BRIEFING
European Added Value in Action

Potential economic impact of European sustainable finance

SUMMARY

Sustainable finance refers to the process of taking environmental, social and governance (ESG) considerations into account when making investment decisions in the financial sector. This could lead to investors channelling more investment into the transition to a climate-neutral, climate-resilient, resource-efficient and fair economy with a high level of quality governance requirements.

Sustainable finance therefore has a key role to play in delivering on the policy objectives under the European Green Deal. In that respect, the EU has made significant progress in recent years, notably with the adoption of the sustainable finance action plan in 2018, the renewed strategy for financing the transition to a sustainable economy in 2021, and with a series of legislative proposals. As a result, the EU is well placed in this area, with an estimated €6.6 trillion of ESG assets under management in 2024, representing 38 % of total assets under management in the EU (€17.2 trillion).

However, the relationship between sustainability efforts, a country's economic growth and the impact on business and financial performance remains a matter for debate. Recent research suggests that countries and businesses can pursue sustainable development without compromising their economic prosperity, although this is dependent on having the right institutional and regulatory framework in place.

Better cooperation and harmonisation at international level is crucial to avoid unfair competition, greenwashing or an increase in administrative burdens for businesses.

IN THIS BRIEFING

EPRS | European Parliamentary Research Service

Authors: Aleksandra Heflich and Jérôme Saulnier
Graphics: Lucille Killmayer

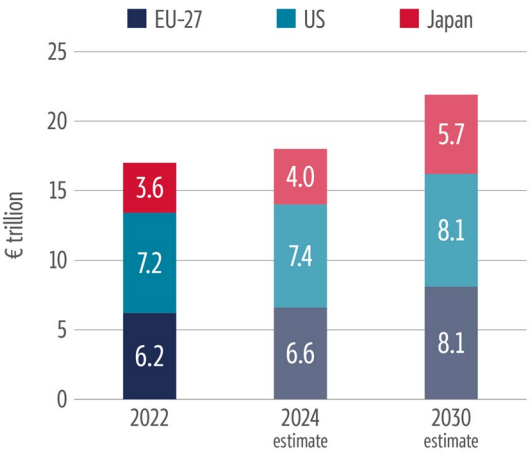
PE 762.852 – September 2024

Introduction

Sustainable finance refers to financial investment decisions that take environmental,[1] social and governance (ESG) considerations into account. Sustainable finance aims to build a sustainable and resilient economy by strengthening long-term economic growth while reducing environmental pressures (linked both to climate change and environmental protection), human rights, social and labour inequalities and improving governance aspects (such as management and employee relations). Sustainable finance therefore also refers to increasing transparency related to risks and their mitigation associated with ESG factors that can impact the financial system. It is in line with the United Nations Sustainable Development Goals (SDGs) and responsible investing principles.

Global sustainable investing assets are estimated[2] at around €32.4 trillion in 2024 and are projected to continue growing to reach €40 trillion in 2030. **The EU is well placed** to benefit from this development, as it currently has one of the highest amounts of sustainable assets under management, estimated at around €6.6 trillion in 2024 and representing 38 % of total assets under management in the EU (€17.2 trillion). This might be explained by the fact that the EU has been extremely active in setting up a regulatory framework to promote the development of sustainable finance. This led to the adoption of recommendations by the European Parliament and to a sustainable finance action plan by the Commission in 2018 with three core objectives:

Figure 1 – ESG assets under management



Data source: EPRS using Bloomberg.

1 Reorient capital flows towards a more sustainable economy
2 Mainstream sustainability into risk management
3 Foster transparency and long-termism

Following up on the action plan, in 2021 the Commission put forward several legislative proposals (see Table 1), as well as a renewed strategy for financing the transition to a sustainable economy. An increasing number of initiatives[3] have also been launched globally in recent years by public and private actors, triggering renewed interest and lively debates on the pros and cons of the approach.

Current EU sustainable finance regulation framework

Regarding the classification of activities, one of the key regulatory tools the EU has developed is Regulation 2020/852 of 18 June 2020 – the **Taxonomy Regulation**. It creates an EU-wide classification system, which helps guide investments towards economic activities aligned with a net zero trajectory by 2050 and with broader environmental objectives. It aims to increase transparency and combat greenwashing, in order to foster climate-friendly businesses and scale up sustainable investment across the EU. The regulation defines criteria for an economic activity to qualify as environmentally sustainable, so that companies share a common language and have a clear Union-wide definition. In principle, such a common EU system should help avoid market fragmentation and could reduce compliance costs in the financial services sector, although the benefits and costs are not precisely quantified in the related impact assessment.

Another EU instrument is Regulation 2023/2631 of 22 November 2023 on the **European Green Bond Standard (EUGBS)**. It is an EU-wide voluntary framework that aims to establish a harmonised standard for green bonds. The standard relies on the EU taxonomy criteria to define green economic activities, ensuring transparency and supervision of companies in line with market best practices.

