

The role of the Eu Green Bond Regulation in accelerating sustainable finance in the Baltic region

Natalja Tocolovska^{1,*} and Aleksandra Anna Meinerte²

¹Riga Graduate School of Law, Riga, Latvia; ORCID: 0000-0002-1235-6579

²ORCID: 0009-0003-5089-0494

Abstract

The European Union (EU) Green Bond Regulation aims to further align private investments with the Paris Agreement, minimise greenwashing and enhance transparency, offering a robust framework for European Green Bonds. While the academic research actively explores green bonds as part of the investment portfolio or environmental, social and governance agenda, relatively less interest is dedicated to the regulatory challenges. The aim of this paper is to analyse the impact of the EU Green Bond Regulation on the Baltic green bond market, focusing on its implications for market development, regulatory harmonisation and sustainable finance practices. The study combines a comprehensive literature review with an analysis of the EU Green Bond Regulation, the EU Taxonomy Regulation and related frameworks such as the Sustainable Finance Disclosure Regulation and the Climate Bonds Standard. The findings reveal that Baltic green bond market remains dominated by the state-owned enterprises that currently comply with international standards and EU regulations. The EU Green Bond Regulation, while stimulating market development, introduces overlapping requirements that may create administrative burdens and additional costs for issuers, especially the private segment.

Keywords

Baltic states • EU Green Bond Regulation • financial markets

INTRODUCTION

The growing academic interest in green bonds reflects their increasing importance as a financial instrument for financing sustainable development and addressing climate change. Green bonds have emerged as mechanism for channelling investments into environmentally sustainable projects, aligning with global climate objectives such as the 2017 Agreement (United Nations, 2015). In December 2024, the European Union (EU) started the application of EU Green Bond Regulation as a next step to regulate and standardise green bond markets. This regulation aims to enhance transparency, minimise greenwashing and stimulate market growth, while aligning private investments with the European Green Deal (European Commission, 2019). However, its need for harmonisation with private standards poses challenges for broader adoption, particularly in smaller and emerging markets such as the Baltic states.

Historically, the Baltic states have faced challenges such as underdeveloped capital markets, limited liquidity and regulatory fragmentation. However, recent initiatives, including regulatory harmonisation and integration through the Capital

Markets Union (CMU), have improved the situation. The EU Green Bond Regulation provides a harmonised framework that enhances transparency and investor confidence, but it also introduces new compliance requirements for issuers. The Baltic states' adoption of green bond frameworks reflects their commitment to sustainability and their adaptation to EU regulatory standards, though challenges such as market size, investor demand and regulatory alignment persist.

The aim of this paper is to analyse the impact of the EU Green Bond Regulation on the Baltic green bond market, focusing on its implications for market development, regulatory harmonisation and sustainable finance practices. The study contributes to existing research in two ways. First, it provides an in-depth analysis of the regulatory environment governing green bonds in the EU. Second, it offers a specific focus on regulatory environment governing green bonds implications for the Baltic region. The study employs a qualitative research approach, incorporating document analysis and legal framework examination. Primary data sources include EU legislative texts and delegated acts, supplemented by secondary data from academic journals, industry publications and reports from organisations such as

* Corresponding author: natalja.tocolovska@rgsl.edu.lv

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the Climate Bonds Initiative (CBI) and the International Capital Market Association (ICMA). The study also incorporates case studies and regional analyses of the Baltic states, highlighting their unique challenges and opportunities in adopting green bond frameworks.

The paper is structured as follows: the first section reviews the existing academic literature on green bond market development, focusing on financial performance, pricing dynamics, and environmental, social and governance (ESG) impacts, and regulatory issues. The second section outlines the research methodology, the third section presents the research results and discussion, focusing on the EU Green Bond Regulation, and related regulations and their implications for the Baltic green bond market. Finally, the paper concludes by summarising the key findings.

LITERATURE REVIEW

Academic interest in green bonds is growing quickly, where researchers use several approaches to subgroup papers in the area. Cortellini and Panetta (2021) identified six main themes of the academic research on green bonds: greenium, connections with financial instruments, stock reactions, supply-side analysis, market performance and clean energy stocks. However, the fast increase in research calls for a broader approach to categorisation. Current studies can be divided into two main areas: (1) focusing on green bonds as financial instrument and (2) examining their ESG aspects and their role in sustainable development.

