon taxes or tightening government regulation to curb greenhouse gas emissions. However, some of these higher funding costs can be mitigated when high emitting companies invest in activities that promote sustainability. This would seem to imply a financial incentive for corporates to adopt climate transition plans, set targets for net zero and possibly issue green bonds.

However, one of the concerns within the ESG-labelled fixed income universe has been whether corporate issuers deliver on their promise to reduce greenhouse gas emissions via green bond issuance. This seems to be reinforced by analysis[17] which shows that about one third of corporate green bond issuers are found to have a poorer environmental performance after their initial green bond issuance. A similar level of concern has been cited around sustainability linked bonds and loans, whereby the monitoring and verification of meeting sustainability performance targets may be compromised[18]. A more recent US study[19] found that only 2% of U.S. corporate and municipal green bond proceeds initiate projects with clearly novel green features.

For green bonds, these concerns are being addressed by green bond taxonomies and standards which are being introduced and/or strengthened to improve the credibility of the green and ESG-labelled fixed income universe. Often these guidelines and principles for green bond issuance have been around for some time[20] but in certain jurisdictions they are being strengthened. For example, the EU Green Bond Standard (EU GBS) which applies from December 2024.

Compared to the ICMA's Green Bond Principles, the EU GBS applies stricter rules as to what is defined as a green project, which are defined under the EU's Taxonomy Regulation. The EU GBS therefore relies on the EU taxonomy to define green economic activities and establishes the supervision by the European Securities and Markets Authority of companies to undertake pre- and post-issuance reviews[21]. In so doing it is hoped that companies adopting the EU GBS will not only bolster the credibility of the issuer but also the verification of the use of proceeds to green economic activities both of which have been found to encourage the appearance and persistence of a green premium. [22] We have seen in the past when new guidelines and principles are introduced, for example in 2014 and 2016, this has helped maintain the momentum in ESG-labelled bond issuance. A renewed renaissance in green bond issuance, particularly among corporate issuers, may therefore be about to unfold in the years ahead.

Green bond principles:

For green, social, sustainability and sustainability-linked bonds, principles and guidelines have been developed to build the integrity of these markets. The most widely recognised industry standards are governed by the International Capital Markets Association (ICMA) and date back to 2014 (green bonds), 2017 (social bonds), 2019 (sustainability bonds) and 2020 (sustainability linked bonds).

The ICMA's Green Bond Principles are voluntary and ensure any green bond conforms to certain rules around the use of proceeds, disclosure of project evaluation, management of proceeds and reporting. As part of the financing of the European Union's Green Deal, the EU Green Bond Standard was developed to ensure a uniform set of requirements were created such that to qualify as a European Green Bond an issuer needs to comply with the following:

- Invest bond proceeds in activities which are in full alignment with the EU Taxonomy
- Provide transparency on proceeds allocation during the lifetime of the issuance
- Undertake an external review for all issuances aligned with the EUGBS and governed by the European Securities Markets Authority (ESMA)
- The EU GBP regulation came into force in November last year and it will apply from December 2024

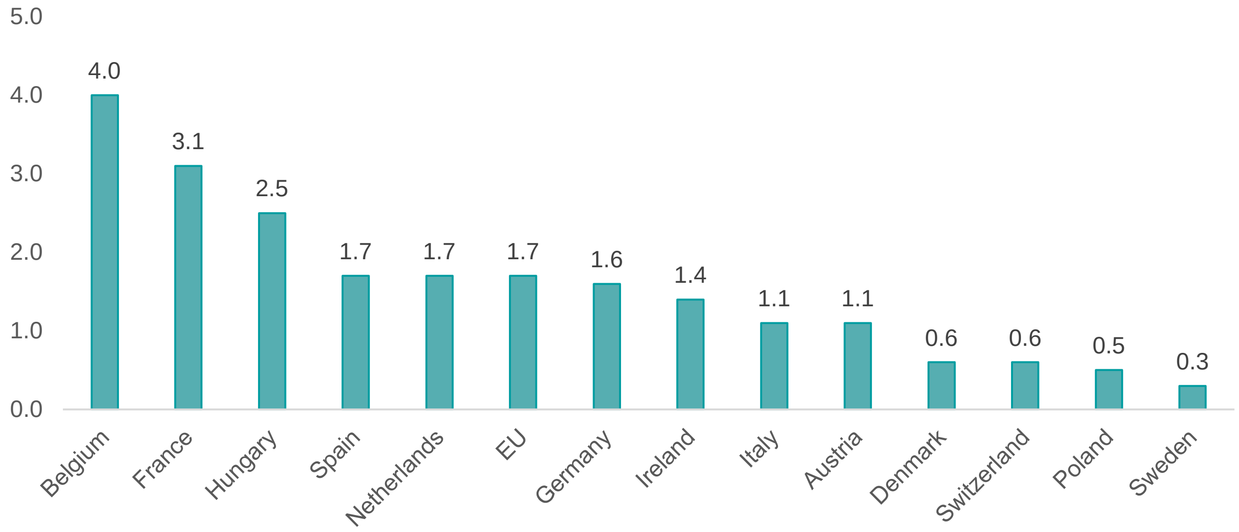
Time will tell to what extent the new EU GBS encourages a new wave of green bond issuance. However, history suggests that Euroepan sovereigns may need to take the lead. If they do this may encourage corporate issuance to follow given the IMF finding that the number and size of corporate green bond issuance in a country typically increases after a sovereign bond issue.

[16] De Nederlandsche Bank (August 2024). Carbon-intensive companies pay ever higher market interest rates
[17] HKMA (November 2022). Greenwashing in the corporate green bond markets
[18] DWS Research Institute (February 2024). The road ahead for direct lending https://www.dws.com/en-gb/insights/global-research-institute/the-road-ahead-for-direct-lending/
[19] NBER (September 2024). Green bonds: New label, same projects
[20] Green bond standards and guidelines exist in many countries including China, Brazil, Kenya, Nigeria, India and Japan
[21] The European green bond standard – supporting the transition https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/european-green-bond-standard-supporting-transition_en
[22] European Central Bank (September 2022). Pricing of green bonds: drivers and dynamics of the greenium

This is likely to mean all eyes will be on a few European sovereigns such as France, Germany and Belgium to lead the way. At the end of 2022, the total stock of green bonds issued by EU general governments reached €266 billion, equivalent to 1.7% of EU GDP.[23] The two largest EU economies, Germany and France, have combined issued approximately 60% of all European general government green bonds. However, when measured as a share of national GDP, Belgium leads Europe in green bond issuance, Figure 11.

These trends may herald a renaissance in corporate green bond issuance. For investors, the appeal of these fixed income secutiries are also supported by evidence[24] that green bond issuance can not only increase institutional investor appeal for the issuer, but that it can also benefit the equity returns of the issuer.

Figure 11: Stocks of green and sustainability general government bonds* across Europe as a percent of national GDP



* Sustainability bonds are where the proceeds can be either used for an environmental or social project
Source: Eurostat (2023). As of 2022, some European countries have not issued government green bonds including Finland, Portugal, and Greece

[23] Eurostat (June 2023). Green and sustainability bonds issued by governments https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Green_and_sustainability_bonds_issued_by_governments
[24] Journal of Corporate Finance (April 2020). Do shareholders benefit from green bonds

Important information – EMEA, APAC & LATAM