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Chair of Sustainable Development and Energy and Climate

**Sustainable bonds and the market for green and sustainable bonds**

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## INTRODUCTION

In recent decades, sustainable finance has taken on a central role in the global economic landscape, becoming one of the main responses to the challenges posed by climate change, growing social inequality, and the need for responsible management of natural resources. This study aims at exploring the evolution of sustainable finance and its impact on financial markets and businesses. Specifically, it will examine the various facets of sustainable finance, with particular attention to the innovative financial instruments that have facilitated the transition to a low-carbon economy and a more inclusive and transparent management of resources.

In the first chapter, the concept of sustainable finance is explored, starting from its connection to sustainable development and outlining the evolution of ESG (Environmental, Social, Governance) criteria as a tool for assessing sustainability. The main regulatory instruments introduced at the European level, such as the European Taxonomy and the SFDR Regulation, which aim to standardize sustainable investment practices, prevent greenwashing, and promote greater transparency and consistency in the markets, will also be analyzed.

The second chapter focuses on new financial instruments in sustainable finance, such as green bonds and social bonds. The functioning of these instruments and their impact on channeling resources towards sustainable projects are analyzed. Through the analysis of concrete cases and the exploration of the principles governing these bonds, this chapter illustrates how sustainable financial instruments can promote the adoption of responsible corporate practices and foster the development of a greener economy.

In the third and final chapter, the focus shifts to the market for green, social, and sustainability bonds, with particular attention to the main ESG rating methodologies used for the construction of sustainability indices. This chapter examines the advantages of these financial instruments and the implications for businesses and investors. Furthermore, it explores the methodologies for evaluating ESG performance and their role in guiding sustainable investment decisions.

# CHAPTER 1 SUSTAINABLE FINANCE

## 1.1 From sustainable development to sustainable finance

### 1.1.1 The notion of sustainable development

The notion of sustainable development was first introduced in the "Brundtland Report"<sup>1</sup>, also known as "Our Common Future," published in 1987 by the UN World Commission on Environment and Development (WCED). According to the report, sustainable development is defined as development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs (WCED 1987, p.43). In this initial definition, sustainable development is directly linked to environmental protection, to be integrated into traditional economic and social issues. This principle was then discussed at the United Nations Conference on Environment and Development, held in Rio de Janeiro in 1992. This conference, commonly known as the Earth Summit, was one of the most important international meetings on environmental issues and sustainable development.

It brought together world leaders, government officials, and non-governmental organizations to discuss and negotiate measures to address global environmental challenges. The conference resulted in Agenda 21 (intended for the 21st century), a global action plan for sustainable development that identifies key areas for intervention at the local, national, and international levels. Agenda 21 covers a wide range of issues, including poverty, health, natural resource management, biodiversity, and sustainable urban development.

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At the summit, the United Nations Framework Convention on Climate Change (UNFCCC) was also signed. This is an international treaty which aims at addressing climate change with the goal of stabilizing greenhouse gas concentrations in the atmosphere. The Rio conference helped bring this environmental issue at an international level, paving the way for future treaties, global initiatives in sustainable development, and environmental protection. Sustainable development has become a principle of international law and has contributed to the evolution of international environment. Many agreements and treaties, either at a bilateral or international level, were written as a result. Among these is the Paris Agreement of 2015 (adopted at UNFCCC COP 21), which is the first universal and legally serious agreement on a global action plan, with the participation of 195 signatory countries.

In the same year, the United Nations released the so-called Agenda 2030: 17 sustainability goals (Sustainable Development Goals - SDGs) through 169 targets to be achieved by 2030. The sustainability concept established by the early agreements remained too general and undefined to allow the development of a regulatory plan to guide policymakers to adopt concrete actions and policies towards sustainability. The Economic analysis did not offer much help either because for long periods it did not clearly define the notion of sustainability, except the context of the opposition between conservative economists on one side, and critics of linear economic growth on the other.

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<sup>1</sup> The report is named after the then Norwegian Prime Minister named Gro Harlem Brundtland, then chairman of the World Commission on the environment and development of the United Nations

However, following the Brundtland report, there has been an increasing consensus among economists that the notion of sustainable development is compatible with the classical economic paradigm. Some authors, including Campbell (1996)<sup>2</sup>, Beatley, Manning (1998)<sup>3</sup>, Berke R and Conroy (2000)<sup>4</sup>, believe it is possible to incorporate the concept of sustainability into traditional finance schemes, recognizing either the roles of currency and capital as ideal instruments for meeting the needs of future generations, or the role of finance as a "service" to the real economy and its productive processes.