The EUGBS envisages that companies carrying out pre and post issuance reviews at European level are overseen by the European Securities and Markets Authority (ESMA). By implementing the EUGBS, the EU aims to become a key player in standard-setting in the green bonds market. The benefits are evaluated qualitatively in the related impact assessment.

Regarding reporting and transparency by financial market actors, with a view to ensuring adequate sustainability-related disclosures, the EU adopted Regulation 2019/2088 of 27 November 2019 – the **Sustainable Finance Disclosure Regulation (SFDR)**. It mandates financial market participants to communicate sustainability-related information to investors and requires disclosing how sustainability risks affect investments and the adverse impacts of such investments on the environment and society. In practice, the SFDR splits the fund universe into three categories: **Article 6 funds** (i.e. non-ESG funds), **Article 8 funds** (which promote sustainability characteristics), and **Article 9 funds** (the most stringent, which include a sustainability objective).[4] This could help reduce unnecessarily high search costs that investors face because of imperfect information. The benefits and costs are evaluated qualitatively in the related impact assessment.

Table 1 – Overview of key EU sustainable finance legislation

	Purpose	Scope and actors affected	Cost and benefit
EU taxonomy for sustainable activities	A classification system established to clarify which investments are sustainable	Companies that fall under the CSRD; financial market participants that offer and distribute financial products in the EU	Cost: Qualitative evaluation - only a partial cost of ESG integration is given.[5] Recurring cost for the EU of between €190 million and €900 million per year. Benefit: Qualitative evaluation
EU Green Bond Standard (EUGBS)	A voluntary standard available to all issuers to help finance sustainable investments	Companies and public entities that wish to raise funds on capital markets to finance their green investments	Cost: Between €10 million and €40 million per year, given the number of issuances in the EU[6] Benefit: Literature reviews and qualitative evaluation; slightly lower cost of funding through green bonds
Transparency and integrity of ESG rating activities regulation[7]	To improve confidence in and quality of ESG ratings through more transparency and clarity of operations	ESG rating providers operating in the EU	Cost: Recurring cost of €6.4 million to €10.6 million per year; one-off cost of between €4 million and €6.4 million Benefit: Reduced due diligence costs, with savings of between €110 million and €290 million per year
Sustainable Finance Disclosure Regulation (SFDR)	Lays down sustainability disclosure obligations	All manufacturers of financial products and financial advisers for all financial products that pursue sustainable investment	Cost: Qualitative evaluation – only a partial cost of ESG integration is given (see above) Benefit: Qualitative evaluation
Corporate Sustainability Reporting Directive (CSRD)	Requires companies to publish regular reports on their environmental and social impact activities	All companies whose securities are admitted to trading on regulated markets; listed SMEs and third-country undertakings generating net turnover above €150 million in the EU	Cost:[8] Recurring cost of €5 187 million per year; one-off cost of €1 625 million Benefit: Reporting costs could be reduced by around €600 million and up to €2 000 million per year, if standards were to completely eliminate the need for additional information requests
Corporate sustainability due diligence (CSDDD)	Requires companies to demonstrate what action they are taking to protect the environment and human rights	Companies established in the EU with more than 1 000 employees and a net global turnover of more than €450 million; franchised companies with global turnover above €80 million	Cost: Recurring cost of €2 370 million per year; one-off cost of €1 127 million Benefit: Some literature reviews and qualitative evaluation

Data source: EPRS.

Regarding reporting and transparency by businesses, Directive 2022/2464 of 14 December 2022 – the **Corporate Sustainability Report Directive (CSRD)** – modernises and strengthens the Non-Financial Reporting Directive (NFRD)[9] requirements by including a broader set of large companies, listed SMEs and foreign companies generating a net turnover of more than €150 million in the EU and having a subsidiary undertaking or a branch on EU territory. It requires more detailed reporting on ESG impacts and, in particular, on **scope 1 (directly controlled), 2 and 3 (including indirect) greenhouse gas (GHG) emissions**.[10] It could reduce reporting costs by standardising the information businesses provide under the European Sustainability Reporting Standards (ESRS), but total administrative and compliance costs would remain significant.

To further promote corporate sustainable action, the EU adopted a Directive[11] on **corporate sustainability due diligence (CSDDD)**. The law establishes a corporate due diligence duty regarding negative human rights and environmental impacts in the company's own operations, their subsidiaries and their value chains. It also introduces civil liability for companies that intentionally or negligently fail to comply with the law's obligations aimed at protecting natural or legal persons. It complements the CSDR and SFDR, although the financial sector is covered partly by the due diligence obligations (restricted to a company's own operations, and those of their subsidiaries and upstream business partners). The costs are quantified in the related impact assessment.

The EU co-legislators have found compromise after interinstitutional negotiations on a Commission proposal for a regulation on the **transparency and integrity of ESG rating activities**. The regulation addresses concerns expressed by stakeholders related to the quality of ESG ratings, including comparability. It introduces obligations on ESG rating providers to ensure they charge clients fair, reasonable, transparent and non-discriminatory fees, disclose details of their methodology and key rating assumptions, separate rating activity from business activity, and declare conflicts of interest. It envisages authorisation to operate and supervision of ESG rating providers by ESMA to ensure investor and consumer confidence. As explained in the related impact assessment, it could lead to reduced due diligence costs for ratings users and rated entities.