Academics have explored various dimensions of green bonds as a financial instrument, including their financial performance, pricing and investor demand. Zerbib (2019) conducted a study on the pricing of green bonds and found a small negative green bond premium, more pronounced for financial and low-rated bonds, indicating that investors' pro-environmental preferences had a limited impact on bond prices. Gianfrate and Peri (2019) found a statistically significant negative green bond premium demonstrating that green bonds were relatively more cost-effective for issuers compared with the costs of obtaining green certification. Fatica et al. (2021) further investigated the pricing dynamics of green bonds, identifying a premium for green bonds issued by supranational institutions and corporates but not for financial institutions. Huang et al. (2023) proved that greenium increased for higher levels of non-green bond yield spread and that this occurred at an increasing rate. Karpf and Mandel (2018) found that while green municipal bonds historically traded at lower prices than conventional bonds, recent improvements in credit quality have reversed this trend, making green bonds increasingly attractive for bridging the climate finance gap. Flammer (2021) examined the corporate governance aspects of green

bond issuance, concluding that corporate green bonds, increasingly prevalent in environmentally material industries, led to improved environmental performance and increased ownership by long-term and green investors post-issuance.

The growing number of academic papers highlights the potential of the green bonds to drive sustainable development and support the transition to a low-carbon economy. Mitchell et al. (2024) highlighted that during the green bond issuance process, companies adopted changes to their sustainable business models, particularly through green finance frameworks and enhanced governance practices. Wyszowska and Filipiak (2024) proved that green bond volume had an impact on the implementation of Sustainable Development Goals but contributed more to the transformation towards sustainability. Weber and Saravade (2019), and Sartzetakis (2021), and Lichtenberger et al. (2022) explored the green bond market as a critical tool for financing the transition to a low-carbon economy, while emphasising the need for standardisation and regulation as well as the potential to mobilise private capital for climate-related projects.

However, the studies also highlight challenges associated with green bonds. Cochran et al. (2014) highlighted that, alongside regional and country-specific policy barriers, limited long-term finance, unattractive risk-return profiles and insufficient capacity in low-carbon project development hinder investment, underscoring the government's role in regulating green financing for both issuers and investors. Baker et al. (2018) found that green municipal bonds, especially those externally certified, were issued at a premium and were more closely held than ordinary bonds, reflecting investor willingness to accept lower returns for environmentally friendly investments. The study underscored the importance of external certification and supported legislative efforts to establish standardised criteria for green bond verification. Tang and Zhang (2020) pointed on the lack of standardised definitions.

The regulatory environment plays a crucial role in shaping the development of green bond markets. The EU has been at the forefront of efforts to standardise and regulate green bonds, with the EU Green Bond Regulation representing a significant milestone. Pyka (2023) argued that the EU Green Bond Standard was necessary to address market fragmentation, offering added value over private standards, and should have been mandatory for EU green bond issuances while coexisting with and complementing private standards through a mix of public and private obligations. Kölbel et al. (2020) debated that policymakers should recognise that sustainable investing (SI) alone cannot achieve transformative goals like decarbonisation without complementary policies, such as pollution taxes or minimum standards, which SI complements by incentivising companies to adopt ESG practices and explore viable business models. Bachelet et al. (2019) highlighted the

role of governments and financial institutions in harmonising standards and providing incentives to promote green financial instruments, such as green bonds. The study noted initiatives like the European Commission's (EC) proposal (European Commission, 2017) to lower capital requirements for energy-efficient projects, reflecting efforts to redirect investments towards environmentally friendly assets. Cheng et al. (2024) noted that while green bond principles (GBP) were largely voluntary, allowing flexibility in classification, stricter standards like the EU Green Bond Standard imposed more concrete obligations on issuers. Boffo and Patalano (2020) emphasised the need for legislative and regulatory frameworks to address inconsistencies in ESG reporting, scoring and disclosure, particularly in ensuring transparency, comparability and alignment with materiality factors. Research suggested an ESG scoring bias favouring large-cap companies over small and medium-sized enterprises, largely due to greater resource allocation for reporting by larger firms, creating market inefficiencies that impacted smaller firms' cost of capital, corporate reputation and access to sustainable finance. Dikau and Volz (2021) highlighted that while many central banks integrate climate risks into their mandates to ensure monetary and financial stability, legislative clarity was needed to define their role in promoting green finance, balancing institutional traditions and political decisions to avoid resistance and ensure effectiveness. Nair et al. (2024) found that green bond issuance in emerging economies was positively linked to ESG performance, with ESG also enhancing the positive relationship between board characteristics and green bond issuance, highlighting the role of regulatory requirements in driving sustainable finance. Demekas and Stallings (2023) emphasised that private financial firms in emerging markets and developing economies were adopting green and sustainable finance initiatives primarily due to pressures from parent companies, foreign investors and development finance institutions rather than regulatory requirements, but the lack of common standards and first-mover disadvantages hindered wider adoption, compounded by gaps in climate-related risk assessment frameworks.

