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Impact of carbon corporate disclosure on the value of their securities: case of European Union

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Research Dissertation

**Impact of carbon corporate disclosure on the
Value of their Securities:
Case of European Union**

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**Master Degree
M2 Advances in Finance & Accounting
Graduate School of Risk specialty
2022 - 2023**

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SUMMARY

The concerns associated with non-financial criteria are extensive. Sustainable finance, known by various names such as green finance, ESG, SRI, impact finance, etc., stands out as a crucial issue for the global future of finance. The urgent need to reconcile financing with sustainable development arises from the societal and climatic shifts occurring in our societies. In this context, innovation in sustainable finance products emerges as a potential remedy for the ongoing global crisis, particularly concerning the energy transition. As institutions like the European Union take concrete measures in response to the challenges revealed by past systemic crises, the time has come for us to reassess our investments. Our investments must be reoriented towards long-term objectives and be geared towards financing the ecological transition and facilitating changes in corporate governance. This Master Thesis aims to propose a research methodology that examines the sensitivity of European financial markets to corporate disclosures of carbon emissions and their impact on securities' value. Additionally, it explores how incorporating non-financial dimensions can help mitigate systemic risks while fostering sustainable development. The second aspect of our research focuses on the application of these principles within the unique community environment of the European Union. Consequently, the crucial question arises: will such implementation act as a catalyst for transitioning towards carbon-neutral energy sources? It is worth noting that there is a scarcity of studies in the existing literature that have undertaken such an intellectual inquiry in the European context. Therefore, it is of utmost importance to delve into these interconnected notions to gain a comprehensive understanding.

RÉSUMÉ

Les préoccupations liées aux critères extra-financiers sont nombreuses. L'une des questions essentielles concerne la finance durable, connue sous différents noms tels que finance verte, ESG, ISR, à impact, etc. Cela représente un enjeu majeur pour l'avenir des financements à l'échelle mondiale. La conciliation entre les financements et le développement durable est devenue une priorité urgente face aux mouvements sociaux et aux enjeux climatiques de notre société. Dans ce contexte, l'innovation dans les produits de la finance durable est une solution potentielle à la crise mondiale actuelle, notamment en relation avec la transition énergétique. Alors que des institutions telles que l'Union européenne commencent à prendre des mesures concrètes en réponse aux problématiques mises en évidence par les différentes crises systémiques que nous avons connues, il est plus que jamais nécessaire de repenser nos investissements. Ils doivent s'inscrire dans une perspective à long terme et contribuer au financement de la transition écologique et au changement de gouvernance des entreprises. Ce mémoire a pour objectif de proposer une méthodologie de recherche visant à étudier la sensibilité des marchés financiers européens aux publications des émissions de carbone des entreprises et à examiner comment les dimensions extra-financières pourraient contribuer à réduire les risques systémiques tout en favorisant un développement durable. Le deuxième volet de notre démarche consiste à appliquer ces principes dans le contexte communautaire de l'Union européenne, qui est unique en son genre. La question centrale est donc de savoir si une telle mise en œuvre serait un catalyseur pour une transition vers des sources d'énergie favorisant la neutralité carbone. À ce jour, il existe peu d'études dans la littérature qui ont abordé cette approche intellectuelle en Europe. C'est pourquoi il est important d'étudier ces notions entrelacées.

KEYWORDS : Sustainable finance, carbon emissions, European Union regulations, Climate risks, National implementation, Policies & Tools.

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TABLE OF CONTENTS

FOREWORD.....	7
INTRODUCTION.....	8
PART 1: - ACADEMIC LITERATURE.....	11
CHAPTER 1 – SUSTAINABLE FINANCE IN THE EUROPEAN UNION.....	12
I. Methodological and theoretical framework of extra-financial criterion.....	12
II. The European Union as a regulatory framework for taking extra-financial criterion into account? 36	
CHAPITRE 2 – THE IMPACT OF THE NATIONAL ENVIRONMENT & GREEN FINANCE ON ORGANIZATIONS.....	58
I. How does the input of extra financial criterion impact the performance of organizations?	58
II. Application of supranational regulations in the national contexts of the different member states. 76	
PART 2: - RESEARCH QUESTION & METHODOLOGY.....	96
CHAPITRE 4 – RESEARCH QUESTION.....	97
I. General framework.....	97
II. What does literature have to say?.....	98
CHAPITRE 5 – METHODOLOGY	105
III. Setting and assumptions.....	105
IV. Feasibility of the project and data	111
CONCLUSION.....	113

FOREWORD

The study of climatic phenomenon's has challenged modern human societies and pushed them to undergo serious changes. Indeed, it pointed out the harmful effects they have on the balance of the global planetary ecosystem.

The publication of various reports and international studies, including the Brundtland report in 1987 and the IPCC assessment reports, has highlighted the impact of fossil fuel on the environment. Their use reinforces the concentration of CO² in the atmosphere and further strengthens the ozone effect; which allows for a global and never-ending rise in world temperatures.

This very surge is alarming and is bound to impact humanity's sustainability, as well as other living species even more. Also, the advent of economic science with the so-called "Classical" economists (Adam Smith, Thomas Malthus, David Ricardo, etc.) ideologically posed nature as a source of free and essential elements for growth. The Marginalist movement (led by William Stanley Jevons, Léon Walras, Carl Menger), coupled with the appearance of the principle of "marginal utility", posited that nature was an inexhaustible, unalterable, and essential resource to feed the productive apparatus. Yet, due to their very exhaustibility, there is a clear cap to the growth these enable.

The questionable use of limited resources¹ is bound to create a world where the objective of Man is to get richer and richer by increasing the size of his capital². Yet, the stunning need for a never-ending production in a finite world will lead to the exhaustion of our planetary resources. By extension, to the destruction of the habitats of thousands of species. From this principle, growth is no longer sustainable, and it is more necessary than ever to change our consumption patterns to meet the needs of future generations. Sustainability in short.

This thesis, through the vector of finance - allowing the financing of the real economy - proposes to address the problem of global warming via the financing of the ecological transition toward renewable energies. To move toward a paradigm shift, a form of soft capitalism. Considering sustainable development considerations but allowing an increase in wealth.

¹ Tendency of capitalism and liberalism to use natural resources

² Cf : B. Mandeville, *La Fable des Abeilles*, 1714 (Vol.1), 1729 (Vol.2) ; M. Weber, *The Protestant Ethic and the Spirit of Capitalism*, 1905.

INTRODUCTION

"If climate change issues are not adequately addressed – if we keep running those nice energy subsidies, if the price on carbon is not adequately set, if policymakers don't have it on their radar screens – then financial stability in the medium and long-term is clearly at stake." - Christine Lagarde.

This quote from the President of the European Central Bank clearly shows the ambitions of the European Union - both from a monetary point of view and from the point of view of its Commission and its President (Ursula Von Der Leyen) - on the aspects due to the climatic disturbance that our societies are experiencing. Indeed, the observation made here by Christine Lagarde demonstrates that the ecological situation on a planetary level is a priority for the European Union, which is a pioneer in this field. Moreover, the supranational scale of the EU highlights the problems of governance related to the transposition of policies in a national framework within a world that is increasingly globalized and interdependent. To this end, our systems of exchange are those of the world economy, and as such, they are articulated around numerous actors, both private and public, which give rise to disparities in terms of ends (profits, common goods, equity, equality, etc.). Thence, the governance of these organizations is evolving and contingent on their objectives. The Dictionary of Economics and Social Sciences defines it as: "a mode of control, organization, coordination and regulation exercised within complex economic or geopolitical entities of varying size. We distinguish mainly between global governance (at the level of the world economy), country governance (at the level of nation-states), and corporate governance. (C-D. Echaudemaison, 2016). This definition allows us to better grasp the conceptual framework of governance and the differences in scale inherent to it. In this respect, the framing of a common political reference in terms of sustainable and social development must imperatively consider the transposable nature of such policies.

The current global climate emergency, as evidenced by the assessments conducted by the Intergovernmental Panel on Climate Change (IPCC), an organization coordinated by the United Nations and completely independent, presents several scenarios. The most likely scenario, which involves a global temperature rise of 4 degrees Celsius, would have catastrophic consequences. This situation compels us to rethink our ways of thinking and operating, particularly in terms of economics, including how we consume, produce, and profit, and how we address social concerns such as individual behaviours, values, and the distribution of resources in society. Consequently, the vector of finance appears both essential and representative of the existing emergency. Finance, under its role as a theoretical funder of the "real economy" plays an essential role in the functioning of our societies. It is through its tools (credits, financial markets & its products, financial instruments) that the financing is done in part. To this end, the various financial crisis we have experienced (Subprimes 2008, Pandemic

COVID-19, etc.) highlight the systemic flaws that lead to failures in our financing methods. Thus, it has become necessary to consider extrafinancial criteria in the evaluation of assets. Furthermore, we need to ponder about the various ways one could direct capital toward an ecological and sustainable transition through evaluation. It is necessary to question the functioning of the system to evaluate market risks and attempt to contain crisis. In addition to these systemic issues, failures inherent in financial engineering are emerging from unethical market players. We are thinking here of the ethical dimensions that agents operating in the markets should demonstrate; such as free rider behaviour, a moral hazard leading to extreme speculative problems. Similar to Bernard Madoff's Ponzi scheme, the success of this speculative product was more closely linked to the reputation and confidence inspired by its founder than by the results of prudent investment strategies. Market finance requires that market participants create private information from public information. However, this does not mean that investors cannot verify the risks incurred with a strong prudential framework.

From this observation, it is possible to account for the different systemic risks that our economic model has been confronted with (e.g., financial bubbles leading to a chain reaction due to the interrelations existing - in the banking and financial system - between institutions and the market). Moreover, we have seen that the institutions that have allowed the regular and systemic "rescue" of our model were mainly the Central Banks. They used traditional and tools with ever-increasing innovation. This is illustrated by the bond buyback programs that allowed the States to get into debt during the COVID-19 pandemic.

Thus, we have seen renewed interest in environmental and social causes within finance. The following is true because investments considered/saw social and responsible SRIs as less risky and both sustainable and more long term oriented. In this fashion, these help to avoid systemic risks and contribute to sustainable development through their orientation. Furthermore, it should be said that innovations and the evolution of the consideration of concerns often result from a financial or systemic crisis. One could then argue that the evolution of the supervisory framework and the consideration of sustainable development might have been seen through the lens of avoiding certain crisis; especially with the innovative tools that they gave rise to.

In the same way, it is appropriate to state that so-called SRI investments are partly in line with the following criterion: environment, social, and governance (ESG). Two distinct inquiries arise from this very framework: what distinguishes a company that considers ESG themes within its portfolio from one that does not? Is there a difference between a company whose portfolio is composed exclusively of ESG companies and one that does not? It is important to say that SRI investments are part of a long-term prospect, according to the orientation of their actions, but also by the principles of good

governance that these firms demonstrate. The following criterion are taken into account: composition of boards of directors, the fair and equitable treatment of employees, use of local channels, etc.

Thus, this long-term orientation, as well as the principles it entails, helps to generate greater stability for these assets. Indeed, the consideration of ESG criteria ultimately establishes a sustainable orientation in the companies. This prevents systemic crises and sets up a sustainable development approach by protecting the social and climatic environment.

However, there are still many uncertainties surrounding the ESG criteria. In fact, the absence of consensus in its determination methodologies, controversies, and the potential creation of financial bubbles, which could be described as green, are all risk factors for companies. It is also worth noting the action of various international bodies, such as the United Nations (Sustainable Development Goals, United Nations Global Compact), has set up a system for defining global objectives. A true pioneer in the field, the EU's role cannot be downplayed - especially when one considers regulations and reporting. With the common Green Pact, the EU has tried to create a referential framework that can be transposed to the national level (SFDR, Green Taxonomy, CSRD).

Nevertheless, the legitimacy of the innovative measures of these institutions (implementation of actions, organizations created, etc.), and of the SRI or sustainable development labels is put into question due to their limited effectiveness. This holds true for both the systematic risks posed by crises and the tangible effects of environmental and social factors.

Thus, at a time where we are starting to meet dead ends worldwide, where we are witnessing exhaustion of our financial as well as economic systems, it seems appropriate to try to understand a soft/lenient/mild paradigm shift.

One may then inquire about the risks and challenges of carbon disclosure for companies currently engaged in the EU green funding policy. The quantification of their carbon emissions is mature enough and the framework is mature enough to be studied. It seems interesting to look at the impact of the publication of carbon emissions by companies on their stock value.

To do so, we will conduct an academic review in Part 1, in Part 2 we will go into more detail on the research question and the methodology, and in we will conclude.

PART 1:

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ACADEMIC LITERATURE

CHAPTER 1 – SUSTAINABLE FINANCE IN THE EUROPEAN UNION

I. METHODOLOGICAL AND THEORETICAL FRAMEWORK OF EXTRA-FINANCIAL CRITERION.

Although several notions come to mind when we mention extrafinancial criteria, it seems impossible to clearly outline what they stand for. The arising uncertainty stems from a lack of consensus in literature as well as to a multiplicity of indicators (indexes, rating agencies, etc.) and names (sustainable finance, green finance, SRI, ESG, CSR, PRI, etc.).

It would seem advisable to reassess it in order to unearth a clearer methodological framework. Likewise, given their lack of certainty as well as the actors conveying and issuing them, it is important to revisit the role and the action they occupy around the themes they raise. We will attempt to define what extra-financial criteria are, to identify the role of green labels in the measurement of these criterion before going back to the non-consensual nature of the methodologies used by rating agencies.

A. A definition as a conceptual framework?

To better understand what the creation of extrafinancial criterion is all about, it is necessary to venture back to the functioning, the articulation, and the ideological foundation in which our economic paradigm evolves. Also, the dominant ideology that is widely accepted is the neoclassical one. It is built upon on Homo Economicus (anthropological vision of the economic agent). The market mechanism serves as a regulatory force within the market, operating effectively when individual and collective interests align seamlessly (Smith, 1976). Neoclassical liberalism is based on the hypothesis that the market is supposed to be completely ethical and neutral in the social sense. Economic agent must then decide between what gives him the maximum utility (utilitarianism in the sense of John Stuart Mill, then the Classics) and the lowest cost. A situation will ensue as optimum (efficiency) in Pareto's sense of the term. According to said definition, markets would be perfect. Nevertheless, they seem to suffer from endogenous imperfections; and individual and societal designs are rarely aligned. They even seem more often than not to be opposed or contradictory. This means that solidarity would intervene after the perfect division of the market, and that intervention in the competitive environment would become harmful (Fernández, 2011).

From now on, it is vital to venture back to the origin of corporate social responsibility (CSR) and understand how it could create financial or social added value. Furthermore, we need to explore its complementarity in a system still largely dominated by the concept of the invisible hand (Adam Smith 1776) as a market regulator, which de facto translates the tendencies and preferences of individuals.

Which when added together, forms the market and its fluctuations. Therefore, CSR within markets is considered a mechanism of the common good and is held in high regard. It is relayed by both for-profit companies and other non-profit organizations. In contrast to extrafinancial criteria, CSR has several definitions whose orientation remains the same. We will use the definition of the International Labour Organization: "a set of actions decided by companies so that their activities have a positive impact on society. These companies affirm the principles and values that govern them both in their internal procedures and their relations with other actors ». Hence, it can be comprehended that corporate social responsibility (CSR) encompasses financial, economic, social, and environmental obligations towards both stakeholders and shareholders, and aims to uphold ethical values for the betterment of the society. Furthermore, modern academic literature on non-financial information (NFI) has reached a certain degree of maturity; especially the one regarding CSR and the existing links between financial and non-financial performance (Erkens et al. 2015). This raises the following question: is there is a definition of what extrafinancial criterion are? When we talk about them, several concepts spring to mind, including green finance, sustainable finance, SRI, and ethical finance. Among all these notions, it appears that green finance/sustainable finance is perceived as a theme rather than as a concept. Nevertheless, a distinction can be made between sustainable and ethical finance. On the other hand, it seems that SRI is now deemed to be the more fashionable and commonly accepted concept when we consider the preeminent amounts that it generates on the financial markets (in France 1,861 billion euros in 2019 according to (D-L. Arjaliès, et al. 2020) and the interest of institutions in it (C. Revelli, 2013).

SRI find its origins in responsible finance. Finance aims for financial profitability as well as a positive environmental, social or impact through positive externalities. SRI appeared in the 18th century, and originated from a religious and Anglo-Saxon philanthropic movement: the "Religious Society of Friends" whose members are called Quakers. Originally considered as an ethical movement fighting protesting against slavery, weapons' sale, the fight against alcohol consumption, the emergence of women's rights and the preservation of the environment. In earlier times, SRI was driven by the religious beliefs of individual investors and later transformed into shareholder activism during the mid-20th century. This implies a shift from an essentially exclusive and religious logic to developing beliefs that a more politically oriented (economic considerations).

Moreover, as it was previously mentioned, the rise of responsible finance, and by extension SRI, can be partly attributed to the repeated crises that have occurred in the financial markets (Cuénoud, T. Vie & Sciences de l'entreprise No. 13, 2013, 13-32). There is still ongoing debate and no consensus regarding the naming as well as the sectors that make up the SRI (C. De Brito et al., 2005). In addition, the increasing integration of activist pension funds into boards of directors, such as ABP in

the Netherlands and CalPERS in the United States, has stimulated their development. This highlights their increasing integration and incorporation in financial markets. SRI is firmly rooted in the concepts of Corporate Social Responsibility (CSR) and Sustainable Development (SD), which has led to an evolution of the notion of SRI - to its modern form - from shareholder-focused activism to a more holistic approach that includes stakeholders. We note here that it is the first break with a theoretical conception strictly based on profit.

To provide a foundation for the reasoning in the context of this thesis, which adopts a European perspective, we will adopt the definition put forth by the European Commission: "Sustainable finance refers to the process of taking environmental, social and governance (ESG) considerations into account when making investment decisions in the financial sector, leading to more long-term investments in sustainable economic activities and projects. Environmental considerations might include climate change mitigation and adaptation as well as the environment more broadly, for instance, the preservation of biodiversity, pollution prevention and the circular economy. Social considerations could refer to issues of inequality, inclusiveness, labor relations, investment in human capital and communities, and human rights. The governance of public and private institutions, including management structures, employee relations, and executive remuneration, plays a fundamental role in ensuring the inclusion of social and environmental considerations in the decision-making process."

The polarizing notion of Responsible finance, which is deemed to be of traditional finance, is something we need to break down in order to better understand what SRI is. *In fine*, it is divided into two constituents: solidarity finance, where the purpose of the activity of the financed company is to be solidarity-based without a real search for profitability, and ethical finance, where the practices of the financed company are ethical but not necessarily its purpose (Cuénoud, T. *Vie & Sciences de l'entreprise* n°13, 2013, 13 to 32). The choice can be characterized as societal and reflects a commitment to the purpose of one's savings. Nevertheless, there are still many grey areas and debates surrounding the SRI; and no clear-cut definition has sprung out yet. Thus, one may wonder why the term socially responsible investment is used instead of ethical finance. This is indeed the main source of debate. In the literature, SRI has its origins in the term ethical investment. It could also be equated with the term morality, which has a more universal meaning than the ethics of a person. Morality touches on notions of norms and how an adherence to these norms is necessary to do what is considered as « right ». Ethics, on the other hand, is more concerned with the free will of individuals while integrating so-called moral values. Is it therefore a question of respecting previously established norms and values or is it rather focused on the investor who operates according to his discernment to invest in what he considers to be positive or negative? Christophe Revelli (C. Revelli, 2012), after highlighting this issue, provides an answer by emphasizing that within SRI, each investor has his ideals,

and highlights the fact that it would be relevant to talk about ethical investment. Indeed, they all appropriate in their ways the moral values that constitute society. In this context, it should be emphasized that ethical investment can be considered, *ceteris paribus*, as belonging to a category of its own, *sui generis*, within the field of moral investment (C. Revelli, 2012). While it is theoretically possible to use the terms ethical investment or green finance, it is preferable to speak of socially responsible investment to avoid confusion with moral, religious, or ethical, which refer to sectors of activity considered *sin stocks* ("sinners") such as alcohol, tobacco, pornography, weapons, and the gambling industry. Indeed, SRI takes into account all the issues we currently face, such as sustainable development and social action. Thus, it seems more appropriate to use the term SRI as it avoids confusion and better reflects its aggregative dimension.

Therefore, in purely definitional terms, it is possible to say that SRI is an investment strategy considered socially responsible. Indeed, it invests in companies with ethical practices. It is therefore composed of the so-called Responsible Investment (RI): a responsible investment approach is that explicitly recognizes the relevance for the investor of environmental, social and governance factors as well as the long-term health of the market as a whole (T. Roncalli, 2023). Sustainable investment (SI), is posited as an investment approach that considers environmental, social and governance factors in portfolio selection (T. Roncalli, 2023). To apply the virtuous principles that make up SRI, we need factors that allow us to measure the sustainability of an investment, which we call ESG for Environmental, Social, and Governance.



Figure 1: The raison d’être of ESG investing³

To give a few examples of the underpinnings behind each ESG letter, we would have:

³ Source: T. Roncalli, 2023

- E: Carbon emissions, energy consumption, pollution, waste disposal, water consumption, renewable energy, and direct material impact Covering Sustainability;
- S: Gender equality, diversity, stakeholder opposition, community involvement, employment conditions (salaries, adaptability in schedules...), etc. Innovation in human resources, general and local interest;
- G: Board independence, board composition, shareholder rights, corporate behaviour, executive compensation, CSR strategy, anti-competitive prevention, etc. Behaviour toward strict and broad stakeholders.

Furthermore, regardless of whether it is SRI, responsible investment, or another approach, the analysis and methodology employed rely on ESG factors, which encompass seven main strategies. (cf: Figure 2):

1. Negative screening or exclusion, consists of removing certain sectors, companies, or practices (alcohol, tobacco, arms, etc.) from a fund or portfolio based on specific ESG criteria (worst-in-class);
2. Screening based on values/standards (Red Flags): Analysis of investments based on minimum business practices in line with international standards set by organizations such as the OECD, ILO, ONU and UNICEF;
3. Positive screening: Investment in sectors, companies, or projects selected for their positive ESG performance compared to their sector peers (best-in-class);
4. Thematic/Sustainability Investing: This is targeted investment in themes or assets directly related to sustainability, such as clean energy, green technology, or sustainable agriculture;
5. ESG integration: involves the systematic and explicit financial analysis of environmental, social, and governance factors by investment managers;
6. Corporate engagement/shareholder action: involves using the power of equity holders to influence corporate behaviour. This influence can be direct by communicating with company management or boards of directors or indirect by filing or co-filing shareholder proposals and voting proxies. All these actions are guided using comprehensive ESG guidelines that consider environmental, social and governance criteria.
7. Impact investing: this is an investment strategy that aims to solve specific social or environmental problems. Community-based investments that aim to serve traditionally underserved individuals or communities, or financing for businesses with a clear social or environmental focus are examples of impact investing.

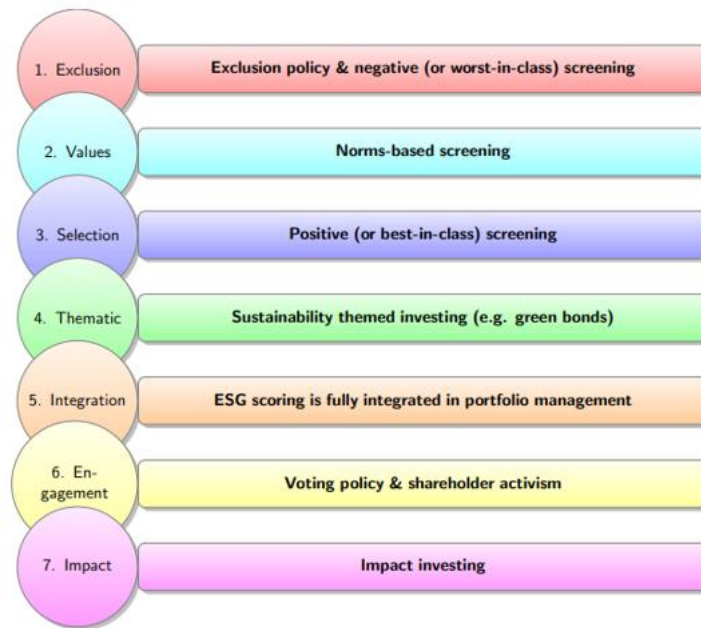


Figure 2: Categorisation of ESG strategies⁴

More often than not, fund managers will use a mix of criterion in the categorization. In this manner, they will be able to fulfill and meet the expectations of their clients. In short, it is important to remember that these criteria are attached to hollow notions; that is, they are weighted according to what each investor or manager considers as relevant. This difference in practices, as well as in managerial and investors' desires can also be explained by the ESG criterion's nonconsensual framework. Thus, each strategy's internal methodologies can shift radically. It is up to the investor to evaluate the offers of management companies. Academic literature suggests that the two strategies most commonly used (and sometimes combined) are integration and exclusion; as it is depicted below in Figure 3.

⁴ Source: Eurosif, 2019

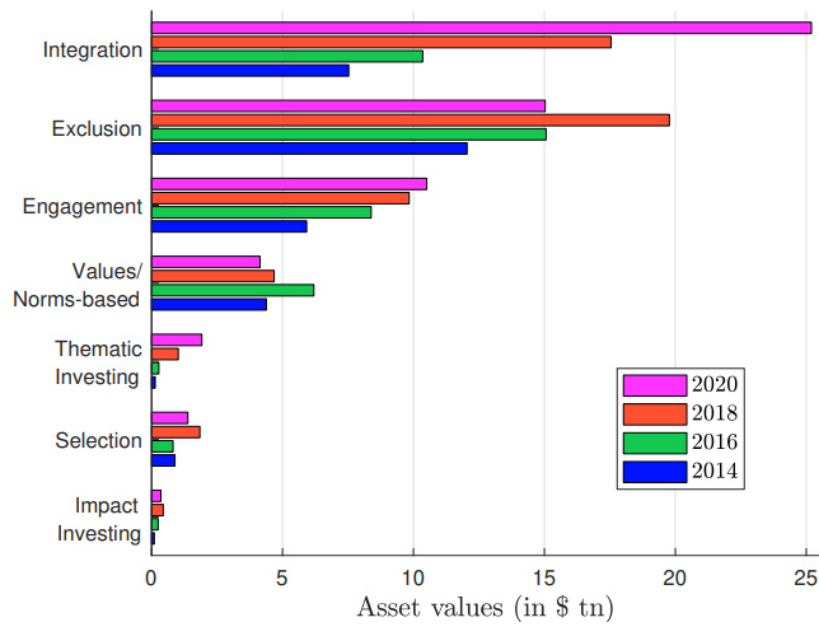


Figure 3: Asset values of ESG strategies between 2014 and 2020⁵

It should also be noted that the methodology used by funds varies according to geographical area. For example, the proprietary approach, which based on negative screening, is more prevalent in the United States; where the SRI emerged. The moral and religious approaches that was the basis of SRI had an exclusive approach. This explains why it is more developed in the United States than in Europe. The work of O. Azoulay and V. Zeller (2006) shows that ESG criteria are supposed to promote the expansion of SRI from a niche market to a more mainstream market. This implies the incorporation of ESG criteria to the investment strategies of management companies; as well as the addition of extrafinancial analysis to traditional financial analysis. According to C. Revelli (2012), it involves the initial exclusion of certain companies from investments before pushing other ones in the investor's portfolio to improve their ESG performance.

It is also worth looking at the notion of shareholder activism, which is based on the "shareholder/manager" relationship. This approach highlights the role of the shareholder who seeks to exert his influence on the management of the company by using his voting rights and by tabling resolutions at general meetings. This type of activism is part of the Socially Responsible Investment (SRI) framework as it helps promote compliance with the requirements of sustainable development as well as the establishment of more ethical relations between shareholders and management. Simultaneously with the development of corporate social responsibility (CSR) and stakeholder theory in North America, a new approach called Sustainable Development (SD), which articulates economic,

⁵ Source: GSIA (2012, 2014, 2016, 2018,2020) & Thierry Roncalli Calculations

social, and ecological values, is emerging. The triple bottom line, representing the People (social), Profit (economic), and Planet (environmental) pillars, is the governance motto for meeting CSR standards. This approach is closely linked with the emergence of the first voluntary CSR reporting frameworks and benchmarks; which suggests a more managerial type of CSR. In addition, the principle of governance can be added to the "3Ps" to form the "quadriptych" of CSR, completed by corporate governance.

The latter has become a major issue on a global scale after the accounting scandals of the early 2000s⁶, prompting supranational institutions (UN, EU, etc.) to coordinate their efforts and establish reference frameworks to meet the needs and urgency of SD. Shareholder activism is considered part of the concept of corporate governance, which consists of two processes: shareholder dialog and stakeholder voice, often with a short-term conflictual relationship. The methodologies of SRI funds systematically include "corporate governance practices", which makes shareholder activism essential. Finally, it should be noted that shareholder activism is upstream of "good governance", while the activism process is downstream.

To summarize the framework of the extrafinancial criterion in terms of sustainable finance, it is interesting to trace the evolution of recent years. Since the 2000s, we have seen the emergence of responsible investment. This approach consists of integrating extrafinancial criteria (environmental, social and governance) into the investment process. In the 2010s, environmental, social, and governance (ESG) investment has gained ground in asset management. The ESG approach differs from responsible investing by focusing on corporate governance practices. In 2020, durable investments have seen a considerable expansion with the emergence of sustainable finance. It now involves all financial actors, from end investors to issuers, banks, and central banks. We can observe a continuous progression of sustainable finance, which testifies to an awareness of the importance of sustainability in financial practices. Sustainable finance has thus become a major pillar of modern finance.

Then, it is important to return to governance linked to the definition of the objectives of sustainable finance, which can be seen through the Principles for Responsible Investment (PRI) launched by the United Nations (UN). In addition, the objective of these PRIs (Figure 4) was to allow companies to take ESG criteria into account more, enabling them to improve the performance of their investments in the long term (reducing risks, and better meeting the financial and extra-financial

⁶ The accounting scandals of the early 2000s were a series of financial affairs that involved major companies, including Vivendi, Enron, Worldcom, Tyco, Adelphia, and Global Crossing. These companies were all involved in fraudulent accounting practices that led to massive financial losses for investors and shook public confidence in the financial markets. The scandals highlighted corporate governance and regulatory issues that led to new laws and regulations to strengthen corporate transparency and accountability. The scandals also led to reforms in the audit and accounting industry to improve audit quality and corporate oversight. For more details, see Boulerne, S. & Sahut, J. (2010). The sources of inefficiency in corporate governance mechanisms. *Management & Avenir*, 33, 374–387. <https://doi.org/10.3917/mav.033.0374>

expectations of investors). In concrete terms, the PRI consists of six commitments (J. Peillex and B. Comyns, 2020):

1. Take ESG issues into account in investment analysis and decision-making;
2. Be active investors by taking ESG issues into account in shareholding policies;
3. Require entities in which investments will be made to disclose ESG information;
4. Promote the acceptance of the PRI among asset managers;
5. Collaborate to jointly improve the effectiveness of the PRI in its application;
6. Report individually on the implementation of PRI in the company and the progress made.

1. We will incorporate ESG issues into investment analysis and decision-making processes.
2. We will be active owners and incorporate ESG issues into our ownership policies and practices.
3. We will seek appropriate disclosure on ESG issues by the entities in which we invest.
4. We will promote acceptance and implementation of the Principles within the investment industry.
5. We will work together to enhance our effectiveness in implementing the Principles.
6. We will each report on our activities and progress towards implementing the Principles.

Figure 4: The Principle of Responsible Investment⁷

Now that the framework has been set, we can finally utter a general definition that is widely accepted in the literature by L. Renneboog et al. (2008, p.1723): 'SRI applies, in contrast to conventional investments, a set of investment filters to select or exclude assets based on ecological, social, corporate governance or ethical criteria, and engages in the local community and shareholder activism'. According to a few figures, SRI represented approximately \$30,683 billion of assets in 2018; compared to \$22,890 in 2016 and \$18,276 in 2014 (GSIA, 2019). Thus, it appears to be a growing sector (beware of the possibly induced fashion effect). Overall, the prerogatives of SRI are plural and suppose a certain set of problems, notably in the absence of consensus on the strategic and methodological definition of extrafinancial criterions. This is despite the presence of existing tools and indicators, such as ESG criteria or PRI, which lack a consensual methodology and a real legal framework. All in all, it should be said that the watchword remains heterogeneous as far as extrafinancial criterion are concerned. SRI has evolved in line with the concepts of CSR and SD. However, there are still some ambiguities surrounding SRI, ESG criteria, and PRI. Despite this, SRI is a reality fully integrated into a multifaceted form of financial markets (C. Revelli, 2013). However, there is still no clear and recognized

⁷Source: UN PRIs, 2015

reference framework for assessing the extra-financial quality of an investment. In this context, green labels can be considered as an important first step for study because of their visibility.

B. Green labels: a tool to measure the extra-financial quality of organizations?

When one mentions socially responsible investments, one often wonders what distinguishes the products that compose them from traditional finance. However, this is indeed a question of innovation. It appears that innovation lies mainly in the methods and orientation of socially responsible investors. Since the early 2000s, two key actors, Novethic for SRI and Fiansol for social finance, have been actively involved in measuring and quantifying progress towards green labels. Novethic has shown that in the vast panorama of labels present in Europe, more than a hundred additional labels have been awarded; we are now approaching the 1,000 labels awarded by the end of the quarter with assets exceeding 300 billion euros (P. Naszályi, 2020). We are thus in a context of mass labelling, which nonetheless suffers from an acute lack of homogeneity. Overall, at present, there are more and more financial products that are given an eco-responsible label or certification, making it quite difficult to know whether it is a real green or eco-responsible label or whether it is greenwashing⁸. Moreover, the multiplicity of labels and the non-consensual nature of the methodologies employed represent a central issue, as we have seen concerning the SRI framework or ESG criteria. In this regard, let us try to return to what makes labels.