Remaining questions and challenges: What could the EU do?

Despite a remarkable global uptake of sustainable finance in the past decade and the EU's favourable position in terms of flows, assets and regulatory environment, many challenges remain in making economies and their financial systems environmentally and socially sustainable. In particular, the European Commission estimates the annual EU green transformation investment gap by 2030 at €630 billion. Three quarters of this amount (over €470 billion) would be needed in private investment to achieve the goals of the European Green Deal and a quarter from public sources.

To unlock the untapped potential of private finance, several remaining questions and potential challenges identified by stakeholders and in academic research would need to be addressed. We discuss some of them below.

Financing the transition – Are green bonds effective?

Over the past decade, corporate borrowers have accelerated their issuance of green, social and, more generally, sustainability-related bonds (see Figure 2). The most commonly used are **green bonds**, which allow borrowers to raise funds for specific and predefined green and environmental projects. Otherwise, they are legally not different from conventional fixed income securities. Information available from reporting on the use of proceeds indicates that the majority of funds raised through green bonds finance investment in the broad area of climate change mitigation. Among single-project bonds, the largest share of proceeds were directed to renewable energy projects (around 25 %), with energy efficiency projects also accounting for a significant proportion (20 % of contracts, 10 % of the total amount).

A first issue related to the use of green bonds is whether they actually translate into better environmental performance by the issuer. Failing to do so would suggest potential greenwashing taking place, whereby companies purport to engage in green investment to attract sustainability-

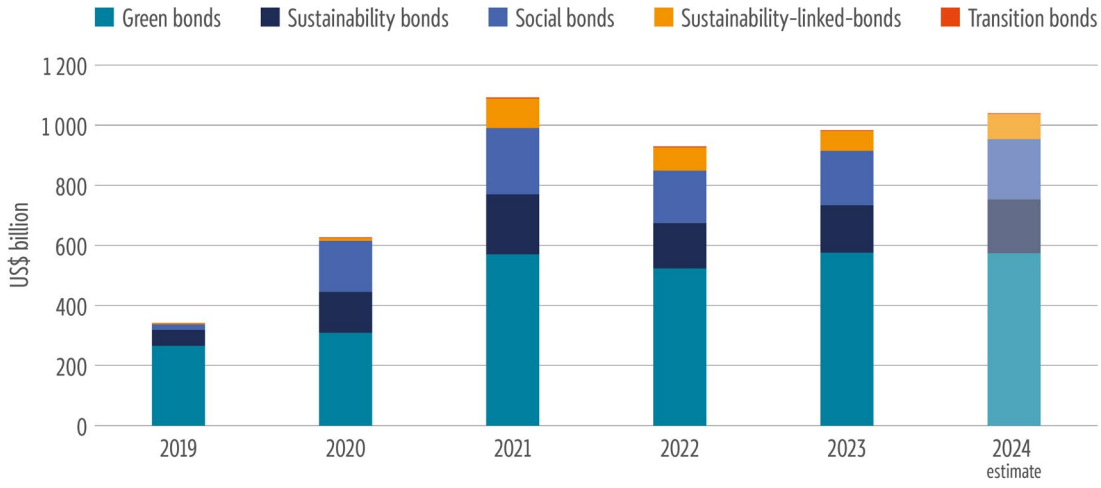
oriented investors while in practice engaging in investment that has little environmental value. However, analysis of the impacts of green bonds on the real economy is still hampered by important data limitations stemming, in part, from the lack of adequate reporting on the matter.[12]

An empirical study by the European Commission's Joint Research Centre (JRC) overcomes this issue by matching relevant information on bonds and firms for a large sample of corporate bonds issued around the world between 2007 and 2018. The econometric results indicate that, compared to conventional bond issuers with similar financial characteristics and environmental ratings, **green issuers display a decrease in the carbon intensity of their assets after borrowing on the green bond market**. The reduction holds both for total and for direct (scope 1) emissions, for which the reduction is in the range of 4 %. Remarkably, the decrease in emissions is more pronounced and significant when green bonds issued for refinancing existing projects are excluded from the sample. In this case, direct emission intensity is reduced by roughly 8 %, which is consistent with an increase in climate-friendly activities due to new investment projects financed with green securities.

Moreover, the study finds a larger reduction in emissions for green bonds that are subject to external review, with a decrease in emission intensity of over 10 %. This suggests that incurring the costs of external review is a strong signal of companies' positive engagement towards the environment and, hence, only firms that invest in a genuinely green way have the incentive and the willingness to do so.