Academic research analysing the Baltic bond market and its green segment remains scarce. Vainovskis et al. (2023) examined the determinants of domestic and international corporate bond issuance in the Baltics, identifying firm-level factors such as financial performance, credit ratings and bond size, alongside country-level factors like gross domestic product per capita, regulatory quality and political stability. The study highlighted the growing trend of Baltic companies shifting towards international bond markets, driven by competitive yields and access to broader investor pools, while domestic issuance remained influenced by local economic conditions and corporate characteristics. Gucciardi (2022) noted that the Baltics ranked among the lowest in the EU in terms of

capital market development prior to the implementation of the CMU initiative. However, the region has made significant strides in recent years, driven by regulatory harmonisation and the integration of capital markets through Nasdaq Baltic. Tocelovska and Jekabsone (2024) examined the impact of Coronavirus disease and the CMU on the Baltic corporate bond market, revealing a 125% average annual growth rate from 2019 to 2023. The study found that cost of funding, strategic market presence and limited funding alternatives drove bond issuance, while liquidity and investor demand remained key challenges, underscoring the importance of CMU initiatives in supporting market development. Climate Bonds Initiative (2018) argued that while Baltic green bond issuance was expected to remain sporadic due to smaller market size, Eurozone membership enhanced credit attractiveness for international investors. Nassiry (2018) further emphasised the role of regional collaboration exemplified by the Nordic green bond market, where pooled financing models enabled smaller issuers to access capital markets more effectively. For pooled finance, the study reviewed Sweden where a group of property companies formed a joint venture as a funding vehicle to raise funds via the bond market then on-lending to subcompanies at lower rates in bond markets than would otherwise be available for the sub-companies. The study emphasised the importance of joint guarantees, legal frameworks and technical capacity for identifying and managing green investments to replicate such models in other regions. Additionally, stable relationships with national institutions and reliable tax systems were identified as critical factors for the success of pooled financing mechanisms in mobilising capital for sustainability projects. Monk and Perkins (2020) explored the emergence and diffusion of green bonds as a financial innovation, emphasising the role of intermediaries, learning processes and favourable contextual developments in scaling up this market. Their findings highlight the growing involvement of emerging economies on the supply side and the importance of product design.

Bužinskė and Stankevičienė (2023b) identified reputation, credit rating and ESG scores as critical success factors for green bond issuance in Lithuania, highlighting their ability to attract low-risk investments and raise significant capital. However, challenges such as greenwashing, limited environmental impact and insufficient financial returns remained barriers to the market's growth. Bužinskė and Stankevičienė (2023a) developed a 12-step decision-making algorithm for municipalities in Lithuania to issue green bonds, emphasising inter-municipal cooperation for zero-waste projects. The study found that smaller municipalities exhibit moderate performance compared to larger ones, but inter-municipal collaboration can enhance overall effectiveness in green bond issuance. Tocelovska and Eglite (2021) examined the broader regulation context: the feasibility of developing

a pan-Baltic legal and regulatory framework for uncovered corporate bond issuance, highlighting the strong demand for corporate bonds in the Baltics despite the legislative focus on covered bonds. The study identified the need for harmonising information disclosure requirements under the Prospectus Regulation and aligning national insolvency laws to address issuer defaults. The authors concluded that a unified framework was feasible and aligned with the goals of the CMU and pan-Baltic capital market development.

METHODOLOGY

The study employs a qualitative research approach, incorporating document analysis and legal framework examination. Primary data sources include EU legislative texts and delegated acts, supplemented by secondary data from academic journals, industry publications and reports from organisations such as the CBI and the ICMA. The study also incorporates case studies and regional analyses of the Baltic states, highlighting their unique challenges and opportunities in adopting green bond frameworks.