To quickly illustrate the increase in green-labelled or SRI assets, we shall take the example of France. Indeed, there has been a progressive increase in assets that we would call labelled ISR from 2010 to 2018, after which there was an exponential increase in this labelling starting in 2019. Here it appears that the SARS-CoV-2 pandemic has accelerated the awareness of climate and ecological emergencies. From this point of view, this increase fits quite well with the elements we have seen above, regarding agents' propensity to consider emergencies in crises. Moreover, it is important to highlight that in 2021 there has been a shift from non-ISR funds to ISR funds, which represents around 579 billion euros. Given the significant amounts involved, one may question the relative interest of green labelling and whether it is truly representative of a sustainable economy.

Before delving into the specifics of existing green labels, it is essential to first provide a general overview of the concept. It can be argued that the creation process surrounding green labels is still ongoing, meaning that markets are only beginning to become truly accustomed to them. There are currently no real standards in place although some labels are more well known than others. What is

⁸ “Activities by a company or an organization that are intended to make people think that it is concerned about the environment, even if its real business actually harms the environment. A common form of greenwash is to publicly claim a commitment to the environment while quietly lobbying to avoid regulation” Source: Oxford English Dictionary (2020)

certain is that the emergence of these entities is in response to market expectations (investors and stakeholders) regarding sustainable development. Some labels have been created based on ideology (alignment with sustainable development), while others have been created out of opportunism (the ability to create value). Each label has its methodology inherent to its sensitivity regarding sustainable development. And its valuation, some focusing on social aspects, while others are concerned with environmental aspects. This leads us to say that depending on the geographic area or even the state, there will be disparities in terms of the vision of sustainable development. The plurality of these indicators is problematic for investors as it creates confusion regarding extrafinancial criteria. Moreover, the criteria-governing green labels are available on the issuers' websites, but often these are vague and broad notions. It can be acknowledged that there are four types of methodologies that also represent socially responsible investment (SRI) funds. Some of these methodologies use ESG methodologies because of these criteria. This analogy can be extended to fund managers.

First, we have the Best-in-Class analysis, also known as multi-sector analysis, which simply involves selecting companies with the best ESG performance, as mentioned earlier. The issue here is that all activities are included in this model, which leads to cases where certain companies are selected simply because they are the "best" in their class, when in fact they are the least bad (e.g., Amazon, Total, etc.).

Second, we have the exclusion method, which was described earlier. As a reminder, this method involves simply excluding certain fields of activity from the portfolio, such as child labour, the sex industry, and tobacco. This is the method that the French label GreeFin has chosen to employ.

Third, we have the Best-in-Universe analysis, which aims to invest in structures that maximally respect ESG criteria, ignoring the rest. In other words, all forms of unvirtuous firms would be excluded, leaving only the most virtuous companies in the portfolio. However, the vagueness and heterogeneity surrounding ESG criteria make it difficult to evaluate this method and the resulting risks.

Fourth, we have an approach that could be described as thematic. Here, the focus is on three predetermined themes: environmental, social, and multi-thematic. The nuance here is that the first two types focus only on their respective themes, while the latter combines both.

In recent years, the emergence of ISR labels in France (CIES, AFG-FIR-Eurosif, Novethic, and Afnor) has demonstrated a favorable dynamic for their development. Moreover, their development can more easily extend to all asset classes through improved transparency and education, contributing to their diffusion into the mainstream (P. Crifo, & N. Mottis, 2013). However, it should be noted that green labels mainly reflect asset management companies rather than individual investors as they are not based on the networks of banks and insurers that distribute these SRI products to make them a competitive differentiating axis. This observation remains true despite the extension of these labels to

the institutional framework. This context around SRI encourages green certification for labels, which becomes almost a necessity. Consequently, the desire of funds to obtain certification could be shown on several levels, the first being strategic and commercial; it would seem strange for fund managers to suddenly develop scruples about the environment and/or social issues. Moreover, despite this sometimes-self-interested adaptation, the management of these funds must be adapted at the risk of reduced competitiveness. Similarly, the growing consideration by public authorities of extra-financial themes encourages managers to adapt now to develop strategies around ESG criteria to promote sustainable development, at the risk of being completely overtaken by emerging factors.

To delve deeper into the question of labels awarded to SRI funds, it is worth noting that the number of funds receiving a label in the context of SRI has been steadily increasing in recent years - as of the end of Q1 2020, this amounted to 326 billion euros in assets for 935 labelled funds (P. Naszalyi, 2020). However, several labels do not necessarily use the same methodology or attribution methods. Firstly, there is the Towards Sustainability label, which is the Belgian standard and held the second place in 2020 (P. Naszalyi, 2020), with 355 funds and 168 billion euros of assets. It applies an independent methodology⁹ aimed at "reassuring potential investors that the financial product is managed in a sustainable manner and is not exposed to highly unsustainable practices, without the need for investors to conduct a detailed analysis themselves" according to the Central Labeling Agency (CLA)¹⁰. Its methodology includes numerous ESG strategies, normative screening (positive), selection of best companies, engagement with companies, and shareholder action, among others. We have here a true dimension whose purpose is to extend the quality standard to traditional finance. Then, in the other existing labels at the European scale, we have:

LuxFLAG is an independent and international association established in 2006 by Luxembourgish private and public stakeholders to promote sustainable finance¹¹. The association oversees several eponymous labels that enable asset management companies to showcase the sustainable character of their products. These labels include LuxFLAG Microfinance, which invests directly in microfinance; Climate Finance, which ensures that at least 75% of assets are dedicated to addressing climate change or are related to climate activities; Environment, which primarily invests in the preservation of the environment sector; Green Bond, which finances qualified green projects; ESG, which ensures that ESG criteria are present throughout the investment process; and Sustainable Insurance Product, which is awarded to products that combat climate change by contributing to ecological transition.

⁹ Cf: <https://towardsustainability.be/the-label/third-party-verification>

¹⁰ a non-profit association whose objective is to broaden the content of sustainable investment savings

¹¹ Cf: <https://luxflag.org/what-we-do/labels/>

The FNG Siegel¹² (Siegel means label in German) is a label created in 2015 for responsible investments in German-speaking countries. The criteria considered are in line with the UN Global Compact and include transparency, labour and human rights, environmental protection, and anti-corruption. Funds wishing to obtain the label must have an explicitly responsible approach and practice the exclusion of those financing polluting activities. The label is progressive and awards stars according to the sustainability of the fund, assessed based on an analysis of 80 questions. Finally, it must be renewed every year to continue to be used. The FNG Siegel has thus become an important reference for identifying responsible investments in German-speaking countries.

The term Umweltzeichen¹³, which means "Austrian eco-label", is applied to many products, including financial products. It is used to identify ethical projects and companies that make sustainable investments from the profits generated. The label is also used for products related to tourism, sports, textiles, and cosmetics, among others. According to the official website, the Umweltzeichen is used to recognize sustainable and ethical investments in financial products.

The Nordic Swan¹⁴ is an official ecolabel of the Nordic countries (Denmark, Finland, Norway, Sweden, and Iceland) that has been in existence since 1989. It can be applied to a wide variety of products, including funds and investment products. The official website provides specific criteria for each product to promote sustainability. Criteria include the exclusion of polluting companies in favour of more sustainable ones, transparency, and compliance with international standards and ESG criteria.

The SRI¹⁵ (Socially Responsible Investment) label was launched by the French government in 2016 to make socially responsible investment easier to understand and to highlight corresponding savings products. To obtain this label, investments are evaluated based on their economic performance as well as their social and environmental impact. Companies from all sectors that contribute to sustainable development are eligible for funding. Independent organizations oversee strictly evaluating the investments for the attribution or not of the label.

It is possible to say that several funds are trying to obtain a double or even triple label (P. Naszalyi, 2020). This reflects a desire to become as integrated as possible in a form of consensus and legitimacy with the public. The CLA proposes a mapping of green & sustainable labels within the EU, in its report of 31 May 2021 (T. Van den Berghe, & al. 2021).

Let us focus on the French GreenFin label, whose importance stems from its de facto creation during the Cop21, making it the first green label - with a clearly stated ecological ambition - granted

¹² Cf: <https://fng-siegel.org/application/>

¹³ Cf: <https://www.umweltzeichen.at/en/for-companies/guidelines/>

¹⁴ Cf: <https://www.nordic-ecolabel.org/certification/>

¹⁵ Cf: <https://www.llabelisr.fr/label-isr/criteres-attribution/>

by a State. Replacing the previous "Energy and Ecological Transition for the Climate" (TEEC) label, this label, newly established by the Ministry of the Economy in 2015, currently has 82 funds with 31 billion assets (figures as of 03/06/2022). The clearly stated objective of this label is to mobilize savings for the benefit of the energy and ecological transition, using transparent and sustainable practices to serve the common good, according to the French Ministry of Economy website. The GreenFin label, with a particular focus on the energy transition, requires that the funds that adhere to it have a positive impact on the energy and ecological transition, particularly by promoting renewable energy and the transition from fossil fuels to green energy. It is important to note that this label is issued by the French public authorities and that its guidelines are determined by a committee composed of all stakeholders, including consumer associations. In addition, the label is issued by several independent labellers, such as Novethic, EY France and Afnor. The label's criteria include a section dedicated to ecology, which establishes a nomenclature of activities eligible for financing, such as energy, buildings, waste management, industry, clean transport, agriculture, etc., as well as exclusion criteria and requirements in terms of ESG, transparency in financial management and measurement of the impact of the energy and ecological transition. Finally, it is mandatory to report on at least one of these four areas: climate change, water, natural resources, and biodiversity.

Let us take a closer look at the criteria and labelling process¹⁶ of the GreenFin label. Like other green labels around the world, GreenFin has established a specific process and characterization criteria that aim to reflect the French government's vision and requirements for extra-financial criteria and green finance. This label is based on four major axes, namely the share of investment in activities related to the ecological transition, exclusion criteria, ESG criteria, as well as the impact on the energy transition.

The "green share" concept aims to establish a classification of activities eligible for GreenFin-labeled financing, which is based on eight categories of activities: energy, construction, waste management and pollution control, industry, clean transportation, information and communication technologies, agriculture and forestry, and climate change adaptation. In addition, funds wishing to obtain the GreenFin label will have to allocate a substantial portion of their investment to these activities. For this purpose, GreenFin has established three distinct categories: "the green share", "the share in transition" and "the share in compliance".

- Category 1: companies generating more than 50% of their turnover in an eco-responsible activity (the 8 activities listed above);
- Category 2: companies making 10 to 50% of their sales in eco-responsible activities;

¹⁶Cf: https://www.ecologie.gouv.fr/sites/default/files/Label%20Greenfin_plaquette%20pr%C3%A9sentation.pdf

- Category 3: companies that generate less than 10% of their sales in an eco-responsible activity.

Furthermore, it should be noted that while the labels are listed on the financial markets, the three categories of funds are awarded differently by the label. In addition, the methodology applied to bond funds differs slightly. Under the GreenFin label, a green bond is considered as such subject to three conditions: compliance with the Green Bond Principles¹⁷ (GBP) of the International Capital Markets Association (ICMA), financing of projects falling within the nomenclature of the eight eligible categories and no financing of excluded activities. In addition, if a fund holds 75% of bonds that are considered green according to GreenFin, it is eligible for certification.

The second axis of the GreenFin label is based on exclusion. As mentioned earlier (*cf.* I. A.), the label will exclude what it considers to be contrary to its principles, i.e., the energy transition in the case of GreenFin. Thus, the label will methodically exclude companies with activities related to the exploration-production and exploitation of fossil fuels, as well as the entire nuclear sector. In addition, a partial exclusion will also be applied, with companies being excluded if more than one-third of their turnover comes from activities such as distribution, transport and production of service equipment, landfills without greenhouse gas capture, incineration without energy recovery, energy efficiency for non-renewable energy sources, energy savings from optimizing fossil fuel extraction, transportation and electricity generation, as well as forestry (unless sustainably managed) and peatland agriculture.

The third axis concerns the integration of ESG criteria (environmental, social and governance) in the construction and management of fund portfolios. To this end, funds applying for GreenFin certification must actively monitor ESG criteria. To do so, they must describe their ESG monitoring and controversy management process, as well as the resources used. If companies are excluded, they must provide a document describing the companies excluded due to an ESG controversy, as well as a list of companies underweighted in the portfolio due to an ESG controversy. In addition, funds must comply with transparency requirements and rules when managing their portfolios. Derivative financial instruments must be used in a non-abusive manner to avoid destabilizing the fund structure. If this is not the case, a justification must be provided to explain the excess. The portfolio turnover rate of a fund is also calculated. If this rate is higher than 2, the fund must justify the label. It should be noted that this criterion does not apply to private equity or start-up funds.

The fourth axis focuses on the positive impact that the labelled funds should have on the energy and ecological transition. In this context, funds should be able to demonstrate their contribution to this transition. To do so, they must be able to assess and justify their valuation and assessment

¹⁷*Cf.* <https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/green-bond-principles-gbp/>

methodology to the label. They can also call on specialized third parties such as rating agencies like Vigeo Eiris or Sustainalytics. Ultimately, the funds must prove their positive commitment to one of the following four categories: the fight against climate change, water management, preservation of natural resources and respect for biodiversity, by providing regular reports on this subject.

As far as the labelling process is concerned, it is important to note that the application must be initiated by the fund itself. In this case, the fund must contact one of the three labelling organizations mentioned above, namely EY France, Novethic or Afnor Certification. The first step in the process is a study to determine whether the fund is eligible for the label. If so, a written agreement will be drawn up, and then an audit will be carried out with the full cooperation of the fund. The fund will provide the necessary documentation for the audit.

The labeller will then review the fund and its activities to determine if it meets all the above criteria. At the end of the audit, the fund will be awarded the GreenFin label or not? It should be noted that the decision is made by the labelling body independently of the French government. If the label is awarded, it will be valid for one year and may be renewed if the fund complies with the conditions and accepts the control of its practices.

In fine, the use and development of green labels is generally a positive thing, as it allows funds to gain visibility, provide a marketing and strategic tool, increase credibility and legitimacy, and finance projects promoting a smooth transition towards sustainable development principles. For the investor, it provides a regulatory framework demonstrating certification by experts, compliance with the investment preferences of savers, or giving meaning to their savings. However, the label sector, like ESG criteria, suffers from a lack of consensus in the literature, and standardization is needed to achieve a referential framework for each one, which would allow asset managers and investors to be less confused by the plurality of offers available to them. Therefore, it would be wise for this methodological framework to avoid financial management companies that have the sole objective of avoiding sacrificing ESG analysis (a reduction of which tends towards greenwashing) in favour of pure financial profitability. Sectoral exclusion and Best-in-Class could then represent an interesting alternative, as their methodological prism could compel managers to consider strong ethical criteria and exclude so-called ESG integration methods, which, incidentally, are less restrictive (C. Revelli, 2013). One avenue for reflection would be to consider whether maintaining good SRI management could be achieved through an extra-financial filter before the traditional financial filter (currently the opposite). This would make it possible to distinguish an SRI fund from a traditional fund; this would constitute its difference, its added value, and its strength vis-à-vis traditional funds (C. Revelli, 2013).

As we have seen, there are many labels and methodologies for determining what constitutes SRI. These methods can be applied directly to assets or funds through labels. However, this plurality reflects the desire for transition and research and development towards a consensus, which could eventually be reached with the intervention of public authorities. Some labels, such as Greenfin or Umweltzeichen, are supported by public authorities. Although all labels are based on ESG criteria, some are more focused on a particular aspect, such as Greenfin and LuxFlag Climate Finance, which focus on the environmental aspect. It becomes possible to say that the use of green labels helps more to improve the legitimacy of the labelled companies/funds to create more financial value. Rather, *ceteris paribus*, occupies a central place in the selection process of fund managers, applying their own methodology. We would thus have a value creation process through the prism of individual investors. Finally, the green label framework raises an important question about the place of rating agencies in the evaluation of SRI assets and extra-financial criteria, which will be discussed in the next section.

C. Methodologies used by non-standardized extra-financial rating agencies: variable evaluations.

The emergence of ratings, which are *strico sensu* financial in nature, is not a recent phenomenon. In fact, Moody's in the United States was the first to integrate a rating with its analyses in the early 20th century. At that time, the purpose of the rating was to measure the default risk of bond issuers. Initially, ratings ranged from AAA (the safest) to D (the riskiest, or default). Ratings rated BB and below became speculative (*cf*: Figure 5). The evolution of rating agencies was relatively tranquil and neutral until the advent of Basel I regulation in the early 1970s. Until Basel III, this regulation continued to increase their influence due to the role of "quasi-regulator" of capital markets (Partnoy, 1999; Weber and Darbellay, 2008) that had been entrusted to them, as well as the evolution of their business model and the oligopolistic situation of the rating market. Indeed, rating agencies have developed according to an external growth logic through mergers and acquisitions, leading to an oligopoly situation that has resulted in problems that did not exist previously. According to J-G. Degos & al, 2012, there are four of them: employees play a dual role, negotiating both their fees and the technical analysis process - devoid of a regulatory framework - which leads to conflicts of interest. It should be noted that the downgrading of a rating is rarely appreciated by issuers, who may feel aggrieved by the agency's decision. The notion of "issuer paying" emerged as a result. Moreover, it is the agencies themselves that generate many problems related to the partiality of rating allocation, leading to a wave of demand for financial ratings in order to satisfy issuers who desire high ratings in the context of tightening prudential regulation around securities. This had an impact on financial markets, as ratings give impulses in terms of investment (confidence), which could exacerbate certain crises such as the Greek debt crisis in 2009.

In its entirety, ratings were supposed to be the result of external expertise and free from biases and conflicts of interest. However, regulators, starting with Basel, transformed them into regulatory tools. Accordingly, the transition of agencies, whose sole purpose was the provision of financial information to a regulator, was next. The legislature has still not succeeded in holding back this phenomenon of conflicts of interest.

Moody's	S&P	Fitch	Description
Aaa	AAA		Highest credit quality, minimum credit risk
Aa1, Aa2, Aa3	AA+, AA, AA-		Very high credit quality, very low credit risk
A1, A2, A3	A+, A, A-		High credit quality (upper-medium grade)
Baa1, Baa2, Baa3	BBB+, BBB, BBB-		Good credit quality, currently low credit risk
Ba1, Ba2, Ba3	BB+, BB, BB-		Speculative elements, issuer faces major uncertainties and adverse conditions
B1, B2, B3	B+, B, B-		High credit risk, but issuer still able to meet its financial commitments
Caa1, Caa2, Caa3	CCC+, CCC, CCC-	CCC	Issuer currently vulnerable, default likely
Ca	CC	CC	Issuer currently highly vulnerable, near default
C	R, SD, D	C, RD, D	Lowest rating, typically in default on some (SD, RD) or all of its financial obligations

Source: Authors' compilation based on data from Fitch, Moody's, and S&P

Figure 5: Credit rating scales of Moody's, S&P, and Fitch¹⁸

From this principle, it is important to note that despite their proven role in exacerbating systemic crises such as the subprime and Greek debt crises, the margins of rating agencies remain very high. This is problematic considering their performances often falling short of the markets' expectations. It shows the complicity of regulators who have left ratings - which are part of financial regulation - in the hands of biased organizations (N. Gaillard, 2012). Considering these contextual elements, it is possible to examine in more detail the ratings provided by these agencies in terms of CSR, and then within the framework of SRI and ESG criteria.

The beginning of 2000 saw the emergence of the first specialized indices in extra-financial criteria, with the Dow Jones Sustainability Group Indexes in 1999, financial rating agencies and actors of professional and institutional legitimation of SRI (Forum for Responsible Investment, 2001). Since then, the sector has continued to develop. However, as we have seen above, official forums and associations of responsible investment offer converging but still different definitions (C. Revelli, 2013). For example, Eurosif divides SRI into two compartments: Core ISR and Broad ISR¹⁹. While US SIF, on the other hand,

¹⁸ Source: Klimavičienė, A., & Pilinkus, D. (2011). The impact of sovereign credit rating changes on the stock markets in Central and Eastern Europe. *Transformations in business & economics*, 10, 87-103.

¹⁹ Theurillat, T., Crevoisier, O. & Salomon, V. (2017). Finance de marché et fonds d'investissement durables : la coupure au territoire. *Géographie, économie, société*, 19, 537-560. <https://doi.org/10.3166/ges.19.2017.0024>

operates with a breakdown into three main concepts, namely: shareholder activism, screening activities, and community investment (an idea not relegated to the European conception of SRI).

De facto, it is reasonable to delve into the measurement of the "sustainable value" of SRI in general. Indeed, is it not the role of rating agencies to legitimize or appreciate the sustainable value of securities of any organization? One can reinforce the sense of this hypothesis, in that many works on ESG criteria rely on data from extra-financial rating agencies. However, this is not without highlighting certain issues related to "sustainable value"; it seems that many rating agency benchmarks are tacitly based on the assumption that the different ESG dimensions are fungible (good and bad practices would compensate each other) and commensurable (different ESG factors can be combined because they have similar importance) (P. Crifo & N. Mottis, 2013). Similarly, according to the idea put forward by Igalens and Gond in 2003, rating agencies resort to the utilization of primary data (inputs) that they subsequently exploit in the construction of their indicator (output). In the end, quality depends on the quality of the information collected. Based on this principle, it is evident that operating within a system lacking consensus on ESG criteria results in each agency promoting its own vision of SRI screening and indexes. However, this situation raises concerns as highlighted earlier, as these agencies possess inherent biases and exert influence on the market through the issuer-payer relationship, potentially distorting its functioning. However, even though rating agencies are at the centre and influence financial markets, they are not subject to official supervision and controls by public authorities.

The emergence of a sustainable rating system leads to an incentive for investors who are concerned with social and environmental issues. In this regard, the debate around "sustainable value" is central, and it can take various forms. However, the construction of "sustainable value" highlights the idea that it should be relative to territoriality (T. Theurillat, & al. 2017). Moreover, the concept of territoriality makes sense in the context of sustainable development as it enables the determination of the governance framework about sustainability (stakeholders defining the sustainable nature and actions to be taken in a specific territory). Thus, this idea can be transposed to ISR funds that seek to create this value. Rating agencies play the role of a third-party actor legitimizing the action and the virtuous character of an entity (*cf*: Appendix 2). The concept of territoriality then appears as a central point in the composition of ISR funds, as they often use an index-based approach, which is the result of different methodologies and emerging geographical regions for the funds (*cf*: Appendix 2).

The centrality of extra-financial rating agencies in the development of SRI fund portfolios encourages us to provide explanatory elements of their index methodology. Thus, like traditional financial rating agencies, they proceed with a screening starting from the origin of a market index, which will subsequently be reduced through their determination process. Therefore, based on this principle, it appears that there is a correlation between an index and its benchmark, leading to the

belief that SRI stock market indices operate similarly to those of traditional finance (A. El Khamlichi, 2013). It is important to state that extra-financial rating agencies, under the impetus of a so-called scientific methodology, create evaluation criteria that are supposed to demonstrate sustainability and financial performance. As a result, some rating agencies, *ceteris paribus*, use numerous sustainability criteria to identify, weigh and rank them; this process also involves the use of econometrics and meta-analysis (T. Theurillat, & al. 2017). This database creation contributes to generating analysis matrices containing hundreds of criteria and companies (Mortier, 2013). In this way, it becomes possible to improve processes according to customer demand and become more competitive.

As it stands, due to the concentration effect, there are only about thirty extra-financial rating agencies left in the world. Here are a few examples: there are several well-known ESG data providers including FTSE (Beyond Ratings), Moody's (Vigeo-Eiris), MSCI, Sustainalytics, RepRisk, and Verisk Mapplecroft. These providers exhibit an average cross-correlation of 85% for ESG scores, 42% for environmental scores, 85% for social scores, and 71% for governance scores. For instance, Bloomberg rates over 11,800 public companies using more than 120 ESG indicators and 2,000+ data points. ISS ESG rates around 10,000 issuers using more than 800 indicators, applying approximately 100 indicators per company. FTSE Russell rates over 7,200 securities using more than 300 indicators and 14 themes. MSCI rates 10,000 companies (14,000 issuers including subsidiaries) and 680,000 securities globally using 10 themes, 1000+ data points, 80 exposure metrics, and 250+ management metrics. Refinitiv rates 12,000 public and private companies considering 10 themes built using 186 metrics and 630+ data points. S&P Dow Jones Indices uses between 16 to 27 criteria scores, a questionnaire, and 1,000 data points. Sustainalytics rates over 16,300 companies considering 20 material ESG issues based on 350+ indicators. In addition, RepRisk employs NLP daily using 500,000+ documents and 100,000+ sources across 23 languages to identify controversies, while geospatial data is used to assess physical risk. (T.Roncalli, 2023)

In other words, the sociotechnical devices associated with the legitimacy validation of SRI funds by extra-financial rating agencies appear to use methods like those employed in traditional management (tracking the evolution of benchmark indices). As a result, issues arise regarding differing geographic situations in different contexts, which makes the analysis and interpretation of indices that do not consider the "sustainable value" that would evolve complex. The use of methods such as "blue chips" (inclusion of openly controversial large firms) is also criticized. In fine, benchmark indices become classical indices such as MSCI World, the S&P 500, or the CAC40, as they are considered representative of the market. However, there are specialized indices in sustainable finance. Similarly, it can be argued that major rating agencies analyse ESG issues as a financial risk and opportunity factor (as confirmed in the academic literature), even though it would be necessary to question the real impact of non-

financial performance. The question of double materiality, the measurement of the real impacts that ESG criteria are supposed to induce on companies, then arises. For example, is the reduction of carbon emissions not achieved using electricity produced by fossil fuels?

Similarly, unlike credit ratings, the non-consensual nature and absence of a clear definition of what constitutes ESG criteria encourage extra-financial rating agencies to compete due to the lack of common standards (M. Billio, & al, 2020). Windolph (2011) identifies six causes that result in the absence of transparent and objective ratings:

1. The lack of standardization;
2. The lack of credibility of information;
3. Biases;
4. Compromises;
5. The lack of transparency;
6. The lack of independence.

Thus, the ESG sector suffers from many of the issues identified by Windolph, which creates complexity in ESG ratings. As previously mentioned, agencies have developed their methodologies to assess ESG performance, with information being a primary source of work for these agencies. The primary distinction among agencies lies in the information-gathering process. Prominent credit rating agencies invite the largest listed companies to complete a questionnaire that will fill in any missing information (M. Billio, & al, 2020). However, even when information data converge, the data processing differs between agencies. Moreover, all ESG rating agencies examined have developed their definitions of materiality, leading to significant variations in weighting procedures²⁰. Furthermore, almost all rating agencies adjust their final scores by incorporating industry-specific questions, yet few of them publish the weights attributed transparently. This way, the differences in ratings may simply arise from the consideration of different components, weighted differently (M. Billio, & al, 2020). These differences are highlighted in Figure 6.

Company	Sustainalytics	RobecoSAM	Refinitiv	MSCI
Nissan Motor Co., Ltd	6	77	72	CCC
Verizon Communications Inc.	91	20	67	BB
Oracle Corp. Jpn	78	8	63	BB
Goodman Group	86	21	58	AA

Figure 6: Example of divergence in ESG rating²¹

²⁰ MAE provides a measure of the errors between matched observations describing the same phenomenon, and is equal to: $\frac{\sum_{i=1}^n R_i^A - R_i^B}{n}$. R_i^A and R_i^B are the scores given to firm i by the A and B score providers, respectively. n is the total number of firms considered.

²¹ M. Billio, & al, 2020

Also, the study conducted by Berg, Kölbel, and Rigobon (2022) found that the ESG ratings provided by different agencies are highly divergent (cf: Appendix 3), which can lead to aggregated confusion among investors and inconsistent investment decisions. The source of these differences is shown in Figure 7. They identify three sources of divergence in ESG ratings. The first source, accounting for 56% of the cases, is “measurement divergence,” which occurs when different ESG metrics are used to measure the same indicator. The second source, accounting for 38% of cases, is “scope divergence,” which occurs when different sets of ESG indicators are used to evaluate a company. The third source, accounting for 6% of cases, is “weight divergence,” which emerges when rating agencies have different views on the relative importance of ESG indicators.

The researchers have also found that the factor ‘underlying these ESG ratings are not necessarily the same between agencies, contributing to the divergence of ratings. The evidence presented in the article includes an empirical analysis of ESG data from 2016 to 2019 for over 2,000 companies worldwide, as well as a study of how ESG ratings affect investor behaviour. The authors also conducted a comparative analysis of the ESG methodologies of six different agencies, revealing significant differences in the factors considered and in their relative importance.

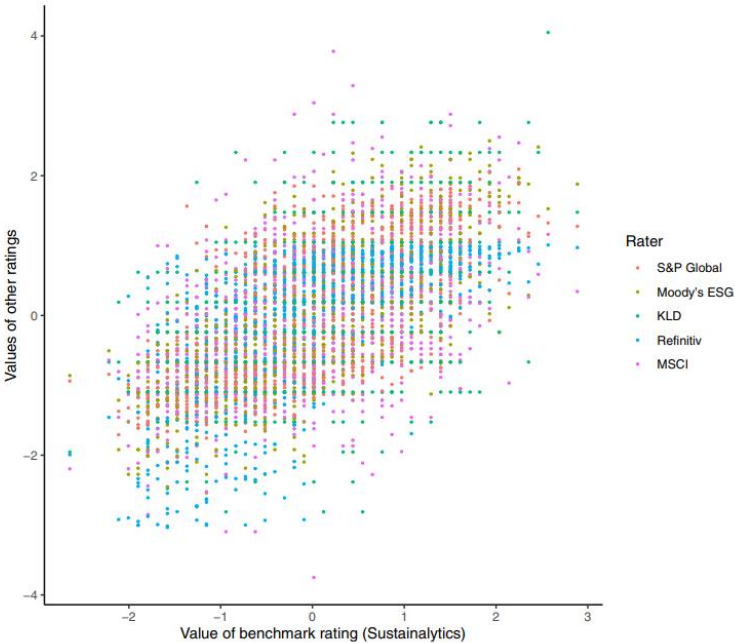


Figure 7: ESG rating disagreement²²

²² Author's note: This graph illustrates the ESG rating divergence. The horizontal axis indicates the value of the Sustainalytics rating as a benchmark for each firm (n ¼ 924). Rating values by the other five raters are plotted on the vertical axis in different colors. For each rater, the distribution of values has been normalized to zero mean and unit variance. The Sustainalytics rating has discrete values that show up visually as vertical lines where several companies have the same rating value. Source: Berg & al, 2022.

Likewise, the paper: "The complex materiality of ESG ratings: Evidence from actively managed ESG funds" (Cremers, & al, 2023) aimed to examine the relationship between ESG ratings and the financial performance of actively managed ESG funds. The authors analyzed a sample of 2,200 actively managed funds, including 331 ESG funds, between 2010 and 2018, using traditional financial performance measures such as alpha, beta, and Sharpe ratio, as well as ESG performance measures such as Morningstar ratings and MSCI ESG scores. The study found that ESG ratings were not strongly correlated with the financial performance of actively managed ESG funds. In addition, the authors observed significant variability in ESG ratings across rating agencies, suggesting the need for caution when using these ratings for investment decisions. Finally, the authors found that actively managed ESG funds often invest in companies with low ESG ratings but positive environmental or social impacts, indicating that fund managers can use their judgment in deciding where to invest rather than relying solely on standard ESG ratings. In addition, highlighting the complexity of the relationship between ESG ratings and financial performance suggests that investors should use ESG ratings with caution and not rely on them solely to make investment decisions.

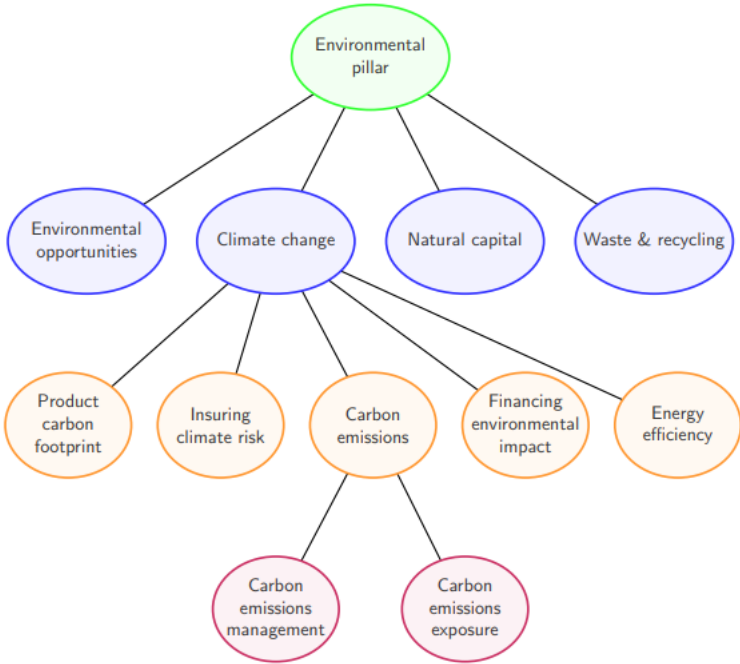


Figure 8: An example of ESG scoring tree (MSCI Methodology)²³

²³ Source: T. Roncalli, (2023).

On the other hand, Billio et al. (2019) focus on the accuracy and performance of ESG ratings from multiple rating agencies. They use an innovative method to measure the divergence between ratings by calculating the dissimilarity index of a set of ESG criteria²⁴. The authors apply this approach to a sample of over 2,000 stocks in the S&P 1200 index for the period 2010-2016. The results show significant divergence among ESG ratings from different rating agencies, with an average correlation of only 0.61 between ratings. Furthermore, companies rated differently by various agencies exhibit different ESG characteristics, including size, sector, and financial performance. However, companies rated favourably by multiple agencies tend to have better long-term financial performance, as measured by risk-adjusted stock returns.