Similarly, the study confirms that non-refinancing green bonds issued after the Paris Agreement are linked to a larger reduction in corporate emission intensities than securities issued before 2015. Naturally, by raising awareness about climate issues among the general public and economic and financial actors, the Paris commitments might, in general, have made businesses more environmentally conscious and therefore more willing to align their behaviour with climate objectives. Hence, corporates might have a greater incentive to finance investment in climate-friendly projects through green bonds since the Paris Agreement. While there is no clear causality – also because green bonds still account for a limited share of companies' total borrowing (around 13 % in 2023) and thus translate into similar investment capacity – the findings suggest that **green bonds are a credible signal of firms' climate-related engagement**.

Figure 2 – Issuance of global green, social, sustainability and sustainability-linked bonds



Data source: EPRS using Standard and Poor.

Pricing of green bonds, and green premium

In the wake of the growing green bond market, there has been increasing interest in understanding the price signals for these securities. In particular, the question is whether there is a premium, i.e. an additional spread paid by green bonds compared to equivalent conventional bonds (a so-called

'greenium' or green premium). The financial literature stresses that non-pecuniary motives, specifically pro-environmental preferences, motivate investors to hold green assets. If a sufficiently large group of investors has an appetite for certain types of asset, given their expectations regarding return and risk, their demand can modify equilibrium prices in the market. A major issue for green-minded investors is the ability to identify a genuine commitment on the part of the issuer to use the proceeds of the bond in an environmentally friendly way; these considerations also have a bearing on market prices. Against this background, the **evidence on the existence and the direction of a green premium is mixed**.

To shed light on this issue, researchers from the JRC analysed the pricing implications of the green label on the primary market for bond issuances. Their econometric results suggest that the lack of consensus on the green premium may be due to differences in the types of issuer. The study finds a premium only for green bonds that are issued by supranational institutions and non-financial corporates. In other words, for these issuers the green label is associated with lower yields compared to conventional bonds, implying cheaper financing costs for borrowers.

Savings for non-financial corporations are in the range of 5 %, on average. By contrast, green securities issued by financial institutions are not priced differently from conventional bonds. One possible reason for such differential pricing is that financial institutions are less clearly able to signal their environmental attitudes, as bond funding is presumably used to finance green loans. Hence, for investors it would be rather difficult to identify borrowers with a genuine commitment to environmentally friendly projects.

This argument is corroborated by the finding that, **when a green premium exists, it is larger for bonds that are subject to external review and for those issued by return issuers**, i.e. issuers that have tapped the green bond market more than once. In both cases, more information is available, which increases the transparency. External review acts as a signalling device that certifies bonds' environmental or climate-related benefits; as such, it reduces information asymmetries between issuers and investors. Therefore, reviewed bonds sell at a premium compared not only to conventional bonds but also to non-reviewed green securities. Likewise, issuers placing more than one green bond over time can build a reputation for green commitment. At the same time, multiple issuances allow investors to gather more information on the borrowers and, thus, increase the opportunities to screen them.

The fact that some green bonds pay a lower yield compared to similar conventional bonds implies a lower cost of financing on green issuances, all other things being equal. Hence, as a market-based incentive for green issuances, the green premium entails the risk that companies engage in greenwashing to attract investors who are concerned by sustainability and benefit from lower debt costs.

It is not clear to what extent the risk is mitigated by the additional costs that green issuers incur – for reporting or external review, for example. While the negative premium is consistent with strong demand from investors concerned by sustainability, the results suggest that the green bond label per se is not enough to raise funding at a lower cost. **This supports the notion that the credibility of the set of rules governing green bond issuances is crucial**. Similarly, further standardisation of market practices with more stringent requirements for external review, as contemplated in the EUGBS, would further alleviate concerns about greenwashing.

Impact of high climate risks on EU banks holding high-carbon assets

The EU banking sector plays an important role in sustainable finance and in financing decarbonisation of energy systems. An ECB report shows that the sector is still very much entrenched in conventional finance, with a majority of banks holding high-carbon credit portfolios. The report concludes that there is a **substantial misalignment between banks' actions and the goals of the Paris Agreement**; this mismatch is mainly due to relatively slow decarbonisation of

carbon-intensive sectors for which EU banks provide capital. The ECB also underlines that around 70 % of banks are subject to elevated reputational and litigation risks, but market, liquidity and operational risks are also possible due to potentially stranded assets.

A research paper from the JRC emphasises that the level of exposure to high-carbon assets determines banks' losses in an adverse scenario, finding that:

- should climate risk materialise in a business-as-usual scenario, owing to banks and other investors suddenly shedding risky assets exposed to transition risk, some unprepared banks with high exposure to high-carbon assets could default, leading eventually to a systemic crisis. According to the JRC modelling, the crisis could lead to a loss of 0.7-0.9 % of total assets, corresponding to over €400 billion;
- should climate risk materialise on top of an adverse macrofinancial scenario, the main driver of losses would be economic recession itself rather than climate transition risk. Additional losses would be unevenly distributed across countries, with some jurisdictions experiencing mild impacts, while others could witness substantial increases in losses compared to the baseline of no transition risk. These findings depend heavily on the underlying riskiness of high-carbon assets. However, for any moderate value of the relevant parameter, **aggregated losses would increase by around 10 % on average**.

