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GREEN, SOCIAL AND SUSTAINABILITY BONDS MARKET TRENDS

SFDR 2.0: The New Case for Green Bonds

January 2026

Winter Edition

ABOUT US

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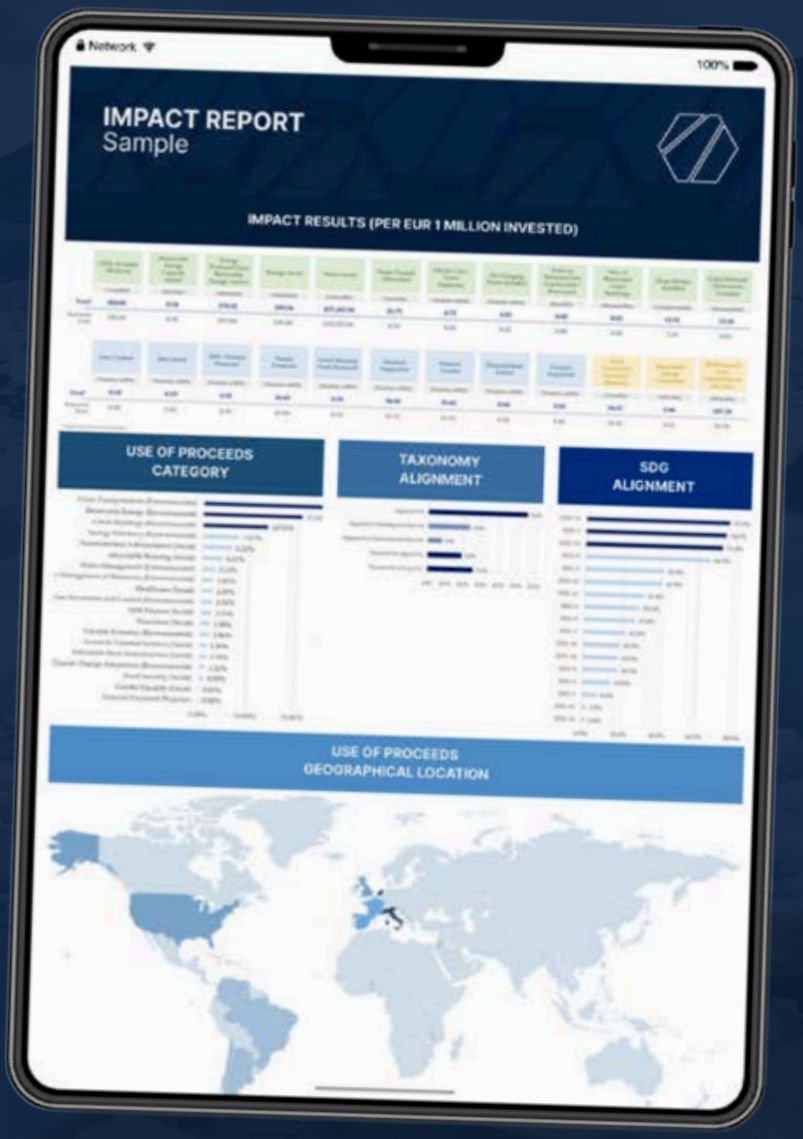
The most comprehensive database available on the market, built with reliability and accuracy since 2010.

- Unmatched granularity and breadth of coverage
- Industry-leading methodologies with deep quality assurance
- Issuer engagement by our in-house highly specialized research team

GSS BONDS DATABASE

> 6,000 GSS bonds



AT ISSUANCE

- ESG and Sustainability Ratings
- Impact Ratings
- Use of Proceeds category
- Primary Market Alert
- SDG alignment
- & PAB Alignment

1 YEAR FROM ISSUANCE

- Impact Results *(ex-post)*
- Proceeds category *(ex-post)*
- Proceeds geography *(ex-post)*
- SDG Alignment
- & PAB Alignment *(ex-post)*

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KEY HIGHLIGHTS

THE MATURITY WALL

represents the largest GSS Bonds reinvestment cycle to date, with EUR 252bn matured in 2025 and EUR 287bn maturing in 2026

UNDER THE SFDR 2.0 PROPOSAL

a fund may qualify as “Sustainable” or “Transition” with:

25%

a ~25% allocation to Green Bonds (assuming an average alignment of ~ 60%)

15%

thanks to the new 15% Taxonomy “safe harbor"

GAP BETWEEN ISSUANCE- AND ISSUER-LEVEL CARBON FOOTPRINTS

92 tCO2

Analysis of 3,000+ Green and Sustainability Bonds reveals a 92 tCO_2 per EUR 1m invested gap between issuance- and issuer-level carbon footprints. Issuer-level metrics underestimate use-of-proceeds decarbonisation impact.

ELECTRIC UTILITIES LEAD ON ISSUANCE-LEVEL CARBON INTENSITY

19 tCO2

Within corporates, Electric Utilities show the lowest issuance-level carbon footprints, driven by renewable energy financing, and the highest reliance on GSS Bonds within their debt structures

1.

2026: MARKET OVERVIEW

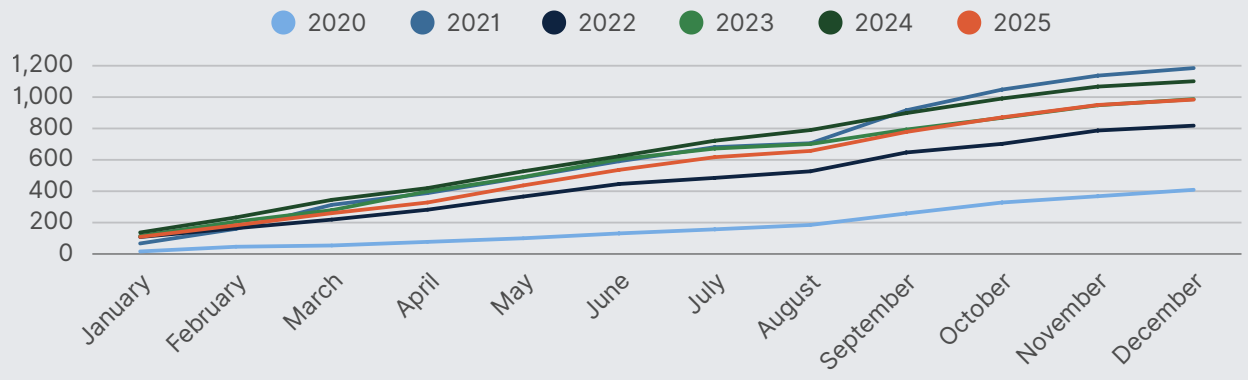
1.1 2025: TRENDS IN LABELS

GSS Bond issuance in 2025 topped USD ~1 trillion in 2025, broadly in line with 2023 levels (USD 987bn) and slightly below the USD 1.1trn recorded in 2024.

Green Bonds continue to gain share within the GSS Bond market and strengthen their position as the largest segment. Their share increases from 53% in 2021 to 58% in 2025. Over the same period, Social Bonds lose market share, declining from 17% to 13%, indicating a relative shift away from this label. Sustainability Bonds expand their presence in the market, with their share rising from 19% in 2021 to 26% in 2025. In contrast, the decline in Sustainability-linked Bonds persists, falling to 3% of new issuance in 2025.

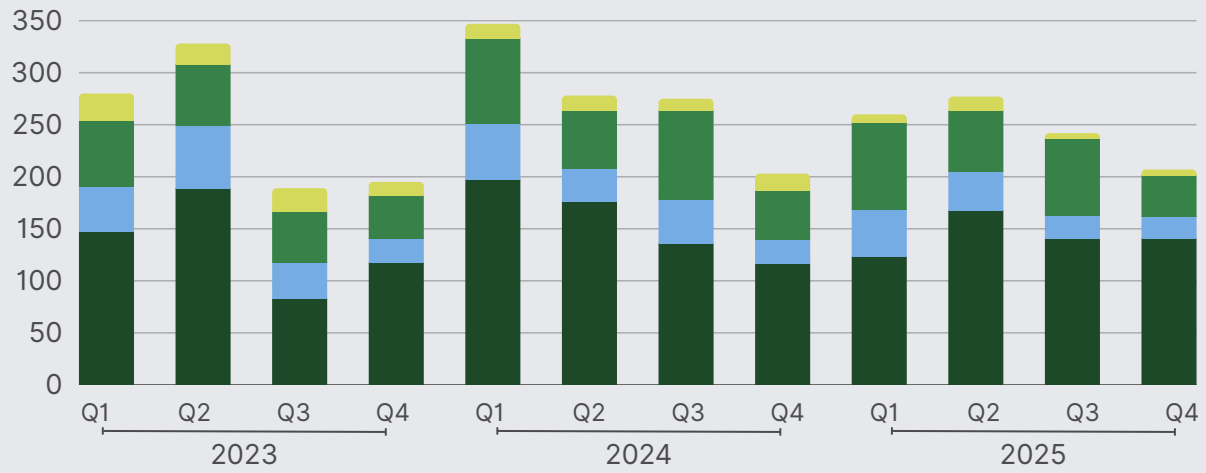
Europe's share of global GSS issuance each year has declined, falling from 52% in 2021 to 39% in 2025. Over the same timeframe, **Asia more than doubled its share of the market**, from 14% to 31%. Supranationals maintain a relatively stable contribution, accounting for around 20% of global issuance in 2025. By contrast, the Americas see a marked reduction in their share, which falls from 16% in 2021 to 8% in 2025.

Global GSS Bond Issuance
(USD billion)



Source: Bloomberg

GSS Bond Issuance
(USD billion)