To this end, both articles emphasize the need for caution in using ESG ratings, considering the diversity of opinions among rating agencies and investors. The authors also stress the importance of transparency in rating methodologies and a better understanding of the criteria used to evaluate companies. These findings have significant implications for policymakers, investors, and companies seeking to improve their ESG performance. Finally, the results of this study emphasize the importance of understanding the divergence of ESG ratings and the factors underlying these ratings when making investment decisions. Investors must also be aware of the limits of ESG ratings and the factors that can influence their reliability.

	MSCI	Refinitiv	S&P Global	
MSCI	100%			
Refinitiv	43%	100%		
S&P Global	45%	69%	100%	
Sustainalytics	53%	64%	69%	100%

Figure 9: Rank correlation among ESG rating²⁵

Similar to the failures that credit rating agencies contributed to during systemic crises, existing disparities in methodologies used for assigning ratings pose concerns for the functioning of markets. Non-financial rating agencies provide the market with non-homogeneous information (ratings and indices), which according to Billio and al. (2020) leads to two major problems: investors struggle to select ESG companies in which to invest, and companies have difficulty understanding which standards they must meet to be included in ESG indexes.

²⁴ The overlap coefficient known as the Szymkiewicz–Simpson coefficient is computed such $\frac{|I_i \cap I_j|}{\min(|I_i|, |I_j|)}$, where I_i and I_j are the ESG indexes, and $|\cdot|$ indicates the cardinality of the set.

²⁵ Source: Bilio, & al. (2020).

To summarize, the lack of common reference points among extra-financial rating agencies leads them to assign opposite ratings. As such, the choice of benchmark is crucial in measuring performance and constructing reference indices. Furthermore, disagreements among ESG ratings between agencies negate the effect of ESG investor preference on asset prices (Merton, 1987). Even in the case of a tacit or explicit agreement among rating agencies, there would be no impact on the financial performance of SRI portfolios (M. Billio and al., 2020).

Extra-financial rating agencies, as well as other legitimate actors (NGOs, researchers, etc.), should be considered essential elements in the paradigm towards which we are heading. It is through the attribution and certification of strong socio-technical processes that companies in an SRI fund could justify virtuous actions; legitimacy constitutes the essential element that underpins the "sustainable value" of one organization or another. The complexity of evaluating the effects of a product on the planet makes this process of legitimation extremely important, as it allows for a form of consensus on what stakeholders consider to be sustainable. Socially responsible investments would become a strong, multidimensional, procedural, and subjective concept in the emergence of a new way of doing finance; one that no longer detracts from the stigmatization that SRI funds currently face (T. Theurillat, 2017).

After outlining the general context regarding the actors who make ESG, it seems interesting to venture back to the various political contexts co-existing all around the world. The European Union has a pioneering role in this area, and the work it has pioneered is advanced enough for us to seriously consider it: this will be the subject of our next section.

II. THE EUROPEAN UNION AS A REGULATORY FRAMEWORK FOR TAKING EXTRA-FINANCIAL CRITERION INTO ACCOUNT?

By enshrining the principles of sustainable development as constitutional principles - just before the 2000s - the European Union has a history that is not as contemporary as other supranational organizations.

Numerous questions arise regarding the way these principles are integrated into European law. Is this integration part of a wider European project?

One could partially answer and state that specific organizations have been created within the EU for this very purpose; and that there is a gradually emerging regulatory framework. Furthermore, it can already be stated that measurements have been taken by the EU. However, in certain respects, they remain limited. It is important to remember that the EU is the only international (supranational) organization implementing at this level the awareness of the ecological urgency. We are facing, not to mention the systemic risks regularly encountered by our economic and financial system. Additionally,

the integration of sustainable development and corporate responsibility was formally enshrined in European legislation with the inclusion of these principles in the Maastricht Treaty and the decisions made at the Cardiff Summit in 1998. It aimed to reshape the way the law is created (M. Torre-Schaub, 2012). Initially, this process was expected to involve various mechanisms; particularly through financial and economic instruments. That would suppose to support environmental protection (by gradually financing the shift in our consumption patterns), with the concrete goal of reorganizing the community's social fabric. Moreover, as early as 2005, the EU decided to go even further by promoting the green public procurement and specifying environmental and social performance criteria for products.

In general terms, it is now possible to assert that both Europe and its constituent states play a pioneering role in considering sustainable development in financial regulation and reporting (*cf*: Figure 10 & 11). Therefore, it becomes crucial to study its functioning and the resulting implications.

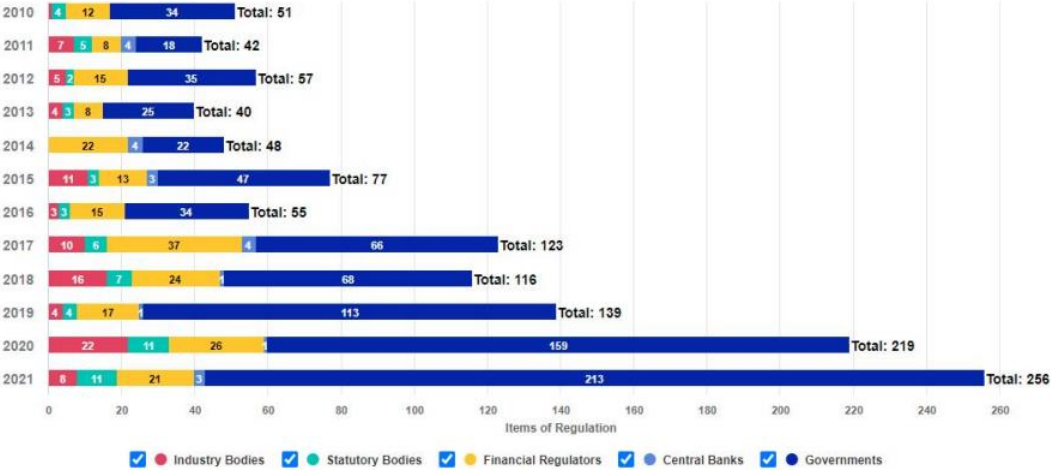


Figure 10: Who will regulate ESG – regulators viewpoint²⁶

²⁶ Source: MSCI, 2022 but but found in T. Roncalli's course (2023)

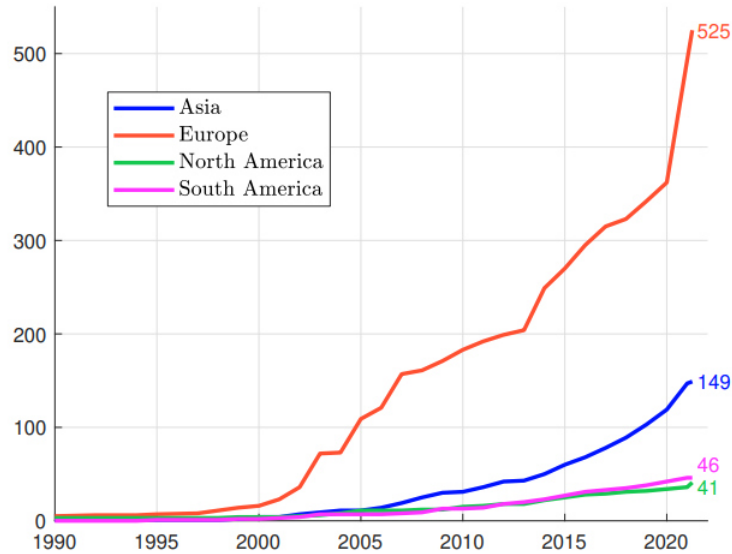


Figure 11: Number of ESG regulations per region²⁷

A. The SFDR as a regulatory framework for sustainable finance

European sustainability regulations have a worldwide pioneering role. In fine, this passes the first directives on Non-Financial Reporting emerged in 2014 with the Non-Financial Reporting Directive (NFRD - European Union 2014), which situates this notion in the following manner:

“Non-financial reporting:

Non-financial consolidated statement: information to the extent necessary for an understanding of the group’s development, performance, position and impact of its activity, relating to, as a minimum, environmental, social and employee matters, respect for human rights, anti-corruption and bribery matters including:

- (a) *brief description of the group’s business model*
- (b) *a description of the policies pursued by the group in relation to those matters, including due diligence processes implemented*
- (c) *the outcome of those policies*
- (d) *the principal risks related to those matters linked to the group’s operations including, where relevant and proportionate, its business relationships, products or services which are likely to cause adverse impacts in those areas, and how the group manages those risks*
- (e) *non-financial key performance indicators relevant to the particular business”*

Excerpts from the articles 19a and 29a of the NFRD - European Union 2014. There are several principles behind this measure. It was first introduced in 2018 to all Member States (27); and all of them have now implemented the principles in their national law. Therefore, all companies defined as Public-Interest Entities (PIEs) are required to submit such a report every year. Among these PIEs are: undertakings listed on European regulated markets, credit institutions, insurance undertakings and, other entities designated by Member States as a PIE. The directive mandates that public disclosure

²⁷ Source: PRI (2022), <https://www.unpri.org/policy/regulation-database>.

documents, including annual reports, sustainability reports, and integrated reports, cover the following topics. Companies are obligated to disclose the impacts of their business activities on issues categorized as follows:

1. (E) Environmental Protection;
2. (S) Social Responsibility and Treatment of Employees;
3. (S) Respect for Human Rights
4. (S) Company Board Diversity regarding: Gender, Age, Education & profession;
5. (G) Anti-Corruption and Bribery.

The Directive follows the "comply or explain" approach. It means that a company is required to provide a detailed explanation if they do not have a policy in place for any of these matters. By adopting this principle, the aim is to promote transparency and accountability. If a company fails to address these issues, it will be publicly disclosed; which can lead to negative publicity, incentivizing companies to act and fill any gaps in their policies.

The main contribution of the NFRD lies in the notion of dual materiality²⁸ that has been put in place. The updated guidelines integrate the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD) and introduce the principle of double materiality; which encompasses both financial and non-financial materiality. Under the latter, companies are required to not only assess climate-related risks in their financial performance but also consider their impact on the climate and disclose non-financial information regarding their external impacts. This approach ensures that companies account for both the risks they face and the impacts they have on the climate in their reporting and disclosure practices.

Now that we have laid the foundations of what is non-financial information according to the EU definition, it becomes possible to say that, the mandates of the current President of the European Commission, Ursula Von Der Leyen, and the President of the European Central Bank, Christine Lagarde, appear to be driven by the objective of sustainable development. This is evident in the Commission's "Green Deal" (*cf.* Figure 12) which aims to make Europe the first carbon-neutral continent through the development of clean energy – to 2050 - and green technologies (M. Tempelman, 2021). The intended approach is to conduct a comprehensive assessment of each existing law based on its climate-related benefits, while also introducing new legislation in areas such as the circular economy, building renovation, biodiversity, farming, and innovation.

²⁸ *Cf.* TCFD, 'Task Force on Climate-Related Financial Disclosures' <https://www.fsb-tcfid.org/> (last accessed 14 January 2021).



Figure 12: The European Green Deal²⁹

In keeping with the EU strategies, it should be said that the NFRD is the detonator. It was followed by several supplements. In this respect, investment has been identified as one of the key components to achieving the plan's objectives, leading the EU to develop the Sustainable Finance Disclosure Regulation (SFDR)³⁰ to ensure the inclusion of precise and consistent information on ESG risks in portfolios. It was implemented in March 2021, following its adoption in 2019, as a key element of the European Commission's sustainable finance agenda³¹.

The objective of the regulation is to integrate sustainability-related risks into the decision-making processes of financial market participants, including MiFID firms, AIFMs, UCITS Managers, financial advisers, and financial products. It does so by establishing non-financial disclosure requirements. The regulation distinguishes between disclosures at the entity and product levels and covers website, pre-contractual, and periodic report disclosures. It also specifies requirements for standard products, as well as products promoting Environmental and Social (E&S) characteristics or having sustainable investments as their objective. The regulation outlines the types of information that need to be disclosed and specifies the disclosure channels, such as websites, pre-contractual arrangements, or periodic reports, for each category of disclosure.

By setting standards and specific disclosure requirements, SFDR aims to enhance transparency and allow investors to make better informed decisions regarding sustainable investments. It acts as a mechanism that fosters confidence in the market and ensures that sustainability claims are substantiated; thus promoting genuinely sustainable finance practices. The excerpts in paragraphs 5, 10 and 14 clearly define the spirit in which the SFDR was designed:

²⁹ Source: European Union website, taken from T. Jérôme's Non-Financial Information course (2022)

³⁰ Source: Regulation (EU) 2019/2088 of the European Parliament and of the Council of 27 November 2019 on sustainability-related disclosures in the financial services sector (Sustainability Disclosure Regulation 2019)

³¹ The sustainable finance reforms of the EU encompass various initiatives, including the Sustainability Disclosure Regulation (SDR) of 2019 and the Taxonomy Regulation of 2020.

- Para. (5): “Disclosures to end investors on the integration of sustainability risks, on the consideration of adverse sustainability impacts, on sustainable investment objectives, or on the promotion of environmental or social characteristics, in investment decision-making and in advisory processes, are **insufficiently developed** because such **disclosures are not yet subject to harmonised requirements**”
- Para. (10): “This Regulation aims to reduce **information asymmetries in principal-agent relationships** with regard to the integration of sustainability risks, the consideration of adverse sustainability impacts, the promotion of environmental or social characteristics, and sustainable investment, by requiring financial market participants and financial advisers to make pre-contractual and ongoing disclosures to end investors when they act as agents of those end investors (principals)”
- Para. (14): “A **sustainability risk** means an environmental, social or governance event or condition that, if it occurs, could cause a negative material impact on the value of the investment, as specified in sectoral legislation [...]”

It is now imperative to delve into the specifics of what lies beneath it. In addition, the various articles of the SFDR provide a framework that harmonizes the rules for financial products, for the consideration of sustainability risks, for participants in the financial markets. Similar to what is written in Article 1:

Article 1 – Subject matter: “This Regulation lays down harmonised rules for financial market participants and financial advisers on transparency with regard to the integration of sustainability risks and the consideration of adverse sustainability impacts in their processes and the provision of sustainability-related information with respect to financial products”.

According to the SFDR’s regulation, financial companies are required to disclose non-financial information for each of their products and classify them into the following categories:

- Article 6 products have little or no consideration for ESG issues.
- Article 8 products involve a commitment to certain practices, such as implementing an exclusion policy, conducting ESG due diligence before investment, and measuring the ESG impacts of underlying assets.
- Article 9 products have a formalized objective, making them the most demanding and virtuous in terms of ESG issues. An "Article 9" fund may set objectives for decarbonization or contribution to a specific Sustainable Development Goal (SDG).

By categorizing products based on their integration in the ESG as well as their objectives, the SFDR aims to provide investors with clearer information about the sustainability characteristics of financial products. This classification system allows for an easier identification of products that aligns with investors' sustainability preferences and which promotes transparency and comparability within the financial industry.

“**Article 6**” products either integrate environmental, social and governance (ESG) risk considerations into the investment decision-making process, or explain why sustainability risk is not relevant, but do not meet the additional criteria of Article 8 or Article 9 strategies
 “**Article 8**” products promote social and/or environmental characteristics, and may invest in sustainable investments, but do not have sustainable investing as a core objective.
 “**Article 9**” products have a sustainable investment objective.” (SFDR, 2019)

KPMG in 2021 provided a schematic response to the characterization proposed by SFDR which is available in Figure 13:

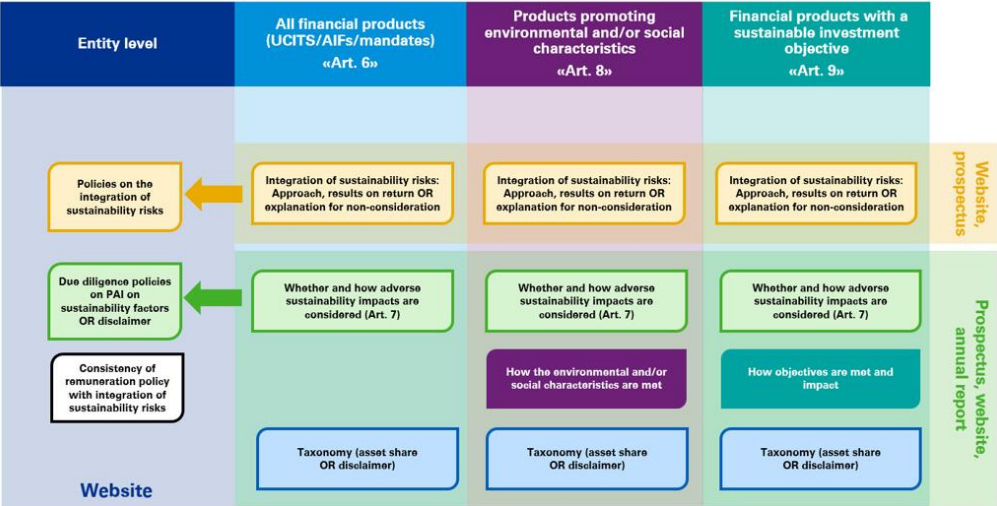


Figure 13: Entity AND financial product levels³²

As it is stated in Article 4(6) of the Sustainable Finance Disclosure Regulation (SFDR), Technical Regulatory Standards (RTS) are to be established to provide additional guidance on the content, methodologies, and presentation of the required disclosures under the regulation. This draft RTS include sustainability indicators and metrics that Financial Market Participants (FMPs) and financial advisers must consider when disclosing information in compliance with the SFDR. The adoption of RTS was initially scheduled for completion by December 2020 but is currently pending, with the expected application aligning with the SFDR in March 2021. It is important to note that the SFDR should be interpreted in conjunction with the EU Taxonomy Regulation, reflecting their interconnectedness. This is evident in Article 2(17) of the SFDR, which refers to the definition of sustainable investment in alignment with the Taxonomy Regulation (C. Alexandraki, 2021).

To sum it all up, non-financial reporting was based on the NFRD prior to 2020 (applicable to listed companies and large corporations); which suffered from a major drawback: the lack of standardized indicators. This meant that companies had total freedom when it came to the selection of the information and methods of calculation to quantify the required themes. Consequently, comparing

³²Source: <https://assets.kpmg/content/dam/kpmgblogs/ch/images/ch-blog-sfdr-graph-800x1200.jpg/jcr:content/renditions/original>

the extra-financial performance of different companies became impossible. In response to this issue, the EU introduced the Corporate Sustainability Reporting Directive (CSRD) to expand the scope of the NFRD while aiming to standardize reporting through the European Green Taxonomy. The creation of the taxonomy, which coincided with the SFDR, sought to address greenwashing concerns, and align with the goals of the Paris Agreement in combating climate change (cf: Figure 14).

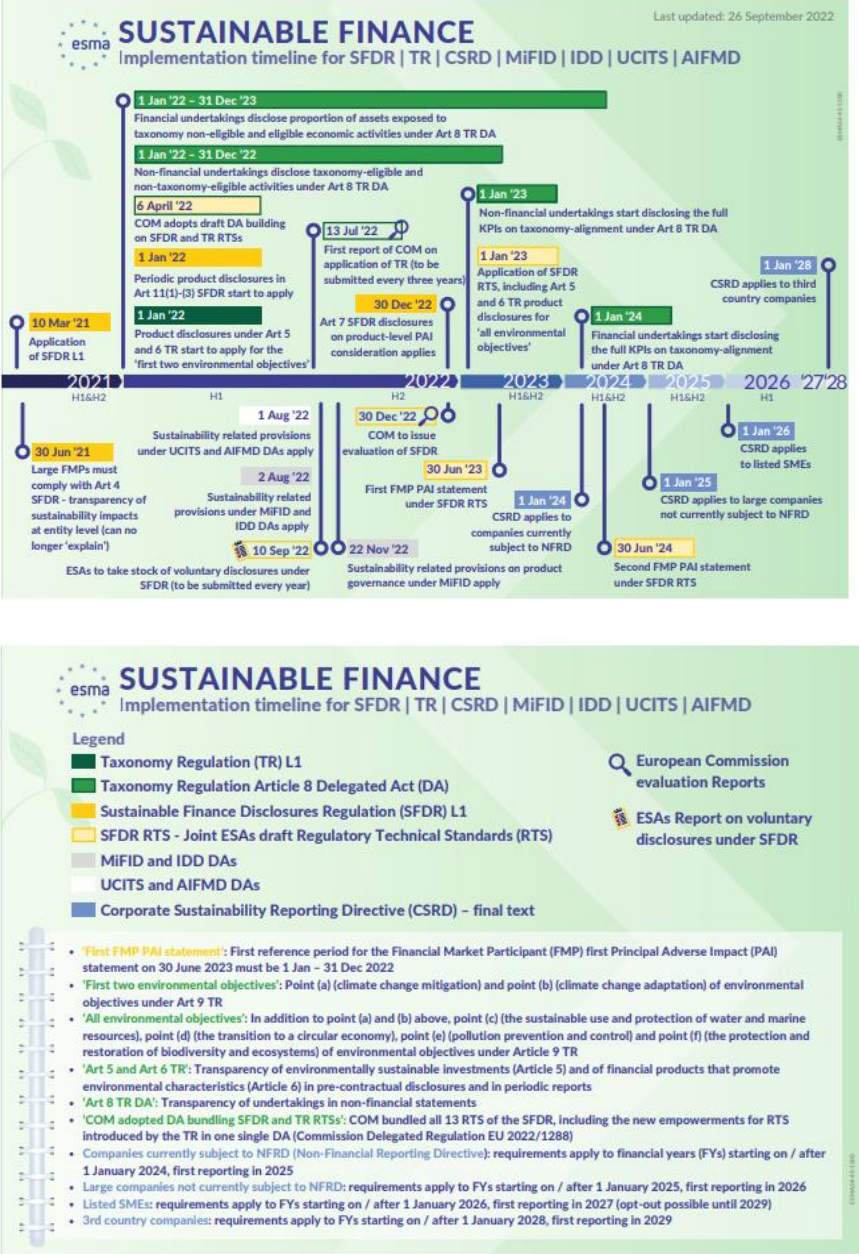


Figure 14: Sustainable Finance Timeline³³

³³Source: https://www.esma.europa.eu/sites/default/files/library/sustainable_finance_implementation_timelin_e.pdf

Similarly, the change of scope for many funds from Article 9 to Article 8 demonstrates once again the EU's desire to strengthen its socio-economic mechanisms for taking extra-financial criteria into account. It is therefore possible to take a closer look at the European Green Taxonomy regulations.

B. The EU Taxonomy as a classification scheme for sustainable economic activities

One of the major measures undertaken by the EU is the implementation of the action plan on financing sustainability, which includes the establishment of a common classification system known as the EU taxonomy (Regulation (EU) 2020/852)³⁴. It provides companies, investors, and policymakers with clear and standardized definitions of economic activities that can be considered environmentally sustainable (*cf.* Article 2, 3 & 9, of ²⁸). The EU taxonomy aims to create a sense of security for investors by protecting them from misleading claims (greenwashing), support companies in their transition towards more climate-friendly practices, reduce market fragmentation, and channel investments towards areas that require the most attention. By providing a reliable framework and promoting transparency, the EU taxonomy plays a crucial role in driving sustainable finance and facilitating the transition to a more environmentally sustainable economy.

The objectives pursued by the EU for the Taxonomy are indicative of a gradual paradigmatic shift. They encompass three main notions: redirecting capital flows towards sustainable investments (sustainable growth), managing financial risks arising from the climate emergency, and promoting transparency and long-term focus on financial activities and the economy. In this context, the Taxonomy aims to establish a common language and strives for a consensus on activities that contribute to sustainable development. To this end, it would provide a secure reference framework for investors, offering safeguards against greenwashing, assisting companies in their ecological transition, mitigating financial market fragmentation, and most importantly, directing investment flows where urgent action is needed (Della Croce et al., 2011).

On April 21, 2021, the European Commission adopted a set of measures that aimed to better channel capital flows towards sustainable activities. As part of the goal to achieve carbon neutrality by 2050, which includes investments in more sustainable technologies and companies. The Taxonomy represents the culmination of extensive investigative and research work carried out by the Technical Expert Group on Sustainable Finance (TEG). On June 22, 2020, the European Union established the general conditions that an activity must meet to be considered environmentally sustainable. This taxonomy is based on three major sets of measures outlined in a press release by the European Commission (D. Ferrie & A. Apostola, 2021).

³⁴ COMMISSION DELEGATED REGULATION (EU) 2021/2139 of 4 June 2021 (349 pages), and, COMMISSION DELEGATED REGULATION (EU) 2022/1214 of 9 March 2022 (45 pages)

These measures consist of the delegated act on climate change; which gives a clearer picture of economic activities that contribute to the EU's environmental objectives. There is also a proposal for a directive on corporate sustainability reporting (CSRD)³⁵, which aims to enhance information flow on sustainability and harmonize sustainability reporting. Additionally, six delegated acts on fiduciary duties and investment advice have been introduced. All of these are part of the European Green Deal; an act that seeks to improve the well-being and health of European citizens and achieve climate neutrality by 2050. In this context, it is more crucial than ever to provide companies of all types with a comprehensive sustainability framework to transform their business models.

Let us delve into the details of these measures. To begin regarding the delegated act, the objective of the Taxonomy is to create a robust tool based on scientific data that would serve as a common reference for all investors. This would facilitate the identification of projects with a positive impact on climate and the environment. It looks to enforce disclosure obligations on companies. The scientific database will be maintained by a Technical Expert Group (TEG) on sustainable finance. Furthermore, the EU Taxonomy delegated act will be a living document, subject to revisions based on evolving priorities, events, technological advancements, etc. The criteria will be regularly reviewed (D. Ferrie & A. Apostola, 2021).

The Taxonomy outlines six environmental objectives that serve as the basis for climate change mitigation, which are as follows: climate change mitigation, climate change adaptation, sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and protection and restoration of biodiversity and ecosystems. For an activity to be considered sustainable, it must fulfill at least one of the six environmental objectives while not having any negative impacts on the remaining five. Currently, only the first two objectives have specific regulatory details provided by the TEG. This highlights the importance that Europe places on green energy transition and, by extension, its commitment to achieving carbon neutrality.

³⁵ The CSRD is intended to address the shortcomings of the NFRD, including the heterogeneity in transpositions, lack of standardization, and the comparability and reliability of companies' ESG performance. It aims to bridge the growing gap between the needs of ESG reporting users, such as investors, shareholders, NGOs, and social partners, who highlight the inadequacies of comparability, relevance, and reliability of information, and the challenges faced by preparers. Without precise standards, preparers struggle to meet the multiple and disorganized requests for information from stakeholders based on various reference frameworks, resulting in both human and financial costs for preparation. The CSRD seeks to rectify these issues and provide a more comprehensive and standardized approach to ESG reporting.

The Taxonomy was developed with a certain sectoral approach, resulting in the following taxonomy structure:

- Technologies used for communication and information;
- Water, waste, and sewage;
- Building;
- Transportation;
- Industrial production;
- Agriculture and forestry;
- Gas, electricity, steam, and air conditioning supply;
- Within this approach, three categories emerge;
- Neutral or low-carbon activities;
- Transitional activities, i.e., those that allow a zero-emission scenario in 2050;
- Activities that make the transition possible, i.e., that would allow other companies to reduce their greenhouse gas emissions.

"Green" activities are directly associated with the framework of the taxonomy, regardless of carbon emissions, but with minimum social safeguards and compliance with the Do No Significant Harm (DNSH)³⁶ principle. As for transitional activities, there is a carbon emission threshold they need to respect in order to be considered sustainable. In terms of setting sector-specific thresholds, the taxonomy includes several milestones to be reached by 2050 in order to ensure a smooth transition. However, certain activities are not included in it. According to A. Creti (2021), these activities can be divided into three categories: activities with significant employment impact but low carbon emissions, economically carbon-intensive activities that can be phased out over time with technological progress (e.g., aviation, marine, etc.), and carbon-intensive activities that can be fully substituted in the future through existing technological advancements (such as fossil fuel combustion).

³⁶ The principle of "do no significant harm" (DNSH) is designed to prevent investments that promote sustainability in a particular area from causing negative impacts in other areas.

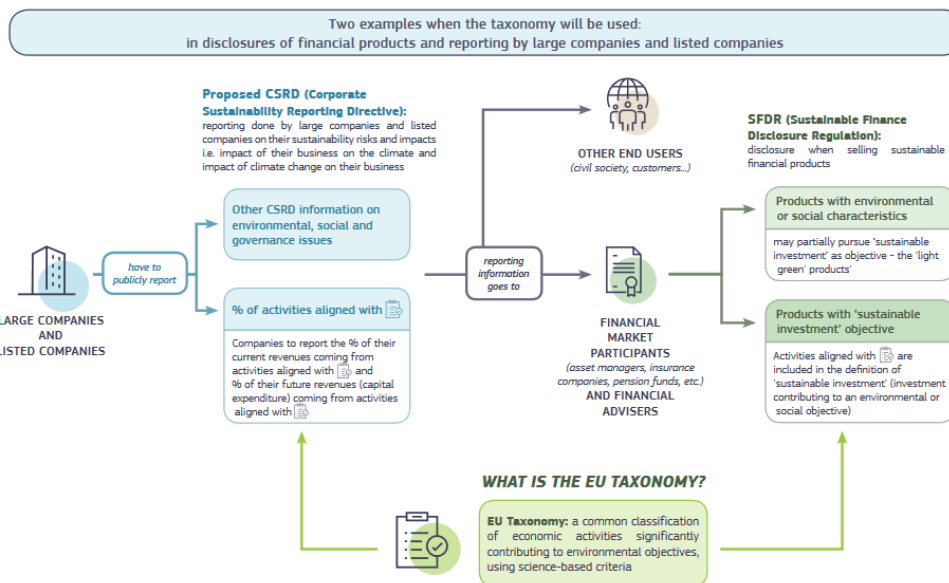


Figure 15: The EU sustainable finance framework³⁷

The following section examines the Directive on Non-Financial Reporting, which plays a crucial role in shaping reporting requirements for non-financial information; the taxonomy primarily targets the financial sector. Its objective is straightforward: to align non-financial reports (regarding sustainability) with the same level of reporting requirements as financial reports. Currently, this will be mandatory for large companies (employing more than 500 individuals) and all listed companies. However, small, and medium-sized enterprises (SMEs) will have the option to give out this information voluntarily by using standards that correspond to their level of activity. In summary, this directive aims to ensure that companies are obligated to disclose reliable and comparable financial information on sustainability. Such a directive should enable companies to work with a unified set of standards, reconciling the expectations and information needs of investors and stakeholders (D. Ferrie and A. Apostola, 2021). As for financial products, they follow the requirements of the SFDR. Consequently, we can once again see the interconnectedness and complementary nature of these two measures, which have been designed to work together.

The implementation of mandatory disclosure requirements aims to enhance transparency regarding environmental performance. Companies, both financial and non-financial, falling within the scope of the NFRD will be forced to disclose the extent to which their activities align with the criteria specified in the EU taxonomy. Financial market participants, including asset managers, will also be required to disclose the degree to which their financial products' funded activities meet the EU's taxonomy criteria. Companies will have the opportunity to disclose their investments, such as capital

³⁷Source:

https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/sustainable-finance-taxonomy-factsheet_en.pdf

expenditures, in expanding or strengthening their existing taxonomy-aligned activities, as well as upgrading other activities to align with the taxonomy. Furthermore, disclosure of green revenue and green expenditure will also offer valuable information to the market, indicating companies that comply with the EU taxonomy criteria (via the disclosure of revenue generated from taxonomy-aligned activities) and those making progress towards compliance (through the disclosure of green expenditure)³⁸.

Lastly (redirecting our focus to the delegated acts,) the purpose of delegated acts is to encourage the financial system to support companies that are transitioning towards sustainability (including those already sustainable) while mitigating greenwashing as much as possible. The delegated acts encompass the following areas:

- Investment and insurance advice: Advisors will be obligated to discuss the sustainability aspects of investments with their clients;
- Fiduciary duties: Clear obligations have been defined for companies to address sustainability-related risks;
- Supervision and governance of investment and insurance products: Product designers will now be required to consider sustainability factors in their design.

Hence, it can be said that the EU has implemented several measures to facilitate the transition of its financial system towards a more integrated and sustainable model, with a focus on responsible investment. To this end, a taxonomy, disclosure regulations, and regulations on benchmark indices have been established to enable investors to identify sustainable investments based on a consensus framework (D. Ferrie and A. Apostola, 2021).