RESEARCH RESULTS AND DISCUSSION

The Baltic corporate bond market demonstrates a growing green finance segment. Green bonds account for 16% of total issuances but represent one-third of the market by value, reflecting their larger average size (over EUR 119 million) per issue (Nasdaq Baltic, 2025). The market's development has been led by state-owned enterprises (SOE): Latvenergo in 2015 and Lietuvos Energija and Altum in 2017 (Nasdaq, 2018). Following issuers have been SOEs, except Lithuania's 2018 sovereign green bond—the region's first (Nasdaq Baltic, *Lithuania's Sovereign Green Bond*, 2018). In 2024, Liven AS announced a green bond offering (Nasdaq, 2024).

The EU Green Bond Regulation, which came into force in December 2024, represents an important step in aligning Baltic capital markets with the EU's sustainability objectives. The regulation pursues five main objectives: aligning private investments with the Paris Agreement (United Nations, 2015) and the European Green Deal (European Commission, 2019); minimising greenwashing risks; enhancing transparency to attract investors; stimulating green bond market growth; and establishing global best practices in sustainable finance. The regulation introduces the voluntary European Green Bond (EuGB) designation, creating a distinction between bonds marketed as environmentally sustainable (requires proceeds to be allocated to green projects) and sustainability-linked bonds (ties financial or structural terms to environmental performance targets). The regulation excludes synthetic

securitisation bonds from the EuGB designation (Article 2). According to the definition in Regulation (EU) 2017/2402, synthetic securitisation involves risk transfer via credit derivatives or guarantees, while the underlying exposures remain with the originator. For Baltics, the introduction of the standardised 'European Green Bond' label could further enhance investor confidence and stimulate liquidity, which is particularly important for a region where green bonds remain a niche segment.

Issuers must comply with the Taxonomy Regulation (Regulation (EU) 2020/852) to determine the 'greenness' of a bond. According to Article 4(1) of the EU Green Bond Regulation, proceeds must be allocated to one of five categories: fixed assets; capital expenditure (aligned with EU Delegated Regulation (EU) 2021/2178); particular operating expenses; financial assets created within 5 years post-issuance; or household-related expenditures. Article 5 provides limited flexibility, permitting up to 15% of proceeds to fund non-taxonomy aligned projects, provided they do not cause significant environmental harm. Sovereign issuers benefit from additional flexibility, including the ability to use proceeds for fiscal measures. An asymmetry exists in regulatory treatment: while some of the sovereign issuers' allocations do not require external review, private undertakings must acquire certification. This disparity is crucial for the Baltics, where SOEs have historically dominated green bonds issuance and potentially support their dominant position, while private sector participants face disproportionate compliance costs acting as a barrier to market entry and support the findings of Boffo and Patalano (2020).

To prevent greenwashing and maintain the Sustainable and Responsible Investment (SRI) integrity of EuGBs, issuers must meet strict pre- and post-issuance transparency requirements, allowing investors to assess and compare the eligibility of the EuGBs (European Commission, 2021). Pre-issuance issuers must submit an EuGB factsheet, including: (1) issuer, bond and external reviewer summaries; (2) a voluntary commitment to the EU Green Bond Regulation framework; (3) the bond's alignment with the issuer's environmental strategy; (4) planned allocation of proceeds; and (5) reporting mechanisms—all subject to external review. Post-issuance obligations include annual allocation reports, externally reviewed until proceeds are fully allocated. An impact report, required once during the bond's lifetime, outlines environmental impacts but does not require external approval.

The EU Green Bond Regulation establishes a three-tier governance structure: Private governance level—the external reviewers assess pre- and post-issuance compliance with regulatory requirements and taxonomy criteria. National supervision is conducted through the competent authorities (under the Prospectus Regulation (Regulation (EU) 2017/1129)) review issuers' prospectuses, imposing sanctions

for non-compliance. EU-level oversight is exercised through the European Securities and Markets Authority (ESMA), which registers and monitors external reviewers but does not directly supervise issuers. Enforcement also operates on three levels: private, national and EU. Traditionally, EU capital markets relied on self-regulation through voluntary standards and codes of conduct. However, post-2008 financial crisis reforms, such as Markets in Financial Instruments Directive (MiFID) (Directive 2014/65/EU) and Market Abuse Regulation (MAR) (Regulation (EU) 2017/2402), have reduced reliance on private governance, enhancing harmonisation.