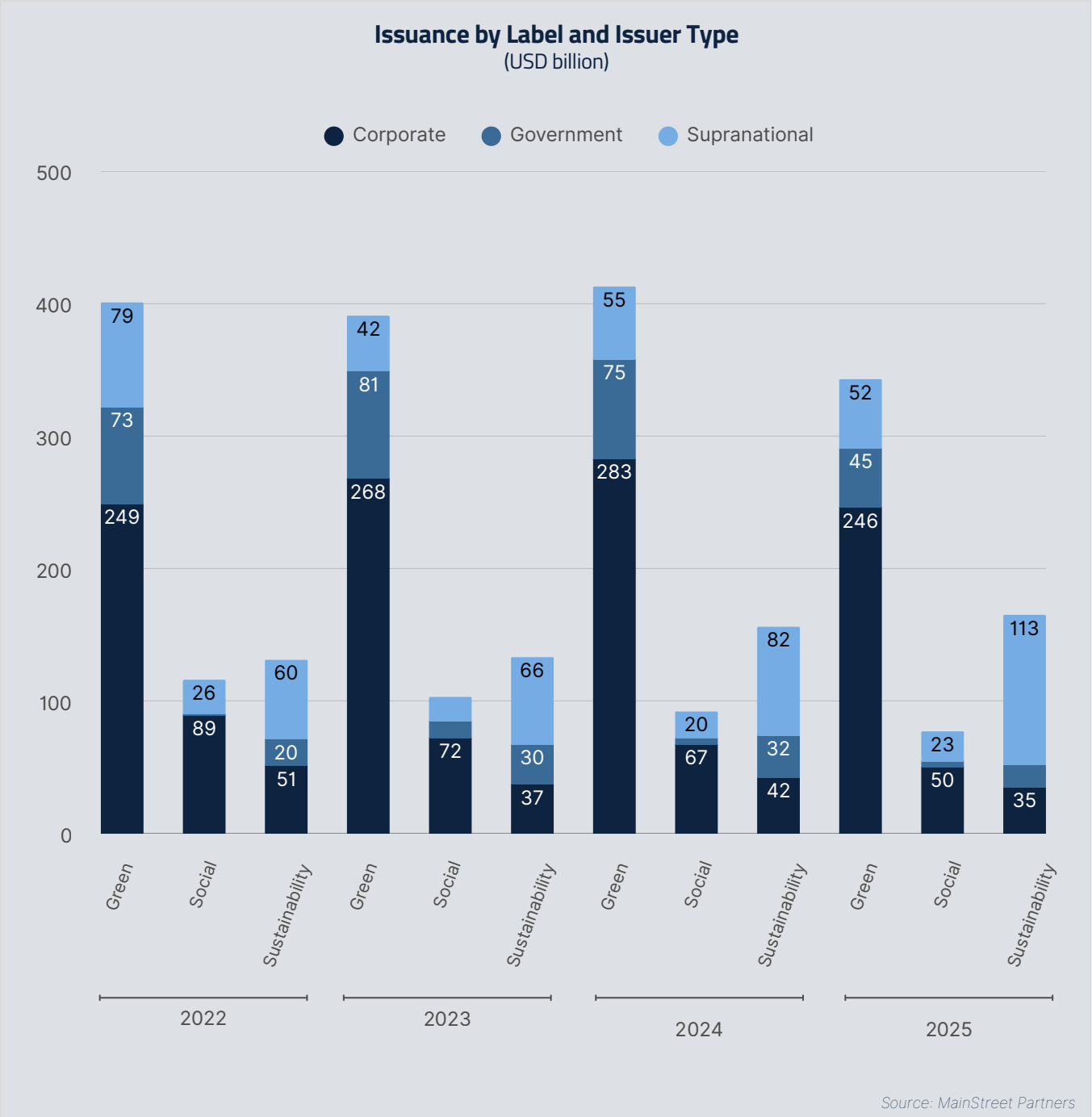
Source: Bloomberg

1.2 2025: TRENDS IN ISSUER TYPES

Supranationals continue to dominate Sustainability Bond issuance, accounting for around **68% of total issuance in 2025**. They remain the primary driver of growth in this segment, with issuance increasing steadily year after year. This reflects the core mandate of multilateral and development institutions, which frequently finance projects delivering both **environmental and social benefits**. As a result, Sustainability Bonds are particularly well suited to supranational issuers and are largely financed by them.

Green Bond and Social bond slight decline in issuance in 2025 reflects reduced activity from the private sector and governments, with Supranationals the only issuer group to increase issuance year-on-year.

Notably, Government Green Bond issuance falls to USD 45bn, down from over USD 70bn in each of the previous three years, contributing significantly to the overall slowdown in Green Bond volumes.

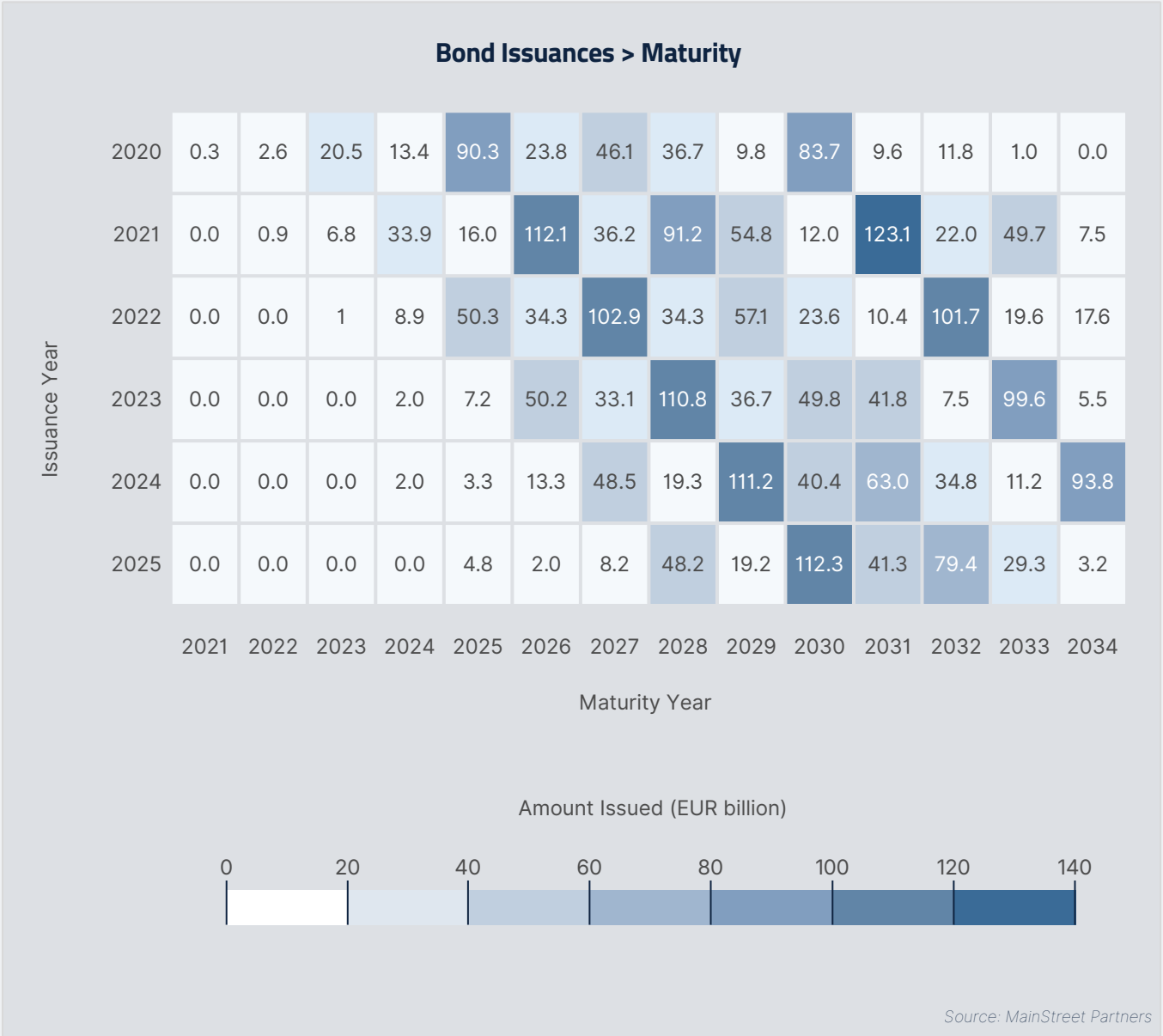


Source: MainStreet Partners

1.3 2025: TRENDS IN MATURITY: A (MISSED) OPPORTUNITY)?

The GSS Bond market has entered its largest reinvestment cycle to date, driven by the 2025–26 maturity walls. Around 315 GSS Bonds matured in **2025**, representing approximately **EUR252bn** of returning capital, with maturities set to rise further in **2026** to roughly 473 bonds and **EUR 287bn**.

This sharp year-on-year increase marks the deepest pool of reinvestment demand the market has seen so far.



Source: MainStreet Partners

These maturity walls largely reflect the **surge in issuance during 2021,** when record GSS Bond volumes were brought to market with predominantly **five-year tenors** (a common format of issuance in the market).

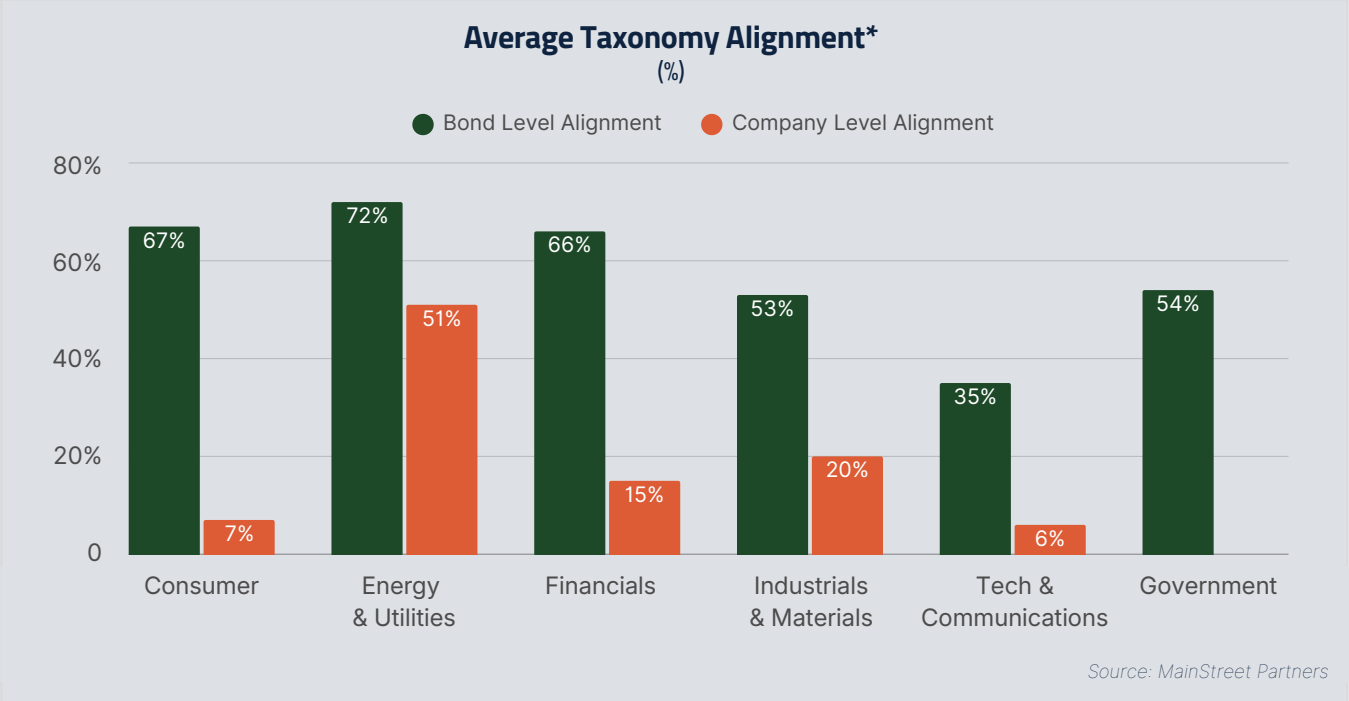
As those bonds roll off, investors will have to redeploy capital at scale, while issuers face a renewed opportunity to return to the market–timing, financial structure and project selection will be key variables in shaping the future of the GSS Bond market.

The reinvestment cycle will also further accelerate the shift towards framework upgrades and higher governance standards, particularly regarding European Taxonomy mapping and Impact Reporting.