³⁸ Course of Thiphaine Jérôme (2022)

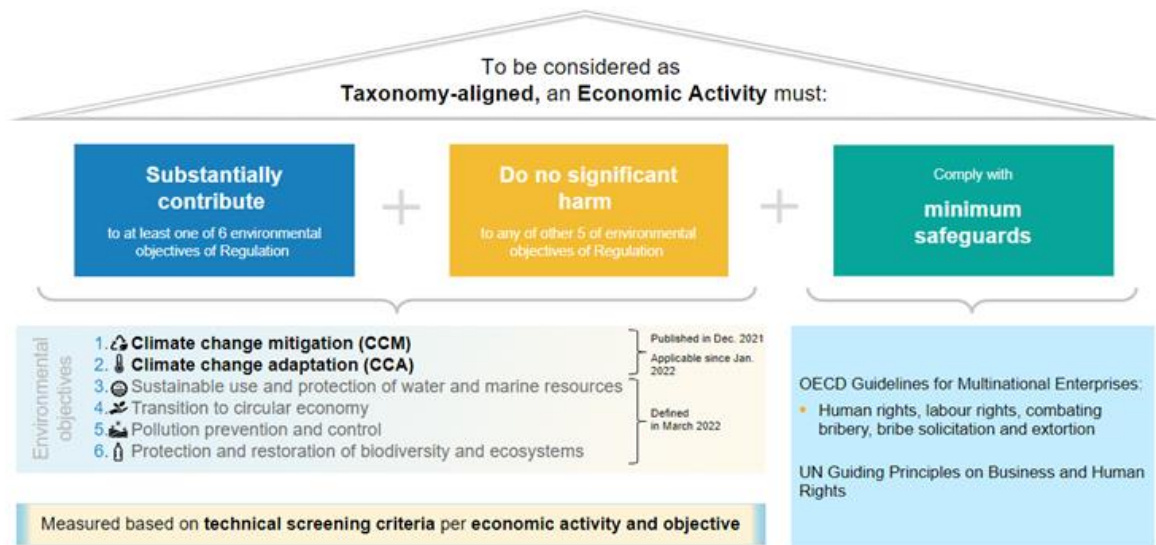


Figure 16: Taxonomy Regulation³⁹

To quote one of the members of Eurazeo's⁴⁰ Executive Board: "La taxonomie va dans un niveau de détail extrêmement fin"⁴¹. Moreover, it is based on two types of criteria: technical criteria (CO2, fuel consumption) & DNSH criteria. This provides a new level of precision and of granularity that is quite deep. It should allow to achieve comparability in the evaluation of business activities and financial products by the time of the public release of the 6 environmental objectives. Therefore, the work that will result from the collection of information is due to this taxonomy.

Although the NFRD, SFDR, Taxonomy, and more recently the CSRD have been developed with a sense of cohesion, one cannot help but question the feasibility of the previously mentioned indicator's standardization. A significant challenge to the efficacy of these regulations remains prevalent: the proliferation of regulatory frameworks. The proliferation and interweaving of texts make their comprehension and operational implementation particularly challenging.

Despite significant actions taken by the EU, concerns regarding the comprehensiveness of the taxonomy framework linger. The Technical Expert Group (TEG) has yet to provide many elements regarding the definition of impact indicators within economic activities, which poses a problem. Additionally, some of the proposals put forth by the taxonomy remain optional at best, which, although transparent in terms of the construction of reference indicators in Europe, could lead to issues. This could result in the arising of opportunistic behaviors from certain companies or funds, whose sole purpose is to lure investors into perceive them as virtuous; thereby generating greater profits through

³⁹ Source: <https://blogs.sap.com/2022/07/01/sap-papm-eu-taxonomy-management/>

⁴⁰ Source: French investment company since 2001: <https://www.eurazeo.com/fr>

⁴¹ Translation proposal: "The taxonomy goes into an extremely fine level of detail"

the creation of financial value influenced by public perception. Similarly, while the establishment of a reference framework for green bonds or the creation of labels and indices is commendable as they contribute to a consensus on the ESG dimensions that underpin responsible investment, they may also exacerbate investor confusion by adding to the plethora of existing indicators.

In other words, although the EU's action plan was designed to address the climate emergency by steering the financial sector towards greater sustainability, it is still uncertain whether these policies will prove to be effective. Their innovative and rather recent nature leaves room for a growing uncertainty regarding their actual impact, particularly in terms of materiality in all aspects. Thus, we have seen that the objectives of the EU's innovative policies are based on the idea of advantageous capital redirection towards sustainable investment while enabling the management of climate change risks and systemic risks, as well as transparency and long-term orientation of organizations. It is therefore prudent to question whether this is sufficient.

The innovative and pioneering character of the European taxonomy is also supported by Jiří Dusík & Alan Bond (2022)⁴² suggesting a sense of complementarity and philosophical shift, it can be inferred that these measures align and resonate with the ones already implemented in the USA. *In fine*, the EU Taxonomy introduces significant obligations for financial sector participants that are comparable to the obligations established by the US NEPA⁴³ in 1970. Like the NEPA, the EU's Taxonomy focuses on information provision and requires financial institutions to disclose the extent to which their activities meet its criteria. This represents a clear mindset's shift regarding sustainable development and it has the potential to influence decision-making systems globally. The article argues that incorporating the EU Taxonomy's review criteria into Environmental Impact Assessment (EIA) systems could lead to efficiency gains and improved capacity development. It suggests exploring the relevance and entry points of Taxonomy-related criteria in EIA systems to align with local contexts. The environmental pressures and interest in redirecting investment decisions towards environmental protection create an opportunity for transformative change in the EIA system and effective implementation of sustainable investment taxonomies.

Once the TEG's work and these measures' implementation become more effective, it will be possible to evaluate their relevance in terms of supranational governance. Furthermore, the referential framework resulting from the emergence of a European standard for green bonds is valuable as it provides a type of standardization in a previously self-regulated market. However, there

⁴² Source: Dusík, J., & Bond, A. (2022). Environmental assessments and sustainable finance frameworks: will the EU Taxonomy change the mindset over the contribution of EIA to sustainable development?. *Impact assessment and project appraisal*, 40(2), 90-98.

⁴³ Site of NEPA: <https://ceq.doe.gov/>

may be concerns about the creation of a speculative "green bubble" associated with the mainstream nature of the emerging financial regulations in the EU. Nevertheless, authors J. Ansidei and N. Leandri (2021) argue that the current amounts and development of responsible investment do not support the emergence of such a bubble.

To fully understand the Taxonomies and SFDR frameworks, it is important to spotlight the article: "The EU Sustainable Finance Agenda: Developing Governance for Double Materiality in Sustainability Metrics"⁴⁴, the author highlights the use of market-based governance in EU disclosure and taxonomy regulations to achieve public policy objectives in sustainable finance. It underscores the necessity for additional endeavours in the development of sustainability metrics to inform the investment industry about the sustainable performance of companies. The article posits that there exist deficiencies in EU leadership regarding the governance of metric development and proposes that governance at the EU level could be structured in a multi-stakeholder fashion, particularly about pivotal information intermediaries in this domain. The point here is to put into perspective for all stakeholders' things that are still very much in line with pure financial logic, as well as the idea that the market is perfectly neutral and moral.

Also, it seems - as we said above - that the financial & economic crises are the trigger for many reforms in systemic risk management. So, the ongoing COVID-19 crisis has reopened discussions about the feasibility of green growth and the trade-offs it entails. Overcoming binary thinking and cognitive dissonance is crucial for European policymakers. Sustainable finance is transitioning from a tool for mitigating climate change to a *modus operandi* for both recovery from the current crisis and resilience against future crises (E. Trippel, 2020).

Therefore, while the risks are there, the emergence of said measures is generally a good thing as it eases the creation of a referential framework. This is as much for investors as for fund managers. Also, following the example of the creation of a social taxonomy, Europe has put in place other regulations impacting finance that we will detail in our next section.

C. Other EU regulations used to ensure compliance of economic activities with sustainable development objectives.

The financial and economic reforms undertaken by the European Union extend well beyond the SFDR, Taxonomy NFRD, and now the CSRD. Additionally, we have chosen to introduce certain monetary measures as well as policies implemented by the EU and Member States' investment banks. This is highlighted in the measures taken to channel capital towards sustainable activities through

⁴⁴Chiu, I. H. (2022). The EU sustainable finance agenda: developing governance for double materiality in sustainability metrics. *European Business Organization Law Review*, 23(1), 87-123.

regulations and the establishment of a taxonomy. The European Commission acknowledges the importance of directing investments towards sustainable projects and activities to achieve the EU's climate and energy objectives for 2030 and fulfill the goals of the European Green Deal. The current Covid-19 pandemic has further emphasized the need to redirect capital flows towards sustainable projects. In the objective to enhance the resilience of our economies, businesses, and societies, particularly our healthcare systems, against climate and environmental risks and shocks, with evident benefits for public health. Based on these considerations, it appears that the EU views green finance as a crucial lever for achieving an ecological, social, and governance transition. Christine Lagarde suggests that this can be achieved through the establishment of an integrated capital market within the EU to enable financial support for the transition. According to her, the fragmentation of national markets could limit our capacity to invest in future projects. This highlights the clear intention to move on from traditional finance towards a finance guided by the commendable principles of sustainable and responsible investment (Speech by Christine Lagarde, at the European Commission's high-level conference on the proposal for a Corporate Sustainability Reporting Directive, May 6, 2021).

It is also noteworthy to mention the transformation of the European Investment Bank (EIB) into a climate bank since 2019 (A. Fayolle, 2020). This shift is accompanied by a 50% increase in its activity towards sustainable and responsible investments (SRI) by 2025. In essence, the primary objective of the EIB is now to move past climate change and environmental degradation. Ambroise Fayolle, one of its Vice-Presidents, has articulated the principle that "tomorrow's growth relies on the competence of our companies and territories, which, to be resilient, must embrace an energy and ecological transition" (A. Fayolle, 2020).

The COVID-19 crisis, which has exposed our systemic weaknesses, has also accelerated the measures taken by the EU for an ecological transition. Through changes in the financing structure (Capital Markets Union plan, strengthening the resilience of the European economy, etc.) (O. Guersent, 2020). It is also important to note the stark increase of measures integrating ESG criteria in the "real" economy and the financial sector.

In this context, it is crucial to carefully look at an organization that now virtually has a single ambition: combating climate change. We will therefore discuss the European Investment Bank (EIB) and its transition towards becoming the European Climate Bank. Since 2019, the EIB has embarked on this climatic transition (with a 50% increase in its activity for green investments by 2025). This includes 1 trillion euros of climate finance (A. Fayolle, 2020). The environment is one of the EIB's four priority objectives, alongside innovation, SME financing, and infrastructure. These objectives are compatible and can be part of a unified approach.

Every year, the European Investment Bank (EIB) allocates a substantial portion of its overall activity, equivalent to 16 billion euros, towards fulfilling these objectives. This encompasses various dimensions such as water treatment, building insulation, biodiversity, mobility, renewable energies, and more. Additionally, the EIB has been a pioneer in the fight against climate change by developing the green bond market in 2007. It has established a aims of allocating 25% of its total financing to climate-related projects and 35% outside the EU. As such, since COP21, the EIB has positioned itself as the leading public actor in financing the fight against climate change. The need for greater coordination of resources at the EU level to combat climate change has also been emphasized in the debates surrounding the 2019 European elections. The Green Deal project, championed by the President of the Commission, Ursula von der Leyen, aligns with this approach.

In this regard, the EIB has initiated a review of its energy financing policy by including representatives from member states alongside the institution's experts (A. Fayolle, 2020). To align with this strategy, the EIB has announced two strategies since late 2019. Firstly, there are quantitative measures, which involve increasing the volume of investments dedicated to climate and environmental action. This translates to a quantified increase of 50% in the annual financing volume, raising the activity volume from 18 to 30 billion euros. Additionally, the EIB acts as a catalyst, sending a positive signal to the markets, which will be inclined to invest in the same direction (A. Fayolle, 2020). This axis is thus in line with the European Green Deal.

The second axis focuses on the quality of invested assets. It is essential to ensure that the overall activity does not harm the climate and the environment. Therefore, these investments are fully aligned with the Paris Agreement, and the EIB commits to respect the trajectories defined by the states (Nationally Determined Contributions - NDCs)⁴⁵. This commitment is based on the European taxonomy (A. Fayolle, 2020).

It is worth noting that the EIB is also accelerating its conversion. The unanimous decision of the Board of Directors demonstrates strong support from the member states. Additionally, the EIB will support the objectives of the Green Deal and sustainable development outside the EU. The framework is divided into four areas:

First and foremost, there is a real need to speed up the transition. This entails a monitoring of the objectives of the Green Deal as well as strengthening resilience, combating climate change, and protecting nature. This will, among other aspects, strengthen dialogue with EU member states, increase coordination and integration, and foster innovative activities.

⁴⁵Cf: <https://unfccc-int.translate.google.com/process-and-meetings/the-paris-agreement/nationally-determined-contributions-ndcs? x tr sl=en& x tr tl=fr& x tr hl=fr& x tr pto=sc>

The second axis focuses on ensuring a just transition for all. It involves supporting every citizen so that no one is left behind. This entails providing social support during the transition. It is necessary to support areas such as social development, environmental sustainability, gender equality, fragile states, and migration.

The third pillar concerns supporting operations that align with the Paris Agreement. This will require adapting them to all the bank's products.

Finally, the fourth pillar aims to strengthen strategic coherence and the accountability of banks. It involves implementing policies that address identified needs and adapting the bank's policy while maintaining transparency. The objective is to align with social and environmental sustainability, following the European taxonomy and the Green Deal (A. Fayolle, 2020).

Considering these elements, the EIB emerges as a major institutional actor, both at the European and global levels. The momentum it has created to implement massive financing in support of climate and social change appears justified, given its technical and institutional credibility acquired over the years. This includes support for green capital markets.

Furthermore, it is worth noting the desire to create stock market indexes that are bound to support the transition within the European Union. In this regard, the third European regulation of the action plan proposes two indices that are well aligned with a common, transparent, and specific set of requirements: the Climate Transition Benchmark (CTB) and the more ambitious Paris-Aligned Benchmark (PAB). Both indices are built on the foundation of reliable carbon emission data. It is evident that the creation of these two stock market indices aimed to encourage innovation and transparency about ESG criteria and indicator disclosure, as demonstrated by the declaration of major index providers such as MSCI, Standard & Poor's, ISS, and others who expressed their willingness to align their indices with the EU action plan's requirements.

In a similar vein, Europe has sought to create "green" products that move towards harmonization. For instance, the establishment of a European standard for green bonds has introduced a regulatory framework, in contrast to the previously self-regulated market. With the European Union Green Bond Standard, there is an emphasis on market transparency and integrity for investors. Additionally, a green label has been created, similar to the French GreenFin label, drawing on existing eco-labels for goods and services across Europe.

However, it is important to acknowledge that many of these measures remain controversial and their impact is sometimes limited. In the realm of financial regulation, one notable development is the possible creation of a secondary market for non-performing loans, following the European Central Bank's request in March 2020 for banks to refrain from distributing dividends (P. Berès, 2020). This

highlights the issues surrounding insolvency and debt recovery. It also underscores the need to reform, or even question, the stability pact of the European Union. Numerous questions will need to be addressed, involving various challenges ranging from integration to more technical aspects. These include the ability to analyze a comprehensive budgetary orientation in the eurozone, the necessity of reducing disparities among member states and considering long-term investment needs and expenses to finance common goods, healthcare, hospital systems, or the green deal, among others. Rethinking the EU becomes a multifaceted notion, requiring numerous changes in many respects, including the imperative to consider its autonomy and sovereignty.

Furthermore, the efforts undertaken for ecological transition have revealed the difficulty of implementing accounting standards for the integration of ESG criteria. The COVID-19 crisis has also exposed our shortcomings when it comes to change. It is only since the onset of this crisis that we have been able to realize transformations that would have taken much longer under normal circumstances. Examples include the development of distance learning, telemedicine, remote socio-economic interactions, and more. These changes, however, will have many irreversible effects on our ways of doing and functioning (P. Geoffron, 2020).

Despite the implementation of numerous measures, which have been strengthened, revised, or considered as immediate measures in response to the COVID-19 pandemic., there remain areas of uncertainty and limitations to these measures. For instance, despite the Next Generation EU initiative, which aims to establish a form of capital market union through the creation of national or even regional funds (covering multiple member states) managed by a private asset manager - even if the money would come from institutional investors (O. Guersent, 2020) - Christine Lagarde laments the fact that the action is not fast enough or even non-existent. Indeed, the implementation of this initiative would be a step forward towards greater integration and a gradual containment of systemic risks. These funds would be mandated to invest in companies' capital to strengthen their solvency and create long-term benefits (similar to the orientation of ESG funds). In this way, Europe's money would ensure a minimum net asset value of the fund at a specific point in time. This would allow funds to enter capital during a crisis and, *ceteris paribus*, exit during prosperous times. The total budgetary cost would then be zero, but thanks to the guarantee, institutional investors would have a long investment horizon. Such a system would expedite the implementation of the Capital Market Union while enabling an environmentally friendly and competitive transition by financing decarbonization or digitization.

To stay within the monetary domain, it is possible to discuss central bank policies. Indeed, they are often the ones who must swiftly implement a series of measures to counter systemic crisis. This is what they did once again during the COVID-19 crisis, being more focused on innovation than during the Subprime crisis, Quantitative & Qualitative easing, etc. Furthermore, it will be necessary to be

innovative because the pre-COVID-19 economic model based on shareholder value and monetary neutrality is no longer viable. Additionally, we must learn to live with high levels of public debt (M. Aglietta and S. Khanniche, 2020), in the sense that spending on public goods contributes greatly to climate change mitigation.

One potential avenue is to consider climate risks in the collateral accepted by central banks. Over time, we would mechanically witness a decrease in carbon-intensive assets, for example, through the signal sent to financial markets. The importance of considering climate risks for investors would also be theoretically signalled, leading to an increase in the price of green assets through the interplay of supply and demand (M. Aglietta and S. Khanniche, 2020).

Moreover, as major actors in capital markets, central banks can use macroprudential and monetary policies to drive sustainable development. In this regard, materiality and transition risks should be added to the stress tests for assets (requiring the measurement of the impact of non-financial policies rather than their financial materiality). Similarly, guarantees could be adjusted to account for the underpricing of financial intermediaries. However, such an operation would need to be coordinated with other public institutions to function optimally (M. Aglietta and S. Khanniche, 2020). It appears that central banks may not even require a significant structural change to act favourably towards sustainable development and promote ESG investments (ISR).

Regulation of green finance is progressing quite well; however, social and governance considerations remain underdeveloped (J.J. Barb ris et al., 2020). In this regard, the upcoming assessments that will take place before the adoption of these various directives seem to be at the heart of the EU's ability to develop an autonomous (consensus) standard for non-financial reporting. This includes the inclusion of social and governance criteria indexed to the structure of European operations. Therefore, much is expected from Europe's ability to develop a harmonized social taxonomy to complement the ongoing discussion on green taxonomy (J.J. Barb ris et al., 2020).

However, it should be noted that measures are being taken to initiate a Capital Markets Union (long-term orientation and sustainability) that redirects savings towards long-term investment. The asset management industry will have a central role to play by genuinely integrating ESG standards (indexed by PRI or ESG criteria, for example) to meet current needs. Nevertheless, it is regrettable that this action plan does not consider ESG criteria or address the issue of "short-term orientation in current financial regulation" (J.J. Barb ris et al., 2020). Indeed, there remains a question as to whether the green taxonomy alone would be sufficient to delineate green activities. Perhaps, in addition, the creation of a "brown taxonomy" would be needed, which would establish a list of exclusions for non-sustainable activities due to their high carbon emissions. This would make it possible to exclude

investments with a non-sustainable impact while allowing ESG investment funds to focus on activities not covered due to their low carbon intensity (A. Creti, 2021).

In totality, H. Ahlström and D. Monciardini (2022) explain the limited success of EU policies relatively would be the fact of the existing heterogeneity in the methodologies of the managers not necessarily aspiring to take over the regulatory constraints. Indeed, Sustainable finance has transitioned from being a peripheral issue to a central focus in EU policy. The financial crisis contributed to the emergence of sustainable finance as a response to the failures of the financial system. However, the adoption of this agenda had limited effects and may promote further financialization. Financial regulation played a key role in the emergence of sustainable finance, with a shift from voluntary to legislative approaches and a narrower focus on climate finance. The heterogeneous coalition of actors supporting sustainable finance reforms initially gained support but later faced interest misalignment, limiting sustainability outcomes. The success and limitations of sustainable finance depend on the composition and collaboration within the coalition. Understanding inherent contradictions and limitations is crucial for successful regulatory dynamics. Excessive prevalence of the financial logic may hinder transformative sustainability reforms. It is important to assess the level of additionality and socio-economic effects of sustainable finance policies and measure their wider impact. Establishing positive externalities and knowledge diffusion in sustainable finance requires measuring beyond direct financial benefits (H. Ahlström, and D. Monciardini, 2022).

In summary, the implementation of the European Union's action plan, particularly through the Green Deal, represents an innovative form of governance in many respects. Firstly, the EU is the first supranational institution to undertake such policies to such a significant degree. Secondly, the holistic nature of the policies driven by the Green Deal offers a new framework for the functioning of the EU; it now involves considering a circular approach that relates both EU policies and actions. Similarly, the realization of these policies would enable the establishment of coherent policies because the treaties and governance of member states still pose obstacles to the EU's ability to implement efficient policies. To address this legal limitation, the Green Deal would act as the catalyst for a comprehensive, coherent approach that addresses the climate urgency in European policies (F. Berrod, 2021).

CHAPITRE 2 – THE IMPACT OF THE NATIONAL ENVIRONMENT & GREEN FINANCE ON ORGANIZATIONS

I. HOW DOES THE INPUT OF EXTRA FINANCIAL CRITERION IMPACT THE PERFORMANCE OF ORGANIZATIONS?

Once the terms ESG criteria or ISR are mentioned, a multitude of questions arises in the minds of economic agents. We have already discussed the contextual dimensions, concepts and their definitions, as well as the actors closely or remotely associated with ISR or impact investing. Similarly, we have provided a more precise framework in terms of European supranational policies, which allows us to better understand the position of Europeans in sustainable finance. Thus, the impact aspect of non-financial performance remains relatively underexplored in terms of the concrete impacts that non-financial criteria would have on companies and their environment. In this section, we aim to revisit the profitability-risk aspect that underlies finance to determine whether it remains a central dimension of sustainable finance or if we are truly in a framework of theoretical change. Moreover, we will address questions regarding the financial performance of ISR and the risks associated with it. Additionally, it is important to examine how organizations consider non-financial criteria, how they integrate them into their policies, and for what purposes. This will provide insights into the governance practices of companies concerning the incorporation of non-financial themes into their operations and governance structures.

A. *Is the profitability/risk ratio still relevant?*

When examining the technical characteristics of sustainable finance products, it becomes apparent that they do not differ significantly from non-ESG finance. In essence, they are the same financial products, but the methodology for selecting issuing entities differs. As a result, the range of financial products covered by ESG/ISR finance is as broad as that of non-ESG finance. This includes traditional financial products such as stocks, bonds, options, forwards-futures, etc. Particularly, there is a significant representation of Collective Investment Schemes (CIS), such as open-end investment funds or mutual funds (T. Cuénoud, 2013). Although the figures presented by Thibaut Cuénoud may be somewhat outdated (2012), they demonstrate that ESG products are just as diverse as non-ESG products. Furthermore, individual investors have access to these products through the mosaic of investments and financial actors that make up our financial system. However, the global expansion of the ISR market remains primarily limited to developed countries. Y. Ferrat (2022) illustrates that the development of ISR is predominantly driven by developed markets rather than emerging ones. Consequently, ISR becomes a concept primarily associated with developed countries or members of the Triad (East Asia, the European Union, and North America).

The investigation into the relationship between financial and extra-financial performance is not recent; it has been the subject of numerous studies in the literature since the early 2000s. Initially, the question revolved around determining whether there is a link between CSR and financial performance. In classical finance, the management of portfolio objectives is both measurable and attainable (maximizing profit while minimizing risk to increase the agents' utility), and it is governed by Markowitz's portfolio theory (1952)⁴⁶. It involves consciously choosing among the range of companies in the market to achieve a return while considering risks, excluding investment contexts. Economic agents are considered rational in this framework.

Considering these elements, it becomes apparent that theoretically speaking, ISR is not in line with the principle of portfolio diversification (which mitigates specific risk) because it reduces the investment universe. Strictly interpreting Markowitz's principles would suggest that ISR funds have lower performance relative to traditional funds. Additionally, there are considerations regarding the costs associated with extra-financial analysis, which may result in additional transaction costs (monitoring costs) (C. Revelli, 2013). However, Barnett and Salomon (2006) argue that any potential losses incurred by ISR funds due to the reduction in the investment universe would be offset by the selection of more stable companies in the portfolios.

Legitimately, we should ask ourselves where the difference lies with non-GSE funds. In truth, in terms of pure portfolio management, is very similar to traditional finance; the only difference is that the fund managers only select (or not) assets according to the ESG strategy issued by the management company. Therefore, it is the result of the complex analysis between risks, ESG risks and methods mentioned in I.A.

In addition, another key characteristic is the lower financial volatility of assets, resulting in stability through the application of ESG strategies. Notably, there is better risk management for the funded assets. The objective is also to create a climate of trust among all stakeholders (T. Cuénoud, 2013). This stability demonstrates a significant capacity to innovate in the face of future societal challenges by adopting an innovative approach. It showcases an active understanding of the world, ultimately leading to prosperity and even stability (T. Cuénoud, 2013). Therefore, we would have a form of long-term risk control. In light of these factors, it is now possible to affirm that investments in assets falling within the scope of ISR are oriented towards the medium to long term. It is precisely this orientation that distinguishes the traditional approach from the ISR approach in purely technical terms. Indeed, it is this long or medium-term aspect that enables a reduction or even elimination of systemic risks, aligning with a logic of sustainability. Thus, it is possible to acknowledge that ISR aligns with a

⁴⁶Cf: <https://www.investopedia.com/terms/m/modernportfoliotheory.asp>

profitability/risk logic like that used in non-ISR finance, but with differences in terms of orientation. *In fine*, this concept can be likened to the theory of "information effect" (Kurtz, 2002), stating that firms with more significant socio-environmental risk management than their competitors are less exposed to the risk of bankruptcy (reduction of social conflicts, image degradation, etc.). The result is increased attractiveness and economic performance.

The question then arises as to whether there is a difference in terms of profitability. In truth, the debate on performance is no longer truly relevant. It is now widely accepted in the literature that there is a similarity between the performances of non-ISR finance and ISR (C. Revelli, 2020). However, according to some critics, there may be lower short-term profitability. This can be explained by the reduced pressure exerted on corporate governance from a short-term perspective, which aligns with the implementation of ESG criteria and governance (T. Cuénoud, 2013). It is not uncommon to encounter individuals who believe that ISR funds underperform compared to conventional financial funds. This could be due to the comparison with solidarity finance, which is entirely dedicated to solidarity and does not prioritize profitability. Nevertheless, studies aiming to measure these performances are based on meta-analyses, which from a technical standpoint can pose problems through the endogeneity of statistical models (correlation between a variable in the model and the error term), meaning that there are causal loops between variables that have not been adequately considered (P. Crifo & N. Mottis, 2013).

The first hypothesis explaining the similar performance of ISR funds is that fund managers, thanks to their experience, can appropriately select the best companies. A second hypothesis is that the mainstreaming of ISR has led to a similar management approach as traditional funds. Thus, the composition and functioning of the funds would not differ significantly. A third hypothesis states that the increased introduction of ISR securities into the market leads to a supply-demand confrontation (with more investors), thereby causing an increase in the price of ISR securities and resulting in a lower expected return referred to as the "ethics cost." This price increase would consequently lead to a decrease in the cost of capital for ISR securities (C. Revelli, 2013; Ng et al., 2015). This third hypothesis would solve the compliance cost issue by lowering the cost of capital, allowing for the balancing of security prices, resulting in similar prices and performances compared to non-ISR funds. A fourth hypothesis shows that firms with good CSR (and therefore ESG) practices have a less price-sensitive demand for their products, which increases their profit margins (Albuquerque et al., 2019). Consequently, there would be a reduction in systematic risk (Bénabou & Tirole, 2010; Orlitzky et al., 2001). Another argument would be to see – according to (Pastor & al., 2021): "In equilibrium, green assets have low expected returns because investors enjoy holding them and because green assets

hedge climate risk. Green assets nevertheless outperform when positive shocks hit the ESG factor, which captures shifts in customers' tastes for green products and investors' tastes for green holdings."

It is now necessary to talk about a major paper that goes in the same direction as our initial proposal, but which theoretically differs a little from it: "Applying Economics – Not Gut Feel – To ESG" by Alex Edmans is a thought-provoking paper by one of the major contributors to ESG literature. Edmans takes a contrarian stance, emphasizing the need for rigorous economic analysis rather than relying on intuition or a desire to do good when it comes to ESG investing. The paper argues that ESG investing can yield higher profitability compared to traditional investing, as companies with high ESG scores tend to exhibit better financial performance and lower risk. Edmans advocates for the use of empirical data to evaluate the impact of ESG criteria on financial performance, rejecting subjective rating systems. Providing evidence from several studies, the paper supports the notion that ESG investing can enhance financial performance. Beyond financial returns, Edmans highlights the positive externalities of ESG investing, such as contributing to a more sustainable and equitable society. In summary, "Applying Economics – Not Gut Feel – To ESG" promotes a more rigorous and evidence-based approach to ESG investing, challenging prevailing assumptions and advocating for economic analysis that considers both financial performance and broader societal goals.

The paper "Creating Shared Value: How to reinvent capitalism - and Unleash a Wave of Innovation and Growth" by Michael E. Porter and Mark R. Kramer, published in the Harvard Business Review magazine in January-February 2011, advocates for a broader perspective in business that goes beyond mere profit and considers the needs of society and the environment. The authors introduce the concept of "Creating Shared Value" (CSV), which involves companies integrating social and environmental considerations into their strategies, going beyond corporate social responsibility to gain a competitive advantage and drive social progress.

In the paper "ESG and financial performance. Uncovering the Relationship" by Tensie Whelan, Ulrich Atz, Tracy Van Holt, and Casey Clark, CFA, the authors aggregate the findings of over 1,000 studies published between 2015 and 2020 on the relationship between environmental, social, and governance (ESG) performance of companies and their financial performance. Most of these studies indicate a positive correlation between ESG performance and financial performance, with stronger results in more recent studies. The relationship is particularly significant for large companies operating in developed countries. The paper highlights the growing trend of sustainable investing, where ESG considerations are integrated into investment decisions, and suggests that effectively managing ESG issues can provide companies with a competitive advantage while benefiting investors.

According to Coqueret (2022), academic studies on ESG and financial performance can be classified into four categories: 1) ESG improves performance, 2) ESG does not impact performance, 3) ESG is financially detrimental, and 4) the relationship between ESG and performance depends on various factors. The aggregation of evidence from these studies supports the argument that companies that effectively manage ESG factors can enhance their financial performance.

Together, these papers emphasize the importance of adopting a broader perspective that goes beyond short-term profit and considers social and environmental factors. Integrating ESG considerations into business strategies can provide companies with a competitive advantage, drive social progress, and contribute to long-term financial performance. As sustainable investing continues to grow, the relationship between ESG and financial performance becomes increasingly relevant for businesses and investors alike.

In its entirety, from a theoretical perspective, it is widely accepted that extra-financial performance can be a source of increased financial performance. Empirically, the literature has devoted significant attention to this topic, and although there is no unanimous result, most meta-analyses converge on the idea that the use of ESG criteria in investments does not diminish financial performance; in some cases, there may even be a positive impact (D-L. Arjaliès et al., 2020). In summary, the performance of ISR fund management firms is primarily dependent on several significant factors: the degree of resistance of asset management companies to ISR, the accessibility and reliability of extra-financial information sources upstream and downstream of the ISR fund composition process, and the quality and transparency of evaluation methods for issuer performance.

While some may argue that performance is contradictory to ISR funds due to the significant exclusion of a portion of the market, it appears that ISR funds are becoming increasingly performant and resilient to systemic risks. In essence, profitability can be explained through the prism of transparency and stability in management and governance implemented in ISR companies, which results in lower volatility due to careful risk management. Furthermore, this equivalence in profitability is the result of factors considered endogenous to the invested assets - the extra-financial criteria - which, *ceteris paribus*, promote the implementation of more intense societal policies and, consequently, the capacity for innovation (T. Cuénoud, 2013). Moreover, the discussion surrounding extra-financial criteria remains debatable, and we will address it in the following subsection.

B. In which manner are the extra-financial criteria implemented within these organizations?

Even today, when the concept of non-financial data is mentioned in asset selection - to determine if they meet certain ESG characteristics, for example - the first thing that comes to mind is the lack of homogeneity. Indeed, it is easier to work with pure financial data of a company, which is agreed upon and published, for instance, through balance sheets or income statements to analyze its financial performance. Consequently, it becomes possible - by combining them with publicly available data - for fund managers to generate private information from public information. On the other hand, analyzing sustainability through non-financial data is more challenging to process or predict. In this regard, three pillars consistently emerge:

The social practices of the company encompass aspects such as staff diversity, salary policy, training, child labour, and organizational culture. However, these principles often face challenges due to the limited availability of relevant data and a broad scope that can be somewhat ambiguous.

Environmental policies include measures such as carbon neutrality, disclosure of CO₂ emissions volume, and supplier relationships. While interpretations may vary, there seems to be a consensus on the global scale that carbon footprint is a crucial aspect.

Governance focuses on factors like the fairness of shareholder rights, diversity and independence of board members, segregation of roles between the chairman and CEO, executive compensation, integration of ESG considerations within the company, transparency levels, and avoidance of anti-competitive practices.

Additionally, these data points are widely acknowledged and embraced by investors seeking comprehensive information on the integration of ESG criteria. They contribute to a clearer delineation of the factors considered within the realm of non-financial criteria.

Moreover, the absence of consensus and standardized frameworks, coupled with differentiation, gives rise to the issue of self-certification, which in turn fosters the practice of greenwashing. Greenwashing entails positioning oneself as environmentally responsible to attract investments and funds without implementing substantial changes in practices. This phenomenon is evident in the self-certification practices adopted by certain entities as socially responsible company. This trend can be attributed to the increasing preference of individual savers to align their investments with meaningful causes (M. Tempelman, 2021).

In the same domain, Novethic proposed a set of ESG indicators in 2013, which investment management firms could utilize (Cuénoud, 2013). Under the "environment" category, indicators such as carbon impact and material usage are included. The "governance" section encompasses indicators

such as gender diversity on the board of directors and board independence. Lastly, in the "social" section, indicators such as employee turnover and employment impact are listed. This framework provides a more precise understanding of the ESG criteria that can be associated with these indicators.