In this way, it is understood that the classical paradigm can incorporate a model of economic growth based on a dynamic and long-term perspective. Thus, it considers the interests of both current and future generations, and acknowledges the interdependence between the economic, environmental, and social dimensions<sup>5</sup>. Over time, it has become clear that integration of economic processes with environmental and social aspects cannot disregard the governance of decision-making entities, both public and private. "If companies continue to treat climate change issues solely as a matter of social responsibility rather than business, they will only incur immense risks" (Scattola 2010, page 30).

### 1.1.2 The notion of sustainable finance

The concept of sustainable finance has not evolved in parallel with the concept of sustainable development. Even though the UN's 2030 Agenda includes a goal specifically related to macroeconomic aspects, it does not explicitly attribute specific importance to the financial system, recognizing however the key role of investments as a driver of sustainable development. The G20 Sustainable Finance Study group, drawing inspiration from the 2030 Agenda, has explicitly referred to market mechanisms that promote strong, sustainable, and inclusive growth capable of promoting the SDGs, improving the stability and efficiency of the financial system.

This is achieved through appropriate risk management and addressing market failures, such as those related to the lack of pricing for negative externalities in production resulting from company activities.

In 2017, the World Bank, during the World Bank Group Initiative summit, more explicitly associated the concept with the functioning of businesses and financial markets, leveraging the notion of a strong commitment from business owners and managers to integrate sustainability into corporate strategy. In Europe, the crucial role of the financial system in supporting the ecological transition has been recognized, given the inadequacy of public resources available for this purpose. However, even if public resources were available, it does not necessarily mean that it would be more efficient to achieve the economic transition through state funding rather than through taking responsibility in the behavior of consumers/producers. Even if the concept of sustainable finance is not defined as clearly as the concept of sustainable development. The EU "high-level expert group on sustainable finance" (a group of experts from the financial community named by the EC) state in their 2018 final report that sustainable finance involves two

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<sup>2</sup> Campbell S. (1996) "Green cities, growing cities, just cities Urban planning and contradictions of sustainable development", *Journal of American Planning Association*, 62 (3), pp. 296-312

<sup>3</sup> Beatley T., Manning K. (1998), *The ecology of place: planning for environment, economy and community*, Island Press, Washington DC.

<sup>4</sup> Berke R., Conroy M. M. (2000), "Are we planning for sustainable development. An evaluation of 30 comprehensive plans", *Journal of American Planning Association*, 66 (1), pp. 21-33

<sup>5</sup>As Fusco Girard L. and P. Nijkamp (1997) argue, in fact, the functioning of the economic system is linked to the natural ecosystem (which can be considered free as implicitly assumed in the traditional economic paradigm, only if human behaviors do not jeopardize stability and resilience) and to profiles concerning equity, such as wealth distribution, respect for basic human rights, and economic and financial inclusion.

fundamental imperatives: the first being to improve the contribution of finance towards sustainable and inclusive growth that achieves mitigation of climate change. The second imperative is to strengthen financial stability by integrating environmental, social, and governance (ESG) factors into investment decisions. Furthermore, the report asserts that "sustainable finance consists of an integrated approach to developing financial services that incorporates all three ESG dimensions into market practices, products, and regulatory frameworks," and that it is axiomatically linked to a long-term time frame requiring patience and trust in investments that take time to manifest their value. In its broadest sense, the notion of sustainable finance refers to strengthening financial stability in an economy by integrating ESG factors into decision-making processes, while in a narrower sense it is associated with reallocating available resources in favor of "low carbon" investments<sup>6</sup>. Following this approach, the European Commission defines sustainable finance as consideration of environmental and social factors in the investment decision-making process, supported by appropriate governance of public and private institutions. Specifically, sustainable finance, according to the European Commission, generally refers to a process that carefully considers environmental, social, and governance aspects in financial sector investment decisions, leading to increased long-term investments in sustainable economic activities and projects. Environmental considerations may involve climate change mitigation and adaptation, as well as broader environmental issues such as biodiversity conservation, pollution prevention, and a circular economy. The implementation of this approach involves all actors in the financial system, from companies to investors, financial intermediaries to information intermediaries, regulators to supervisory authorities, and implies an evolution of decision-making processes leading to identification of objectives (such as creating financial value in the short and long term) and restructuring of production and consumption processes (with non-linear and circular schemes based on factors of production including not only financial but also natural and social capital). In the most advanced version of the concept of sustainable finance, it is stated that ESG factors no longer represent a constraint on maximization objectives but are an integral part of maximization objectives themselves<sup>7</sup>. For economic actors to make decisions consistent with sustainable development objectives, it is essential for the market to include all relevant information on performance and ESG risks of productive and financial activities in prices. For this to occur efficiently and consistently with a shift to a medium-long term timeframe, suitable data, information, and analysis models are needed for measuring and representing the ESG characteristics of economic and financial activities. Both the information providers (companies) and information intermediaries, especially ESG score providers, play central roles in this perspective. Therefore, it is necessary to verify the evolutionary stage of sustainable finance within the European context with respect to each of the profiles concerning decision-making processes of relevant actors.