1.4 2025: TRENDS IN EUROPEAN TAXONOMY ALIGNMENT

Overall, **use-of-proceeds-level assessment provides a more accurate and decision-relevant representation of Taxonomy Alignment** across GSS Bonds, especially for issuers whose overall activities are broad, international, or not fully covered by current Taxonomy reporting frameworks.

While issuer-level metrics remain useful for assessing an entity's general exposure to Taxonomy-aligned activities, they can misrepresent the impact of labelled bond financing when used in isolation. Looking ahead, **the growing share of issuance aligned with the EU Green Bond Standard is likely to further reinforce the relevance of bond-level Taxonomy assessment.**

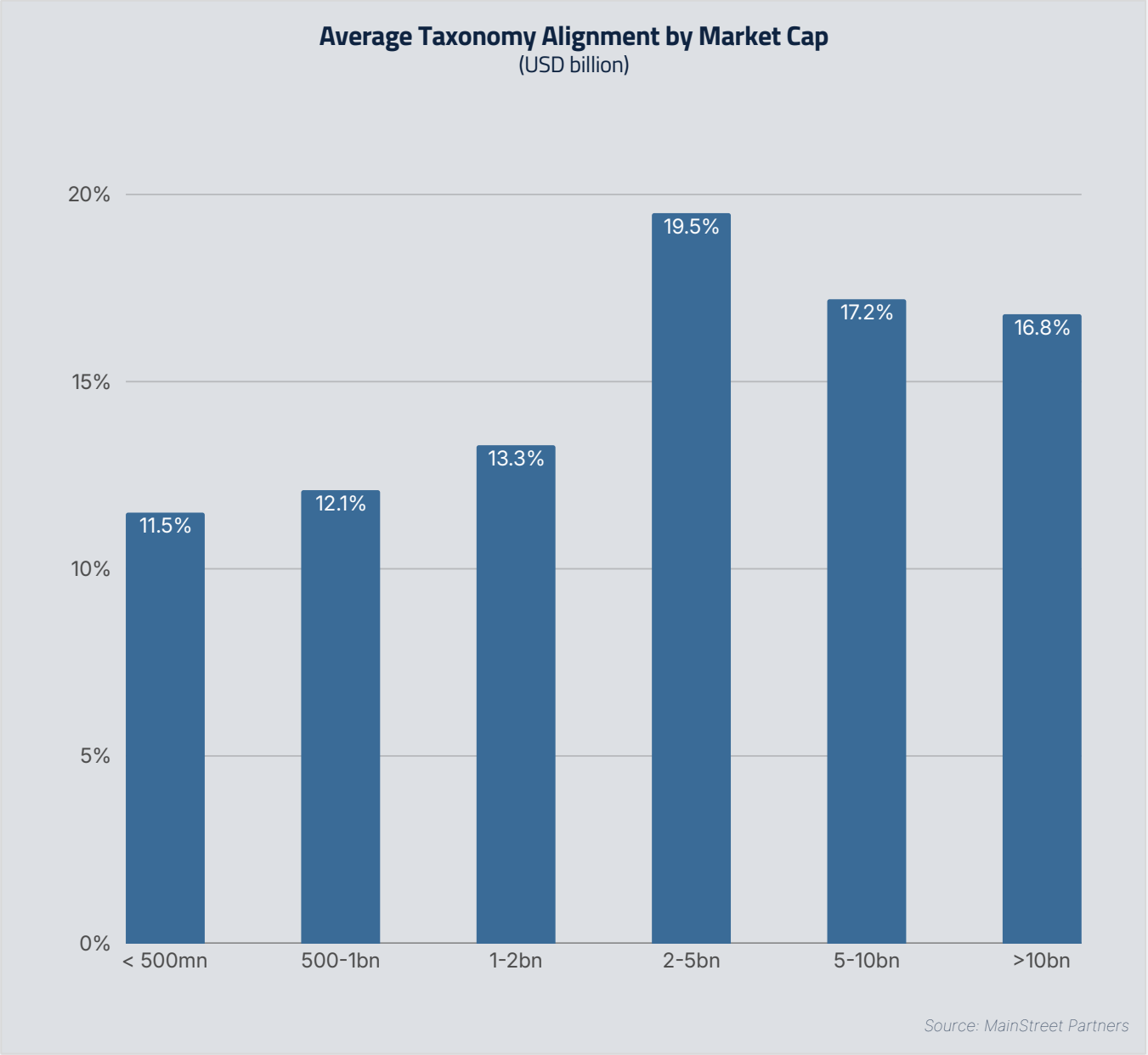


At an aggregate sector level, average EU Taxonomy Alignment is consistently higher when assessed at the Green Bond use-of-proceeds level than when inferred from issuer-level metrics. This pattern suggests that issuer-level indicators often underestimate the extent of Taxonomy-aligned activities financed through GSS Bonds, as they reflect the issuer's overall activity mix rather than the specific projects funded by labelled bond proceeds.

This divergence is partly driven by structural limitations in issuer-level reporting. For governments and supranational issuers, Taxonomy Alignment is not reported at the issuer-level at all, as these entities are not subject to corporate Taxonomy disclosure requirements. As a result, project-level analysis is the most meaningful way to assess the Taxonomy Alignment of their Green and Sustainability Bond issuances, which typically finance well-defined activities such as renewable energy, clean transport, or energy-efficient infrastructure.

For corporate issuers, similar distortions can arise, particularly where balance sheets are diversified. This is especially evident for financial institutions, where reported green asset ratios tend to be relatively low compared with the scale of sustainable financing delivered through labelled bonds. Banks finance a wide range of activities, including agriculture, real estate outside the European Union, and SME or corporate lending, where Taxonomy Eligibility and Alignment assessments remain constrained by data availability and methodological complexity. As a result, issuer-level metrics may fail to capture the underlying alignment of Green Bond portfolios.

* Data sourced from ~1000 companies' most recent annual reports used – utilised the maximum alignment between sales, capex and opex. Green Bonds analysis only for bonds issued between 2020 and 2025 with post issuance data available.



Taxonomy Alignment varies significantly by company size. Smaller companies, with market capitalisations below USD 2bn, tend to exhibit lower average alignment than mid-sized and large companies, which may partly reflect greater resources and dedicated expertise to measure and report Taxonomy Alignment. At the same time, alignment among the largest corporates, with market caps above USD 5bn, is lower than that of mid-sized companies, although it remains higher than for smaller firms.

This non-linear pattern reflects both sectoral composition effects and structural factors. Beyond a certain size, companies are more likely to be diversified, multi-activity groups, for which Taxonomy measurement becomes more complex and reported alignment is diluted.

By contrast, this size-related bias is not observed when alignment is assessed at the bond use-of-proceeds level, where financing is directed toward a more concentrated and clearly defined set of projects, making alignment measurement more straightforward.

The trend is particularly pronounced for financial institutions. While overall alignment remains lower across the sector, smaller banks, including those with market caps below USD 1bn, tend to report higher average Taxonomy Alignment than large banking groups, reflecting more focused business models and simpler balance sheets.

2.

THE REGULATORY SHIFT. WHAT IS CHANGING UNDER SFDR 2.0?

2.1 WHAT IS BEING PROPOSED

On 20 November 2025, the European Commission proposed an update to the Sustainable Finance Disclosure Regulation (SFDR), seeking to simplify the existing requirements, shifting from a largely disclosure-based approach towards clearer product categorisation and labelling.

Under the SFDR 2.0 proposal, the existing SFDR classifications will be replaced by new product categories. The proposed labels are:

01. ESG BASICS

At least 70% of investments must integrate sustainability factors (ESG integration). These funds apply minimum safeguards, such as excluding controversial weapons, tobacco, and companies breaching international norms, but have relatively lighter sustainability objectives. This is a lighter version of the old Article 8, focusing on basic ESG considerations.[1]

02. TRANSITION PRODUCTS

At least 70% of the portfolio must support measurable transition goals (e.g. financing companies with science-based emissions targets, transition plans, or engaging for decarbonisation). This category is intended for funds facilitating the shift to a low-carbon economy (including climate transition strategies) and comes with restrictions like no new fossil-fuel exploration investments.[2]

03. SUSTAINABLE PRODUCTS

At least 70% of investments must align with sustainability objectives (e.g. environmental or social goals). This is the strictest category. Sustainable category funds must follow stringent exclusions (for example, full fossil fuel exclusions consistent with EU Paris-Aligned Benchmark standards).[3]

A critical, yet often overlooked, feature of the SFDR 2.0 proposal is the **15% Taxonomy Alignment Threshold**. While the headline requirement for "Sustainable" and "Transition" categories is a 70% allocation to specific assets, the Commission has introduced a "Safe Harbor" provision for high-conviction environmental strategies.

Funds that can demonstrate a minimum of 15% portfolio alignment with the EU Taxonomy are automatically deemed in compliance with the sustainability criteria for the Sustainable or Transition labels. This creates a dual-track eligibility framework:

- **Track A (The Volume Path):** Maintain a broad 70% allocation to assets that meet the category's general qualitative and exclusion standards.
- **Track B (The Quality Path/Safe Harbor):** Achieve a 15% "dark green" core of Taxonomy-aligned investments, which validates the fund's status even if the remainder of the portfolio is composed of more traditional or neutral instruments (provided they meet minimum safeguards and exclusions).

1. European Commission (2025), Proposal for a Regulation amending Regulation (EU) 2019/2088 as regards sustainability disclosures, COM(2025) 841 final, Articles 7–9 (ESG basics, Transition and Sustainable categories: criteria and disclosures).
2. Ibid., Article 7 (Transition category: criteria and disclosures).
3. Ibid., Article 9 (Sustainable category: criteria and disclosures).

Why **this matters for Asset Managers**:

- **Fixed Income Versatility.**

For diversified bond funds, reaching a 70% "Sustainable" threshold is often mathematically impossible due to the inclusion of cash, hedging instruments, or traditional sovereign debt. **The 15% threshold provides a realistic "bridge" for these products to retain their labels**.

- **Instruments vs. Issuers.**

The safe harbor explicitly allows for Taxonomy alignment to be calculated via Use-of-Proceeds (UoP) or Corporate Profile. This reinforces the value of Green Bonds, as a relatively small allocation to high-quality GSS Bonds (e.g., 25% of a fund at 60% alignment) can single-handedly secure the fund's "Sustainable" or "Transition" categorization.

- **Standardisation.**

This move shifts the focus from subjective "ESG scores" toward the objective, evidence-based framework of the EU Taxonomy, effectively setting 15% as the new industry benchmark for "credible" sustainability.

2.2 THE HIGH-LEVEL EXPECTED RESULTS

SFDR 2.0 should be broadly constructive for GSS Bonds, but it will raise the bar on eligibility and push much of the "light ESG" bond universe out of sustainability-labelled categories.

- The main practical constraint is **stricter exclusions, especially around fossil fuel exposure at issuer-level:** managers may need to avoid or divest certain labelled bonds where the issuer fails the new criteria. Meanwhile, sovereign and supranational issuers remain a robust Article 9-compatible core.