Consequently, in the absence of regulations, standards, or a consensus in the literature, the selection of extra-financial criteria remains largely influenced by individual investor choices. However, certain criteria frequently reappear or exhibit substantial similarities among these choices.

The financial sector has faced significant criticism due to the recurring financial crises that have revealed its systemic deficiencies. The most prominent criticism is its perceived disconnection from reality. In a rapidly evolving world that demands paradigm shifts for some, the legitimacy of trust's ability to reinvent itself in response to structural changes is now more crucial than ever. Moreover, promoting and developing a more sustainable financial system, with the systematic inclusion of ESG criteria in the investment process, can profoundly impact the financial balance between SRI (Socially Responsible Investment) and non-SRI assets, thereby mitigating systemic risks. Achieving this objective necessitates the establishment of a consensual regulatory framework for SRI, which would serve to legitimize SRI investment processes through the pursuit of reliable and consolidated information by all stakeholders. To facilitate this, standardization and transparency in asset evaluation methodologies are imperative, ultimately leading to the establishment of a universal framework for extra-financial reporting akin to the International Financial Reporting Standards (IFRS) for international accounting (Moussafir, 2020).

The examination of investor motivations is of utmost importance in this context. Due to the absence of consensus and neutrality, non-financial information is treated differently depending on the objective pursued. Two distinct trends emerge from this analysis: investors utilizing the integrative approach of ESG tend to focus primarily on measuring its impacts on the company's financial streams. Within this framework, the materiality of an ESG factor manifests as a variation in one of these streams (such as sales, expenses, or intermediate management figures), thereby considering the company as the affected system. Conversely, impact investing evaluates the influence of the company's activities on the ESG criteria themselves, independent of financial materiality⁴⁷ (Arjaliès, 2020). The existing divergence between these two approaches is pivotal, as it facilitates an informed evaluation of the same ESG factor in terms of risks and challenges. For instance, investors favouring ESG integration may exhibit hesitancy in incorporating certain factors, such as biodiversity preservation, due to the difficulty of quantifying their financial materiality. In this regard, a reexamination of the definition of non-financial information is warranted. Non-financial information can be defined as "all quantitative or

⁴⁷ Hence the concepts of double materiality that we mentioned in 2.

qualitative information presented outside the financial statements, not generated from accounting and financial information systems, and lacking a direct and easily measurable link to financial performance" (Protin et al., 2014). Two approaches to non-financial information (NFI) may consequently arise from this discussion.

An alternative perspective on performance that surpasses the conventional focus on financial performance. This alternative approach recognizes the significance of considering non-financial criteria in evaluating an entity's overall performance.

A shift towards a more qualitative approach in communicating financial performance. This implies a departure from solely quantitative measures and emphasizes the inclusion of non-financial information to provide a comprehensive understanding of a company's performance.

These concepts further underscore the necessity to advance current practices related to reporting by incorporating extra-financial criteria.

The standardization of pertinent indicators in the realm of non-financial information poses a significant challenge, akin to financial accounting. This challenge pertains to the credibility and quality of the approach and the resultant information stemming from such standardization efforts. Although there is currently no ISO 26000⁴⁸ certification available, various approaches have been proposed by extra-financial rating agencies and industry stakeholders at large, including initiatives such as the Vigeo Eiris 26000 certification, the AFAQ 26000 label, and the B Analytics initiative. These endeavours provide potential avenues for addressing the need for standardized practices in the field of extra-financial reporting.

Certain authors argue that the process of value creation is no longer solely dependent on a financial capital perspective. In line with this notion, the International Integrated Reporting Council (IIRC) suggests the existence of six distinct forms of capital in value creation within an organization: financial, manufactured, intellectual, human, social, and natural capital (*cf*: Figure 17). Accordingly, it would be logical and akin to the International Financial Reporting Standards (IFRS) to establish and implement a framework that delineates specific indicators for each of these capital categories. This would allow for a comprehensive and holistic assessment of value creation across various dimensions of capital.

⁴⁸ Cf: <https://www.iso.org/fr/iso-26000-social-responsibility.html>

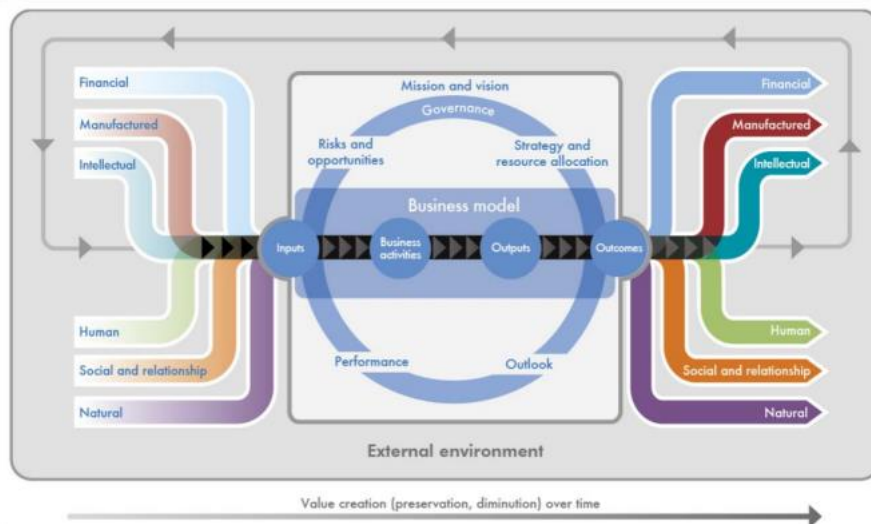


Figure 17: Value creation and various forms of capital⁴⁹

The measurement of impact and non-financial materiality stands as one of the most critical issues, particularly given the lack of rigour and consistency in companies' impact measurements across various domains, such as carbon emissions (D-L. Arjaliès, et al., 2020). Addressing this challenge requires the collaboration of regulators, stakeholders, and investors in defining a robust framework for data collection and establishing coherent elements for impact measurement. It is noteworthy that the concept of impact carries diverse definitions, as per institutional perspectives, practitioners' insights, and researchers' viewpoints. Peersman et al. (2016) propose six key dimensions for impact, encompassing its application, scope, level of study, degree of separation between action and output, time horizon, and consistency of results. Numerous globally recognized organizations, including the OECD, World Bank, Investment Integration Project, and Global Impact Investing Network, have put forth their definitions, underscoring the inherent significance of impact measurement. It is essential to recognize that impact measurement is a multifaceted endeavour that spans multiple disciplines. According to D-L. Arjaliès et al. (2020), organizations and funds need to address six central questions to determine the impact they generate.

When undertaking impact measurement, organizations and funds need to address several key questions to ensure clarity and effectiveness:

⁴⁹ Source: Arjaliès, D. L., Bouchet, V., Crifo, P., & Mottis, N. (2020). La mesure d'impact et l'investissement socialement responsable (ISR): Un tour d'horizon. *Zone frontières et entreprise socialement responsable—Perspective multiple: droit, administration et éthique*, Tchotourian E., Bres L. et Geelhand de Merxem L.(éd.), Edition Yvon Blais (Canada) and Mare &.

1. Objectives of the impact measurement: What is the intended purpose of the measurement? Is it to assess investments before they are made, monitor ongoing investments, or evaluate the impact of existing investments?
2. Impacted system: What inputs and actions are considered in the measurement? Is the focus solely on financial flows, or does it encompass the broader investor-firm relationships and interactions?
3. Themes and objectives sought: What are the specific environmental and/or social issues under consideration? What are the desired outcomes and performance thresholds that need to be achieved within these themes?
4. Scope: Which stakeholders or counterparts are most affected by the identified issues? Are there specific geographic or demographic considerations that should be considered?
5. Available and relevant data: For each outcome being measured, what are the most appropriate and meaningful data sources? Are there existing datasets or metrics that can provide insights into the desired impact areas?
6. Causality study: How can it be demonstrated that observed variations in outcomes, either directly or through outputs, can be attributed to the inputs being measured? What methodologies or approaches can be employed to establish a causal relationship?

By addressing these six questions, organizations and funds can enhance their understanding of the impact they generate and ensure a more comprehensive and robust approach to impact measurement.

The innovative process resulting from the integration of extra-financial criteria also merits consideration. This section draws on the research conducted by J. Peillex and B. Comyns in their study titled "Why do financial companies decide to adopt the United Nations Principles for Responsible Investment?" (Peillex & Comyns, 2020). This study, one of the few to address these questions, sheds light on the contemporary nature of the topic.

The concept of innovation is commonly referred to as a new idea, practice, product, or artefact perceived as a novel by individuals or groups (Dewar & Dutton, 1986; Rogers, 1995). The consideration and application of ESG strategies within financial companies can be viewed as such an innovation. The mechanisms involved in identifying and monitoring companies that align with ESG criteria necessitate changes in documentation practices, as well as the evaluation and monitoring of extra-financial behaviour. Consequently, these commitments to changing practices can be regarded as process innovation or organizational innovation (Peillex & Comyns, 2020).

Process innovation refers to the introduction of a new element into an organization's manufacturing or service operations to improve the production of goods or provision of services (Damanpour & Gopalakrishnan, 2001). In this context, corporate social responsibility (CSR) can be seen as a process innovation when socially responsible practices are implemented. On the other hand, organizational innovation can be defined as "the creation or adoption of a new idea or behaviour within an organization" (Daft, 1978). Applying the PRI scheme or ESG standards within financial structures qualifies as product innovation, as it involves consciously introducing changes to achieve more efficient and effective resource allocation. Lastly, mere adherence to PRI and the implementation of ESG standards, which are sub-components of socially responsible investment (SRI), can be seen as opportunity innovation, as meeting these standards satisfies clients' social and environmental needs (Peillex & Comyns, 2020).

However, the justification for socially responsible investment lies in the work of Sandor and Faltz (2002), who demonstrated that the creation of the first socially responsible stock market index, the Dow Jones Sustainability Index, occurred in three stages: invention, innovation, and diffusion. This suggests a Schumpeterian process of financial innovation, characterized by the concept of creative destruction. Overall, considering the innovative nature of integrating extra-financial criteria in financial practices contributes to a deeper understanding of the evolving landscape of responsible investment.

The application of SRI practices as an innovation in the context of registering a legal entity can be examined by considering the broad spectrum of legitimacy for financial companies and the public perception of them. The consideration of ESG criteria by financial firms seems to reflect a recognition of the societal consequences of their invested assets. Additionally, there is an increase in the legitimacy of companies that become signatories to initiatives such as the Principles for Responsible Investment (Peillex & Comyns, 2020).

The CSR practices of financial companies now extend beyond the direct consequences of their activities, such as governance and energy consumption, to encompass indirect consequences or externalities. Consequently, if financial firms were to allocate resources to companies that do not adhere to certain ESG standards (e.g., environment, human rights, governance), their reputation would suffer, leading to a deterioration in legitimacy (Peillex & Comyns, 2020). The registration of SRI practices through the PRI or other frameworks becomes valuable in this regard. It is interesting to note that the public perception of financial companies has shifted from viewing the sector as highly responsible (due to its limited direct impact) to one that is deemed irresponsible following various systemic crises, notably the Subprime crisis. In this context, the CSR policies of financial companies appear to restore their legitimacy (Peillex & Comyns, 2020). During the 2008 Subprime crisis, responsible financial firms experienced significant growth in their client portfolios. A sound CSR policy,

characterized by respect for ESG standards or adherence to the PRI, enables financial firms to gain competitive advantages such as competitive barriers and higher rates.

Drawing from Suchman's concept of legitimacy, which refers to the generalized perception that an entity's actions are desirable, relevant, and appropriate within the socially constructed system of norms, values, and beliefs (Suchman, 1995), two theoretical approaches have emerged. The neo-institutional approach suggests that organizations are considered legitimate when they conform to and promote the values demanded by society at a given time. In this view, organizations tend to conform to one another through mimicry, leaving little room for managerial creativity and emphasizing the central role of institutions. The second conception posits that organizational legitimacy is the result of deliberate strategies implemented by the company (Boyd, 2000). In this framework, the aim is to influence stakeholders' judgments, recognizing that legitimacy is a matter of perception. The compliance of financial companies with SRI practices can be understood through both these principles. In the first approach, the adoption of SRI can be equated with conformity to widely accepted social standards. In the second approach, the implementation of SRI can be seen as an action aimed at acquiring or restoring the legitimacy of financial firms (Peillex & Comyns, 2020).

Shareholder activism is a crucial driver for the implementation of CSR⁵⁰ policies. In response to the systemic risks revealed by financial crises, companies, particularly those in the financial sector, have reevaluated their governance structures and emphasized the importance of CSR. Consequently, many fund managers now analyze voting policies within boards of directors, recognizing their significance (Peillex & Comyns, 2020). Although boards of directors should ideally include internal mechanisms to mitigate agency conflicts between shareholders and managers (Jensen & Meckling, 1976), research suggests that a more independent and diverse board can realign the perspectives of managers and shareholders, reducing agency costs (Reguera-Alvarado et al., 2017). Furthermore, corporate governance and board composition play a critical role in shaping reputation and organizational legitimacy (Peillex & Comyns, 2020). In some cases, board structure can be employed as a strategy to enhance the ethical legitimacy of an organization.

The board of directors holds a central position in organizational legitimacy and the allocation of resources for CSR. Research indicates a positive relationship between gender diversity on boards and CSR performance, as diversity fosters creativity, increases the quantity and quality of innovation, and accommodates constant structural change (Peillex & Comyns, 2020). Similarly, the level of

⁵⁰ Statistics about ESG voting Asset managers Main findings: 1. "49 additional resolutions would have received majority support if the largest asset managers had voted in favour of them. 2. Voting performance has been stagnant in the US and the UK compared to 2021, while European asset managers have shown a large improvement. 3. Asset managers across the board are hesitant to back action-oriented resolutions, which would have the most transformative impact on environmental and social issues." Source: T. Roncalli (2023)

independence of the board of directors is a hallmark of good governance. The presence of outside directors serves as a mechanism to control the actions and decisions of managers and shareholders, intervening in cases of opportunistic and irresponsible behaviours (Peillex & Comyns, 2020). In contrast to internal directors who may prioritize short-term financial performance, outside directors tend to advocate for the long-term financial interests of the organization, as well as compliance with rules, stakeholder interests, and socially responsible behaviour.

Empirical studies support the notion that companies with independent boards of directors are more attentive to their environment and its legitimacy, and there is a positive correlation between board independence and CSR performance (Peillex & Comyns, 2020). Although the literature has provided limited research on the relationship between corporate social performance (CSP)⁵¹ and ESG ratings, the concept of performance in environmental, social, and governance aspects can be directly associated with the application of CSR principles in a measurable form within a company management. In this context, it is relevant to analyze governance within the framework of CSP. Vigeo Eiris has developed a benchmark to evaluate CSP using 37 criteria in six areas: environment, societal commitment and human rights, human resources, market behaviour, and governance. Governance, in this context, is primarily assessed through the lens of human resources and the company's relationship with its stakeholders. Transparency in the company's audit and control mechanisms is a crucial element, particularly in the absence of a consensus on ESG criteria and the impact measurement of both financial and extra-financial performance. Thus, virtuous firms are those that provide transparency regarding the methodologies used to measure financial and extra-financial materiality, aiming to construct more equitable CSR reporting, especially regarding CO2 emissions and their environmental impact (Peillex & Comyns, 2020).

In summary, the financial sector, as a major financier of the economy, is highly sensitive to public and media attention and is therefore cautious about its public perception. The perception of the financial sector, as well as that of listed companies, has a direct influence on the value of these companies in the stock market, which makes managers keenly aware of public opinion. Public attention serves as a channel for legitimacy, justifying the methodologies of environmental, social, and governance (ESG) practices and enabling value creation. Financial firms can utilize SRI practices not only out of conviction but also to attract investors and satisfy public interests (Peillex & Comyns, 2020).

The application of SRI practices in all aspects of financial companies' operations not only aligns with changing societal expectations but also legitimizes their actions in an evolving world. The

⁵¹ Source: <https://www.oxfordbibliographies.com/display/document/obo-9780199846740/obo-9780199846740-0099.xml>

consideration of extra-financial criteria, such as ESG factors, becomes highly relevant, and the establishment of a consensus and regulatory framework is crucial to address greenwashing practices. Measuring the impact of ESG criteria, whether related to environmental, social, or governance aspects, becomes a significant task. This calls for further research to analyze the extra-financial impact, akin to studies examining financial performance (Arjaliès et al., 2020). By understanding and quantifying the impact of ESG criteria, financial companies can provide transparent and meaningful information to stakeholders, contributing to sustainable and responsible investment practices. We can now question the effectiveness of ESG strategies for companies and fund managers alike. This will be the subject of our next section.

C. What type of result does it yield in terms of organizational practices and risk management?

The concept of ESG integration in companies raises important questions regarding its practical implementation within the companies themselves and the asset management firms responsible for selecting socially responsible companies and financing the economy. This prompts inquiries into the effectiveness of exclusion methods in driving corporate behaviour change and the risk management implications for managers. Furthermore, it is crucial to examine the policies employed by fund managers to assess ESG risks.

In this context, understanding sustainable finance within investment funds and measuring the sustainability of funds relative to each other becomes imperative. To address this, Marc Chesney and Yves-Marie Lugez (2021) conduct a comprehensive analysis of existing methods and frameworks, highlighting the inherent limitations that hinder the accurate measurement of investment fund sustainability. Consequently, the lack of consensus on the definition of sustainability in the context of investment funds is evident, leading to the adoption of diverse approaches such as exclusions, ESG integration, and impact investing for sustainability assessment.

These approaches, however, encounter various shortcomings, including issues related to transparency, standardization, data quality, and accuracy. To address these limitations, it is essential to enhance data transparency and continue research on comprehensive theories related to sustainable finance. Additionally, regulatory bodies play a significant role in the standardization of methodologies. Although the European Union has initiated this process, its completion is a time-consuming endeavour. Considering these factors, establishing a global consensus on measuring the sustainability of funds and their constituent companies remains challenging.

In fine, the whole edifice of ESG finance may be called into question⁵². Indeed, according to Alex Edmans (The End of ESG 2021), ESG investing, which focuses on environmental, social and governance factors, is fundamentally flawed and ineffective. It highlights the fact that such investments fail to genuinely change corporate behaviour, and often rely on subjective and arbitrary measures that lack consistency and comparability. It also calls into question the motivations of ESG investors, suggesting that many are more concerned with their image and reputation than their actual impact (*cf.* Appendix 4). As a result, the paper suggests that it would be preferable to focus on more objective and measurable factors, such as carbon emissions, rather than ESG scores. Overall, the paper challenges the dominant discourse on ESG investing and encourages a critical reassessment of its effectiveness.

Legitimately, it becomes important to consider the validity of such statements. Divestment policies also appear to be an interesting vector. According to this approach, sustainable investment is counter-productive. Let us have a look at the exclusion method or the notion of divestment. The article The Impact Elasticity of Brown and Green Firms by Samuel M. Hartzmark and Kelly Shue (2022) looks at the effectiveness of sustainable investment, focusing on divestment from fossil fuel companies. Thus, it appears that divestment from fossil fuel companies may not deliver the expected reduction in greenhouse gas emissions due to the possibility of other investors buying shares in these companies, resulting in no net reduction in fossil fuel extraction. The article highlights the potentially counterproductive nature of divestment and proposes alternative approaches to sustainable investment.

Using a dataset of mutual fund holdings, the study examines the effectiveness of mutual fund divestment strategies in reducing greenhouse gas emissions. The results indicate that the divestment strategy employed by mutual funds does not appear to be effective in reducing emissions. Instead, the authors suggest that investors could achieve better results by actively engaging with companies to encourage them to change their behaviour, rather than relying solely on divestment. In addition, the authors reveal that divestment from fossil fuel companies may unintentionally reduce the pressure on these companies to improve their environmental performance. The article highlights the complexity of sustainable investment and the need to carefully examine the impact of different strategies on environmental outcomes.

⁵² “ESG is both “extremely important and nothing special” – economically, it’s no different to other intangible assets that create long-term financial and social value. Decades of finance research have studied how to create long-term financial value; decades of economics research have analyzed how to enhance social welfare. For example, any model of investment can be applied to ESG, since ESG is an investment with short-term costs and long-term benefits. Any model of agency theory considers managerial private benefits; while a common application is to executive perks, such models can equally be applied to externalities that the manager cares about – a private benefit is any outcome that’s not captured in long-term firm value.” Source: A. Edmans, 2023

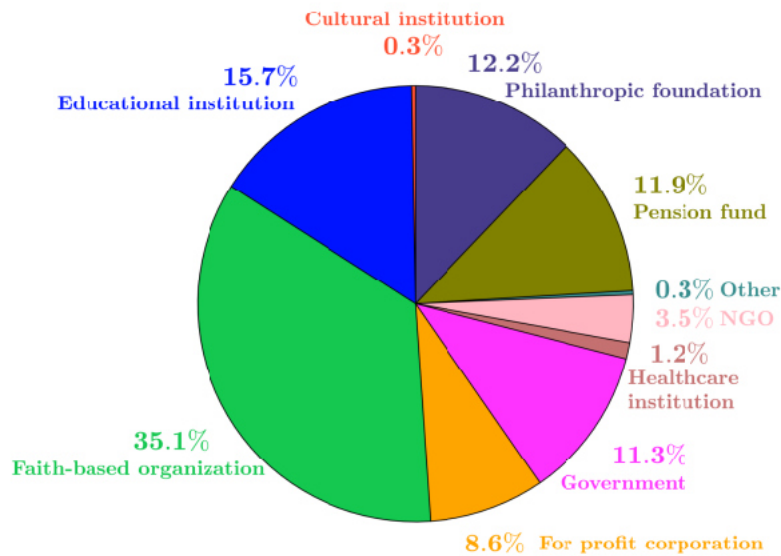


Figure 18: What kinds of institutions are divesting from fossil fuel⁵³

It appears that there is still a gap in research in this area and that other measures should complement it, such as shareholder activism or an improved best-in-class methodology that would always encourage companies to do better.

In general, it is important to mention, according to a study (A. Edmans, D. Levit, and J. Schneemeier, 2022)⁵⁴, that the effect of socially responsible divestment on firm value is detrimental to stock prices. Furthermore, the analysis of the impact of divestment on the ESG performance of targeted companies demonstrates no significant improvement. Similarly, the negative effect on firm value was found to be more pronounced for companies with higher social responsibility issues and less diversification. Divestment does not appear to be an effective means of instigating social change; engagement with companies may be a more effective approach. Overall, the findings of the study suggest that socially responsible divestment may not be an effective strategy for promoting social change and can have negative consequences for both companies and investors.

It is important to address divestment (exclusion) as an ESG methodology, as it is one of the most used approaches alongside integration within asset management firms, and its impact seems to be limited or even non-existent on targeted companies.

In response to the shortcomings of divestment, the 2019 article titled "The Return on Sustainability Investment (ROSI): Monetizing Financial Benefits of Sustainability Actions in Companies," authored by Ulrich Atz, Tracy Van Holt, Elyse Douglas, and Tensie Whelan focuses on the importance of evaluating

⁵³ Source: <https://divestmentdatabase.org>

⁵⁴ The authors conducted an event study on the impact of divestment announcements by university endowments and found that such announcements led to a significant negative market reaction for the affected companies.

the return on sustainability investment in companies. The paper introduces a novel framework called Return on Sustainability Investment (ROSI) that enables companies to quantify the financial value of their sustainability initiatives. The ROSI framework considers all the positive and negative financial impacts of a company's sustainability actions, including implementation costs, energy savings, water savings, greenhouse gas emissions reduction, improved corporate reputation, and increased employee productivity. The findings of the article indicate that the ROSI approach can be used to demonstrate the financial value of sustainable actions and assist companies in making more informed investment decisions. Additionally, the ROSI approach can help companies identify new cost savings and growth opportunities.

Furthermore, considering these considerations, one may question how virtuous companies that adopt ESG practices create value that translates into higher market valuations and additional returns for investors embracing sustainable strategies. The channels through which ESG factors influence the risk/return profile of companies include cash flows, associated risks, and market valuations. Consequently, companies with a high ESG profile demonstrate greater efficiency through their management and innovation capabilities, better personnel management, and customer satisfaction, as mentioned earlier, enabling them to generate superior profitability compared to their competitors. As a result, this translates into higher and more stable cash flows and dividends over time. Thus, companies can seize growth opportunities and create value through the management of sustainability issues.

Also, a study conducted by Guido Giese, & all, in 2019 notes that companies in the top two quintiles based on ESG ratings exhibited higher profitability (gross profitability) and dividend yield compared to their counterparts in lower quintiles between January 2007 and May 2017. Additionally, companies with strong ESG profiles demonstrated better risk monitoring and management practices, reducing the likelihood of adverse events and subsequent financial market reactions. A study on companies in the MSCI World Index found that higher ESG-rated companies experienced fewer impairments from severe corporate events compared to lower ESG-rated competitors. Moreover, companies with robust ESG standards displayed resilience to exogenous shocks, resulting in reduced systematic risk, lower cost of capital and debt, and higher valuations in terms of price/earnings and price/book value. While limited research exists on the relationship between ESG standards and returns in the fixed-income sector, the findings thus far are noteworthy.

As a result, it is now possible to take a closer look at ESG risk management within asset management companies. In addition, it is important to distinguish between several concepts, as follows: financial risks and financial performance, and the impact of extra-financial risks on financial and extra-financial performance.

Financial risks, such as market volatility and variability of returns, are generally associated with financial performance indicators such as yield and volatility. On the other hand, extra-financial risks, including environmental, social and governance considerations, can also influence financial performance. Studies explore how these risks relate to financial performance measures, and highlight the potential implications for companies and investment portfolios. *De facto*, the influence of ESG scores on optimized portfolios relies on their associations with various factors such as expected returns, volatilities, correlations, and beta coefficients. For example, when employing a best-in-class selection strategy, a notable risk of tracking error arises due to the low volatilities and correlations of the best-in-class assets in comparison to the worst-in-class assets. Consequently, replicating the performance of the worst-in-class assets using other assets becomes challenging. (T. Roncalli, 2023)

When it comes to financial risk, fundamental concepts emerge alpha and beta. This raises the question of which indicator is preferable when it comes to ESG. So, α or β ? “[...] When an alpha strategy is massively invested, it has an enough impact on the structure of asset prices to become a risk factor. [...] Indeed, an alpha strategy becomes a common market risk factor once it represents a significant part of investment portfolios and explains the cross-section dispersion of asset returns” (Roncalli, 2020).

The role of ESG factors in investment strategies has garnered attention in both North America and Europe. In North America, ESG has been considered an alpha strategy, implying that it offers the potential for generating excess returns beyond what can be explained by traditional risk factors. However, in Europe, ESG has transitioned to being perceived as a beta strategy, meaning it is viewed as a risk factor that can be systematically incorporated into portfolio construction. Looking ahead, it is anticipated that ESG will also evolve into a beta strategy in North America, aligning with the European perspective. This shift suggests that ESG considerations are increasingly being recognized as fundamental drivers of risk and return, shaping investment strategies and portfolio performance in the global financial landscape. This idea alone in terms of strategy suggests and demonstrates Europe's pioneering character, if not in sustainable finance, at least in terms of ESG consideration.

For example, the study by Guo, Singh and Velioglu (2021) examines the performance of ESG portfolios after adjusting for systematic risk factors; it further suggests that the outperformance of ESG portfolios compared to non-ESG is due to exposures to systematic risk factors rather than their ESG characteristics. Finally, the study analyzes ESG portfolios constructed by three major ESG rating agencies - MSCI, Sustainalytics and Refinitiv - and compares them to non-ESG portfolios⁵⁵. The authors

⁵⁵ The study analyzes ESG portfolios constructed by three major ESG rating agencies, MSCI, Sustainalytics and Refinitiv, and compares them to non-ESG portfolios.

find that, after adjusting for risk factors, the alpha of ESG portfolios is significantly reduced, hence their conclusion. They also highlight the fact that ESG portfolios perform less well in times of market difficulty, which may suggest that ESG ratings fail to capture important risk factors. *In fine*, they suggest risk-adjusting ESG portfolio returns to provide a more accurate assessment of the value of ESG investing.

On the other hand, “In equilibrium, the market premium increases and demand for stocks declines under ESG uncertainty. In addition, the CAPM alpha and effective beta both rise with ESG uncertainty and the negative ESG-alpha relation weakens.” (Avramov et al., 2022). It would therefore seem that these results need to be qualified.

Taking all these factors into account, it would appear that the answer to financial stability and risk management is a collective one. We have seen that the emergence of ESG criteria is not without debate - beyond its non-consensual methodological aspect - in terms of real impact. As a pioneer, the EU is attempting to establish a common framework and reference framework for measuring impact and, by extension, dual materiality. Furthermore, while the legal framework is one thing, it is important to question the transposition of the supranational framework to the national framework, in terms of both laws and practices within organizations. This will be the subject of our next section.

II. APPLICATION OF SUPRANATIONAL REGULATIONS IN THE NATIONAL CONTEXTS OF THE DIFFERENT MEMBER STATES.

As soon as we talk about the European context - as a political entity - it becomes essential to venture back to the socio-economic and legal disparities that exist between states. Additionally, it is crucial to examine these variations in order to gain a deeper understanding of supranational decision-making and assess the applicability of these measures to national contexts. This analysis should also take into account factors associated with cross-border implications.

A. *Consider the countries’ cultural framework to better grasp the institutional one.*

Before assessing the cultural and legal frameworks, we need to look at what drives companies to adopt socially responsible practices. As a reminder, classical finance theory holds that companies seek to maximize shareholder value (Friedman, 1970). Consequently, they would have, a priori, no obligation or responsibility to improve societal conditions (Bénabou and Tirole, 2010). Also, Freeman (1984) defines a shareholder as: “any group or individual can affect or be affected by the achievements of an organization’s objectives”. Clarkson (1995) proposes a typology of primary and secondary stakeholders. The primary stakeholder is defined as "shareholders and investors, employees, customers, superiors, government, and communities", while the secondary stakeholder is defined as

"shareholders and investors, employees, customers, superiors, government, and communities". "Secondary stakeholder [correspond to] groups are defined as those who influence or affect or are influenced or affected by the corporation, but they are not engaged in transactions with the corporation and are not essential for its survival" (Clarkson 1995, p. 107)

The rationale behind corporate investment in corporate social responsibility (CSR) is often attributed to the belief that it enhances profitability and firm value, commonly known as the "doing well by doing good" perspective (Dowell, Hart, and Yeung, 2000; Orlitzky, Schmidt, and Rynes, 2003; Renneboog, Ter Horst, and Zhang, 2008, 2011; Guenster et al., 2011; Deng, Kang, and Low, 2013; Flammer, 2015; Krueger, 2015; Dimson, Karakas, and Li, 2015). Alternatively, some studies consider the reverse perspective of "doing good by doing well," exploring whether it is only well-performing firms that can afford to invest in CSR (Hong, Kubik, and Scheinkman, 2012). However, these explanations fail to account for cross-firm and cross-country variations in CSR adoption.

The existence of differential levels of CSR adoption raises questions regarding the way certain companies embrace a CSR-oriented strategy more extensively than others, and why companies in specific countries consistently allocate greater investments towards CSR compared to those in other countries. Furthermore, the prevailing "doing good by doing well" and "doing well by doing good" arguments primarily perceive CSR as a voluntary initiative. Existing studies often focus on a single facet of CSR, such as employee satisfaction (Edmans, 2011, 2012; Edmans, Li, and Zhang, 2014), environmental protection (Dowell, Hart, and Yeung, 2000; Konar and Cohen, 2001), corporate philanthropy (Seifert, Morris, and Bartkus, 2004; Masulis and Reza, 2015; Liang and Renneboog, 2016), or consumer satisfaction (Luo and Bhattacharya, 2006; Servaes and Tamayo, 2013). These studies typically examine CSR relationships within a single country, often focusing on the United States.

However, CSR encompasses multiple dimensions of firm behaviour and reflects a company's commitment to addressing various externalities generated in the pursuit of profit maximization (Tirole, 2001) that are not internalized by shareholders (Magill, Quinzii, and Rochet, 2015). Given the multidimensional and externality-driven nature of CSR, its significance extends beyond a firm's independent choices and encompasses regulations, institutional arrangements, and societal preferences (Liang, and Renneboog, 2017). Moreover, instead of viewing CSR solely as a mechanism to address externalities, we conceive CSR as a fundamental trade-off between shareholder-centric and stakeholder-centric approaches at the firm level (Ferrell, Liang, and Renneboog, 2016), as well as between rules and discretion governed by institutional frameworks in economic contexts. The explanations of "doing well by doing good" and "doing good by doing well" fail to account for the wide-ranging variations in CSR adoption among firms and countries. Understanding CSR requires acknowledging its multidimensional nature and recognizing the trade-offs between shareholder and

stakeholder interests as well as the interplay between rules and discretion within institutional frameworks governing economic activities (Liang, and Renneboog, 2017).

Consequently, many empirical studies find an intricate connection between the financial performance sought by shareholders and the SR commitment expected by all stakeholders (Orlitzky and al, 2003; Allouche and Laroche, 2005; Margolis, 2009; Revelli and Viviani, 2013). This relationship can be modulated to mediating or moderating variables, such as institutional variables. (Girerd-Potin, Jimenez-Garcès, Louvet, 2017); moreover, it highlights the role of national cultural characteristics (Miras-Rodriguez, and al., 2015). It can be argued that people's expectations of social responsibility are met by businesses when the state is failing (Benabou, and Tirole, 2010); furthermore, in classical theory, markets and economic agents are assumed to be morally neutral. Similarly, Liang and Renneboog (2016) state that the legal origin of the country is a more fundamental determinant than political institutions or culture. Yet the institutional environment, through its norms and the culture it suggests, would remain a brake on the standardization of behaviour by multinational companies in a more globalized world (Girerd-Potin, Jimenez-Garcès, Louvet, 2017).