While the ability of financial institutions to identify and monitor climate and environmental risks is crucial, acting early could limit the losses from stranded assets but would require the EU to further stimulate accelerated investment in low carbon energy by 2030. The ECB estimates that over 30 % of the euro area banking sector's misalignment with climate neutrality goals stems from insufficient financing of renewable energy sources.

The Jacques Delors Centre recommends a broader set of actions encompassing **prudential regulation**. Apart from integrating climate risks into the capital requirements of banks, the EU could accelerate greening of its banking system by systematically incorporating it in the work of banking supervisors and in the ECB's monetary policy. This would be necessary to have a direct impact on investment decisions and could influence revaluation of sustainable projects by making them more attractive and the unsustainable ones more expensive. Coordinated EU policy would be particularly beneficial due to the international dimension of the challenges.

JRC researchers propose that the EU could **regulate a bank's capital add-on** as a tool to address a potential fire sale and safeguard the banking system. This solution, in the form of a bank-specific capital add-on, averaging around 0.9 % of risk weighted assets (RWAs), would be sufficient to avoid bank defaults due to climate transition risk. The size of this capital add-on could be reduced as the economy becomes more environmentally sustainable and EU banks' balance sheets become, in turn, less exposed to high-carbon assets.

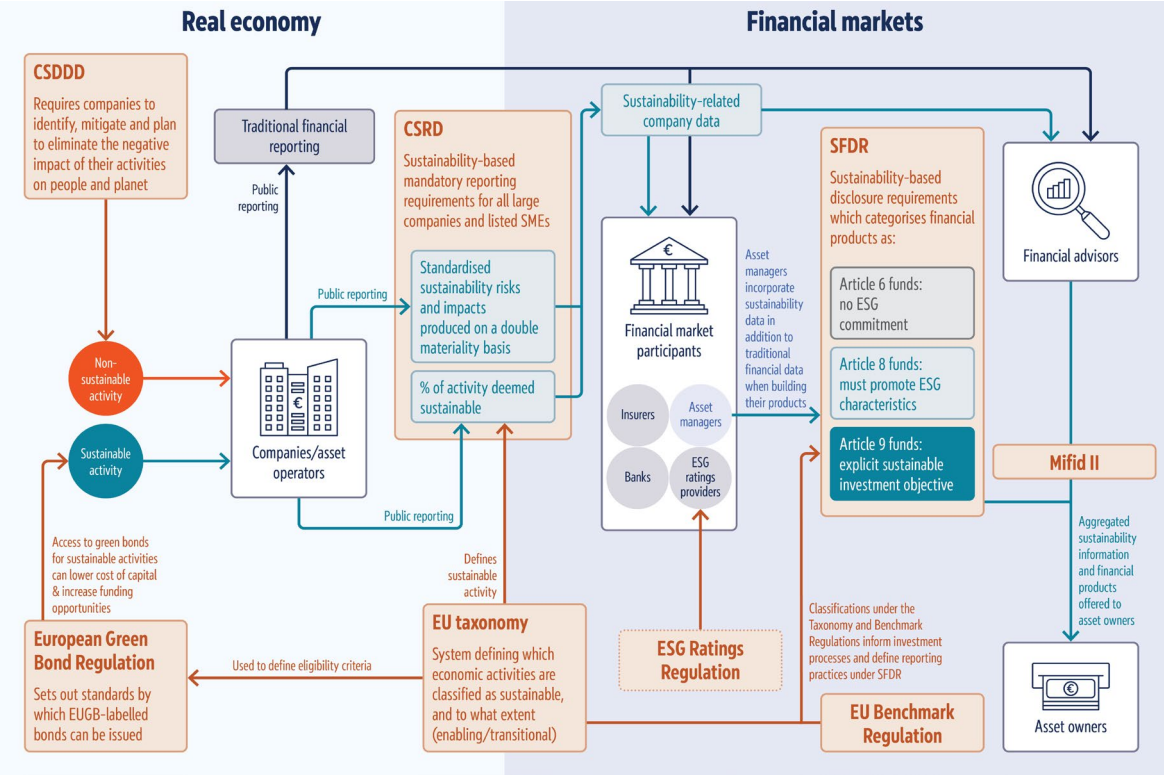
High regulatory complexity, flexibility and uncertainty

The complex regulatory system (see Figure 3) that the EU created in the field of sustainable finance has been the subject of some recent less favourable assessments. Notably, the EU taxonomy, the SFRD and their additional technical rules needed clarification, requiring the European Supervisory Authorities (ESAs) to issue guidelines to answer requests from stakeholders. Every update to one law also needs to be coherent with other rules regulating sustainable finance, and the Commission's current update to the SFDR regulatory technical standards has been criticised by stakeholders for not being coordinated with the ongoing review of the SFDR. Research on sustainable finance confirms that rules that are complex and excessively rigid exacerbate compliance problems, making regulatory breaches more probable. Moreover, combined with sometimes low coordination, this can contribute indirectly to a higher risk of greenwashing,[13] as involuntary mistakes, confusion, misinterpretation or dependence increase.