Sustainable finance is based on the objective of directing capital towards financial activities that also consider environmental, social, and governance (ESG) aspects besides generating economic profit. These factors are used to evaluate the sustainability and risks of potential financial investments. In detail, environmental criteria (E = environment) relate to environmental impact, both as a contribution to climate change and opportunities related to the. Social principles (S = social) refer instead to the relationships that an organization has with its stakeholders and employees. The most common measurement metrics related to this aspect areas related to human capital management, such as compliance with safety standards, fair wage distribution, and employee involvement and training.

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<sup>6</sup> Malgorzata J., A. Pieloch-Babiarz, and A. Sajnog (2020), Does Short-Termism Influence the Market Value of Companies

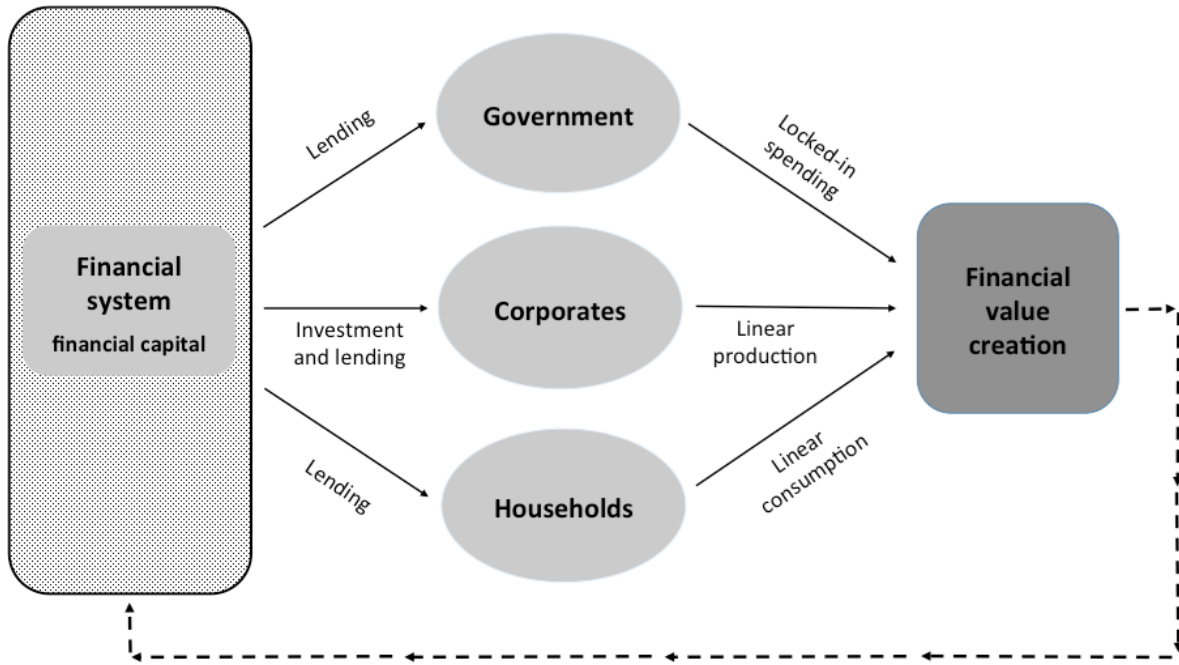
<sup>7</sup> Schoemaker D. and W. Schramade (2019), Principles of Sustainable Finance, Oxford University Press, chapter 6