The EU Green Bond Regulation requires issuers using the EuGB designation to comply with the EU Taxonomy Regulation (Regulation (EU) 2020/852). The regulation defines environmentally sustainable activities through six environmental objectives: climate change mitigation/adaptation, sustainable water/marine use, circular economy transition, pollution prevention and biodiversity protection. To qualify, activities must substantially contribute to at least one objective while avoiding significant harm to others (Article 9), alongside meeting social and employment standards. Technical screening criteria are specified in delegated acts (Commission Delegated Regulation (EU) 2021/2139), clarifying sector-specific requirements (e.g. energy, greenhouse gases). While environmentally focused, the Taxonomy Regulation also integrates social and governance requirements (e.g. fair wages, anti-forced labour).

The Sustainable Finance Disclosure Regulation (SFDR) (Regulation (EU) 2019/2088) was introduced alongside the Taxonomy Regulation and the EU Green Bond Standard as part of the European Green Deal (European Commission, 2019) and Sustainable Finance Strategy (European Commission, 2018). It mandates financial market participants to disclose sustainability risks and impacts, requiring integration of ESG factors into investment decisions through website disclosures, periodic reports and prospectuses. The regulation defines sustainability risks as ESG matters potentially adversely affecting investments, encompassing issues from climate change to human rights violations.

While SFDR applies broadly to financial institutions including asset managers and insurers, sovereign issuers remain exempt. Additionally, there is an overlap with the Prospectus Regulation (Regulation (EU) 2017/1129) which governs securities prospectuses in the EU, but it is part of the broader CMU initiative, which is not directly related to the European Green Deal (European Commission, 2019). Issuers must comply with both the EU Green Bond Regulation and the Prospectus Regulation disclosure requirements. The Prospectus Regulation aims to ensure transparency and investor protection by requiring issuers to disclose key information regarding securities offered to the public or traded on EU regulated markets. It mandates clear, accurate and

comprehensive prospectuses for all transferable securities, which include green bonds. Although it is not part of the European Green Deal (European Commission, 2019) or Sustainable Finance Strategy (European Commission, 2018), it aligns with the goal of enhancing market integrity and facilitating capital raising within the EU's broader financial regulatory framework. The EU Green Bond Regulation shares similarities with other EU legislative frameworks, including the SFDR. Although the SFDR has a wider range, its disclosure requirements align with those of the EU Green Bond Regulation, particularly in need for issuers to disclose the sustainability activities related to their investments and the link between these activities and the financial products.

The Climate Bonds Standard (CBS) (Climate Bonds Initiative (CBI) 2019) and GBP are internationally recognised, voluntary standards for the green bond market. According to CBI, in 2019 14% of issuers did not follow GBP recommendations or undergo external reviews (Climate Bonds Initiative, 2019). The GBP, developed by the ICMA, recommend disclosing the use of proceeds, project selection processes and both pre- and post-issuance reporting mechanisms, along with external reviews to enhance transparency and attract investment, especially from foreign investors (International Capital Market Association, 2021). Launched by the CBI in 2021, the CBS serves as a certification tool to align green bonds with the Paris Agreement (United Nations, 2015). The CBS requires third-party verification and aims to promote sustainable market growth, particularly in countries like India and China. Unlike the EU Green Bond Regulation, the CBS allows up to 95% of proceeds to be allocated to projects meeting the Climate Bonds Sector Eligibility Criteria, with 5% flexibility. The CBS is more science-based, focusing on bond performance, while the GBP emphasises the issuance process and recommends, rather than mandates, external reviews.

The analysis of the Baltic green bonds indicates that the prevailing market practices demonstrate that green bonds are issued in compliance with the EU Taxonomy Regulation, the Prospectus Regulation and either CBS or GBP. Latvenergo, the first state-owned energy company in Eastern Europe to issue a green bond (Latvenergo, 2015), issued under the Prospectus Regulation, allocating the proceeds to renewable energy and infrastructure. Latvenergo has since issued multiple green bonds, aligning with CBS, CBI and the Taxonomy Regulation. In 2021, another Latvian SOE, Augstsprieguma Tīkls (AST), issued EUR 100 million in green bonds (AS 'Augstsprieguma Tīkls', 2021). The AST Green Bond Framework, which was issued in accordance with GBP, attracted strong investor interest, leading to an oversubscription of over twice the issue size. The European Bank for Reconstruction and Development (EBRD) invested EUR 14.2 million, further supporting its success (European Bank for Reconstruction and Development [EBRD], 2021).