A closer look at the legal origin of countries. The legal origin of a country plays a central role in the shaping of corporate social responsibility (CSR) practices, as it determines how the private sector contributes to public goods provision (Kitzmueller & Shimshack, 2012). Common law systems emphasize discretion, enabling private market outcomes and offering flexibility in managerial behaviour while relying on ex-post sanctions to protect shareholders (La Porta et al., 2008; Allen et al., 2015; Magill et al., 2015). Civil law systems, on the other hand, involve state intervention through rules and regulations, considering stakeholders' interests (La Porta et al., 2008; Allen et al., 2015; Magill et al., 2015). The level of CSR practices reflects a governance trade-off between shareholder and stakeholder interests, with rule-based or discretionary approaches influencing the extent of CSR engagement (La Porta et al., 2008; Allen et al., 2015; Magill et al., 2015). Thus, the legal origin shapes the mechanisms of public goods provision, shareholder-stakeholder contracts, and the governance structures defining the balance between shareholder-centric and stakeholder-centric perspectives (La Porta et al., 2008; Allen et al., 2015; Magill et al., 2015).

Social arrangements and the role of legal origin vary across countries, influencing CSR practices. Common law⁵⁶ countries rely on private market outcomes, assuming that maximizing profit aligns with the interests of stakeholders (Magill et al., 2015). In contrast, civil law⁵⁷ countries have

⁵⁶ Definition from Oxford dictionary: "a system of laws that have been developed from customs and from decisions made by judges, not created by Congress"

⁵⁷ According to Washington University in St. Louis: "Civil law in other European nations, on the other hand, is generally traced back to the code of laws compiled by the Roman Emperor Justinian around 600 C.E.

stronger state intervention and regulations to protect stakeholders' interests (Botero et al., 2004; Djankov et al., 2008; La Porta et al., 2008). Conflict resolution also differs, with common law relying on judicial mechanisms and civil law relying on rules-based mechanisms (Enriques, 2004; Cheffins and Black, 2006; La Porta et al., 2008). Supply-side factors suggest that CSR may arise as a response to market failures in civil law countries, while demand-side factors indicate consumer preferences for altruistic behaviour (Benabou and Tirole, 2006, 2010). Thus, CSR is an equilibrium outcome influenced by demand and supply forces. Empirically, CSR adoption is driven by corporate discretion in common law countries and by explicit or implicit rules in civil law countries (Enriques, 2004; Cheffins and Black, 2006; La Porta et al., 2008). Factors such as shareholder litigation risk and decision-making insulation also affect CSR engagement (Issacharoff and Miller, 2009; Cox and Thomas, 2009; Gelter, 2012; Cremers and Sepe, 2016). Additionally, stronger regulations and government interventions promote CSR, aligning with legal mandates and responding to supply and demand forces (La Porta et al., 2008). The relationship between CSR and legal origin depends on the interplay between these forces.

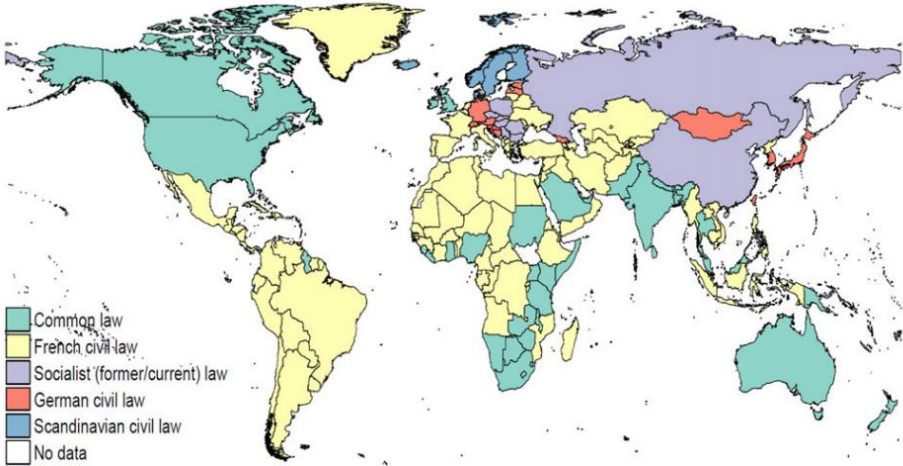


Figure 19: Legal Origins around the world⁵⁸

In the end, a study realized by Liang and Rennebood (2017) shows that the legal origin of a country has significant implications for corporate social responsibility (CSR). The relationship between legal origin and CSR, finding that civil law countries tend to have higher CSR scores compared to common law countries. Civil law systems emphasize rule-based mechanisms that restrict corporate behavior, reflecting social preferences for stakeholder-oriented approaches. In contrast, common law systems prioritize shareholder primacy and private market-oriented strategies. The study highlights the role of legal origin in driving economic outcomes and sheds light on the stakeholder welfare aspect

Authoritative legal codes with roots in these laws (or others) then developed over many centuries in various countries, leading to similar legal systems, each with their own sets of laws.”

⁵⁸ Porta, R. L., Lopez-de-Silanes, F., & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of economic literature*, 46(2), 285-332.

often overlooked in the law and finance literature. The findings contribute to understanding the drivers of CSR at both macro and micro levels, emphasizing the importance of legal contexts in shaping CSR practices. It is important to note that higher CSR levels in civil law countries may be due to constraints rather than managerial objectives, and the equilibrium level of total social responsibility varies across countries based on different legal regimes and societal demands. Overall, legal origin plays a significant role in CSR and underscores the connection between CSR and a country's legal framework.

It is important to address the role of institutional context and legal origin in the relationship between CSR and financial risk. In this way, Ioannou and Serafeim (2012) found significant variation in CSR ratings and stakeholders' practices across countries, highlighting the association between national institutions and social performance. Common law countries, with their emphasis on shareholder primacy, exhibit the lowest levels of CSR and sustainability. In these countries, laws and regulations primarily protect shareholders' interests, leaving little incentive for companies to consider other stakeholders. Consequently, CSR activities and stakeholder considerations are often seen as wasteful, and common law culture does not significantly affect firms' financial risk. Conversely, civil law traditions tend to be more stakeholder-oriented in defining company law. German companies, for example, are legally required to consider stakeholders' interests through the co-determination system. In civil law countries, higher demand for CSR activities leads to increased market value for firms that improve their CSR practices. The discussion on the legal origins of CSR distinguishes between "shareholder-oriented countries" and "stakeholder-oriented countries." Shareholder-oriented countries prioritize shareholders and provide less consideration to other stakeholders, resulting in regulatory interventions that favor shareholders. CSR practices benefiting employees, customers, and suppliers are not well-regarded in these countries and can increase firms' financial risk. Common law countries tend to fall into this category. In contrast, stakeholder-oriented countries have regulations that protect the interests of all company stakeholders. They stimulate CSR practices and foster an environment that values social and environmental initiatives, leading to low firm financial risk. Civil law countries are often classified as stakeholder-oriented. However, the common law versus civil law classification is not entirely binary. Countries may protect shareholders while also considering other stakeholders' interests. Deakin and Sarkar (2008) found a positive correlation between shareholder, creditor, and worker protection scores in France, Germany, and the USA, except for the UK. This suggests that improving shareholder protection can align with improving creditor and worker protection. Considering the institutional environment, the level of regulation favoring shareholders and human resources (representing financial and non-financial stakeholders) can further differentiate countries. This classification aligns with the common law versus civil law categorization, representing

the legal system of the country. In countries where regulations tend to protect all firms' stakeholders, CSR is expected to have a negative effect on financial risk.

For a complete frame. It seems important to return to the role of national Culture and by extension of institutional theory. It is through this prism that Girerd-Potin, Jimenez-Garcès, and Louvet (2017) examine the influence of national culture on CSR policies.

Subsequently, a comprehensive definition of a country's institutions might encompass formal rules, including constitutions, laws, and regulations, as well as informal constraints, such as behavioral norms and culture; which collectively shape the "rules of the game" followed by organizations (North, 1990). Institutions consist of both regulatory dimensions that encompass political and economic rules, laws, and contracts, deriving legitimacy from legal sanction, and normative dimensions. They entail social obligations and draw legitimacy from moral authorization. Additionally, the cultural dimension focuses on shared conceptions that define social reality and shape the frameworks through which meaning is constructed, with legitimacy derived from cultural support. Therefore, institutions encompass a combination of rules, norms, and beliefs that influence individual behavior.

While it is influenced by technological imperatives and resource dependencies, the organizational structure is also reflective of institutional forces. Although scholarly attention has so far only been focused on the regulatory dimension, Scott (2008a) argues that the cognitive-cultural framework provides the deepest foundations for institutional forms; and established the infrastructure that underlies beliefs, norms, and rules. In a similar vein, Williamson (2000) emphasizes the fundamental role of culture. He presents an analytical framework that encompasses four levels: Level 1 represents informal institutions, such as culture, which exert constraints on Level 2 formal institutions. These formal institutions, including constitutions, laws, and property rights, shape Level 3 governance structures, which, in turn, influence Level 4 resource allocation decisions. Notably, Level 1, the social anchoring, evolves slowly over long periods, spanning centuries or even millennia. In contrast, Level 2, consisting of formal rules, indicates that the legal system is secondary to culture in terms of its foundational importance. Consequently, when explaining variations in social responsibility policies among countries, the cultural dimension assumes a primary role.

Institutional theory serves as a valuable research framework for identifying and examining factors that enhance the survival and legitimacy of organizational practices (Glover et al., 2014). It elucidates the influence of culture, social environment, regulation, and their transformations on decisions on environmentally conscious or sustainable activities. Ball and Craig (2010) demonstrate the significant role of normative pressures in driving corporate environmental awareness. They argue that understanding new ethical values, ecological thinking, and responses to environmental challenges

necessitates an institutional approach. Institutions play a crucial role in defining what actions are considered appropriate or acceptable (legitimate) and rendering other actions unacceptable or inconceivable (DiMaggio and Powell, 1991). Scott (2008b) asserts that legitimacy is not a tradable commodity among firms but rather a condition reflecting cultural alignment, adherence to norms, or congruence with the rules and laws of the environment. Similarly, Brammer et al. (2012) emphasize that CSR, with its societal dimension, should be situated within a broader economic governance framework, and they propose an institutional theory as a central conceptual lens for comprehending a business's social responsibilities. Hence, CSR should not be perceived solely as a voluntary managerial domain, but rather as a field that integrates various disciplines, including political science, economics, law, and sociology. The institutional theory facilitates the integration of these disciplines into the study of CSR, enabling a better understanding of the diverse forms of CSR across countries and their dynamic evolution. Notably, organizational change often results from isomorphic processes that lead to increased organizational similarity without necessarily enhancing efficiency (DiMaggio and Powell, 1991). Formal and informal institutional pressures, such as religious norms, customary practices, and tribal traditions, contribute to the tendency of organizational structures to converge within a particular environment. Numerous studies employing institutional theory have explored differences in CSR practices among countries. For instance, Ioannou and Serafeim (2012) analyzed a sample of companies from 42 countries and revealed significant variations.

Finally, the study that Girerd-Potin, Jimenez-Garcès, and Louvet (2017) highlights the impact of national cultural specificities on CSR policies and emphasizes the need to consider multiple dimensions of CSR rather than relying on a singular score. By recognizing the cultural dimension of social responsibility, a more nuanced evaluation can be achieved, considering the diverse expectations placed on companies.

Now that we have seen the different implications of national culture, the role of institutions, and the legal origin of the country. This raises the question of their implications in terms of climate and green policy.

In this respect, Ram Bhandary and al. (2021) highlight the varying performance of nine climate finance policies based on multiple evaluation criteria. It underscores the importance of government intervention, enforceability, cost-effectiveness, environmental integrity, and adaptability in shaping effective climate finance policies. The findings emphasize the need for a holistic approach to climate change mitigation, incorporating a range of policy instruments to steer investment away from polluting technologies and towards sustainable alternatives.

The question of legitimacy assumes a fundamental and significant role, particularly in the contextualization of supranational policies within national frameworks. In this regard, a report by *Énergie de la Francophonie* in 2011 (H. Marhold and S. Pouffary) underscores the need to scrutinize the legitimacy of the system. Despite the presence of numerous institutions dedicated to sustainable development or socially responsible investment (SRI) in general, the attainment of legitimate authority appears to be of utmost importance. While the European Union (EU) has implemented notable initiatives, the legitimacy of power remains a critical factor. The effective functioning of an institution necessitates the association of legitimate power with its competencies, which assumes greater significance in the case of supranational entities transcending the interests of individual nations. Hence, establishing a form of governance unanimity, particularly at the EU level, becomes imperative to adequately address and arbitrate the pertinent issues. Consequently, the structures of the European Union continue to be a subject of ongoing debate. The subsequent considerations for the member states of the European Union.

B. What are the consequences on the legal system, within the framework of the EU resolutions?

As we said earlier, legal, and cultural origins have a considerable influence on the CSR policies practised by organizations. Thus, we need to study how the EU's supranational resolutions are transposed into national policies. This raises the question of whether there are strong disparities in sustainability policy between member states. Furthermore, it should be noted that the integration of sustainability into EU law has brought about changes in terms of governance and political and legal structures within the EU. This includes the introduction of moral considerations such as intra and intergenerational equity. It is important to highlight that the EU is the only region in the world where sustainable development has been established as a constitutional principle. However, despite this, there is a lack of genuine guiding principles for policies based on the sustainability paradigm (M. Torre-Schaub, 2012).

Nevertheless, there have been developments in EU governance that have added four levels of requirements through the establishment of sustainable development goals. These requirements include informing citizens about decisions made, consulting them, promoting dialogue and participation, and ensuring that decisions are made collectively. The use of citizen conferences is a result of this participatory democracy (M. Torre-Schaub, 2012). Similarly, there should be public access, access to environmental information, and consideration of the results of public consultations in the final plan. However, the implementation of these actions has been limited when transposed into national laws (M. Torre-Schaub, 2012).

For instance, on April 16, 2013, an amendment to accounting legislation was passed by the European Commission, aiming to enhance transparency among large companies about ESG criteria, including disclosure of diversity policies. However, as mentioned earlier, this measure proved to be highly limited due to the challenges associated with its national transposition. Yet, before detailing the literature that has studied these aspects, it is important to return to the economic differences that exist between states.

The objective of the study conducted by Jedrzejczak-Gas, Barska, and Wyrwa is to provide a comprehensive assessment of the multidimensional diversification of economic development in European Union (EU) countries in the context of the implementation of sustainable development between 2014 and 2019. Given the current pronounced spatial disparity in economic development within the EU, the issues discussed in this article assume topicality and significance.

To evaluate the progress of EU countries in implementing economic governance in the context of sustainable development, a suitable set of indicators needs to be selected. This encompasses quantitative changes in macroeconomic values, qualitative changes in the socio-economic system, and the overall organization of society. The utilization of renewable energy resources emerges as a vital component of sustainable development, offering evident economic, environmental, and social benefits. From a qualitative perspective, economic development manifests through transformations in societal and structural aspects, including technical and technological progress, intra-economic system enhancements, and more.

The study was conducted in two variants. The first variant involved assessing the diversity of EU member states in terms of economic development and the implementation of sustainable development principles in 2014 and 2019. The indicators employed provide insights into the EU's progress toward sustainable development concerning economic objectives and energy considerations. The second variant employed a temporal approach, evaluating the progress of EU countries in economic development and sustainable development between 2014 and 2019. The analyses conducted contribute to the assessment of the effects of development policies pursued by EU members thus far. Based on the presented results, it can be concluded that several EU countries are experiencing positive changes, bringing them closer to the successful implementation of the sustainable development paradigm, a key priority of the Europe 2020 Strategy. This article presents taxonomic measures of economic development within the framework of sustainable concepts, utilizing two taxonomic methods for ranking the studied countries. Furthermore, the research identifies four clusters of countries characterized by similar levels of economic development. The analysis reveals significant disparities among EU countries regarding the level of economic development concerning

the implementation of sustainable development principles. It is justified to take action to mitigate these differences by intensifying pro-development efforts at both the national and EU levels.

The research results indicate certain negative phenomena that may signify unfavourable changes in several EU countries. For instance, the average synthetic measure in the EU, as well as the maximum and minimum values, decreased in 2019 compared to 2014, with 16 countries experiencing a decline in the synthetic measure. The clustering results obtained using the threshold method demonstrate a shift towards dominance by countries with an average level of development in 2019 compared to 2014.

The study highlights the significant influence of the energy-related situation in individual countries on economic development, which exhibits notable differentiation across the EU. The diversity of the EU's energy sector stems from a combination of endogenous and exogenous factors. Factors such as historical considerations adopted for energy production solutions, and the availability of raw materials influence the energy production structures and energy security of individual countries. While some EU members heavily rely on fossil fuels, others are progressively increasing their share of renewable energy sources. Additionally, countries vary in their approaches to shaping relationships with energy-supplying states, particularly the Russian Federation.

The collision between environmental and energy goals has hindered efforts to improve the current situation. The EU strives to lead in environmental protection, but this entails significant costs for sector transformation and may adversely affect the competitive position of individual member states and the entire community. The EU's dependence on fossil fuels, coupled with limited access to meet current and future needs, necessitates seeking new suppliers from third countries, which can result in increased dependence and substantial impacts on economic development. Furthermore, the achievement of the EU's economic goals is heavily influenced by global economic conditions for energy resources and their tariffs.

While the EU aims for sustainable development, other major polluting countries such as the United States, Russia, China, Brazil, and India prioritize effective economic development and are reluctant to adopt restrictions that could disrupt their national policies. Therefore, seeking an environmental compromise on the international stage becomes necessary.

To summarise, this study sheds light on the multidimensional assessment of economic development diversification in EU countries within the context of sustainable development. The findings highlight the disparities among EU countries in terms of economic development and the implementation of sustainable development principles. It emphasizes the need for concerted efforts

at the national and EU levels to address these differences and align with the goals of sustainable development.

The disparities demonstrated in this paper show just how much the issue of energy - and in particular the transition to green energy - is part of the EU's problems and part of Europe's desire to improve its policies in this area. Particularly when it comes to carbon issues and the climate risks they entail.

At the same time, the initiatives taken by the EU need to be fine-tuned to suit the overall European ecosystem and take account of systemic risks. From now on, the challenge will be to reconcile all players around the new regulations. It will be up to the European authorities to ensure this coherence at the intergovernmental level, but mainly at the legislative level. For example, despite its ambition and very positive impact, particularly on the issue of consensus, the obligation for companies to be transparent about the policies they implement to integrate sustainability risks and serious impacts is not without its problems. Some of the data required for this implementation may be lacking. For example, the lack of reliable, harmonized data from the organizations that make up the market ecosystem (J.J. Barbéris, et al., 2020). An approach that holds promise is the assessment of the climate performance of new investments. Such an evaluation would enable the measurement of the appropriateness of these investments and the portion of expenditure that aligns with the Taxonomy, specifically focusing on capital expenditure (CAPEX). The integration of the Taxonomy could occur at both the EU and national levels, with potential incorporation into initiatives such as the InvestEU program, which could replace the European Strategic Investment Fund.

It is also essential to address the management of the COVID-19 pandemic crisis, which has proven to be a significant driver of innovation. Consequently, from a financial assistance perspective, it is interesting to examine how Europe has responded to the economic disparities. The crisis has provided an opportunity to strengthen cooperation within Europe and implement unprecedented measures to contain the crisis, initially on a healthcare level and subsequently on economic and humanitarian fronts. Notably, exceptional financial measures were implemented, such as the authorization by the European Commission of around €3 trillion in additional public aid, representing an approval for disbursement (O. Guersent, 2020). Consequently, numerous state-guaranteed loans were established across Europe for this purpose. However, existing disparities among states in terms of budgetary actions led the EU to implement further measures. As a result, a €750 billion recovery plan was launched by President Ursula von der Leyen. Notably, the subtlety of this recovery plan lies in its financing. Nearly half of the €750 billion is provided in the form of direct and non-repayable assistance. It has been financed through a common debt issuance, aiming to support the recovery of strong and sustainable growth in the most affected member states (O. Guersent, 2020). The innovation

lies in the multi-state nature of the financing, representing a joint effort that demonstrates coordination within the EU and highlights common discipline and solidarity serving all member states. Similarly, this plan serves the objectives of a virtuous cycle. So far, fiscal, and monetary responses have contained crises caused by system failures. The challenge today is to create conditions for a recovery that is not traditionally financed by debt but through capital injections. This would align the system with the long-term objectives desired by Europe, particularly in terms of establishing a mechanism for recovery and resilience encompassing various plans. It should facilitate the achievement of the dual transition desired by Europe, namely in the digital and environmental economies. Therefore, several plans are taking shape, including those related to the Capital Markets Union, digital finance strategy, and the future adoption of sustainable finance strategy (O. Guersent, 2020), referred to as Next Generation EU. Through these plans and the pooling of risks (borrowings), it can be considered a crucial step in European integration (P. Berès, 2020). This is evident, for instance, in the €750 billion recovery plan, where out of the total subsidies (€390 billion), €312.5 billion have been allocated to the Recovery and Resilience Facility (RRF). Furthermore, through the pooling of expenditures, it is noticeable that the weight of states and intergovernmental has strengthened in the governance of the European Union (P. Berès, 2020).

It is now important to return to the role of sustainable or CSR reporting in the EU's considerations. Disparities in CSR reporting have become evident as investors increasingly demand the integration of ESG considerations. The evolution of social and environmental accounting and reporting movements, from CSR to sustainability reporting, has been significant. However, traditional sustainability reports often fall short of promoting meaningful sustainability and tend to prioritize weak sustainability paradigms. Weak sustainability relies on technological solutions and offsetting natural assets, while strong sustainability calls for radical transformations and challenges existing market structures. Measurement issues and fundamental changes in the capitalist mindset are necessary to translate sustainability commitments into action. Sustainability reports primarily operate within a weak sustainability framework, focusing on risk management rather than driving substantial operational change towards sustainability (Carol and Adams, 2015).

Also, the work of Jorma Mähönen (2020) examines the relationship between financial communication and sustainable corporate governance. The article begins by presenting European and international standards for financial communication and corporate governance, with a focus on integrated reporting. The author then discusses the link between integrated reporting and sustainable governance, particularly in European companies.

Furthermore, the article highlights that the EU High-Level Expert Group on Sustainable Finance emphasizes the importance of integrated governance principles, which include a distinctive set of

fiduciary duty principles and the concepts of loyalty and prudence. According to these principles, the fulfilment of fiduciary duty involves considering and managing ESG risks and long-term sustainability, rather than solely focusing on short-term financial returns. It is crucial to integrate environmental, social, and governance factors into national definitions of fiduciary duties, either directly or through European legislation.

However, the question that remains is how to establish such a unique set of fiduciary duty principles and related concepts of loyalty and prudence. While reporting plays a significant role in integrated governance, it alone is not sufficient. Although the efforts of many European companies to enhance transparency regarding ESG factors and improve the quality, comparability, and relevance of reporting are recognized, high-quality integrated reporting is still not widely adopted. While there are many sustainability reporting initiatives, the ultimate ambition must be the convergence of financial and sustainability reporting, supported by a more comprehensive set of accounting standards. According to the group, integrated reporting supports this convergence from a qualitative point of view, with reports that link sustainability factors to corporate strategy. The underlying premise is that the EU does have a pioneering role to play in sustainable finance, both in terms of its international policies and their application within member states, which try as far as possible to integrate its principles into their national policies.

The article's interest lies in its in-depth analysis of how European companies integrate sustainable development objectives into their financial communication and governance. The author emphasizes that integrated reporting is an effective tool for communicating environmental, social and governance (ESG) issues to stakeholders, thereby improving transparency and accountability in sustainable development.

The results of the study indicate that European companies tend to integrate ESG issues into their financial communication and governance, although this varies according to sector and size. Large and blue-chip companies are more active in this respect, while medium-sized companies find it difficult to integrate ESG issues into their financial communication and governance strategies.

It seems that Jorma Mähönen's article offers an enlightening perspective on how European companies are integrating sustainability objectives into their financial communication and governance, particularly through integrated reporting. The results of the study provide valuable insights into improving sustainability transparency and accountability and identifying the associated challenges and opportunities. In light of these factors, it is important to return to the concrete conclusions that supranational frameworks, legal origins and the institutional frameworks of individual countries can lead to in terms of corporate behaviour and the behaviour of fund managers.

C. Which impact can we expect in terms of corporate behaviour and fund managers?

As already seen in Chap2, I., many perspectives on corporate governance and sustainability reporting have been studied in the literature, including the role of boards of directors (Hamad et al., 2020) and green innovation practices (Khan and Johl, 2020; Khan et al., 2019), nationality and gender diversity (Kaczmarek and Nyuur 2021; Zaid et al. 2020), sustainability reporting in the oil and gas industry (Shad et al. 2020, 2018), Sustainability of Higher Education Institutions (Zahid et al. 2020), Corporate Social Responsibility Practices (Ur Rehman et al. 2020), Roles of Women Boards of Directors (Halliday et al., 2021), new technologies for sustainable business (Del Giudice et al., 2021), and the link between board diversity and firm efficiency (Hassan and Marimuthu, 2018a,b; Ali et al., 2021a).

Moreover, Ahmad Ali Jan et al. (2021) proposes an exploration of a comprehensive set of global corporate governance practices. Various governance practices are adopted by financial institutions worldwide, and below we discuss some well-known corporate governance practices.

The Anglo-Saxon corporate governance structure involves a board of directors composed of executive and non-executive directors, alongside a supervisory board. The executive and non-executive directors are responsible for monitoring and supervising the actions of company officers who represent the shareholders. The appointment and removal of both types of directors are determined by shareholders during the general meeting (Alnen, Alnasser & Muhammed 2012; Denis & McConnell 2003).

German corporate governance adopts a Germanic approach aiming to benefit stakeholders. This approach utilizes a dual board structure consisting of a board of directors and a supervisory board. The supervisory board's primary role is to appoint, dismiss, and assess the performance of the management. In this governance model, the bank plays a significant role as a provider of capital. Thus, at shareholders' meetings, the bank holds voting rights and acts as the shareholders' representative on the supervisory board, safeguarding their interests (Alnasser & Muhammed 2012; Odenius 2008).

Latin corporate governance is known for its flexibility compared to other governance approaches. Companies have the freedom to choose between the Anglo-Saxon model, where there is a board of directors or the dual board structure as in Germanic governance. However, in this system, directors can be appointed and dismissed by shareholders who wield substantial influence (Alnasser & Muhammed 2012).

In Japanese corporate governance, the board of directors consists of a council comprising representative directors and auditors, with the Chairman rarely serving as the leader. Additionally, the

influence of the bank also affects management decision-making in this governance system (Alnasser & Muhammed 2012).

Islamic corporate governance exhibits similarities to conventional governance, such as organizational control and direction. However, the incorporation of Islamic principles and norms renders traditional governance distinct and characterized by unique features (Jan et al. 2021; Ajili & Bouri 2018). Islamic corporate governance encompasses two elements: Shariah governance, which ensures compliance with Islamic financial regulations based on Islamic law, and traditional corporate governance, which ensures bank efficiency and performance. This practice, referred to as *hisbah*⁵⁹, pertains to acts considered virtuous by a group of individuals and prohibited by Islamic law (Jan et al. 2021; Ajili & Bouri 2018).

Based on this principle, it is possible to say that within the European Union, there is a preponderance of governance practices that would be described as Germanic (continental) and Latin (e.g., France, a system somewhere between Anglo-Saxon and Germanic). It is possible to say that the scales of governance, and the repercussions in terms of practices for both companies and fund managers in terms of transposability, will be somewhat different. As a result, the emphasis will not necessarily be placed on the same CSR practices in each country. It should be remembered that there are more differences between the Eurozone than between individual states in the US.

The decision-making process behind a company's choice to balance between social commitment and financial performance raises the question of why such variations exist (Girerd-Potin, & al. 2017). The economic analysis offers insight in terms of opportunity cost, suggesting that a company maintains its social commitment until the cost of additional efforts exceeds the marginal utility for stakeholders. However, understanding why the optimal mix differs among companies requires considering factors beyond mere organizational mimicry as proposed by DiMaggio and Powell (1983). It is expected that companies are subject to isomorphic change driven by coercion from their environment, as well as mimicry to address uncertainty and standardization associated with professionalization. This would imply that all companies within a sector aim for a similar level of social commitment, aligned with stakeholder expectations.

Nonetheless, significant intra-sector heterogeneity in social scores indicates differences in social responsibility (SR) behaviour that can be attributed not only to the cost of efforts but also to the

⁵⁹ "Term referring to community morals; by extension, to the maintenance of public law and order and supervising market transactions. The functions of the *muhtasib* (person responsible for *hisbah*) cover duties regarding prayers, mosque maintenance, community matters, and market dealings. With the advent of Western colonialism, *hisbah* came under the purview of secular departments in many Muslim societies." Definition of Oxford Reference.

expected return by stakeholders, whom themselves exhibit diverse sensitivities (Girerd-Potin, & al. 2017). To comprehend the diverse choices made by companies in this realm, it becomes necessary to consider the specific characteristics of their stakeholders. Among these characteristics, nationality stands out as a prominent factor. Despite operating within an international context, companies have a national foundation, which means they cater to society, employees, suppliers, customers, and shareholders who possess distinct cultural affiliations (Girerd-Potin, & al. 2017). In economic theory, Porter's hypothesis, formulated in 1995, asserts that a company can improve its long-term commercial competitiveness by following strict environmental regulations and strategies, thus preventing it from being affected by exceptional events such as heavy pollution.

In this sense, CSR is a multi-faceted concept, with the result that it has different impacts. There is no single impact of CSR, just as there is no single definition of CSR. Moreover, stakeholder theory has highlighted the idea that companies invest in CSR in order to achieve better corporate performance (Hassan Shahrour, Girerd-Potin, Taramasco, 2021). This means that environmental and social expectations are reconciled in some way.

Furthermore, the emergence of new global ESG risks, such as rising sea levels, global warming, and demographic change, has presented companies, asset managers, and governments with additional risk factors to consider (MSCI, n.d.-a). Consequently, investors find themselves operating within a more intricate landscape that necessitates a review of their current investment processes and policies to effectively address the new challenges of sustainable development (MSCI, n.d.-a). Therefore, it is important to reiterate that the integration of ESG criteria and CSR principles into corporate governance⁶⁰ is not solely driven by virtuous principles, but rather by the desire of fund managers to mitigate risk (with varying degrees of emphasis depending on the country and specific companies involved). It is therefore important to revisit this measurement of risk and performance.

Theoretical arguments within the stakeholder theory and information asymmetry suggest that corporate social responsibility (CSR) contributes to the reduction of risk. By focusing on stakeholders and providing extensive information, firms can effectively mitigate risk (Aguinis & Glavas, 2012; Chen et al., 2016). Research on CSR demonstrates considerable variation in CSR practices across firms, industries, and countries. The institutional framework of a country appears to influence a firm's CSR performance (e.g., Ioannou & Serafeim, 2012) and moderate the relationship between CSR and firm value (e.g., El Ghouli, Guedhami, & Yongtae, 2015). Benlemlih and Girerd-Potin (2017) argue that the association between financial risk and CSR engagement depends on how individuals and the country's rules consider and protect shareholders versus non-financial stakeholders. This perspective draws

upon Scott's (1995) three dimensions of the institutional environment: regulative, normative, and cognitive.

However, it is important to note that there is no direct alignment between common law/civil law countries and shareholder-oriented/stakeholder-oriented countries. To investigate the link between CSR and financial risk, we employ financial risk measures derived from portfolio theory, specifically examining systematic and idiosyncratic risks. Orlitzky and Benjamin (2001) conducted a meta-analysis of papers addressing the relationship between social performance and financial risk in the US from 1978 to 1995. Their findings support a negative relationship between CSR and financial risk, indicating that CSR practices are relevant to firms and associated with lower financial risk. Recent studies have examined the association between CSR and financial risk using traditional risk-return models. Many studies focus on idiosyncratic risk as a primary measure of financial risk, given the practical limitations of forming well-diversified portfolios (Jo & Na, 2012) and the adverse impact of idiosyncratic risk on market efficiency and arbitrage activity (Duan, Hu, & McLean, 2010). However, the findings from these studies are inconclusive and do not consistently support a negative relationship between CSR and idiosyncratic risk (Orlitzky et al., 2013).

In summary, existing literature indicates a modest negative association between CSR and various measures of financial risk, including stock volatility, idiosyncratic risk, systematic risk, and credit risk (Orlitzky et al., 2013). However, there is limited research on how CSR outcomes differ across institutional contexts and the extent to which a firm's institutional environment influences the relationship between CSR and financial risk. While some studies suggest that CSR reduces firm-specific risk through positive reputation, high employee loyalty, and strong customer trust (e.g., Bouslah, Kryzanowski, & M'Zali, 2013; Boutin-Dufresne & Savaria, 2004; Lee & Faff, 2009; Luo & Bhattacharya, 2009; Mishra & Modi, 2013), others find no significant association between CSR and idiosyncratic risk (e.g., Humphrey, Lee, & Shen, 2012; Kim, 2010). Additional research by Jo and Na (2012), Luo and Bhattacharya (2009), and Oikonomou, Brooks, and Pavelin (2012) explores the link between CSR and systematic risk in the US market. Jo and Na (2012) utilize the MSCI ESG Stats database spanning from 1991 to 2010 to demonstrate that comprehensive CSR engagement by firms reduces systematic risk and market sensitivity, particularly in controversial industries.