Finally, for Governance (G = governance), everything related to business leadership and management is included, where elements such as alignment of incentives between leadership and stakeholders, shareholder rights, adherence to principles such as ethics, transparency, and anti-corruption measures are taken into consideration. In recent decades, interest in sustainable finance has grown significantly, driven by the increasing awareness of environmental, social, and governance challenges that the world is facing. Sustainable finance encompasses concepts such as impact investments, which aim to generate a measurable social or environmental impact alongside financial returns, and green finance, which focuses on investments in the environmental sector, such as renewable energy and waste management. Therefore, sustainable finance can include various strategies and approaches.

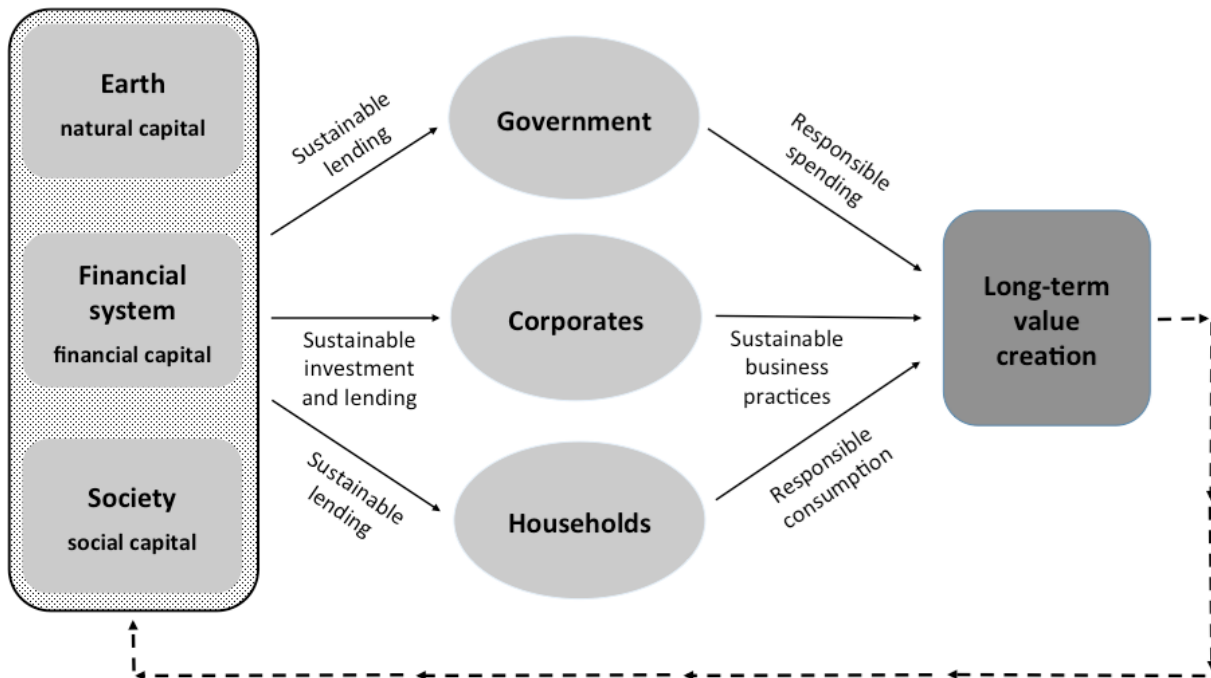
Some examples include socially responsible investments, which are investments that consider various social and ethical values, avoiding sectors or companies that may be considered harmful and not in line with ethical principles, such as the tobacco industry, the defense industry, or polluting industries in general. It can focus on social finance, meaning focusing on investments aimed at generating a positive social impact, for example by providing funding for projects that promote sustainable aspects such as social inclusion, poverty alleviation, and access to education (described in Figure 1).

**Figure 1 Financial value creation in traditional finance and long-term value creation in sustainable finance**

Panel A: Financial value creation in traditional finance



Panel B: Long-term value creation in sustainable finance



Source: Schoenmaker and Schramade (2019)

Ultimately, the goal of sustainable finance is to promote investments that have a positive impact both environmentally and socially, while also generating financial returns. It focuses on integrating environmental, social, and governance factors into investment decisions and risk assessment.