That being said, constant rewriting of rules to make them more or less flexible should also be avoided, as the **lack of regulatory stability** can significantly and negatively impact sustainable funds' flows and investments. Looking at this issue, a paper from the JRC investigated the reaction of investors to the Paris Agreement. The authors measured the extent to which financial investors adjusted their holdings of carbon-intensive securities in response to the Agreement and to the subsequent withdrawal by the United States. Results show a substantial decrease in investor participation in high-carbon firms following the Paris Agreement, with an overall reduction of high-carbon holdings by approximately a quarter in relative terms. However, this trend reversed after the US announced its withdrawal. The paper suggests that climate policies do influence the business strategy of financial institutions, but the lack of coherence in policy announcements causes financial actors to revert to their original portfolio allocation. This therefore emphasises the need for coordinated policy, to ensure enough stability so that investors could move in the right direction.

These findings seem to be confirmed by what has been happening recently in the US, where investing in ESG funds has become highly politicised. Outflows from sustainable funds have continued since the second quarter of 2022 and increased in 2024. This is notably linked to the fact that, at the beginning of 2024, two of the biggest US-based asset managers – JPMorgan Chase and State Street – withdrew from the world's largest investor-led engagement initiative, Climate Action 100+. For EU policymakers, this raises questions over the stability and potential prospects for sustainable finance if the global context were suddenly to become more confrontational.

Figure 3 – Relative complexity of the EU sustainable finance regulatory framework



Source: EPRS, based on the Institute for Energy Economics and Financial Analysis.

The EU should strive to continue ensuring stable, coherent and coordinated policy for sustainable investments. The **balance between rigidity of rules, effective results in terms of achieving ESG targets, and competitiveness should be carefully assessed**. This should naturally also take into account international developments so as not to put EU business at a permanent disadvantage, as EU requirements are currently the most stringent globally.[14] For instance, the confirmation that the SFDR will remain a disclosure regime is probably a step in the direction of more flexibility, as financial

market participants carry out their own assessment and disclose their underlying assumptions with no minimum standards for sustainable investments. This could contribute to a healthy financial development of funds under Article 9 of the SFDR.

Another example, following the U.S. Securities and Exchange Commission's decision not to require the disclosure of scope 3 emissions at this stage, is the Council of the European Union's adoption of a directive to delay reporting obligations for certain sectors and third-country companies. This amends the CSRD to give businesses more time to apply ESRS requirements.

However, when considering the urgency of climate action, these developments might prove controversial. A comprehensive evaluation of the impact of the changes might be required, while the benefits and the impact on competitiveness of EU legislation should be made systematic and more robust to better inform the ongoing discussion. To find the right balance between flexibility, competitiveness and risks, ESMA is emphasising the need for a more **risk-based approach** while advocating for **better enforcement** in its latest report on greenwashing. Notably, it recommends including stronger provisions prohibiting misleading information on indices used as benchmarks in financial instruments and financial contracts. ESMA also recommends enhancing supervision and making it more consistent to limit greenwashing risks and protect investors and market integrity.

Discrepancies in carbon accounting data and methods

To be able to draft sustainable investment strategies and assess ESG risks, companies and actors in the financial system need to have access to accurate reliable and comparable data, including international data. A study for the Commission also indicates that rating, data and research providers continue to use different methodologies to monitor, report and rate ESG risks and impacts. For example, for GHG two main accounting frameworks prevail – the Greenhouse Gas Protocol (on which the Financed Emissions Standard[15] is based) and ISO 14064. EU sustainable finance stakeholders have raised comparability concerns in relation to the choice between the two standards.

Research from the JRC confirms unaddressed issues with emissions data, including scarcity and discrepancies across different data providers. The coverage of direct emissions data or estimates, although increasing, is only available for a limited number of companies (around a thousand out of a total of 25 million EU firms). Even focusing just on listed companies and leaving SMEs aside, **direct emissions are available for only around 25 % of them, while data on indirect emissions are only available for a handful of companies**. Additionally, there are significant discrepancies in data, one key difference being the degree of consolidation of firms. As a result, significant disagreement can occur, leading to a company being assessed as a top performer in one dataset and a bottom performer in another. This discrepancy highlights the need for improved data quality and standardisation in emissions reporting.

In a follow-up paper, the JRC also finds that European companies that do not undergo external assurance for their carbon disclosures are very likely to under-report emissions. Specifically, direct emissions are estimated to be approximately 4.5 % to 8 % higher when firms externally assure their emissions. The impact of external assurance on indirect emissions is less pronounced, with an estimated increase of between 2.4 % and 4 %.

The discrepancies in carbon accounting data and methods carry important implications for both companies and the financial system, as they suggest that companies may have an inaccurate understanding of their emissions, while investors may underestimate their exposure to transition risk. Addressing these issues is vital not only for individual entities but also for the broader economy, as it directly impacts the achievement of climate neutrality targets. The studies by the JRC highlight the need for coordinated regulatory action by policymakers to **implement robust validation procedures** that can enhance the overall quality and reliability of emissions data.