- SFDR 2.0's greater emphasis on measurable impact and substantiation also **increases the premium on credible issuer reporting,** and the EU GBS (evidence of Taxonomy Alignment)

- SFDR 2.0 also streamlines how funds report their sustainability focused, ensuring more consistency across products: **pre-contractual disclosures will be capped at 2 pages**, with an additional page only for funds pursuing a specific impact objective.

At the same time, entity-level PAI disclosures may be removed entirely, with product-level PAI reporting retained only for Transition and Sustainable funds – reducing administrative burden but also requiring "dismantling" of already running procedures for article 8 funds that will move into the ESG Basics label.

Once adopted, a transition period will apply before implementation, during which asset managers will need to reclassify products and update disclosures; until then, the current SFDR regime remains in force.

The SFDR overhaul represents a significant shift in Europe's sustainable finance landscape.

For European Bond funds, and GSS Bond funds in particular, the changes bring both challenges and opportunities. On one hand, there will be fewer funds allowed to wear the ESG or sustainable label, and compliance demands (exclusions, data reporting) will tighten. On the other hand, truly green and sustainable bond strategies will gain a more credible label (Article 9), signalling better quality to investors.

2.3 THE IMPACT SIMULATION: POTENTIAL RECLASSIFICATION OUTCOMES SFDR 2.0

To evaluate potential fund reclassification under SFDR 2.0, we apply a rules-based mapping to European bond funds using MainStreet Fund Research data, drawing on each fund's stated mandate and objectives, sustainable investment commitments, and screening thresholds. Our assumptions for this test are:

- **Article 6 (Non-sustainable/Other):** The default category, used where a fund does not meet the minimum conditions for Transition, ESG characteristics, or Sustainable.
- **Article 7 (Transition):** Assigned where a fund shows a transition objective (explicit or evidenced) and applies fossil-fuel exclusions (threshold >1%).
- **Article 8 (ESG characteristics):** Retained only where a fund is currently Article 8, has binding ESG characteristics, meets a minimum sustainable investment condition, and supports credibility through PAI metrics and/or fossil-fuel exclusions.
- **Article 9 (Sustainable):** all current Article 9 funds remain Article 9, and upgrades are limited to funds with a clear sustainability objective and ≥70% sustainable investments, or Article 8 funds that also meet a higher-credibility screen (PAI metrics, tighter fossil-fuel exclusions, and taxonomy/PAB eligibility).

(Important caveat: results are indicative, the proposal does not yet set final thresholds, and we also assume no investor rebalancing/response.)

If SFDR 2.0 were to apply from tomorrow, based on what we know today:

- **Most of the change would come from today's Article 8 funds.** On a purely rules-based test, the market shifts from 630 Article 8 funds (94% of assets in our database) to only 53 Article 8 funds (14% of assets in our database), with the majority moving into Article 6 (778 funds; 71% of assets in our database).
- **Article 8 becomes a smaller, stricter category:** the funds that remain in this category are those with binding ESG characteristics plus minimum commitments and evidence (PAI indicators and/or fossil-fuel screens).
- **Transition stays niche by product count, but meaningful by assets.** Only 21 funds qualify for Article 7, yet they represent 13.4% of AUM, suggesting Transition classification is concentrated in a small number of large strategies rather than broad "ESG" funds.
- **Sustainable remains a high bar and stays small in asset terms.** Article 9 is broadly unchanged, despite 86 funds being classified as Article 9.

CURRENT SFDR		# FUNDS	% (AUM)
Article 6		223	4.00
Article 8		630	94.21
Article 9		85	1.79

NEW SFDR	# FUNDS	% (AUM)
Article 6	778	71.13
Article 7	21	13.38
Article 8	53	13.70
Article 9	86	1.79

2.4 THE MATERIAL IMPLICATIONS FOR SUSTAINABLE ASSET MANAGERS

At a practical level, **SFDR 2.0 introduces five structural shifts for sustainable asset managers**. Together, they increase clarity and credibility, but materially raise operational, portfolio construction, and governance demands.

1 EVERY FUND MUST BE EXPLICITLY CLASSIFIED

What is changing

- All funds must be assessed under SFDR 2.0 and either fall into one of the sustainability categories or remain non-categorised ("non-sustainable / other"). Asset managers can no longer “sit out” of SFDR. Every fund must have a deliberate sustainability stance;
- Only categorised funds can make sustainability-related claims in:
  - Fund names
  - Marketing materials
  - Pre-contractual disclosures;

This applies across all asset classes, public and private markets.

Why it matters

- Even funds that do not pursue sustainability objectives must:
  - Be explicitly assessed and comply with baseline disclosure requirements;
  - Accept a non-sustainable positioning.

Potential consequence

- Increased disclosure and governance burden across the entire product range (pending, of course, the new products template included in the upcoming RTS);
- Higher reputational risk from unclear or inconsistent positioning.

Assessments performed by internal Wealth Management teams or third-party providers become even more important to verify and validate Asset Managers’ product classifications, in a manner similar to the role MSP currently plays in assessing alignment with the ESMA fund naming guidelines.

2 SOVEREIGN GSS BONDS BECOME STRUCTURALLY CRITICAL FOR SUSTAINABLE AND TRANSITION GOVERNMENT BOND FUNDS

What is changing

- In the government bond universe, sovereign GSS Bonds are the only instruments that can be used to meet the required 15% Average Taxonomy Alignment, thanks to their Use of Proceeds;
- Traditional sovereign ESG scores, SDG alignment frameworks, or country-level best-in-class methodologies cannot be used – even within the Transition category.

Why it matters

- Sustainability at sovereign level shifts from a country-based assessment to an instrument-level qualification;
- GSS Bond frameworks and Use of Proceeds become the decisive eligibility factor while Sovereign ESG integration, as historically practised, is effectively sidelined for categorised funds.

Potential consequence

- Reduced diversification with higher tracking error versus traditional benchmarks;
- Severe contraction of the investable universe for sustainable government bond funds with constraints on duration and yield curve positioning.

3 PRIVATE ASSETS FACE PUBLIC-MARKET-LEVEL SUSTAINABILITY REQUIREMENTS

What is changing

- Private assets are subject to the same categorisation logic and sustainability thresholds as public funds;
- To qualify as Sustainable or Transition, funds must demonstrate evidence-based sustainability alignment.

Why it matters

- Private markets often rely on:
  - Partial or estimated data substantiated by engagement-led transition stories;
  - Long investment horizons before measurable outcomes due to data availability being uneven.

They are becoming increasingly popular and are being distributed to retail investors through ELTIF 2.0. This aspect is also critical, as an ESG assessment will be required to verify and validate the product categorisation in order to ensure alignment with MiFID sustainability preferences.

Potential consequence

- Competitive disadvantage relative to public strategies with more mature data ecosystems;
- Risk that innovation and transition capital in private markets is discouraged due to increased compliance costs and operational complexity.

4 A TIGHT AND OPERATIONALLY CHALLENGING IMPLEMENTATION TIMELINE

What is changing

- SFDR 2.0 is expected to apply no earlier than end-2027, with a strong likelihood of 2028 implementation, depending mostly on the time for adoption of Level 1 legislation and Level 2 RTS;
- Asset managers must then update: Fund classifications, Prospectuses, Investment guidelines and disclosures;
- ·Although the regulatory timeline appears long, effective preparation time is short, especially for complex product ranges.

Why it matters

- Prospectus updates are resource-intensive and dependent on asset owner approvals, and often jurisdiction-specific.

Potential consequence

- Bottlenecks in legal, compliance, and sustainability teams, as well as risk of conservative or rushed fund classifications;
- Limited time for portfolio restructuring before go-live.

5 CATEGORY EXCLUSIONS AND NAMING RULES MAY OVERLAP

What is changing

- ESMA fund naming guidelines partly overlaps with the proposal (but are not fully harmonised);
- Importantly, Key takeaway, even once SFDR 2.0 is implemented, regulatory stability is not guaranteed.

Why it matters

- Asset managers may face ongoing uncertainty around future revisions to naming rules.

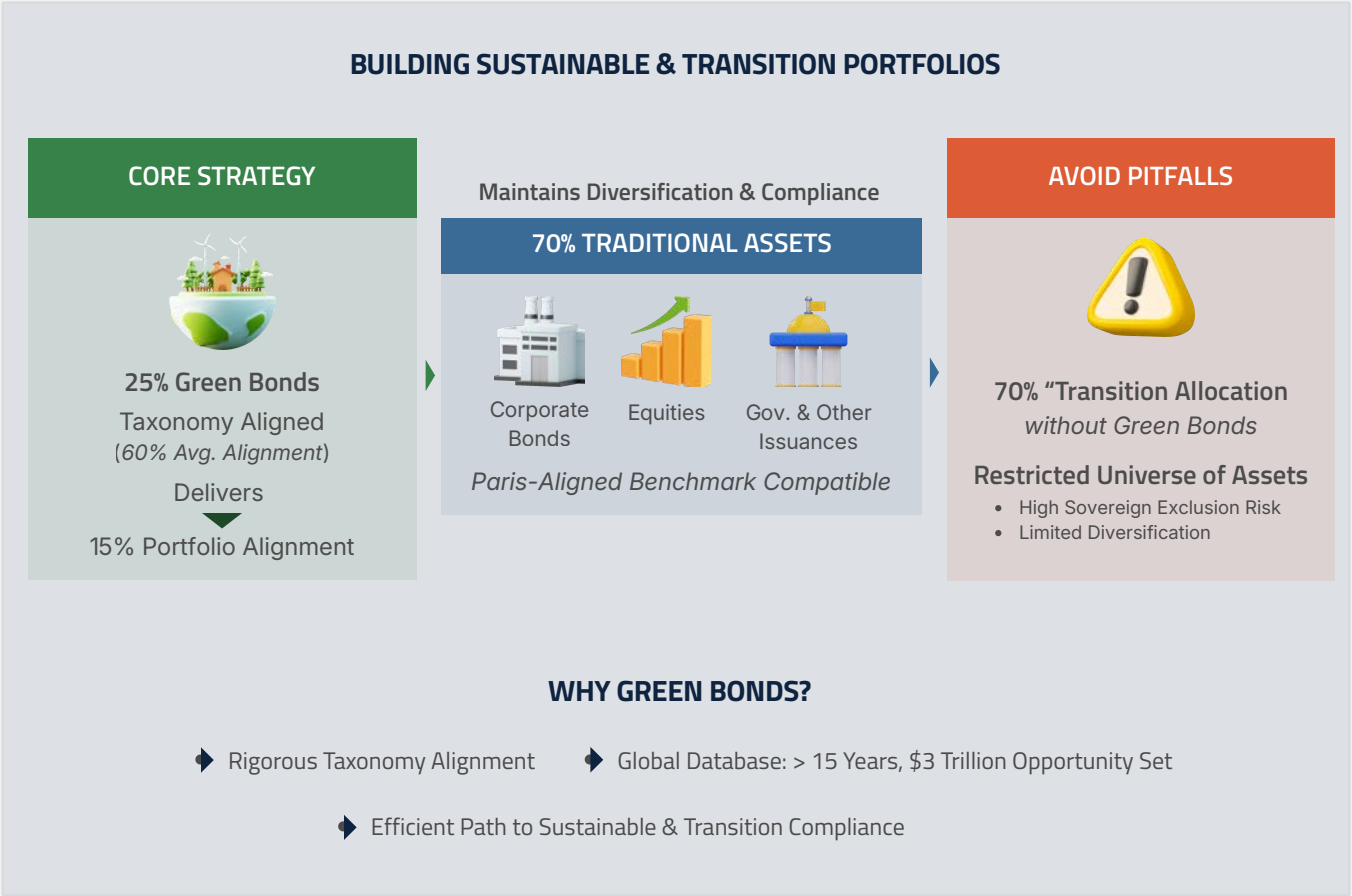
Potential consequence

- Further rounds of fund changes even after SFDR 2.0 implementation;
- Investor confusion around sustainability labels and fund names.