Sustainable finance can include various strategies and approaches, with some common examples being:

- socially responsible investments (SRI) - investments that consider both social and ethical values, avoiding sectors or companies that may be harmful to the environment or do not adhere to ethical principles, such as the tobacco industry, weapons, or other polluting businesses.
- impact investments - investments aimed at generating a positive social and environmental impact while also achieving financial returns. Investors seek to support projects or companies addressing specific issues, such as waste management, renewable energy, and biodiversity.
- green finance - a branch of sustainable finance focusing on investments in the environmental sector, such as energy efficiency, greenhouse gas emission reductions, and so on.
- social finance - focuses on investments aiming to generate positive social impact, for example, by providing funding for projects or organizations promoting social inclusion, poverty reduction, and access to education.

## 1.2 SDGs relevant to sustainable finance

During the 2015 New York UN Sustainable Development Summit, a program titled "Transforming our world: the 2030 Agenda for Sustainable Development" was presented, aiming to address a set of socio-environmental and economic problems globally, involving both developed and developing countries. The 2030 Agenda aims to overcome two major challenges: the first one concerns the commitment to "leave no one behind", reaching out to the most vulnerable and disadvantaged individuals by offering them appropriate services to ensure empowerment and social protection. The second one aims to achieve 17 goals, named Sustainable Development Goals. These goals are to be achieved during the period of 2016-2030, involving national governments, the private sector, and civil society. The areas of intervention can be summarized in five areas (Figure 2):

**Figure 2 The 5 P's of Sustainability**



Source: Agenzia Coesione 2023

- Planet: addressing environmental degradation, climate change, and natural resource management
- Prosperity: ensuring sustainable economic, social, and technological progress
- People: aiming to end hunger and poverty, following principles of equity and dignity
- Peace: eradicating violence and terror from the world
- Partnership: encouraging global and solidarity participation (UN, 2030 Agenda, page 3).

The 2030 Agenda was drafted in accordance - and in alignment - with previous international agreements, including the United Nations Charter, the Universal Declaration of Human Rights, and the Rio Declaration on Environment and Development. The Sustainable Development Goals (SDGs) declared by the agenda are as follows:

**Figure 3 Sustainable Development Goals**



Source: UN Agenda 2030 (page 17)

1. No poverty: reducing or eradicating drastically the poverty around all world through the implementation of appropriate national and social protection systems and measures.
2. Zero Hunger: eliminating starvation around the world at all levels through the increase of agricultural productivity and food production. Guarantee equal access to land, resources, financial services, and opportunities.
3. Good health and well-being: reduce mortality rate due to epidemics and serious diseases. At the same time prevent and reduce global maternal mortality and death of newborns and children under the? age of 5.
4. Quality education: make sure primary and secondary education is guaranteed to all boys and girls through the improvement of preprimary education. At the same time ensure equal access to tertiary education, including university.
5. Gender equality: ending discrimination and violence of all women at all levels. Eliminate physical harmful practices (genital mutilation) and forced marriages. Guarantee the opportunity for every woman to participate in any activity: political, economic, and social.
6. Clean water and sanitation: guarantee access to safe and affordable drinking water. Improve sanitation and hygienic conditions and eliminate any potential polluting practices and materials.
7. Affordable and clean energy: ensure access to reliable and modern energy services, guarantee an equal share of renewable energy, and improve energy efficiency.
8. Decent work and economic growth: support GDP growth by at least 7% per year in the least developed countries. Achieve higher levels of economic productivity through diversification, technology, and innovation. Promote development-oriented policies.
9. Industry innovation and infrastructure: improving infrastructures and facilitating economic development. Promote inclusive and sustainable industrialization, increase access to small-scale industries in developing countries.
10. Reduced inequalities: supporting and promoting income growth of the bottom 40% of the population. Promote social, economic, and political inclusion of everybody, no matter of sex, race, origin, religion, etc. Boost equal opportunities and reduce inequalities at the workplace (salaries, policies, treatment).