Lithuania has issued both corporate and government green bonds. In 2017, Ignitis, a SOE, entered the market with EUR 300 million in green bonds issued under a prospectus and green bond framework (Ignitis, 2017). The issuance received a positive external review, and Ignitis has since expanded its total green bond issuances to EUR 600 million, directing funds to renewable energy projects. In 2018, Lithuania became the first Baltic state to issue a sovereign green bond, allocating the proceeds to infrastructure projects, primarily renovating apartment buildings to improve energy efficiency. Two Lithuanian companies, Auga Group and Atsinaujinančios Energetikos Investicijos, have also issued green bonds. All Lithuanian green bonds follow the ICMA Green Bond Framework and CBS, with issuers publishing Green Bond Frameworks alongside their prospectuses to ensure transparency and compliance with CBS and GBP.

Green bond issuers in the Baltic countries are dominated by SOEs and consistently adhere to the GBP and CBS, obtain external reviews and implement frameworks that ensure transparency and compliance with international standards. The current issuance process aligns with the Taxonomy Regulation and Prospectus Regulation, demonstrating adherence to EU legislative requirements concerning sustainability, transparency and green finance. However, the introduction of the EU Green Bond Regulation, which establishes a separate market and introduces new issuer requirements, will overlap with existing regulations, such as the Taxonomy Regulation and Prospectus Regulation. As a result, issuers will face additional administrative burdens to obtain certification as 'green'. This added complexity could create barriers to entry in the already underdeveloped green bond niche, especially for small and medium enterprises, and impose unnecessary costs, potentially hindering the development of the market.

CONCLUSION

Academic research on green bonds has grown significantly in recent years, with studies generally falling into two main categories: examining green bonds as financial instruments and analysing the ESG impact. Research on the financial aspects has produced mixed findings regarding pricing premiums and market performance. The studies have identified green bonds' considerable potential to support sustainable development and climate transition goals, while also noting challenges related to standardisation, impact measurement and private sector engagement. The regulatory environment, particularly the EU's efforts to establish common standards through initiatives like the EU Green Bond Regulation, emerges as a crucial factor shaping market development.

Research on the Baltic bond market remains limited. While identifying the influence of the Eurozone membership improvement on the credit appeal, the studies prove growing corporate issuance driven by firm-level factors (financial performance, credit ratings) and country-level conditions (regulatory quality, economic stability), with an increasing interest in international issuance. Baltic green bond issuance has been sporadic due to market size constraints where pooled financing models (as seen in Nordic markets) could enhance accessibility for smaller issuers. Key barriers to green bond growth in the Baltics include greenwashing risks, limited environmental impact transparency and insufficient financial returns.

The EU Green Bond Regulation aims to align private investments with the Paris Agreement and European Green Deal, minimise greenwashing, enhance transparency, stimulate market growth and set a global legislative example. It establishes a voluntary 'European Green Bond' label. Issuers must comply with the Taxonomy Regulation to determine the 'greenness' of a bond. An asymmetry exists in the regulatory treatment: while some of the sovereign issuers' allocations do not require external review, private undertakings must acquire certification.

To prevent greenwashing and maintain the SRI integrity of EuGBs, issuers must meet strict pre- and post-issuance transparency requirements. The EU Green Bond Regulation establishes a three-tier governance structure involving external reviewers, national authorities and ESMA.

The EU Green Bond Regulation shares similarities with other EU legislative frameworks, including the SFDR. Although the SFDR has a wider range, its disclosure requirements align with those of the EU Green Bond Regulation, particularly in need for issuers to disclose the sustainability activities related to their investments and the link between these activities and the financial products. The CBS and GBP are internationally recognised, voluntary standards for the green bond market.

The Baltic green bond market remains dominated by SOEs that currently comply with international standards (GBP, CBS) and EU regulations (Taxonomy, Prospectus). The EU Green Bond Regulation and related frameworks aim to standardise green finance practices, reduce market fragmentation and enhance investor confidence. While stimulating the market development, it also introduces overlapping requirements that may create administrative burdens and additional costs for issuers, affecting the private segment.

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