2.5 DEEP DIVE & SOLUTION: GREEN BONDS

So then, how can I realistically manage a multi-asset or fixed income fund that is Sustainable or Transition?

Taken together, these findings highlight a structural challenge: under SFDR 2.0, many fixed income and multi-asset strategies will struggle to meet sustainability thresholds without compromising diversification. This naturally raises the question of how such portfolios can be constructed in practice.



A recurring question from investors is how to credibly structure Sustainable or Transition strategies in fixed income and multi-asset portfolios.

In practice, the answer is both simple and scalable: taxonomy-aligned Green Bonds.

- **Green Bonds, when assessed rigorously against the EU Taxonomy, provide the most efficient and reliable building block for these strategies.** A portfolio allocation of around 30 percent to Green Bonds (corporate and/or sovereign), assuming a conservative average taxonomy alignment of 60 percent, already delivers an overall portfolio taxonomy alignment comfortably above the 15 percent threshold - even with a broadly diversified selection of instruments.
- This approach leaves the remaining 70 percent of the portfolio available for traditional corporate bonds, equities, or government-related issuances that are not explicitly classified as "sustainable" or "transition" (Paris-Aligned Benchmark compliance still required).
- By contrast, **attempting to reach a 70 percent allocation to "transition assets" or "sustainability-aligned assets" without relying on Green Bonds would require a structurally low exposure to government bonds**. In fact, as discussed previously, sovereign issuers are not eligible for these categories, making such portfolio construction impractical for diversified fixed income or multi-asset funds.

MainStreet is uniquely positioned to support this approach. Our Green Bonds database spans more than 15 years, and since December 2021 our analysts have conducted independent, instrument-level assessments of Taxonomy Alignment for all Green Bonds globally.

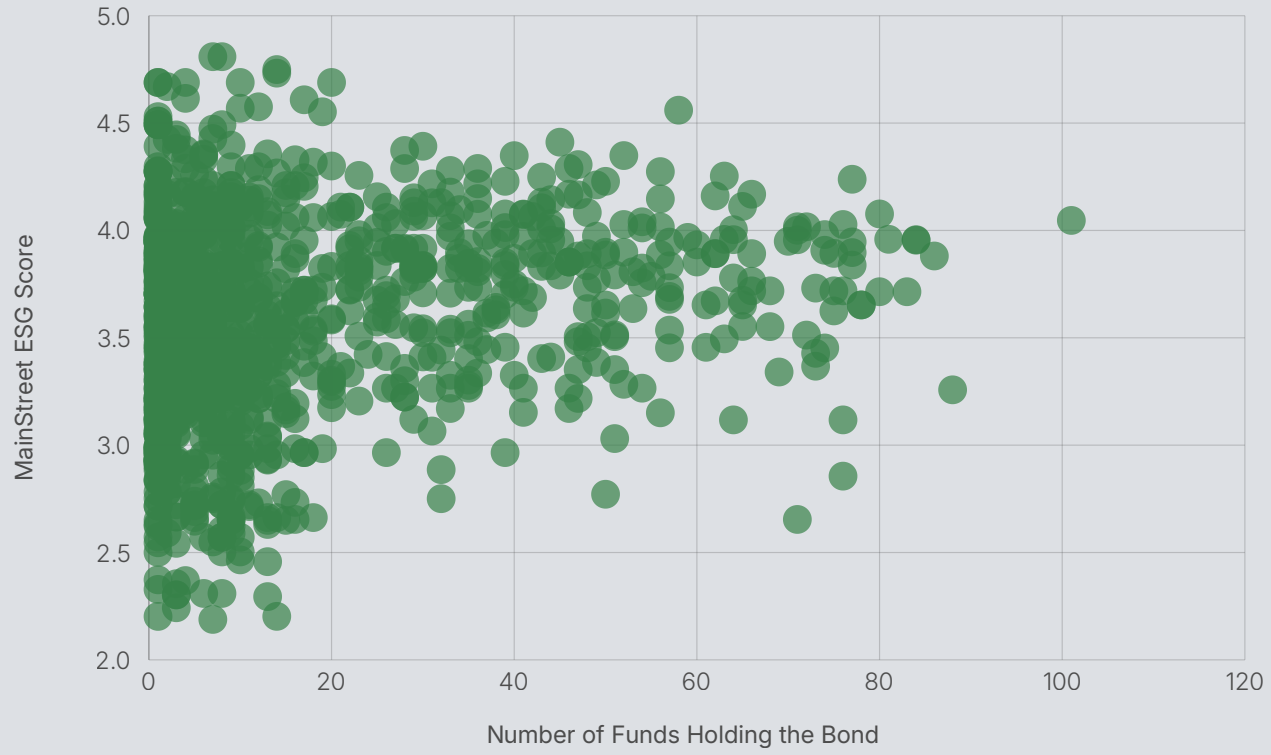
This robust and transparent analysis enables investors to move beyond the still narrow universe of EU Green Bond Standard issuances (around 30 at the time of writing) and access a broad, well-diversified opportunity set exceeding USD 3 trillion in outstanding instruments.

Are today's GSS Bond fund managers accounting for the quality of their Green Bonds?

We examine whether ownership breadth acts as a market signal of Green Bond quality. Specifically, we test whether Green Bonds held by a larger number of European bond funds tend to have higher MainStreet ESG scores, and whether dispersion remains high even among widely held issues. The figure explores the relationship, illustrating how ESG quality evolves as bonds are held by more investors.

- More widely held **Green Bonds score higher on average**, indicating some investor preference for stronger ESG profiles.
- **The relationship is positive but moderate**, meaning wider ownership may be informative as a high-level screen.
- **Variation remains large at every ownership level**, including among widely held bonds, implying ESG quality is not "standardised" by market consensus.
- **Bonds held by few funds show the widest spread**, consistent with a mix of niche/high-quality issues and weaker or less proven instruments.

Green Bonds Fund Ownership



Source: MainStreet Partners

3.

SOVEREIGN BONDS UNDER SFDR 2.0

3.1 THE ROLE OF SOVEREIGN BONDS IN SUSTAINABLE FUNDS ACCORDING TO SFDR 2.0

SFDR 2.0 strengthens the credibility of GSS Bond funds, but achieving meaningful climate impact requires more than regulatory compliance alone. While sovereign Green Bonds remain important portfolio building blocks, they are not sufficient, on their own, to ensure that capital is consistently channeled towards the energy transition.

Under the original SFDR, Sovereign Bonds' inclusion in sustainability-labelled portfolios was largely unchallenged despite the absence of defined use-of-proceeds. SFDR 2.0 makes this increasingly difficult to defend. The original SFDR was fundamentally a disclosure regime. As a result, general-purpose sovereign bonds were frequently included in Article 8 and even Article 9 portfolios despite lacking defined use-of-proceeds.

Based on the latest European Commission's proposal, Sovereign Green Bonds rely on issuer frameworks and reporting, and often lack measurable climate outcomes, as governments finance entire economies rather than discrete assets. This logic is already embedded in EU regulation: sovereign debt is excluded from Paris-Aligned and Climate Transition Benchmarks due to non-comparable data, reinforcing the prioritisation of traceable destinations for green capital.

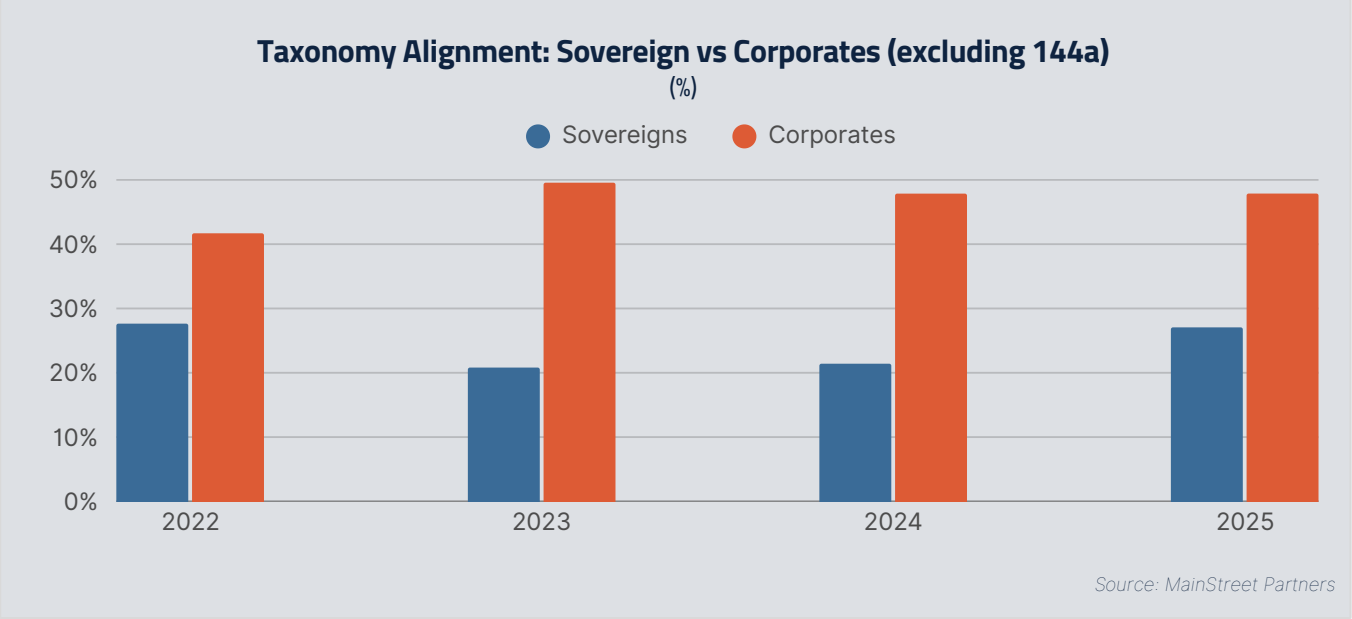
SFDR 2.0 marks a decisive shift.

The proposed framework replaces disclosure-led categorisation with eligibility-based product labels, supported by binding quantitative criteria, including a requirement that at least 70% of investments align with the stated sustainability objective. Under such thresholds, undifferentiated sovereign exposure becomes increasingly difficult to justify.

3.2 THE SOVEREIGN PROBLEM: NO PROCEEDS, NO CONTRIBUTION

Based on the European Commission's proposal, the core issue with general-purpose sovereign bonds is methodological: there are no reliable metrics to assess the climate or sustainability footprint of sovereign budgetary decisions.