11. Sustainable cities and communities: ensure access to adequate, safe, and affordable housing, basic services, transport systems. Improve sustainable urbanization and access to the city facilitated to anybody, particularly the vulnerable and disabled ones.
12. Responsible consumption and production: achieve efficient use of natural resources. Cut down any kind of food and resources waste and boost sustainability information.
13. Climate action: improve resilience and adaptive skills to climate risks and natural disasters. Boost people's awareness on this topic. Integrate climate change measures, through national policies, strategies, and planning.
14. Life below water: prevent and reduce water pollution of any kind (dumping and nutrient pollution). Fight the negative impact on marine ecosystems and reestablish its restoration to achieve healthy and productive oceans. Minimize ocean acidification.
15. Life on land: promote a sensible and sustainable management of all land ecosystems. Fight deforestation and desertification through restoration of ruined and damaged forests and drylands.
16. Peace, justice, and strong institutions: reduce all forms of violence, abuse, exploitation, trafficking and torture against women and children. Reduce money laundry, illicit financial and arm trafficking. Ensure equal access to justice.
17. Partnerships of the Goals: make domestic resource mobilization easier (through international support to developing countries). Assist developing countries in reaching long-term debt sustainability and assist them in reducing debt distress. Boost? circulation of financial resources in poor and developing countries.

Source: UN Agenda (page 17)

The first innovative element brought by the 2030 Agenda represents the multidimensional and integrated aspect of the SDGs, which interconnect elements of economic prosperity, social well-being, and environmental well-being, which? implementation must be joint and balanced. Secondly, a global perspective is adopted, involving all countries, both developed and developing, rather than directing the efforts of more advanced nations towards the poorest areas of the world. Another point to highlight in the agenda is the dynamic nature of the SDGs: thanks to continuous debate and periodic revisions, it is possible to identify new challenges and changes in the reference context to ensure a better and timely implementation of the program. The document provides instructions regarding financial support, aimed at investments for the implementation of the SDGs that must be consistent with the identified priorities and with the progress of the program. The position of the European Union on the 2030 Agenda is being a pioneer in its implementation. In a document published in 2016 "Next step for a sustainable European Future – European action for sustainability", the EU implementation strategy focuses on five fundamental steps:

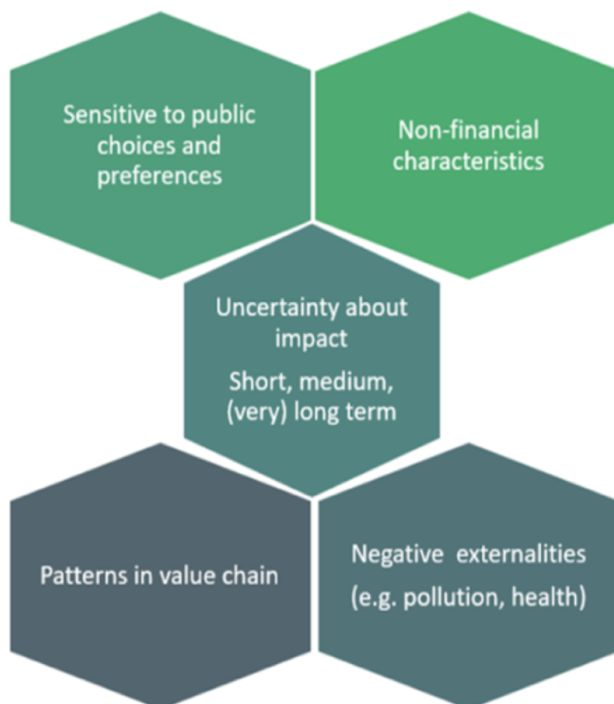
- Integration of community policies with suggestions from the SDGs
- Commitment to monitoring the progress of countries and the European community as a whole and preparing regular reports.
- Development of a platform for sharing results to improve the implementation process through cooperation.
- Preparation of a preemptive scenario analysis document for 2020
- Commitment to spreading the implementation of the SDGs to all stakeholders.

### 1.3 ESG FACTORS: THE THREE DIMENSIONS OF SUSTAINABILITY

In the UN Agenda 2030, sustainability is viewed through three primary dimensions: Economic, Social, and Environmental. However, over the past decade, a fourth dimension—Governance—has gained recognition, emphasizing that effective institutions are essential for achieving sustainable development goals. In the business world, the focus often centers on ESG (Environmental, Social, and Governance) factors, with Governance relating specifically to corporate management. Here, sustainability extends beyond environmental concerns to encompass socially responsible corporate practices, highlighted by the acronym ESG. Nowadays, there is still no clear and universal definition of these factors. However, some characteristics are common to all definitions, and these include, for example:

- These are factors traditionally considered non-financial.
- The impact of their effects over time is unknown.
- They are often seen as a negative economic externality (such as greenhouse gas emissions, pollution, poverty, and excessive waste production).
- They have direct interactions both upstream and downstream with elements of the value chain, they can lead to unpredictable changes in public and structural policies.