Regarding the impact of CSR on risk, we assert that it predominantly affects idiosyncratic risk, and we present two reasons to support this claim. Firstly, if CSR is considered a common risk factor, it would not be incorporated into traditional risk-return models such as the CAPM or the Fama-French model. Consequently, it would be inaccurately included in the idiosyncratic risk component. Secondly, if CSR initiatives, through the benevolent and patient behaviour of stakeholders, serve to mitigate random shocks experienced by the firm, it would result in a reduction of idiosyncratic risk. While

systematic risk holds evident importance for portfolio managers who cannot avoid bearing such risk, they are also concerned with idiosyncratic risk. This risk component may encompass a non-diversifiable common systematic risk factor or persist due to the limitations of achieving perfect diversification (Benlemih & Girerd-Potin, 2017).

Returning to the regulatory framework of the European Union (EU), there has been a growing demand for investors to incorporate environmental, social, and governance (ESG) factors into their investment process over the past decade (Yu et al., 2020). While the EU taxonomy currently focuses on the classification and transparency of environmental information, this paper aims to contribute to research on environmental reporting in investment decisions. To begin our investigation into the consideration of environmental information and the innovations introduced by the Taxonomy Directive, we refer to the findings of Rikhardsson and Holm (2008) regarding the effectiveness of environmental information in investment decisions. Their results suggest a positive impact of environmental disclosure on investment allocation decisions. However, recent studies indicate that unreliable non-financial information disclosed by companies can impede the integration of ESG factors into investment decisions (Hahn & Lülfs, 2014; Yu et al., 2020).

Previous studies on non-financial disclosure have employed two types of approaches: archival studies utilizing capital market data and experimental studies. Capital market studies explore determinants for profitability and utility maximization, which are considered essential objectives in investment decisions (Browning et al., 1999; East, 1993). These studies reveal that in addition to financial performance, factors such as competitive advantages, external expectations, and reputational effects contribute to utility maximization (Dangelico & Pujari, 2010; Esch et al., 2019; Schwarz et al., 2002). Consequently, they highlight new risks and drivers influencing investment decisions based on non-financial information (Beal & Goyen, 1998; Bollen, 2007; Chatterji et al., 2009; Nilsson, 2009; Paetzold & Busch, 2014; Rosen et al., 1991; Statman, 2004).

On the other hand, experimental approaches focus on the cognitive processes of investors and examine how the information in disclosures affects individual investment decisions. Khemir et al. (2019) provide a literature review of experimental research on the consideration of non-financial information in the investor decision-making process. The findings of both market data studies and experimental studies underscore the significant relevance of non-financial disclosure in terms of decision usefulness. Rikhardsson and Holm (2008) confirm the effectiveness of environmental information, particularly, in guiding decision-makers toward investment decisions. Additionally, the relevance of non-financial accounting information in investment decisions is recognized in accounting practice through conceptual accounting frameworks of regulators such as the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) (Staubus, 1999).

Hahn and Lülfs (2014) demonstrate that environmental performance can act as a driver for increasing asymmetric information. Obtaining credible information on sustainability aspects can present a barrier for external stakeholders, complicating the asset selection process for investors (Yu et al., 2020). Signal theory suggests that listed companies send signals to investors to create incentives for investment. However, these signals are increasingly perceived as misleading in non-financial reporting (Spence, 2002). This highlights the existing uncertainty among information recipients due to a lack of transparency and a common understanding of green investments. Bowen and Aragon-Correa (2014) and Du (2014) explain that companies engage in greenwashing, which involves disclosing information that benefits the companies at the expense of the addressees. Based on this notion, Yu et al. (2020) explore mechanisms that could deter firms from engaging in ESG greenwashing. From the perspective of information recipients, the new transparency regulation of the EU Commission should serve as a tool to gain a better understanding of non-financial reports. With a new and standardized information base, investors should be able to assess the green performance of companies and identify greenwashing.

The main finding of the experimental study conducted by Chrzan and Pott (2021) is that both additional commonly disclosed environmental information and taxonomy-aligned information influence the investment-related judgments of professional and private investors, but in different directions. This experimental approach provides insights into investors' information processing. The study reveals that environmental information has a positive impact on the investment-related judgments of private investors, despite negative taxonomy-aligned information. In contrast, the investment judgments of professional investors are negatively affected.

These findings have important implications for legislation and environmental disclosure practices. According to the decision usefulness theory, investors consider environmental information and taxonomy disclosures when evaluating investments. Therefore, even companies that are not obligated to submit non-financial reports should publish such information. By integrating cognitive and behavioural aspects into the experimental analysis of transparency-enhancing policies and gaining a better understanding of investors' judgments, practical and investor-oriented insights can be provided for standard setting, particularly in cases where investors have limited information processing capabilities. If there are no legal regulations (e.g., in investment advisory) to ensure that private investors are aware of the taxonomy indicators and the direction of information is clearly labelled, the effectiveness of the EU Taxonomy Directive may be limited (Chrzan and Pott, 2021).

According to Benedetto and Thomsen (2021), data providers play a crucial role in ESG investing, as the most common way to gather data on ESG performance is through collecting "ratings" or "scores" from third-party agencies. However, the study reveals that there is a disconnect between the data available to industry professionals and the knowledge of end investors, who often have a limited understanding of ESG investing and the associated data. To promote sustainable finance, it is essential to improve the interpretation and accessibility of data for both end investors and institutional investors. Transparency in data collection from companies is key to achieving this goal. While the immediate impact of the EU Action Plan may be limited, it is expected to create a broader foundation for investors in the long run, providing much-needed assistance in enhancing transparency and data availability.

PART 2:
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RESEARCH QUESTION & METHODOLOGY

CHAPITRE 4 – RESEARCH QUESTION

I. GENERAL FRAMEWORK

When they think about carbon emissions, investors and fund managers often look at the risks involved. Moreover, the development of ESG finance has not been without its problems; especially with greenwashing. As a result, so-called impact investors - or fund managers with controversial analysis - are left with just one question on their minds: How can we avoid it (& ESG washing)?

This phenomenon, which will be examined in detail below, represents an area of risk that is also part of the ESG field, in terms of both risk and intrinsic requirements. If companies can take advantage of vague standards and regulations to appear more attractive to green funds, a moral issue is at play. This can lead to shifts from the carbon reduction objectives that companies are supposed to follow.

Consequently, this risk could impact investment firms and their shareholders if said risk was to be exploited; thus, affecting the value of their Securities. Moreover, inadequately assessed, and insufficient environmental business practices will increase the risk of inadequate sustainable development performance, thereby affecting the world simply because economic activity has strong environmental consequences. We have decided to examine the current regulations and industry standards to mitigate the moral hazard risk- a liability related to carbon emissions disclosures - and assess the adequacy of its current forms.

As a result, investors are becoming increasingly interested in impact investment or impact finance, i.e., first, intentionality refers to the investor's deliberate aim to generate a positive and measurable social and environmental impact. Secondly, additionality goes beyond simply providing private capital by emphasizing the fulfilment of additional positive outcomes. Lastly, measurement plays a crucial role as it is enabling transparent evaluation of the investments' financial, social, and environmental performance. These fundamental components collectively contribute to the core principles of impact investing.

The attention from the public can be regarded as a form of legitimacy, it displays a transcription of societal expectations. Hence, considering the structural changes demanded by our society, which aim at a paradigm shift, albeit lacking consensus, the innovation of sustainable and responsible investment emerges as a legitimate response that aligns with a comprehensive transformative app.

It now seems essential to define the framework encompassing the dangers associated with carbon emissions. To this end, risks in the financial domain exhibit a transversal nature, with carbon risk⁶¹ and climate risk being of particular significance. The former encompasses reputational and regulatory risks and exerts a direct influence on economy, market, and credit risks. The latter is closely associated with extreme weather events and natural disasters. It also extends its impact to economic, operational, credit, and market risks. Recognizing the integral role of carbon and climate risks, effective risk management strategies incorporate these dimensions.

Within the realm of climate risk, two distinct categories stand out: transition risks and physical risks. Transition risks entail the financial implications associated with the transition to a low-carbon economy. It encompasses diverse factors, including policy changes, reputational impacts, shifts in market preferences, norms, and technological advancements. On the other hand, physical risks relate to the financial losses incurred due to the occurrence of extreme weather events and climate-related disasters (such as flooding, sea-level rise, wildfires, droughts, and storms).

II. WHAT DOES LITERATURE HAVE TO SAY?

A growing interest in the academic press examines whether climate risks are reflected in operating results and valuation (Chava, 2014; Andersson, Bolton, and Samama, 2016; Hong, Li, and Xu, 2019). In line with this research, our focus is on carbon risks, measured through carbon emissions. We consider this measure to be of the utmost importance given its prevalence in academic literature, in the medias. This consideration is strengthened due to its utilization by ESG rating agencies, which investors heavily rely on to evaluate firms' environmental performance.

Previous studies linking emissions to financial performance primarily view carbon emissions as a source of risk for which investors seek compensation (Aswani et al., 2023). It would manifest as a risk premium, resulting in a positive relationship between emissions and stock returns. Carbon risks may arise from shocks related to government measures to reduce emissions, such as carbon taxes or corrective environmental costs that issuers could be forced to bear in adverse scenarios.(Aswani et al., 2023).

More recent studies also incorporate a taste-based argument alongside the risk premium argument, particularly within the investor context. For instance, Pastor, Stambaugh, and Taylor (2021) propose that certain investors derive satisfaction from holding green assets; even though it may mean sacrificing returns to maintain their desired portfolios. In a subsequent paper, Pastor, Stambaugh, and

⁶¹ Carbon risks encompass the potential financial losses resulting from the emissions of greenhouse gases (GHGs), predominantly carbon dioxide (CO₂) emissions, within an increasingly stringent regulatory framework.

Taylor (2022) argue that green stocks have exhibited superior performance due to unforeseen increases in society's environmental concerns.

Consistent with the theoretical arguments outlined above, Matsumura, Prakash, and Vera-Munoz (2014) find a negative relationship between higher emissions and firm values. Other studies directly link emissions performance to returns. For example, In, Park, and Monk (2019) unearthed a positive stock returns alpha by purchasing low-emissions stocks and shorting high-emissions stocks. Lastly, in two notable recent papers, Bolton and Kacperczyk (2021a, 2022) identify a positive association between unscaled emissions and stock returns, supporting the risk premium argument. Importantly, these studies adopt different measures of carbon performance in their primary tests. The objective of this article is to emphasize the impact of such measurement's choices. Emissions are not a static entity for a company; instead, they represent a variable that is not subject to the economies of scale observed in other facets of the company's production process, such as overhead costs.

Furthermore, Aswani et al. (2023) contends that the use emissions intensity (the ratio of emissions to size measures like sales) might represent a more appropriate approach to gauge a firm's carbon footprint and risk.

It is a tool that better highlights the societal objective of simultaneously reducing emissions while maintaining the overall productivity of the economy (Nordhaus, 2019).

By acknowledging and addressing the interconnectedness of carbon and climate risks, organizations can also enhance their ability to navigate the complexities of comprehensive risk management. Effectively managing these risks requires a holistic approach that integrates both the transitional and physical dimensions; thereby enabling informed decision-making and proactive risk mitigation strategies. The understanding and management of carbon and climate risks are crucial for robust risk management practices in the financial sector. Adopting a comprehensive framework that encompasses both transitional and physical risks enable organizations to effectively assess, monitor, and mitigate these risks; thus, protecting their financial stability and resilience in the face of environmental challenges. The emergence of carbon risk considerations is - as we have seen above - at the heart of the European Union's concerns. It is even one of the fertile grounds for the articulation of its supranational policies on economic activity and sustainable finance (SFDR & Taxonomy), whose aim is to achieve carbon neutrality by 2050. From this principle, the EU is a privileged terrain for sustainable finance, despite disparities due to the applicability of measures in national contexts, as well as cross-border effects. It, therefore, becomes interesting to study the extent to which financial markets (& their players in the broadest sense) consider the publication of carbon footprint and the consequences for asset values.

Hence, the question we will seek to answer in this master's thesis is the following one: ***What are the risks and challenges of carbon disclosure for companies currently engaged in the EU's green funding policy?***

Considering these factors, it is fair to say that the EU's focus on carbon emissions (its desire to achieve carbon neutrality) makes it a privileged study region. However, it should not be forgotten that it has a particular institutional framework. It means that an investor's study to CSR issues depends on several complex factors, such as country culture, legal and institutional background. As a result, these differences are more noticeable than in the USA. That is why - in our study - it is insufficient to solely consider a company's sector; instead, a holistic assessment of its broader environment is necessary.

ESG represents a significant portion of net new assets (NNA), comprising an impressive 58% of the market for European ETFs. The total assets of ESG funds stand at a staggering \$1,652 billion; with Europe alone accounting for \$1,343 billion (or 81.3% of the total funds). In comparison, the United States contributes \$236.4 billion (or 14.3%), while Asia support \$43.1 billion (or 2.6%). The influx of funds into sustainable mutual funds and ETFs in the fourth quarter of 2020 amounted to \$370 billion; which highlighted a notable increase of 29% in assets. Throughout 2020, Europe witnessed a remarkable inflow of \$273 billion into sustainable mutual funds and ETFs; which nearly doubled 2019's total and surpassed the amount recorded in 2017 by five times. Similarly, the United States experienced a substantial inflow of \$51.2 billion, the amount nearly doubled compared to the total in 2019 and was nearly tenfold higher than the inflow recorded in 2018. These statistics underscore the significance of Europe in the field of ESG finance and further reinforce the relevance of this research as well as the selection of the sample studied. The data source for these figures is Morningstar's report titled "Global Sustainable Fund Flows: Q4 2020 in Review" (January 2021).

The EU also reminds us that: "Today it is difficult for consumers, companies, and other market actors to make sense of the many environmental labels and initiatives on the environmental performance of products and companies. There are more than 200 environmental labels active in the EU, and more than 450 actives worldwide; there are more than 80 widely used reporting initiatives and methods for carbon emissions only. Some of these methods and initiatives are reliable, some not; they are variable in the issues they cover" (European Commission, 2020). This example reminds us that, despite a plethora of existing initiatives in the field of green finance, there is still a lack of clarity in terms of methodology. From a legal point of view, a variety of aspects are left to the discretion of investors, fund managers and reporting producers. These shortcomings are reminiscent of the work of Edmans (2021), who points out that ESG finance fails to truly modify corporate behaviour, and that it is often based on subjective and arbitrary measures that lack coherence and comparability. In addition, it may be more appropriate to use concrete variables such as carbon emissions. Our study focuses on

the carbon aspect of companies, which can be considered both suitable for ESG finance, an integral part of the regulator's desires, a concrete, quantifiable and visible variable and, of course, a contributor to the literature on the risks associated with energy transition.

In the basic sense, these ambiguities are not always detrimental. By understanding the criteria that constitute each label, stakeholders can make informed choices in managing their finances and thus align their savings with their intended purpose. However, the problem arises in the absence of consensus, where the methodologies used to define what qualifies as green finance or to determine the underlying factors behind ESG criteria often remain vague. Consequently, companies are tempted to engage in greenwashing practices. Similar issues arise with rating agencies. Indeed, their assessments guide investment flows, just like in traditional finance. The regulatory power held by said agencies has sparked debates regarding the issuer-pays model; which was compounded by the non-consensual nature of the methodologies employed. These debates raise questions about the reliability and relevance of the ratings assigned by non-financial rating agencies to sustainable finance funds; as they are believed to be partial and inconsistent. Consequently, the lack of homogeneity in ESG criteria leads to significant methodological discrepancies that are seldom transparently disclosed. As a result, it becomes common to observe completely contrasting ratings for two different companies. This idea can be extended to the quantification of carbon emissions, which remains highly disparate in terms of the employed methodologies. The outcome is a potential misinterpretation of a company's carbon performance by the market, fuelled by initially flawed disclosures.

It also appears that literature has been more concerned with studying the impact of the EU Emissions Trading System (EU ETS)⁶². Indeed, there are a number of studies on the sensitivity of carbon emissions and stock market returns (Oestreich & Tsiakas, 2015)⁶³ while others have studied the same system but on the return and volatility links between CO² emissions and clean energy stock prices (Dutta, & al., 2018)⁶⁴, some have studied whether investors pay attention to carbon emissions under

⁶² Cf: https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en

⁶³ This paper examines the impact of the European Union's Emissions Trading Scheme (EU ETS) on stock returns in Germany. The study reveals that, during the scheme's first few years, companies that received free carbon emission allowances outperformed those that did not. This finding indicates the existence of a substantial and statistically significant "carbon premium," primarily driven by increased cash flows resulting from the allocation of free carbon emission allowances. Additionally, the cross-sectional variation in stock returns can be partially explained by a carbon risk factor, as firms with higher carbon emissions face greater exposure to carbon risk and, consequently, exhibit higher expected returns.

⁶⁴ This study examines the relationship between the carbon emission market and the clean energy stock market. Using daily data, the research analyzes the impact of European Union Allowance (EUA) prices on clean energy stock returns and volatility. The results indicate that variations in EUA prices have a positive effect on renewable energy stock returns, although not statistically significant. However, there is a significant volatility linkage between emissions and European clean energy price indexes. This association is specific to the European market and does not hold in the US market. Additionally, the study finds low average correlations between emissions

this policy (Basse Mama and Mandaroux, 2022)⁶⁵, others tackle directly the relevance of valuing greenhouse gases in this same system (Clarkson, & al., 2015; Martin, & al., 2016)⁶⁶. Finally, an article entitled "The importance of Greenium: greenhouse gas emissions, environmental disclosures and share prices" (Alessi, & al., 2020)⁶⁷ whose plead is designed to argue for the introduction of climate resilience testing for systemically important financial institutions through evidence of the existence of an ecological transparency risk premium based on greenhouse gas emissions. While these studies are directly applicable, they give us some indication regarding the European market's sensitivity to the issue of carbon emissions (as well as the public's assessment of legitimacy). The innovative difference between the present study and the previous one lies in the fact that we propose to study market sensitivity to carbon emissions publications and their effects on stock prices (volatility).

Indeed, to date, the financial press seems to have spent more time focusing on whether emissions reductions by portfolio companies might contribute to higher expected stock market returns and improved operating results.

In response to the expectations of investors, practitioners, and policymakers, several academic papers examining the relationship between emissions and key financial performance indicators of firms as well as including stock returns and operating profitability have been published (Aswani, & al., 2023). For instance, studies by Matsumura, Prakash, and Vera-Munoz (2014) and Bolton and Kacperczyk (2021a, 2022) have found strong ties between emissions and fundamental financial

and stock prices, suggesting potential portfolio diversification benefits for investors holding assets in both the EUA and clean energy markets.

⁶⁵ This study examines the impact of carbon emissions on future valuations of European firms under the EU ETS. Surprisingly, higher emissions initially increase valuations, but beyond a threshold, they have a negative effect due to regulatory and transition risks. Lower emissions are associated with a valuation premium, particularly in smaller firms with limited analyst coverage and institutional ownership. The findings suggest the need to promote green technology development.

⁶⁶ This study investigates the relationship between greenhouse gas emissions and firm valuation within the European Union Carbon Emissions Trading Scheme. The analysis focuses on firms' ability to pass on carbon-related compliance costs and their carbon performance relative to industry peers. The findings reveal that carbon allowances do not significantly impact firm valuation, but allocation shortfalls are negatively associated. Moreover, the negative valuation impact of emission shortfalls is moderated by better carbon performance and less competitive industry sectors. These results highlight the heterogeneity in the valuation effects of carbon emissions across firms and sectors, emphasizing the need for tailored research and improved disclosure of greenhouse gas liabilities.

⁶⁷ This study presents empirical evidence of a negative Greenium, which refers to a risk premium associated with firms' environmental performance and transparency, using individual stock returns in Europe. They construct a priced factor called "greenness and transparency" based on companies' greenhouse gas emissions and the quality of their environmental disclosures. This factor serves as a tool to assess portfolio exposure to the risks related to the low-carbon transition and provides a means to hedge against such risks. Their analysis reveals that in a stressed scenario where greener and more transparent firms significantly outperform brown stocks, failure to incorporate climate-transition risks into pricing could lead to losses at a global level, including for European large banks. These findings underscore the need for the implementation of climate stress tests for systemically important financial institutions.

measures. These findings suggest that emissions play a significant role in shaping firms' financial performance.

The literature on carbon emissions presents two economic arguments that establish a connection between emissions and stock returns (Aswani, & al., 2023). The first argument is driven by risk. In the face of growing societal pressure to adopt environmentally friendly practices, high-emissions firms face the risk of increased capital costs due to potential government interventions to address climate change. This risk encompasses factors such as carbon taxes or mandated pollution cleanup expenses. Several studies, including Bolton and Kacperczyk (2021a) and Pedersen, Fitzgibbons, and Pomorski (2021), support this risk-based argument, suggesting a positive relationship between emissions and stock returns.

The second argument revolves around investor preferences. Certain investors may choose to avoid companies in "brown" industries that are perceived to cause significant harm to society. As it was argued by Pastor, Stambaugh, and Taylor (2021) and Pedersen, Fitzgibbons, and Pomorski (2021), this investor aversion can lead to a situation where high-carbon stocks underperform. Similar to the case of sin stocks (Hong and Kacperczyk, 2009), the avoidance of "brown" stocks by a substantial number of investors may result in excess returns for these stocks. *De facto*, these arguments shed light on the relationship between emissions and stock returns; something that further reinforces the importance of risk factors and investor preferences in shaping market dynamics and investment decisions.

Aswani et al. (2023) present empirical evidence highlighting systematic disparities between emissions figures disclosed by vendors and those estimated by firms. Notably, the expanded coverage in this regard primarily stems from an increase in vendor-estimated emissions rather than firm-disclosed figures. Consequently, studies that focus on more recent years, when carbon risk has gained greater political significance, may be particularly vulnerable to this issue. This finding can be partly attributed to the fact that estimated emissions appear to be strongly influenced by factors such as firm size, sales growth, industry, and time, rather than effectively capturing variations in carbon efficiency within industries (including the adoption of green technologies).

A potential counterargument to the findings is that firms disclosing emissions may systematically differ from those that do not. This could potentially explain the stylized facts presented. Bolton and Kacperczyk (2021b) state that, if a carbon premium exists, it would be lower for firms disclosing emissions due to reduced uncertainty for investors. While this argument could account for the results discussed earlier, another issue arises in prior research: the emphasis on the relationship between unscaled carbon emissions (total carbon emitted) and returns. Given the economic nature of emissions

with a firm's production and output, it remains unclear whether such correlations can be used to conclude the link between a firm's stock returns and its carbon performance.

Thus, understanding the nuances of carbon data interpretation and provenance becomes crucial in our study. It is necessary to examine whether this link exists within the EU, where regulations are more advanced, and the population appears more inclined towards sustainable development themes. Emissions disclosure is more prevalent in Europe, and investors in European firms arguably place greater importance on nonfinancial performance (Gibson et al., 2022). When industry fixed effects are included, we find no relationship between unscaled emissions and returns, though a connection between scope 1 emissions and returns is observed without industry fixed effects. This suggests that if emissions influence investor demand for European stocks, it occurs through aversion to specific industries. Similarly, a relation between emissions intensity and returns is found when industry-fixed effects are not included, but this disappears when industry-fixed effects are considered. Additionally, even the former results weaken or vanish when firm-disclosed emissions observations are taken into account. Therefore, while differences between American and European settings are observed, the key issues highlighted in the article (such as accounting for vendor estimation and scaling emissions by firm size) remain relevant.

Aswani et al. (2023) argues that, in isolation, a relationship between unscaled emissions and stock returns can only be interpreted as the evidence of a connection between a firm's productivity and its stock market performance. Conversely, emissions intensity, which measures the ratio of emissions to net sales, better captures a firm's emissions performance by avoiding mechanical correlations with firm size. Using unscaled emissions instead of emissions intensity to assess carbon performance is akin to using net income instead of ratios like return on assets (ROAs) to measure financial performance.

Furthermore, if the goals of society and firms are to maintain similar output levels without a proportionate increase in carbon emissions, reducing emissions intensity assumes significant importance (Nordhaus, 2019). Thus, the authors argue that emissions intensity, which accounts for size, is an appropriate measurement choice to understand individual firms' carbon efficiency. Emissions intensity also better aligns with the taste-based argument for why emissions may relate to returns. Relying on unscaled emissions implies that investors with a distaste for carbon-inefficient firms would avoid large firms in "dirty" industries but invest in smaller firms in the same industries due to their lower total emissions. A carbon-conscious investor driven by taste would be more likely to shun all firms in a "dirty" industry, like how some investors avoid all firms in "sin" industries (Hong and Kacperczyk, 2009).

While the findings thus far do not align with a carbon premium, emissions may indirectly affect returns through firm fundamentals. For instance, if more emissions-intensive firms generate higher profits (perhaps due to a lack of reinvestment in greener production processes), a positive relationship between profitability and stock returns could imply an indirect positive link between emissions and returns. Additional analyses exploring the relationship between emissions and various measures of operating performance yield similar results to the returns setting: while unscaled emissions show a correlation with performance, accounting for vendor estimation and scaling emissions by the firm.

We should now set out our methodological framework for carrying out our study, which we remind you will focus on the impact of carbon emissions on corporate share values (sensitivity, fluctuation), in the sense of the sensitivity of European financial markets.

CHAPITRE 5 – METHODOLOGY

III. SETTING AND ASSUMPTIONS

As mentioned previously, the purpose of this study is to attempt to measure the impact of carbon emissions disclosures on the value of company stocks in the European Union.

To this end, and thanks to the literature review, we have put forward a few assumptions that will serve as a guiding force throughout this study:

- H1: European financial markets (investors and fund managers) show a negative relationship to a rise or stagnation in corporate carbon emissions.
- H2: the countries of origin of EU companies affect market sensitivity to their carbon emissions.
- H3: Euro Index 100 companies are more sensitive to carbon emission reductions, but the sensitivity varies according to the country of origin of the companies.

This section will offer a conceptual research methodology to answer the research question, as well as the assumptions presented above. The idea would be to carry out an event study - the most appropriate methodology is commonly employed in studies related to this field in both finance and economics.

This section will aim to propose a conceptual research methodology to answer the research question, as well as the assumptions presented above. The idea would be to carry out an event study - the most appropriate methodology is commonly employed in studies related to this field in both finance and economics.

We would then look for a period of at least 30 events, i.e., around 3 years. We will take a range extending over more than 5 years, as this is a more rounded figure, and having a wider range of data allows us to see how the market anticipates information and/or ingests it only later. Let us go back to the event studies.

- Background:

Event studies are conducted based on the theory of efficient markets; which suggests that share prices promptly respond to new information concerning a firm's profitability (Fama, 1970). For event studies to be effective, the market needs to exhibit at least semi-strong efficiency, where the effects of an event are immediately reflected in security prices.

The fundamental principle behind the event study technique, derived from this theory, is to compare a company's performance during a specific event with the expected performance in the absence of that event (MacKinlay, 1997).

In the field of finance, the event study methodology is widely used to examine the impact of both macroeconomic and firm-specific events. It resorts to the use of financial market data to assess the effect of an event on a firm's valuation (MacKinlay, 1997).

By employing event studies, researchers aim to understand how stock prices and market values react to significant events, enabling them to gain insights into the relationship between events and financial market outcomes. This methodology provides a rigorous framework for analyzing the impact of various events on firm performance and valuation.

- General Procedure for an Event Study:

1. Identifying an event:

The first step is generally to identify a specific event we want to examine. In this study, the event of interest is the disclosure of carbon emissions by the issuing companies.

2. Determining the event window:

The next step is to establish the period during which the event is expected to have an impact on share prices, known as the "event window". Typically, the event window spans multiple days, including the announcement day and the subsequent day. It is important to consider both the pre-event and post-event periods to capture the effects of anticipation and delayed market reactions. The literature suggests that a minimum three-day event window, from $t_1=-1$ to $t_2=1$, is commonly used. Furthermore, studies often extend the event window up to 60 days after the event; with almost all of them (67.7%) closing the extension window within five days. It is interesting to note that a smaller

percentage (22.6%) extend it to 60 days (Oler, Harrison, and Allen, 2008). For this study, we propose a symmetric five-day event window centred around the day of the event.

3. Company sample selection:

The third step involves the selection of the companies to be included in the study. All of the chosen ones must have experienced the specific event under analysis: carbon emissions' disclosure. For this study, we will focus on large European companies from various sectors to ensure a representative sample of the European business landscape. Additionally, we will include companies that are subject to EU green regulations. Furthermore, we will examine companies listed in the Euro Index 100 to assess whether being part of a major index impacts public awareness and stock prices.

By following this general procedure, we can conduct an event study to examine the impact of carbon emission disclosures on the stock prices of selected large European companies.

4. Calculating Abnormal Returns in an Event Study:

Once the event and event window have been identified, the next step in an event study is to calculate abnormal returns. Abnormal returns compare a stock's actual return during the event window with its expected return if the event had not occurred. The calculation of abnormal returns involves the following steps:

$$AR_{it} = R_{it} - NR_{it}$$

5. Daily Returns Calculation:

Calculate the daily returns for each stock in the sample during the event window (from t_1 to t_2). Daily returns are typically calculated as the percentage change in the stock's closing price from the previous day. This provides a measure of the stock's daily performance relative to its price level.

6. Determining the Expected Normal Return:

To determine the expected normal return for each day of the event window, a benchmark model is utilized. Common benchmark models include the Capital Asset Pricing Model (CAPM), the Fama-French three-factor model (which can be extended to incorporate climate or carbon risks), and time-series models. These models estimate the expected return of the stock based on factors such as market risk, firm-specific risk, and relevant economic variables. The benchmark model provides an estimate of what the stock's return would have been in the absence of the event.

7. Calculation of Abnormal Returns:

Abnormal returns are computed by subtracting the expected normal return from the actual observed return for each day of the event window. The difference between the actual return and the expected return represents the abnormal return, which captures the stock's performance that is

attributable to the event. Positive abnormal returns indicate that the stock outperformed expectations, while negative abnormal returns suggest underperformance.

By following these steps, we can calculate abnormal returns for each stock in the sample during the event window, providing insights into the impact of the event (in this case, the disclosure of carbon emissions) on stock performance.

Different approaches can be used to determine the returns in an event study; such as logarithmic returns or basic returns. In the context of our case study on the impact of carbon emissions disclosure on stock values over a period of around 5 days, the logarithmic return method is considered more appropriate.

The logarithmic return is calculated by taking the natural logarithm of the ratio of the stock's closing price on the current day to its closing price on the previous day. Mathematically, it can be expressed as:

- $\text{Logarithmic Return} = \ln\left(\frac{P_t}{P_{t-1}}\right)$

where P_t is the closing price on day t , and P_{t-1} is the closing price on the previous day ($t-1$).

The use of logarithmic returns accounts for the compounding effect of successive returns and is additive over time. This is particularly useful in event studies that span multiple days or years, as it allows for consistent measurement of returns across different periods. The issue of normal returns in finance revolves around their non-additive nature, requiring the accumulation of individual returns over time. In contrast, log returns possess a time-additive property, where the summation of log returns yields the desired outcome. Consequently, the utilization of log returns proves to be more advantageous in our research context.

The use of normal returns, which represent the arithmetic difference between the ending and beginning prices of an asset, can result in misleading conclusions when analyzed over extended periods. Since normal returns are not additive, their cumulative aggregation fails to accurately reflect the overall performance of the asset. This limitation poses challenges in capturing the true dynamics of financial markets and may hinder precise analysis and decision-making.

In contrast, log returns provide a viable alternative due to their time-additive property. Log returns are derived from the natural logarithm of the ratio between the ending and beginning prices of an asset. By summing the log returns over the desired period, we achieve a cumulative measure that accurately reflects the compounded growth or decline of the asset. This property is particularly useful when examining long-term trends, assessing the performance of investment portfolios, or conducting statistical analyses.

The utilization of log returns in our research context offers several advantages. Firstly, the time-additive nature of log returns enables us to capture the cumulative effects of market fluctuations, accounting for compounding returns over time. This facilitates a more accurate assessment of investment performance and risk analysis. Secondly, the use of log returns aligns with established financial theories and models, such as the assumption of log normality in asset price distributions. This enhances the compatibility and interpretability of our findings within the existing financial literature.

Overall, the adoption of log returns in our research provides a more meaningful and reliable approach to analyzing financial data. By accounting for the time-additive nature of log returns, we can accurately capture the cumulative effects of market movements and derive valuable insights for our research objectives.

In the book "The Econometrics of Financial Markets" by Campbell, Lo, and MacKinlay (1997), the use of logarithmic returns is discussed in the context of event and time series analysis. Considering the 5-day event window in your case study, the logarithmic return method is recommended in order to capture the cumulative effect of the event over the specified period.

By resorting to the use of the logarithmic return method, you can accurately measure the stock's performance during the event window. You can also calculate the abnormal returns by comparing them to the expected normal returns derived from the benchmark model. This approach provides a reliable basis for evaluating the impact of carbon emissions disclosure on stock values in your study.

After establishing the event window and gathering the requisite data for the estimation period, the subsequent phase in an event study involves estimating the normal returns using a selected model. The estimation window is the period preceding the event window, and it is typically used to calculate the normal performance of the stock.

The market model (such as the Capital Asset Pricing Model (CAPM)) is the one that is the most commonly used. It relies on historical stock returns and relevant risk characteristics to estimate the expected normal return for each day within the event window.

To estimate the normal returns, the parameters of the market model are determined using data from the estimation window; which is usually a period preceding the event window. The event period itself is excluded from the estimation period to prevent the event from influencing the estimation of the model's parameter values.

One commonly used equation to estimate the normal return in an event study is the market model, which is based on the Capital Asset Pricing Model (CAPM). The equation for the market model is as follows:

- $R_{i(t)} = \alpha_i + \beta_i \times R_{m(t)} + \varepsilon_{i(t)}$

Where:

- $R_{i(t)}$ represents the actual return of stock i at time t;
- α_i is the stock-specific intercept, representing the abnormal return that is not explained by the market;
- β_i is the stock's beta coefficient, measuring the sensitivity of the stock's returns to market returns;
- $R_{m(t)}$ is the return of a market index (such as a stock market index) at time t;
- $\varepsilon_{i(t)}$ represents the residual, which captures any unexplained or idiosyncratic factors affecting the stock's return.