Even where sovereigns issue labelled bonds, aggregate climate ambition often remains misaligned with Paris objectives, with most updated NDCs inconsistent with a 1.5°C trajectory when assessed against Climate Action Tracker benchmarks.



Source: MainStreet Partners

According to MainStreet's GSS Bonds database, Green Bonds from sovereign issuers obtain lower average alignment to EU Taxonomy than corporates, **reflecting structural eligibility and reporting constraints rather than a lack of climate-related spending**.

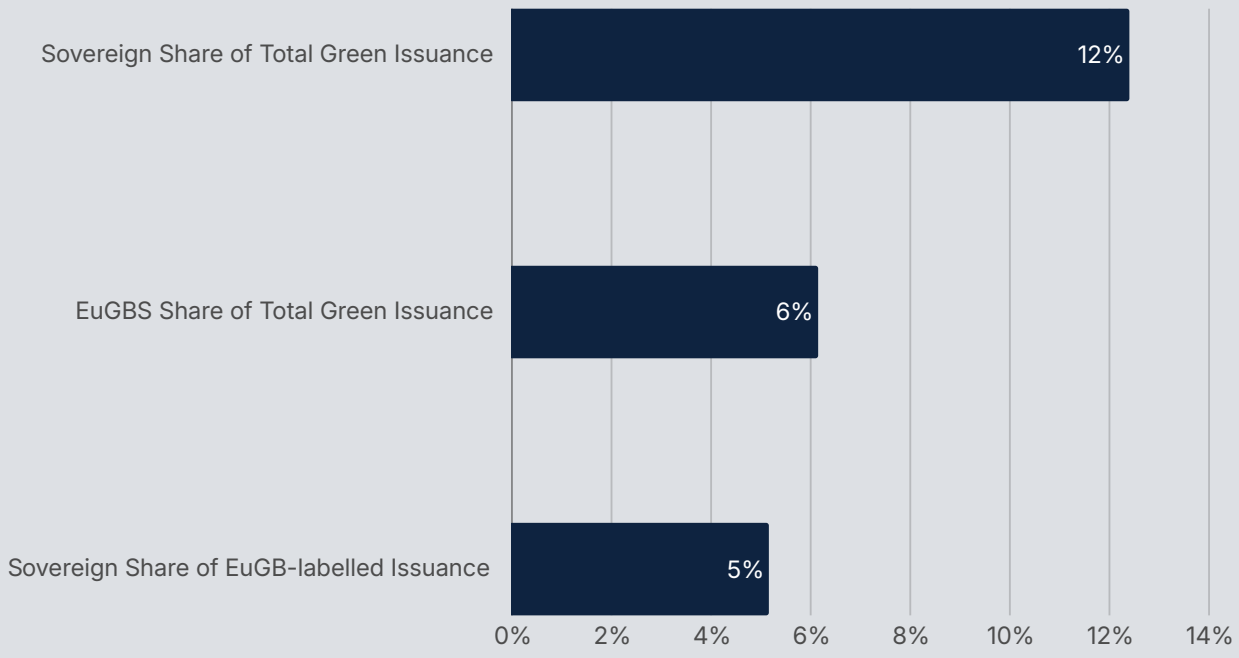
This implies that Taxonomy alignment alone may understate the role of sovereign green exposure within SFDR 2.0-aligned bond strategies and should therefore be considered alongside Impact Reporting Results.

3.3 WHEN SOVEREIGN BONDS DO COUNT

The exclusion of Sovereign Bonds under SFDR 2.0 is not absolute. Consistent with broader EU climate regulation, sovereign instruments can qualify where the Use of Proceeds is clearly defined and traceable.

Where proceeds are clearly earmarked for environmentally sustainable activities and robust reporting applies both ex ante and ex post, sovereign instruments can be assessed against sustainability objectives and included within SFDR 2.0 eligibility thresholds.

Sovereign Participation Across Green Bond Standards
(2025)



Source: MainStreet Partners

In 2025, according to our database, **Sovereign issuers accounted for just over 12% of total Green Bond issuance by volume**, underlining their continued relevance in sustainable fixed income markets.

At the same time, the European Green Bond Standard (EUGB) represented around 6% of the Green Bond universe, reflecting its selective, Taxonomy-aligned design.

Taken together, these figures illustrate the core logic of SFDR 2.0: Sovereign Bonds are not excluded because they are sovereign, but because only a subset offers sufficiently traceable and verifiable destinations for capital. Where sovereign Green Bond issuance meets higher standards of transparency and alignment, it can credibly contribute to sustainability objectives.

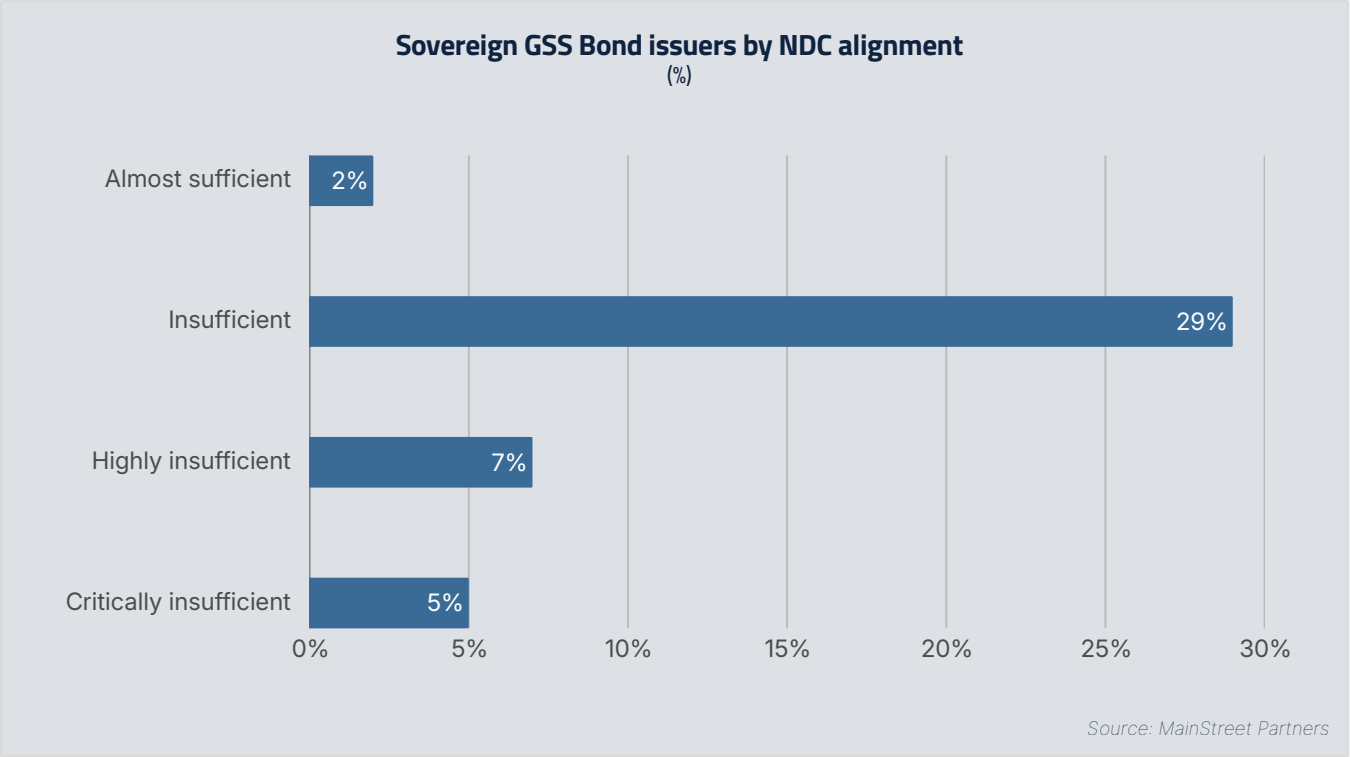
3.4 SOVEREIGN CLIMATE AMBITION AND NDC CREDIBILITY UNDER INVESTOR SCRUTINY

Beyond instrument-level eligibility, investors are increasingly scrutinising sovereigns at the policy level. Analysis of sovereign GSS issuance in our database points to a growing disconnect between labelled bond activity and underlying climate ambition.

Despite increased participation in the Green and Sustainable bond market, most sovereign issuers with updated nationally determined contributions (NDCs for 2035) remain misaligned with a 1.5°C pathway.

Labelled issuance alone is therefore no longer a sufficient proxy for the credibility of a sovereign's climate transition.

While SFDR 2.0 does not require explicit NDC alignment as a formal eligibility criterion, its emphasis on credible contribution and transition logic raises expectations around policy credibility and transition consistency.



As the chart illustrates, among sovereign issuers in our database that have accessed the GSS Bond market since 2020 and are covered by Climate Action Tracker, the vast majority remain assessed as insufficiently aligned with a 1.5°C pathway. This distribution highlights a key implication for investors: while sovereign participation in labelled bond markets has expanded rapidly, national climate ambition and policy credibility have not kept pace.

With 2035 approaching fast, and several countries slowing down their climate policies, **NDC credibility is becoming an implicit component of sovereign ESG assessment**, reinforcing the need to look beyond labels alone.

While the universe of eligible sovereign instruments remains limited – only around 64 of roughly 170 sovereign issuers have entered the GSS Bond market – this imbalance is likely to narrow. As SFDR 2.0 raises the premium on labelled and traceable sovereign exposure, incentives strengthen for a broader set of sovereigns to access or expand within the sustainable finance market.

4.

CARBON FOOTPRINT FOR GREEN BONDS: THE LOOK-THROUGH APPROACH

4.1 PCAF'S LATESTBGUIDANCE UNCOVERS USE OF PROCEEDS BENEFITS

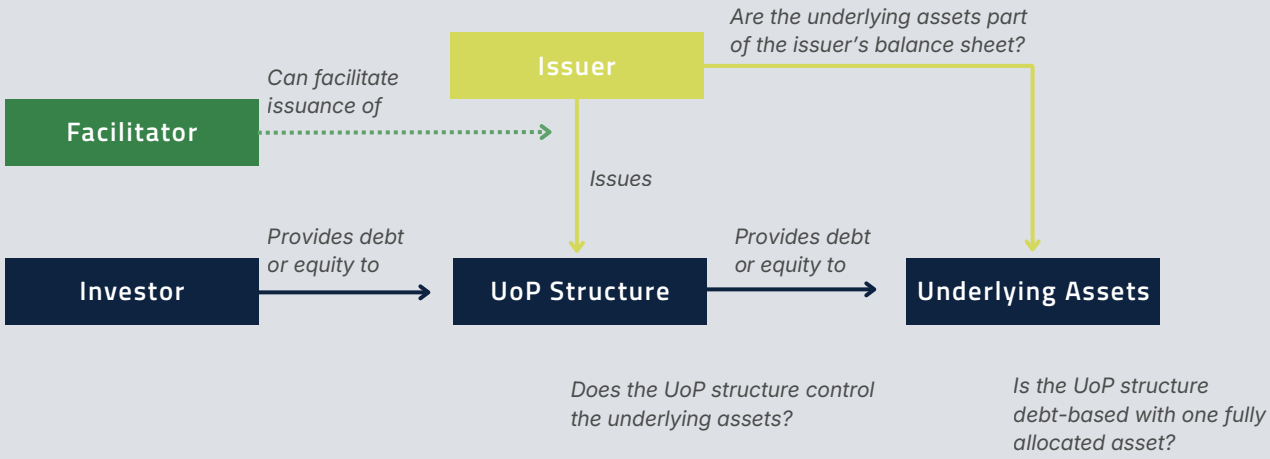
GSS bonds have gained traction in recent years largely due to the transparency around the projects they finance. Issuers typically disclose detailed information on the type, location and positive impact of financed projects in post-issuance reports, in some cases supported by external verification. Additional assurance is also provided at the pre-issuance stage through Second Party Opinions on issuers' frameworks, a requirement for alignment with the International Capital Market Association Green Bond Principles. However, while the use-of-proceeds feature is central to the appeal of GSS Bonds, disclosures often focus on impact, allocation and refinancing, and remain limited with respect to financed carbon emissions (i.e. the emissions associated with the financed projects).