In view of the disparity between perceptions and reality in implementing a sustainability strategy within the sovereign debt asset class, researchers at the IMF emphasise the need to **make sovereign**

ESG scoring methodologies more internationally comparable and urge a globally coordinated effort to establish robust sustainability measurement frameworks. In that respect, the 2023 proposal for a regulation on the transparency and integrity of ESG rating activities and the amendments to Directive 2013/34/EU on financial statements included in the CSRD aim to increase transparency and comparability of data and to harmonise standards.

Potential economic impact on countries and firms

The question of whether there is a trade-off between economic prosperity and sustainable development remains a crucial topic of debate. Analysing the recent literature on this issue, the results presented can broadly be divided into two groups. The first group consists of studies examining the **relationship between country-level ESG performance and economic growth** (see Table 2). Most of the findings suggest that adopting an ESG framework is a significant factor in explaining a country's development prospects. They also suggest that better ESG performance is associated with better long-term economic growth and that countries can pursue sustainable economic development without compromising their economic prosperity. In fact, improving sustainability can have a net positive effect on a country's economy, particularly when combined with certain institutional or economic factors. However, there are still some questions over the relative importance of each sustainability factor (environmental, social and governance) in explaining the results. The effect in the short run and the long run might also be different, and questions remain over the institutional arrangement to be implemented for an efficient outcome.

Table 2 – ESG performance on economic growth at country level

Authors	Main results
Norocel I. and Vierescu E. (2024)	Using panel regression models, the study found a negative relationship between country-level ESG scores and economic growth, both in the short and long run. They also conclude that potential green lending activity does not necessarily enhance economic growth.
Wang J., Yu J. and Zhong R. (2023)	This study documents a significant and positive impact of country-level ESG improvement on economic growth using a comprehensive sample across 109 countries, through improving energy efficiency, promoting human-capital accumulation and attracting foreign investment.
Diaye M., Ho S. and Oueghlissi R. (2022)	The authors examine the economic effect of ESG performance in 29 OECD countries over the 1996-2014 period. They find that, while there is a positive relationship between ESG and GDP per capita in the long run, such a relationship does not exist in the short run.
Morgenstern C., Coquerel G. and Kelly J. (2022}	The study quantifies equity and bond market sensitivity to ESG scores. The results do not support a strong impact of ESG factors on the returns of international markets, but they document a strong association between GDP growth and ESG scores at country level.
Zhou X. et al. (2020)	This paper investigates whether the development and adoption of firm-level ESG practices affects national macroeconomic performance. They find that an increase in micro-ESG performance can result in the improvement of living standards as measured by GDP per capita.

Source: EPRS.

Going into more detail, a second group of studies looked at the **financial implications of adopting ESG**. In particular, the relationship between ESG performance, businesses' profitability and firms' value, the impact of ESG on returns on portfolio investment, and the link between ESG performance and the cost of financing (green premium) have received considerable attention.

The OECD found that, over the past decade, studies have shown that integration of ESG factors can result in over-performance and under-performance relative to market returns. On the one hand, a number of studies indicate that specific aspects of underlying ESG factors can have a positive impact on corporate financial performance over time due to improved governance, better risk management and reputation. Another benefit is to mitigate information asymmetries between the company and its investors which could lead to lower cost of capital for firms (green premium). This, in turn, could affect firms' performance and access to capital. On the other hand, some studies observe market

under-performance of ESG indices and portfolios. As explained in the previous section, the literature emphasises that improving transparency and comparability of ESG approaches will be essential for ESG integration to contribute effectively to long-term business value and performance.

Table 3 – ESG integration effect on financial markets, cost of capital and firms' performance

Authors	Main results
Gehricke S., Ruan X. and Zhang J. (2023)	The authors do not find that incorporating ESG factors into the bond investing process leads to short term under- or over-performance, but they show that the ESG-return relationship strengthens as investors become more aware of ESG risks and opportunities.
Agnese P. and Giacomini E. (2023)	The study uses a dataset of bonds issued by 63 EU banks between 2006 and 2021. The authors find that the cost at issuance is lower for banks with higher ESG scores and that the results are driven by ESG reporting and better corporate and transparency practices.
Whelan T. et al. (2021)	The authors examine more than 1 000 research papers from 2015 to 2020. They find a positive relationship between ESG and financial performance for 58 % of the studies, 34 % showing neutral impact or mixed results, and 8 % showing a negative relationship.
Ernst D. and Woithe F. (2024)	Using financial data and ESG scores for 498 companies, the authors find that companies with better ESG ratings enjoy both a lower cost of equity and a lower cost of debt. However, the cost of capital shows no improvement with a higher ESG score.
Aydogmus M., Gulay G. and Ergun K. (2022)	The analysis is based upon data on the largest 5 000 publicly listed companies from 2013 to 2021. The findings suggest that the overall ESG combined score is positively and significantly associated with firms' value and profitability.
Gjergji R. et al. (2021)	Focusing on Italian-listed SMEs, the study finds that, in contrast to large companies, environmental disclosure for SMEs could provoke an increase in the cost of capital.
EPRS (2020)	The study analyses a sample of EU companies and finds a positive correlation between the extent to which companies implement ESG and their economic performance, notably in terms of higher profitability.