To estimate the normal return for each day within the event window, the market model parameters (α_i and β_i) need to be determined using historical data from the estimation window. Once the parameters are estimated, they can be used to calculate the expected normal return for each day within the event window.

The expected normal return for stock i at time t, denoted as $E[R_{i(t)}]$, can be calculated as:

$$E[R_{i(t)}] = \alpha_i + \beta_i \times E[R_{m(t)}]$$

In this equation, $E[R_{m(t)}]$ represents the expected return of the market index at time t. This can be based on historical data from the estimation window or other appropriate estimates.

By comparing the observed returns during the event window with the expected normal returns calculated using the market model, we can determine the abnormal returns, which represent the deviation of the stock's performance from what would be expected under normal market conditions.

Once the market model parameters are determined, daily stock returns for the estimation period are calculated. These returns are then used in conjunction with the market model to calculate the expected normal return for each day within the event window. This provides a benchmark against which the actual observed returns during the event window can be compared.

To test the significance of abnormal returns, statistical tests are conducted. The test that is the most commonly used is the t-test. It compares the observed abnormal returns to zero to determine if they are statistically different from what would be expected based on the normal returns. If the abnormal returns are found to be statistically significant, it then suggests that the event had a significant impact on the stock's performance.

By conducting significance tests for abnormal returns, we can assess whether the observed returns during the event window deviate significantly from what would be expected under normal market conditions. This analysis helps determine the impact of the event, such as the disclosure of carbon emissions, on the stock's performance.

So much for the overall methodology. As for the details of the variables that would be measured in the study, there would be a certain number that would be defined according to the viability and validity of the data. Conceptually, this would be like Aswani & al (2023), details of which are given in Appendix 5.

IV. FEASIBILITY OF THE PROJECT AND DATA

The feasibility of the project in terms of data can be addressed by leveraging various public and private databases (*cf.* Figure 21) that have been used in previous studies (Bolton and Kacperczyk, 2021a, 2022; Aswani, and al., 2023). Some of the commonly employed data sources include:

Public financial databases: Publicly available financial databases such as Datastream, Worldscope, and Compustat Global can provide valuable financial information about companies, including their financial statements, market data, and company-specific variables.

Environmental data sources: Data providers like Trucost and GSIA offer environmental data, including carbon emissions data, which can be utilized to study the impact of carbon reporting on stock values. Additionally, statistical data from major organizations like the World Bank Open Data and Climate Change Knowledge Portal can provide relevant environmental and climate-related information.

Stock market data: Stock market prices are essential for calculating stock returns and conducting event studies. While there are private databases available for stock market data, public sources like Euronext or other publicly accessible stock market data can be used for historical data analysis (We could also consider requesting data from rating agencies such as Vigeo Eiris or Ethifinance). Comparisons with companies in other regions such as the US or Asia (China, Hong Kong, Japan, and Taiwan) can also be made to ensure external validity.

Qualitative analysis: In conjunction with quantitative analysis, a qualitative study can be conducted to explore the impact of corporate carbon reporting based on the sectors in which companies operate. This qualitative analysis can provide insights into how carbon emissions affect different sectors and how public attention can influence the ratings of companies.

Cross-border and cultural effects: Another potential avenue for research is to analyze the cross-border and cultural effects on company value in the context of carbon emissions publication. This

analysis could involve comparing the practices and impacts across different countries and regions to understand the broader implications.

Rank	Country	CO ₂ emissions Total (in GT)	Share	CO ₂ emissions Per capita (in MT)
1	China	10.06	28%	7.2
2	USA	5.41	15%	15.5
3	India	2.65	7%	1.8
4	Russia	1.71	5%	12.0
5	Japan	1.16	3%	8.9
6	Germany	0.75	2%	8.8
7	Iran	0.72	2%	8.3
8	South Korea	0.72	2%	12.1
9	Saudi Arabia	0.72	2%	17.4
10	Indonesia	0.72	2%	2.2
11	Canada	0.56	2%	15.1
15	Turkey	0.42	1%	4.7
17	United Kingdom	0.37	1%	5.8
19	France	0.33	1%	4.6
20	Italy	0.33	1%	5.3

Figure 20: CO₂ Emissions by country⁶⁸

By utilizing these data sources and combining quantitative and qualitative approaches, the project can provide valuable insights into the impact of corporate carbon reporting on stock values, sector-specific effects, and the influence of cross-border and cultural factors.

Company	Intensity (in tCO ₂ e/\$ mn)			
	SC ₁	SC ₂	SC ₃ ^{up}	SC ₃ ^{down}
Amazon	20.5	19.6	71.5	37.2
Apple	0.2	3.3	106.2	21.0
BNP Paribas	0.8	3.6	24.6	0.0
BP	177.7	18.8	375.1	2 104.5
Caterpillar	16.8	17.2	282.5	7 472.0
Danone	25.5	33.4	1 023.4	157.7
Exxon	434.3	35.2	419.8	2 324.6
JPMorgan Chase	0.7	6.0	26.8	133.6
LVMH	1.1	4.4	197.3	15.7
Microsoft	0.9	28.3	47.5	31.8
Nestle	35.3	34.4	657.6	363.9
Pfizer	14.2	14.7	90.2	2.6
Samsung Electronics	25.6	55.6	169.7	308.4
Volkswagen	15.9	21.1	231.0	1 254.9
Walmart	11.9	25.4	79.0	62.9

Figure 21: Examples of 2019 carbon intensities⁶⁹

⁶⁸ Source : T. Roncalli, 2023 from : Earth System Science Data, <https://earth-system-science.data.net> ; and, World Bank Open Data, <https://data.worldbank.org/topic/climate-change> .

⁶⁹ Source : Trucost (2022) & Barahhou and al., 2022.

CONCLUSION

The plurality of concepts encompassing the domain of green finance gives rise to questions regarding the methodological alignment of this approach. Indeed, as it was previously highlighted, there is a profusion of concepts that can be utilized to define green and responsible finance. Consequently, these interconnected concepts often overlap with one another. Nonetheless, existing literature appears to have outlined a certain cartography of responsible or green finance. It can be posited that this form of finance can be divided into two sub-components: ethical finance and solidarity finance. The former corresponds to the more specific appellation previously known as a socially responsible investment (SRI), which has evolved to incorporate alternative designations such as impact finance. Ethical finance shares the profit-oriented objective of conventional finance while addressing environmental, social, and governance (ESG) concerns. Conversely, solidarity finance solely aims to foster solidarity with others and does not encompass an absolute profitability objective. Therefore, green finance represents one of the two sub-components of responsible finance. Green finance can be further categorized into distinct approaches based on ESG criteria, ranging from the less radical (best-in-class) to the more radical (exclusion or impact investing) approaches. It is worth noting that in addition to social and environmental considerations, green finance also emphasizes corporate governance, rendering it well-aligned with corporate social responsibility (CSR) initiatives and, consequently, shareholder activism practices. However, the absence of a consensus and regulatory framework, attributable to the diversity of approaches and frameworks, entails difficulties for companies, whether financial or otherwise, seeking to incorporate green finance into their operations. Consequently, the identification of non-financial criteria remains subject to considerable debate, as it is heavily influenced by individual sensibilities, be they those of managers or individuals seeking investment opportunities.

The concept of extra-financial criteria encompasses a range of notions that collectively contribute to responsible finance as a comprehensive framework. Despite being in existence for three decades, responsible finance continues to lack consensus within the literature and faces research gaps in certain areas. Nonetheless, various initiatives have been undertaken to establish a framework and methodology for these criteria. Currently, it is feasible to outline the parameters of sustainable finance., albeit with some disparities, particularly concerning extra-financial criteria. Thus, it is justifiable to view socially responsible investment (SRI) as an innovative approach that addresses societal needs within responsible finance. Operating at different levels, these innovations have the potential to reshape corporate governance principles and establish extra-financial criteria as their fundamental basis. Well aware of the importance of sustainable development, European institutions have displayed a striking sensitivity regarding this matter. A supportive institutional framework has

been established since the early 2000s, with the additional impetus provided by the mandates of Commission President Ursula von der Leyen and Christine Lagarde at the Central Bank. These influential figures have spearheaded significant regulatory projects, including the Sustainable Finance Disclosure Regulation (SFDR), Taxonomy, and Corporate Sustainability Reporting Directive (CSRD).

Considering the elements studied in this document, it becomes evident that numerous initiatives are addressing the challenges met by our contemporary societies. Specifically, the integration of sustainability into our economic model, which currently leans towards infinite production within a finite world, is a pressing concern. In this regard, financing plays a crucial role in the vacillations of the ever progressive paradigm shift; a fact acknowledged by the proponents of sustainable finance and other components comprising green or responsible finance. Nonetheless, the lack of consensus and regulatory frameworks established by public authorities remain significant barriers impeding the comprehensive implementation of green finance within our practices. As a trailblazer in this domain, the European Union (EU) should persist in taking initiatives to foster change, given its unique status as the only supranational institution genuinely addressing the technical and legal challenges confronting our society. Notably, the EU's actions signal a growing integration of member states into a common framework, as exemplified by endeavours such as the Capital Markets Union, participatory financing of the COVID-19 recovery plan, and the standardization of non-financial information practices.

In the same way, we have seen that products that are said to be sustainable or ESG have similar profitability to those of conventional finance without applying any filters.

As a consequence of this principle, it follows that that in terms of risk management, green finance seems to favour a reduction in risk through the inclusion of socio-environmental criteria in the creation of portfolios, as well as the long-term orientation of these investments. Public attention has a long-term impact on the legitimacy of action and, more broadly, on the value it creates. In other words, In this perspective, the concept entails that the public, by perceiving the company as virtuous, bestows value upon it, emphasizing the notion of legitimacy.

Moreover, about the legal, cultural, and institutional context, it is crucial to delineate the distinctiveness of the European Union as a supranational entity. It becomes evident that the legal heritage of each country exerts a substantial impact on the corporate social responsibility (CSR) practices adopted by companies. Moreover, whether they agree with Common or Civil Law, the level of attention devoted to CSR practices varies, as corporate governance orientations differ among entities. Similar conclusions can be drawn when it comes to cultural and institutional frameworks; which often display a heightened sensitivity to CSR expectation (and by extension ESG) on continental models.

The EU has launched several measures designed to be transposable to national frameworks - hence their evasive nature - taking into account both economic and spatial disparities and the desire to apply the principles of a sustainable economy, notably through the prism of financing the energy transition and achieving carbon neutrality by 2050.

The aim of this dissertation was therefore to measure the impact of the disclosure of European companies' carbon reports on the value of their shares in terms of sensitivity and volatility; it was also intended to contribute to the literature on risk management since the transition or climate risks (part of ESG criteria, but at the same time concrete) are now an integral part of fund managers' concerns. We have also put forward some hypotheses that we are unable to confirm or refute in the absence of the study. On the other hand, we can nevertheless draw the following conclusion from the literature review: public attention is increasingly focused on non-financial information issues (Gibson et al., 2022). On this basis, we can already expect stronger reactions than in the US or Asian markets. In the context of our study, it, therefore, seems that, given the EU's desire for attention, investors should be more sensitive to the issue of carbon emissions, which should translate into a relative fall in the share price of companies that are not reducing their emissions or that are increasing them.

Also, the paper of Shaojun Zhang (2023) concludes that, in recent years, carbon-intensive firms in the U.S. have exhibited lower performance compared to their less carbon-intensive counterparts. However, there is no observed excess return associated with total carbon emissions and emission growth. Furthermore, there is little international evidence of the existence of a carbon or green premium. Additionally analysis suggests that the green premium observed in the U.S. and the variations across countries are unlikely to be a result of data mining. Instead, shifts in investor preferences and growing climate concerns are identified as significant drivers of the cross-country variation; which is leading to stronger green returns in certain countries. Overall, the findings indicate that the global transition towards a new equilibrium with heightened carbon awareness is promptly progressing. Based on this principle, we can expect results that are, if not similar, at least as important in Europe, given the heightened sensitivity of market players relative to the USA. This would confirm our initial hypothesis that there is a negative relationship between rising corporate carbon emissions and stock prices.

Considering this principle, we can expect similar or equally significant outcomes in Europe due to the heightened sensitivity of market participants compared to the USA. This supports the initial hypothesis that there is a negative relationship between rising corporate carbon emissions and stock prices. Empirical studies have demonstrated a positive association between unscaled carbon emissions and stock market returns, which could apply to Europe given its heightened sensitivity. It is important to study these differences to understand supranational decision-making and the transposability of

measures to national contexts, considering cross-border effects. This would support our initial hypothesis, which stated that there is a negative relationship between increasing corporate carbon emissions and stock prices. Bolton and Kacperczyk (2021a, 2022) and Aswani et al. (2023) have quantitatively demonstrated a positive relationship between unscaled carbon emissions and stock market returns, a finding that can be extended to Europe given its heightened sensitivity and the methodological ambiguity surrounding carbon emissions reporting under the Corporate Sustainability Reporting Directive (CSRD). However, Matsumura, Prakash, and Vera-Munoz (2014) have found a negative relationship between firm value and emissions. Yet, this finding is countered by studies such as Oestreich and Tsiakas (2015), Dutta et al. (2018), Basse Mama and Mandaroux (2022), Clarkson et al. (2015), and Martin et al. (2016), which emphasize the overall attention that investors pay to the European carbon market quotas, thereby reinforcing the notion of sensitivity to the carbon issue in Europe and the desire for emissions reduction.

Additionally, the article by Aswani et al. also highlights two main factors contributing to the relationship between carbon emissions and stock market returns or firm value documented in previous studies. First, the estimation methodologies employed by carbon emissions data providers. Then, the focus in several prior studies on unscaled emissions, which are inherently correlated with productivity and company size. Researchers, practitioners, and policy-makers should exercise caution when interpreting statistical associations between carbon emissions and returns. Therefore, it is crucial to consider these factors when examining the data in our study. These findings suggest that the European market is particularly sensitive to the quality and source of carbon emissions data.

In their article, Pastor, Stambaugh, and Taylor (2022) contend that green stocks have demonstrated superior performance as the result of an unexpected surge in societal environmental concerns. Therefore, we anticipate finding similar outcomes in our study focused on carbon-related issues. For instance, Park and Monk (2019) discover positive stock return alpha by adopting a long position in low-emission stocks and a short position in high-emission stocks. Alessi et al. (2020) provide empirical evidence of a negative "Greenium," indicating a risk premium associated with corporate environmental performance and transparency, based on individual stock returns in Europe. This should equal to lower stock prices, unless investors are willing to take risks in this direction.

A potential counter-argument to these findings is that companies disclosing their emissions may exhibit systematic differences from those that do not, which could explain the observed stylized facts. Bolton and Kacperczyk (2021b) propose that if a carbon premium exists, it would be attenuated for companies disclosing their emissions due to reduced uncertainty for investors.

Furthermore, high-emission companies could face elevated capital costs due to a potential government intervention that aims to address climate change. These risks encompass factors such as carbon taxes or obligatory cleanup expenses. Several studies, including Bolton and Kacperczyk (2021a) and Pedersen, Fitzgibbons, and Pomorski (2021), support this risk-based argument, suggesting a positive relationship between emissions and stock market returns. Consequently, the European political and regulatory landscape should reflect this principle by indicating that a market reaction would involve offering higher returns to the most polluting companies or those failing to reduce their emissions.

The second argument revolves around investor preferences. Some investors may choose to avoid companies operating in "brown" sectors that are perceived as causing significant harm to society. This investor aversion, as argued by Pastor, Stambaugh, and Taylor (2021) and Pedersen, Fitzgibbons, and Pomorski (2021), can result in a situation where high-carbon stocks underperform simply because investors lose interest in them, leading to selling pressure and subsequent price declines due to the interplay of supply and demand.

All in all, the results of the literature should enable us to support this idea of the sensitivity of the EU market to carbon emissions, and the market mechanisms they may give rise to, particularly with the interplay that may exist concerning risk premiums.

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TABLE OF FIGURES

FIGURE 1: THE RAISON D’ÊTRE OF ESG INVESTING..... 15

FIGURE 2: CATEGORISATION OF ESG STRATEGIES 17

FIGURE 3: ASSET VALUES OF ESG STRATEGIES BETWEEN 2014 AND 2020 18

FIGURE 4: THE PRINCIPLE OF RESPONSIBLE INVESTMENT 20

FIGURE 5: CREDIT RATING SCALES OF MOODY’S, S&P, AND FITCH..... 29

FIGURE 6: EXAMPLE OF DIVERGENCE IN ESG RATING 32

FIGURE 7: ESG RATING DISAGREEMENT..... 33

FIGURE 8: AN EXAMPLE OF ESG SCORING TREE (MSCI METHODOLOGY) 34

FIGURE 9: RANK CORRELATION AMONG ESG RATING 35

FIGURE 10: WHO WILL REGULATE ESG – REGULATORS VIEWPOINT 37

FIGURE 11: NUMBER OF ESG REGULATIONS PER REGION..... 38

FIGURE 12: THE EUROPEAN GREEN DEAL 40

FIGURE 13: ENTITY AND FINANCIAL PRODUCT LEVELS 42

FIGURE 14: SUSTAINABLE FINANCE TIMELINE 43

FIGURE 15: THE EU SUSTAINABLE FINANCE FRAMEWORK 47

FIGURE 16: TAXONOMY REGULATION 49

FIGURE 17: VALUE CREATION AND VARIOUS FORMS OF CAPITAL 66

FIGURE 18: WHAT KINDS OF INSTITUTIONS ARE DIVESTING FROM FOSSIL FUEL..... 73

FIGURE 19: LEGAL ORIGINS AROUND THE WORLD..... 79

FIGURE 20: CO2 EMISSIONS BY COUNTRY 112

FIGURE 21: EXAMPLES OF 2019 CARBON INTENSITIES..... 112

ABBREVIATIONS AND ACRONYMS USED

- CRSD: Corporate Sustainability Reporting Directive.
- CSR: Corporate Social Responsibility
- EIB: European Investment Bank.
- ESG: Environment, Social and Governance.
- EU: European Union.
- ILO: International Labor Organization
- NFDR: Non Financial Reporting Directive
- NFI: Non-financial information
- OECD: Organisation for Economic Co-operation and Development
- PRI: Principles for Responsible Investment.
- RI: Responsible Investment
- SD: Sustainable Development
- SFRD: Sustainable Finance Disclosure Regulation.
- SI: Sustainable Investment
- SRI: Social and Responsible Investment.
- TCFD: Task Force on Climate-Related Financial Disclosures.
- TEG: Technical Expert Group.
- UN: United Nations.
- UNICEF: UNITED NATIONS CHILDREN'S FUND.

GLOSSARY

- *Cf* or confer: from Latin confer 'compare'⁷⁰.
- *Ceteris paribus*: if everything else remains the same; other things being equal⁷¹.
- *De facto*: existing in fact, although perhaps not intended, legal, or accepted⁷².
- *In fine*: finally; in short; to sum up⁷³
- *Strico sensu*: "In the strict sense."(1) Literally and without exaggeration or approximation. (2) In a technical sense. E.g., "In the view of Nicaragua"⁷⁴.
- *Modus operandi*: Latin, literally 'way of operating' means a particular method of working⁷⁵.

⁷⁰ Source: Oxford Learner's Dictionaries.

⁷¹ Source: Cambridge Dictionary.

⁷² Source: Cambridge Dictionary.

⁷³ Source: Oxford Languages.

⁷⁴ Source: Oxford References.

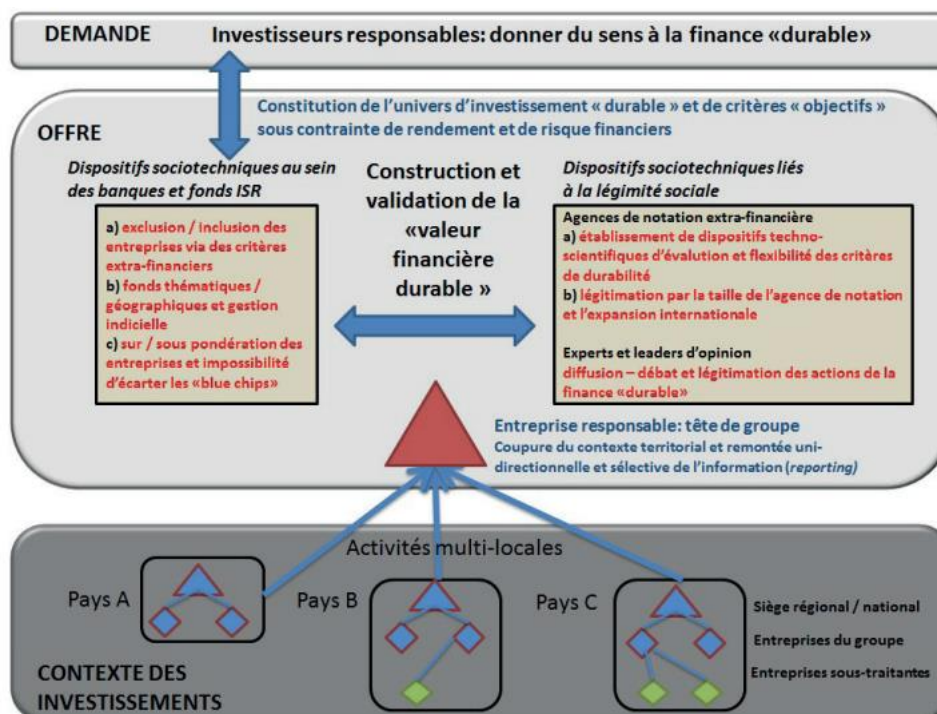
⁷⁵ Source: Oxford Learner's Dictionaries.

APPENDIX 1: PRI PRINCIPLES

“As institutional investors, we have a duty to act in the best long-term interests of our beneficiaries. In this fiduciary role, we believe that environmental, social, and corporate governance (ESG) issues can affect the performance of investment portfolios (to varying degrees across companies, sectors, regions, asset classes and through time). We also recognise that applying these Principles may better align investors with broader objectives of society. Therefore, where consistent with our fiduciary responsibilities, we commit to the following: Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes. Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices. Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest. Principle 4: We will promote acceptance and implementation of the Principles within the investment industry. Principle 5: We will work together to enhance our effectiveness in implementing the Principles. Principle 6: We will each report on our activities and progress towards implementing the Principles. The Principles for Responsible Investment were developed by an international group of institutional investors reflecting the increasing relevance of environmental, social and corporate governance issues to investment practices. The process was convened by the United Nations Secretary-General. In signing the Principles, we as investors publicly commit to adopt and implement them, where consistent with our fiduciary responsibilities. We also commit to evaluate the effectiveness and improve the content of the Principles over time. We believe this will improve our ability to meet commitments to beneficiaries as well as better align our investment activities with the broader interests of society. We encourage other investors to adopt the Principles.”

Source: <https://www.unpri.org>

APPENDIX 2: DE LA VALEUR DURABLE ET DES INDICES



La construction de la valeur « durable » par l'industrie financière

FAMILLES D'INDICES	CRÉATION	ANALYSE ESG	MÉTHODOLOGIE	EXCLUSIONS
Dow Jones Sustainability Indices	1999	RobecoSAM	Best-in-Class	
FTSE4Good Index Series	2001	Eiris	Analyse spécifique	Armement, nucléaire, taba
MSCI EGS Indices	2010	MSCI	Best-in-Class	Alcool, armement, armes à feu, nucléaire, jeux de hasard, OGM, pornographie, tabac
STOXX Global EGS Leaders Indices	2011	Sustainalitics	Best-in-Class	Entreprises ne respectant pas les principes du Global Compact*
Indices Euronext Vigeo	2013	Vigeo	Best-in-Class	Entreprises controversées

Principales familles d'indices ISR dans le monde

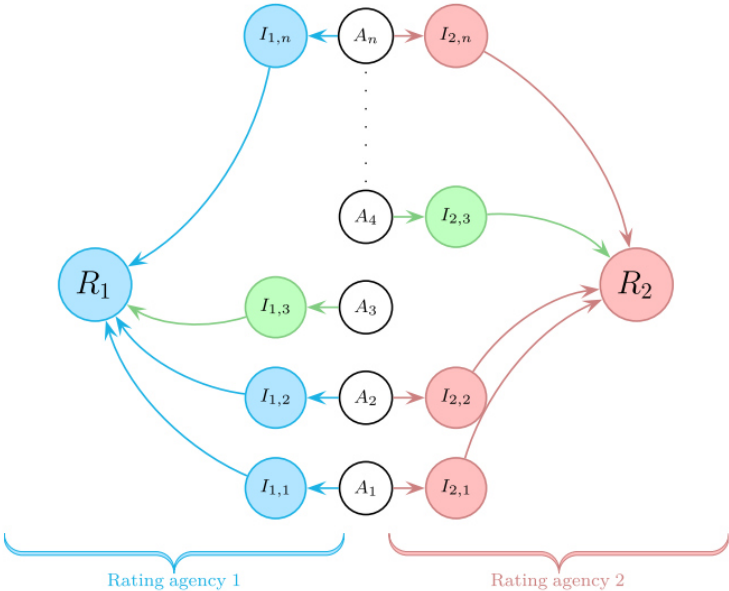
Source: Theurillat, T., Crevoisier, O. & Salomon, V. (2017). Finance de marché et fonds d'investissement durables : la coupure au territoire. Géographie, économie, société, 19, 537-560.
<https://doi.org/10.3166/ges.19.2017.0024>

APPENDIX 3 : ESG METRICS & DIVERGENCES

This table shows the indicators from different rating agencies assigned to the category Water.

Rater	Indicator name	Category
Refinitiv	Emission Reduction/Discharge into Water System	Water
Refinitiv	Resource Reduction/Water Recycling	Water
Refinitiv	Resource Reduction/Water Use	Water
KLD	ENV.CON.Water Management	Water
KLD	ENV.STR.Water Stress	Water
MSCI	Water Stress Mgmt	Water
S&P Global	Water Operations	Water
S&P Global	Water Related Risks	Water
Sustainalytics	Water Intensity-Raw Score	Water
Sustainalytics	Water Management Programmes-Raw Score	Water
Moody's ESG	Water	Water

Example of indicator assignment



The sources of divergence

Source: Florian Berg, Julian F Kölbel, Roberto Rigobon, Aggregate Confusion: The Divergence of ESG Ratings, Review of Finance, Volume 26, Issue 6, November 2022, Pages 1315–1344, <https://doi.org/10.1093/rof/rfac033>

APPENDIX 4: EXAMPLES OF ESG INVESTORS

Pedersen et al. (2021) distinguished three groups of investors:

- Type-U or ESG-unaware investors have no ESG preference and do not use the information of ESG scores;
- Type-A or ESG-aware investors have no ESG preference, but they use the ESG scores to update their views on the risk premia;
- Type-M or ESG-motivated investors have ESG preferences, implying that they would like to have a high ESG score.

“If all types of investors exist, then several things can happen. If a security has a higher ESG score, then, everything else equal, its expected return can be higher or lower. A higher ESG score increases the demand for the stock from type-M investors, leading to a higher price and, therefore, a lower required return [...] Companies with poor ESG scores that are down-weighted by type-M investors will have lower prices and higher cost of capital. [...] Furthermore, the force that can increase the expected return is that the higher ESG could be a favorable signal of firm fundamentals, and if many type-U investors ignore this, the fundamental signal perhaps would not be fully reflected in the price [...] A future increase in ESG investing would lead to higher prices for high-ESG stocks [...]. If these flows are unexpected (or not fully captured in the price for other reasons), then high-ESG stocks would experience a return boost during the period of this repricing of ESG. If these flows are expected, then expected returns should not be affected.”

Source: Lovell-Badge, R., Anthony, E., Barker, R. A., Bubela, T., Brivanlou, A. H., Carpenter, M., ... & Zhai, X. (2021). ISSCR guidelines for stem cell research and clinical translation: the 2021 update. *Stem Cell Reports*, 16(6), 1398-1408.

APPENDIX 5: EXAMPLES OF EVENTS STUDY VARIABLES

Variable	Definition	Data source
Returns	Monthly stock return (expressed in percentage).	CRSP
ROS	Return on sales, measured as the ratio of operating income after depreciation to total year-end sales.	Compustat
ROA	ROAs, measured as the ratio of operating income after depreciation to year-end total assets.	Compustat
EBIT Margin	Ratio of EBIT to total sales at year end.	Compustat
EBITDA Margin	Ratio of EBITDA to total sales at year end.	Compustat
HHI	Herfindahl concentration index of sector-level firm sales, relative to the full firm (i.e., a within-firm measure).	Compustat
ROE	ROE, measured as the ratio of net income divided by the value of its equity.	Compustat
Firm size	Natural logarithm of firm's total market capitalization.	CRSP
Invest/A	Ratio of capital expenditures to year-end total assets.	Compustat
Log PPE	Natural logarithm of property, plant, and equipment.	Compustat
Leverage	Ratio of long-term debt to assets.	Compustat
SalesGR	Change in annual firm revenues normalized by prior-year revenue.	Compustat
EPSGR	Change in annual earnings per share normalized by prior-year earnings per share.	Compustat
Log market cap	Natural logarithm of total market capitalization of a firm in a given year.	CRSP
Total assets	Total assets for a firm in a given year.	Compustat
Log sale	Natural logarithm of total sales of a firm in a given year.	Compustat
Volatility	Monthly stock return volatility calculated over the 1-year period.	CRSP
Momentum	Total stock return over the past 12 months ignoring the previous month.	CRSP
Beta	CAPM beta calculated over the 1-year period.	CRSP

Variable	Definition	Data source
Book-to-market ratio	The ratio of book value of equity to market value of equity.	Compustat
Log scope 1	Natural logarithm of scope 1 emissions (measured in tCO ₂ e). Scope 1 emissions cover direct emissions from establishments that are owned or controlled by the company and include all emissions from fossil fuels used in production.	Trucost
Log scope 2	Natural logarithm of scope 2 emissions (measured in tCO ₂ e). Scope 2 emissions come from the generation of purchased heat, steam, and electricity consumed by the company.	Trucost
Log scope 3	Natural logarithm of scope 3 emissions (measured in tCO ₂ e). Scope 3 emissions are caused by the operations and products of the company but occur from sources not owned or controlled by the company.	Trucost
Carbon intensity scope 1	Ratio of scope 1 emissions (tCO ₂ e) to revenues (millions of dollars).	Trucost
Carbon intensity scope 2	Ratio of scope 2 emissions (tCO ₂ e) to revenues (millions of dollars).	Trucost
Carbon intensity scope 3	Ratio of scope 3 emissions (tCO ₂ e) to revenues (millions of dollars).	Trucost
Scope 1 growth	Change in scope 1 emissions divided by prior-year scope 1 emissions.	Trucost
Scope 2 growth	Change in scope 2 emissions divided by prior-year scope 3 emissions.	Trucost
Scope 3 growth	Change in scope 3 emissions divided by prior-year scope 3 emissions.	Trucost
Change in carbon intensity scope 1	Year-over-year change in scope 1 emissions intensity.	Trucost
Change in carbon intensity scope 2	Year-over-year change in scope 2 emissions intensity.	Trucost
Change in carbon intensity scope 3	Year-over-year change in scope 3 emissions intensity.	Trucost
Estimated values	Indicator variable for whether emissions values are estimated by Trucost. We label an observation to be estimated if Trucost's "source of carbon disclosure" variable contains the word "Estimate."	Trucost

Variable Definition

Source: Aswani, J., Raghunandan, A., & Rajgopal, S. (2023). Are carbon emissions associated with stock returns?. *Review of Finance, forthcoming*.

TABLES OF CONTENTS

ANTI-PLAGIARISM STATEMENT	4
ACKNOWLEDGMENT	7
TABLE OF CONTENTS	6
FOREWORD	7
INTRODUCTION	8
PART 1: - ACADEMIC LITERATURE	11
CHAPTER 1 – SUSTAINABLE FINANCE IN THE EUROPEAN UNION.....	12
I. Methodological and theoretical framework of extra-financial criterion.....	12
A. A definition as a conceptual framework?.....	12
B. Green labels: a tool to measure the extra-financial quality of organizations?.....	21
C. Methodologies used by non-standardized extra-financial rating agencies: variable evaluations.	28
II. The European Union as a regulatory framework for taking extra-financial criterion into account? 36	
A. The SFDR as a regulatory framework for sustainable finance	38
B. The EU Taxonomy as a classification scheme for sustainable economic activities.....	44
C. Other EU regulations used to ensure compliance of economic activities with sustainable development objectives. 51	
CHAPITRE 2 – THE IMPACT OF THE NATIONAL ENVIRONMENT & GREEN FINANCE ON ORGANIZATIONS.....	58
I. How does the input of extra financial criterion impact the performance of organizations?	58
A. Is the profitability/risk ratio still relevant?	58
B. In which manner are the extra-financial criteria implemented within these organizations?.....	63
C. What type of result does it yield in terms of organizational practices and risk management?.....	71
II. Application of supranational regulations in the national contexts of the different member states. 76	
A. Consider the countries' cultural framework to better grasp the institutional one.	76
B. What are the consequences on the legal system, within the framework of the EU resolutions?	83
C. Which impact can we expect in terms of corporate behaviour and fund managers?	89
PART 2: - RESEARCH QUESTION & METHODOLOGY	96
CHAPITRE 4 – RESEARCH QUESTION.....	97
I. General framework.....	97
II. What does literature have to say?.....	98
CHAPITRE 5 – METHODOLOGY	105
III. Setting and assumptions.....	105
IV. Feasibility of the project and data	111
CONCLUSION	113
BIBLIOGRAPHY	118
TABLE OF FIGURES	135
ABBREVIATIONS AND ACRONYMS USED	136
GLOSSARY	137
TABLES OF CONTENTS	144