Information on project-level CO2 emissions is nonetheless essential to fully assess the environmental implications of Green Bond investments and to enable comparability with non-use-of-proceeds (vanilla) bonds. Measuring financed emissions allows investors to make transparent climate-related disclosures, identify transition risks and opportunities, and establish emissions baselines aligned with the Paris Agreement.

The **Partnership for Carbon Accounting Financials (PCAF),** a global industry-led initiative supporting financial institutions in measuring and disclosing GHG emissions, **has recently expanded its work on financed emissions for use-of-proceeds structures**.

Its latest guidance, released in November 2025, recommends that the emissions accounting boundary for these instruments should be defined at the level of the financed projects. Wider availability of such data could further support the financing of green projects and strengthen climate disclosures.

Overview of different roles surrounding Use of Proceed structures



Source: PCAF

4.2 METHODOLOGY: HOW CAN WE DERIVE THE FOOTPRINT OF UNDERLYING PROJECTS

Our approach to calculating the carbon footprint of use-of-proceeds structures is designed to provide sustainable investors with a clear understanding of portfolio positioning, both in terms of impact reporting and carbon exposure. While impact reporting practices are improving, standardisation remains limited, requiring investors to draw on all available analytical tools. Interest in the carbon footprint of use-of-proceeds structures is increasing among both issuers and investors, and PCAF's guidance further validates these calculations, clearly distinguishing such instruments from vanilla bonds.

Under PCAF's published GHG accounting guidelines, the methodology applies to bonds where the Use of Proceeds falls within the issuer's operational control. The guidance recommends using values reported in issuers' post-issuance impact reports, while acknowledging that this data is not always available. In line with PCAF recommendations, we calculate the carbon footprint of Green Bonds using the following equation:

$$Financed\ emissions = Attribution\ factor\ x \sum project \frac{Green\ bond\ part\ of\ the\ project}{Debt + Equity\ of\ project}\ x\ project\ emissions$$

The estimation of emissions calculated follows guidance published in the project financed PCAF standard, whereby Green Bond activity emissions are estimated using default emission factors based on the physical activity or economic activity, as well as considering the location of the individual project. The analysis is done for Green and Sustainability Bonds that report sufficient data for us to estimate the project emissions, otherwise an issuer-level carbon footprint is taken instead. Things we consider are as follows:

01. TYPE OF ACTIVITY

Use of Proceeds structures tend to finance a range of activities (e.g. Renewable Energy). We try to understand the actual activity or technology that is being financed by Use of Proceeds bonds.

02. ALLOCATION

Allocation data provides a detailed post-issuance breakdown of what is actually being financed. Additionally, monetary values are a necessary input to standardise carbon footprint results, only accounting for the capital deployed.

03. GEOGRAPHY

The location of the projects financed by GSS Bonds is a critical factor in accurately calculating their carbon footprint. Information such as a country's energy mix and environmental conditions provide a good overview.

APPLIES TO GREEN AND SUSTAINABILITY BONDS

6
Use of Proceeds Categories

47
Activities

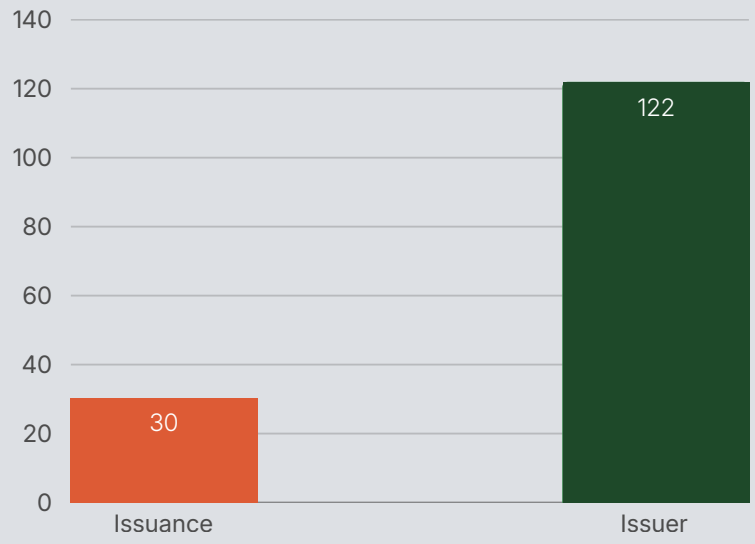
4.3 ISSUER-LEVEL VS. ISSUANCE LEVEL: WHAT DOES IT TELL US

Among the key advantages of an issuance-level focus to carbon footprint is the ability to depict the lower carbon footprint profile of green projects. By considering the Use of Proceeds' perimeter, including its projects financed, we can have an accurate view that assesses them fairly and consistently.

Looking into our existing database, which covers carbon footprint data at security level for over 3,000 Green Bonds and Sustainability Bonds, highlights significant differences in the emissions profiles of issuers. We only look at bonds that have sufficient data to estimate carbon footprint, and that have allocation data available (usually done 1 year after issuance).

Looking at the carbon footprint on an aggregate basis, there is a 92 TCO2e/EUR1mn invested difference in the carbon footprint profile of an issuance and issuer across our covered universe.

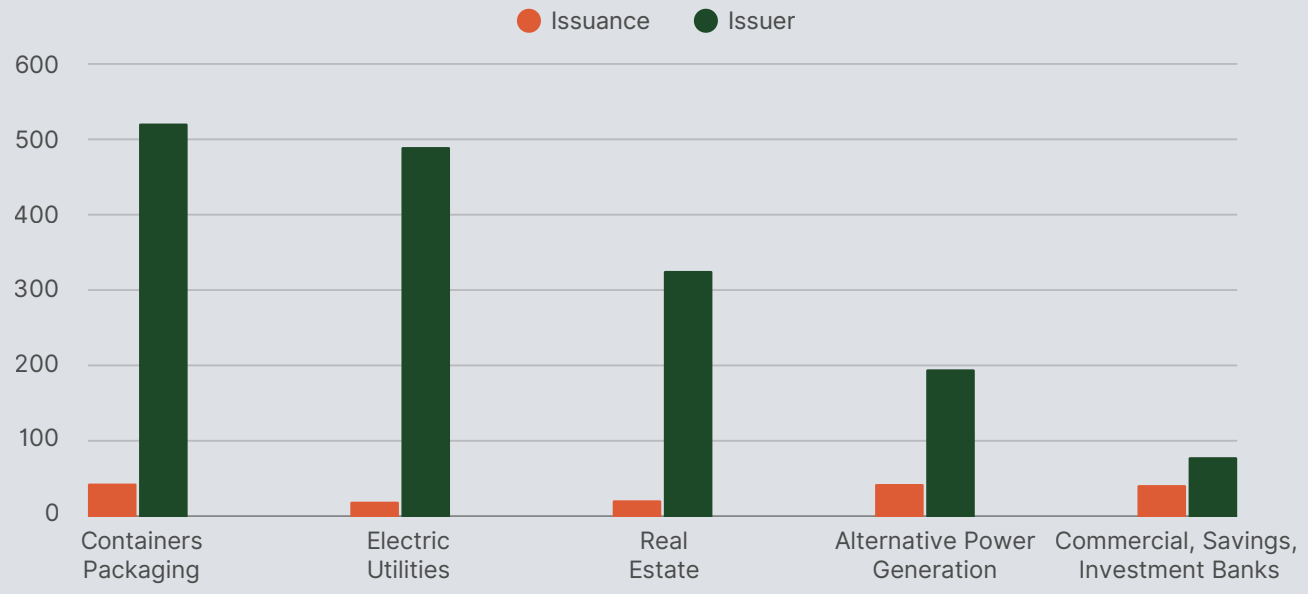
Carbon Footprint at Issuance: Significant Disparities vs. Issuer-level
(In TCO2e/EUR1mn invested)



Source: MainStreet Partners

Digging deeper into the individual sectors further highlights this trend, with noticeable differences in key sectors represented in the Green and Sustainability Bond market.

Carbon Footprint at Issuance: Significant Disparitiesvs.
(In TCO2e/EUR1mn invested)



Source: MainStreet Partners

In the case of **Electric Utilities, one of the more active corporate sectors in the market,** we can see that the **lower carbon footprint is derived from increased financing of renewable energy activities**.

The success of the GSS Bond market over the years can be attributed to investors' interest in securities that earmark capital towards sustainable projects, but also the willingness of issuers to disclose information on those projects. The allocation of funds, attributable impact and location of the projects are items that can be found on issuers' allocation and impact reports. This approach not only helps issuers finance their transition towards more sustainable operations, but also signals a genuine commitment to environmental responsibility, as the proceeds from the GSS Bonds are strictly ring-fenced for sustainability-focused projects.

Research on MainStreet's GSS Bond database highlights that European issuers are **really taking the steps to greenify their balance sheet** – highlighting how issuers see the label as an important piece of their funding programmes. A close examination of the issuance data reveals that Electric Utilities have the highest share of GSS Bond debt against their total debt issued. This demonstrates the sector's efforts to invest in more sustainable activities, whilst also having the willingness to inform investors as to how they are allocating capital.