Source: EPRS.

REFERENCES

Alessi L. and Battiston S., Two sides of the same coin: Green Taxonomy alignment versus transition risk in financial portfolios, International Review of Financial Analysis, Vol. 84, 2022.

Alessi L., Battiston S. and Kvedaras V., Over with carbon? Investors' reaction to the Paris Agreement and the US withdrawal, Journal of Financial Stability, Volume 71, April 2024.

Alessi L., Di Girolamo F., Petracco-Giudici M. and Pagano A., Accounting for climate transition risk in banks' capital requirements, Journal of Financial Stability, Volume 73, August 2024.

Boldrini S. et al., Living in a world of disappearing nature: physical risk and the implications for financial stability, ECB Occasional Paper Series No 333, European Central Bank, 2023.

EU platform on sustainable finance, Monitoring Capital Flows to Sustainable Investments: Intermediate Report, April 2024.

Fatica S. and Panzica R., Green bonds as a tool against climate change?, Business Strategy and the Environment, Volume 30, Issue 5, 2021.

Fatica S., Panzica R. and Rancan M., The pricing of green bonds: are financial institutions special?, Journal of Financial Stability, Volume 54, June 2021.

Papadopoulos G., Discrepancies in corporate GHG emissions data and their impact on firm performance assessment, JRC Working Papers in Economics and Finance, European Commission, 2022.

Papadopoulos G., External assurance of carbon disclosures indicates possible underestimates in reported European corporate emissions data, JRC Working Papers in Economics and Finance, European Commission, 2023.

Spinaci S., Green and sustainable finance, EPRS, European Parliament, February 2021.

ENDNOTES

1 Green finance can be considered as a subset of sustainable finance.
2 Considering all types of sustainable investment strategies, i.e. exclusions, norms-based screening, engagement and voting, ESG integration, best-in-class, sustainability-themed and impact investing.
3 IEA reports that, between 2018 and 2022, the number of financial institutions that adhered to net-zero targets increased over four times (to over 450) and institutions that disclose their emissions doubled (to more than 200).
4 SFDR Article 6 requires all fund managers to make disclosures on the integration of sustainability risks and their likely impacts on the returns of the financial products they make available. SFDR Article 8 requires funds promoting sustainability characteristics to specify how they will promote environmental or social characteristics and how the companies in which they invest follow good governance practices. SFDR Article 9 requires funds with a sustainability objective to specify how they will attain this objective and whether an index has been designated as a reference benchmark.
5 For small entities, the additional cost ranged from €80 000 to €200 000 per year, and €213 000 for large entities. Considering the entities active in this market, this represents a cost for the EU of between €190 million and €900 million per year.
6 With a cost of €20 000 to €40 000 per issuance and between 500 to 1 000 issuances per year.
7 At the stage of the European Parliament's first reading position after an interinstitutional compromise. It is pending Council approval.
8 Future costs of €3 567 million per year in addition to €1 620 million per year of current NFRD recurring costs.
9 Other companies in the EU have been covered since 2014 by Directive 2014/95/EU, the Non-Financial Reporting Directive (NFRD) that required reporting on environmental, social and human rights-related risks and impacts.
10 Scope 1 covers emissions from sources that an organisation owns or controls directly. Scope 2 are emissions that a company causes indirectly and come from where the energy it purchases and uses is produced. Scope 3 encompasses emissions for which it is indirectly responsible up and down its value chain.
11 Waiting for publication in the Official Journal.
12 Impact reporting is currently not mandatory in the green bond segment, although it is considered a best practice. Impact reporting by the issuer is mandatory under the EUGBS: detailed environmental impacts need to be disclosed after the full allocation of the issue proceeds and at least once during the life of the bond.
13 ESMA calls greenwashing the risk that misleading sustainability claims occur and mislead investors in their decisions across the sustainable investment value chain. See ESMA final report on greenwashing, June 2024.
14 See UN Principles for Responsible Investment, which compares four major disclosure regimes: the FSB Task Force on Climate-related Financial Disclosures (TCFD), the International Sustainability Standards Board's Exposure Draft Standards (ISSB EDs), EFRAG's European Sustainability Reporting Standards Exposure Drafts (ESRS EDs), and the U.S. Securities and Exchange Commission's proposed rule (SEC Proposed Rule).
15 The Financed Emissions Standard has been developed by the financial industry for financial institutions to measure their GHG emissions associated with loans and investments.

The authors would like to thank Lucia Alessi, Serena Fatica and Francesca Di Girolamo from JRC-ISPRA for their cooperation and for their contributions to the drafting of the section on remaining questions and challenges.

DISCLAIMER AND COPYRIGHT

eprs@ep.europa.eu (contact)

www.eprs.ep.parl.union.eu (intranet)

www.europarl.europa.eu/thinktank (internet)

http://epthinktank.eu (blog)