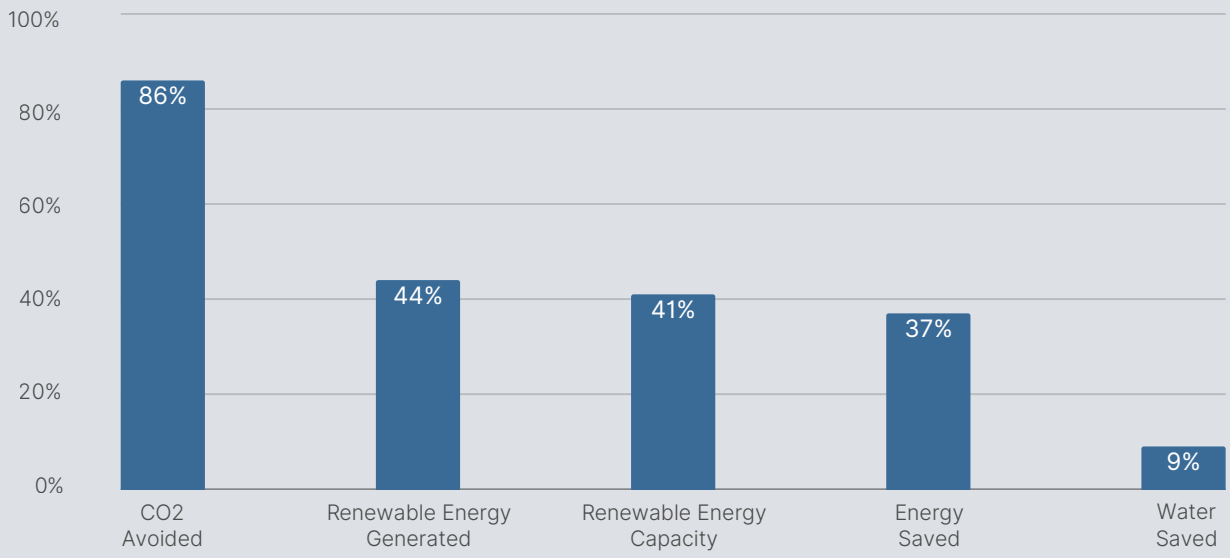
Widespread availability of security-level financed emissions provides an additional incentive for investors to buy Green Bonds. An easier and more consistent integration with "vanilla" bonds and equity analysis positions Green Bonds in the driver seat in terms of the attainment of Net Zero targets of a pool of investments.

4.4 IMPACT RESULTS: STILL RELEVANT?

Although no clear guidance has been provided as to how GSS Bond investors should treat impact reporting, we expect it will remain a common practice in the market, even with EU Green Bond issuance picking up in 2025.

Questions, however, remain around the quality of reporting by issuers. Different use of methodologies, or lack of disclosure around the methodologies/baselines used, limit the potential of the GSS Bond Market. This is particularly noticeable when looking at CO2 Avoided, the most reported metric in the Green Bond market (see below).

Top 5 reported metrics by Green Bonds



Source: MainStreet Partners

Of course, both metrics tell a different story.

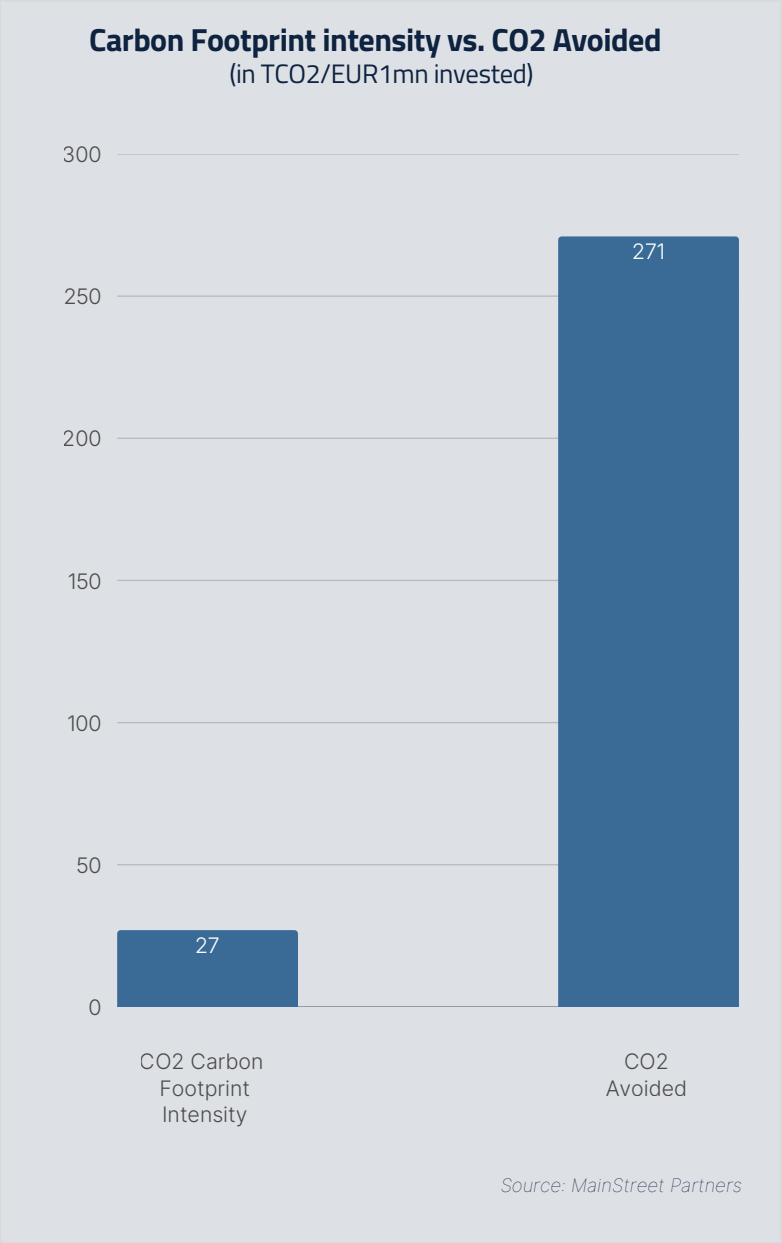
Carbon footprint focuses on the actual footprint of the underlying projects financed, whilst CO2 Avoided measures the CO2 that is 'avoided' through the use of a specific solution (vs. a conventional use).

For example, one could measure the CO2 Avoided from generating electricity via solar energy in a specific country for a year by comparing it to the annual energy output of the country (considering the energy mix).

The problem here lies in the fact that this can be applied for many technologies and geographies, and disclosure around it remains limited.

Although investors are still seeing the potential of financed emissions applicable to Use of Proceeds structures, carbon footprint offers the potential of looking at all GSS Bonds, regardless of what they invest in, through a same lens.

This offers investors the opportunity to not only compare different Use of Proceeds structures, provided data is available, but also the opportunity to see the potential decarbonisation that can occur when investing in assets that directly channel capital to sustainable solutions.



Whilst impact reporting will remain critical for investor decision-making, we see that carbon footprint may offer a lot of potential for GSS Bond investors.

Better issuer-investor dialogue combined with improved reporting will ensure capital is directed towards GSS Bonds that are making an impact in the future.

5.

POLICY NOTE: SFDR 2.0, AN OPPORTUNITY FOR THE GSS BOND MARKET IN 2026 AND BEYOND

SFDR 2.0 and recent naming guidelines aim to strengthen investor protection by requiring clearer substantiation of sustainability claims.

This shift should support a more transparent, credible and investable sustainable finance market.

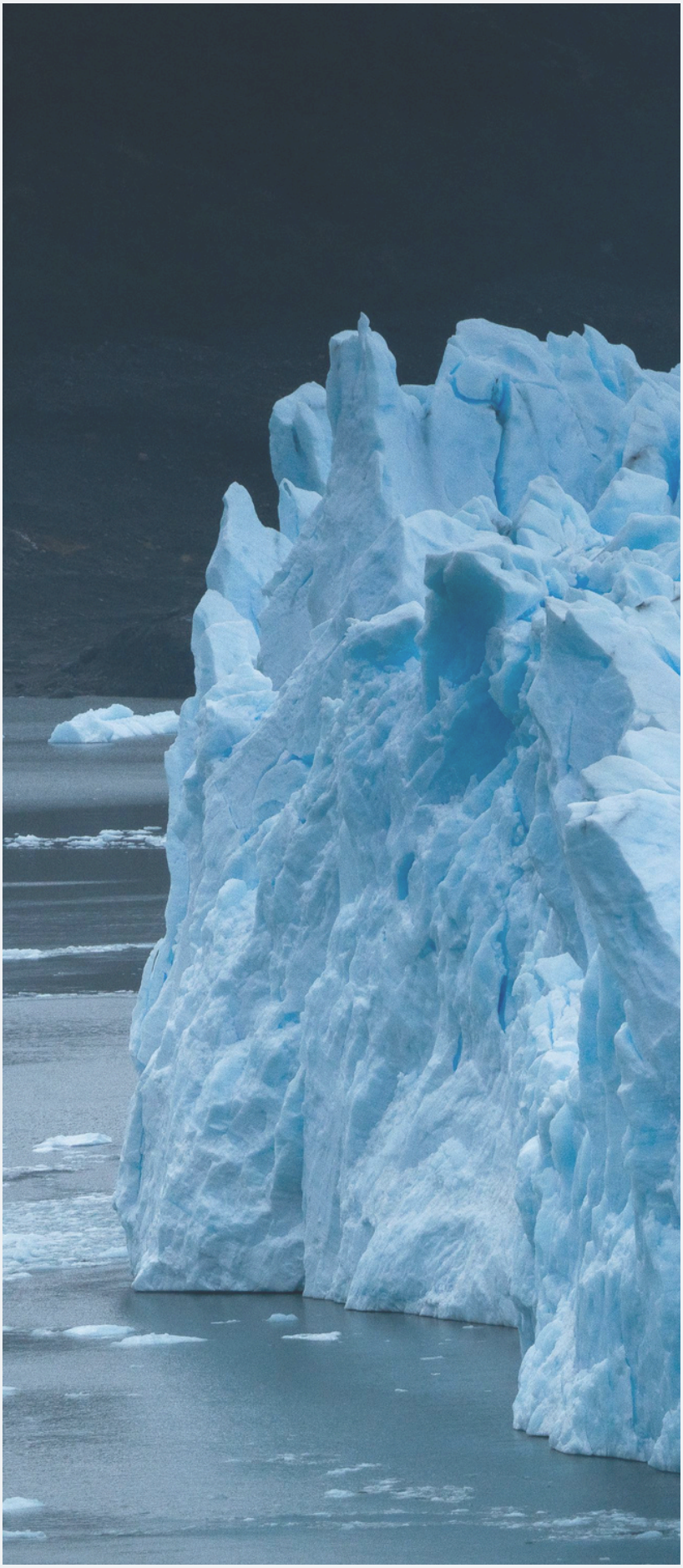
For GSS Bonds, the revised framework represents a meaningful opportunity. With the EU positioned as a central reference, Green and Sustainability Bonds are particularly well placed to benefit from improved regulatory clarity and higher disclosure standards.

The introduction of a 'Transition' category may also revive interest in Sustainability-Linked Bonds, as investors increasingly focus on issuers demonstrating credible transition pathways, even where current activities are not yet fully sustainable.

While SLB issuance has declined, sovereign engagement has increased, notably from Chile, Uruguay and Slovenia, making this an important trend to monitor into 2026. ICMA's Climate Transition Bond Guidelines may further support issuance from hard-to-abate sectors.

EU Green Bonds and Paris-Aligned Benchmark (PAB) alignment remain core across all SFDR 2.0 categories. The combination of stronger Alignment and the safeguards of the EU Green Bond Standard may broaden the investor base beyond dedicated GSS allocators.

Overall, SFDR 2.0 prioritises simplicity, transparency and investor protection. Together with the 2026 refinancing wall, this could support increased primary market activity and reinforce the role of GSS Bonds in financing long-term decarbonisation.



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