**Figure 4 Commonalities of ESG factors**



Source: EBA, 2021, "On management and supervision of ESG risks for credit institutions and investment firms", (page 28)

These factors, in addition to having an environmental impact, can influence various areas of financial risk such as liquidity, credit, operational and financial market. The European Banking Authority (EBA) in 2021 provided its own definition of ESG factors, highlighting that they are "environmental, social or governance issues that may have a positive or negative impact on the financial performance or solvency of a sovereign entity or individual"<sup>8</sup>. More specifically, according to the Authority, the positive impacts of ESG factors are reflected in the ability for companies, particularly financial and banking institutions, to take advantage of opportunities arising from the transition to a more sustainable economy, while the negative impacts weaken their performance which can manifest through various types of financial risk, such as liquidity risk, credit risk, market risk, operational risk, and refinancing risk. The ways in which these risks manifest occur through specific transmission channels.

### **1.3.1 Dimension E**

Although there is no strict and prescriptive list of factors that fall within the definition of the environmental dimension E, there are certainly the following: emissions, energy optimization, water use, waste production, ecosystem biodiversity, and environmental hazards. In practice, these are environmental issues that can have both positive and negative impacts on the financial performance or solvency of an issuer, whether a sovereign authority or a private institution. Among the negative impacts that can be caused by some of the aforementioned factors are the risks of any negative financial impact on the institution, resulting from the current or future environmental impact on its counterparts or investments.

<sup>8</sup> EBA, 2021, "On management and supervision of ESG risks for credit institutions and investment firms", page 31.

In practice, these risks are called environmental risks, of which climate risks are the most important. Environmental risks are further subdivided into physical risks and transition risks. Physical risks indicate the impact that climate change and extreme natural events have on the economic and financial system. These are classified as "acute and chronic"; acute physical risks refer to extreme weather events, such as floods, hurricanes, cyclones, which have resulted in the destruction or damage of property and production facilities.

Chronic physical risks, on the other hand, manifest in the long term and concern events such as sea-level rise, temperature rise, and so on... Although climate change is a phenomenon that affects the entire planet, the intensity of the resulting impact that physical risks have on the economy varies depending on geographical location, with some areas being more affected than others, as they are more exposed and susceptible to certain types of climate hazards. Transition risks are risks to which a company is susceptible, as they are generated by regulations aimed at encouraging the transition of the economy to activities with a lower environmental impact. The European Commission, in a communication published on 20 June 2019, identifies the following transition risks:

- Risks related to policies aimed at achieving the goals set by the Paris Agreement and the European Green Deal, including the imposition of energy efficiency requirements, mechanisms for setting fossil fuel prices or policies aimed at encouraging sustainable land use<sup>9</sup>.
- Legal risks or risks of legal liability as the risk of litigation faced by a company that does not take or neglects actions to prevent climate risks.
- Technological risks, affecting companies that do not replace polluting plants and technologies with low-impact environmental technologies, due to the high cost of change, but risking losing competitive advantage against technologically advanced companies.
- Market risks, resulting from changes in consumer preferences more attracted to eco-sustainable products and services.
- Reputational risks, faced by a company with a poor environmental reputation, resulting in difficulty maintaining its market share, employees, business partners, and investors.

The progression and modalities of the transition influence the relationship between physical risks and transition risks. With the aim of analyzing environmental risks in the field of the economy and especially in the financial system, the Network for Greening the Financial System (NGFS)<sup>10</sup> has developed various scenarios, including:

- orderly: this scenario hypothesizes an orderly transition in which mitigation policies are progressively implemented, becoming more stringent over time to achieve a gradual and effective transition. Both physical risks and mitigation risks are contained compared to those of other scenarios, because physical risks decrease in response to policies taken, and the long adjustment period allows for risk reduction in mitigation.
- Disorderly: this scenario instead hypothesizes an inefficient transition, due to late implementation of mitigation policies. In this case, both physical risks and transition risks

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<sup>9</sup> Communication from the European Commission, "Guidelines on the disclosure of non-financial information: supplement concerning the disclosure of climate-related information", paragraph 2.3 "Risks, dependency relationships and opportunities", published on 20.06.2019.

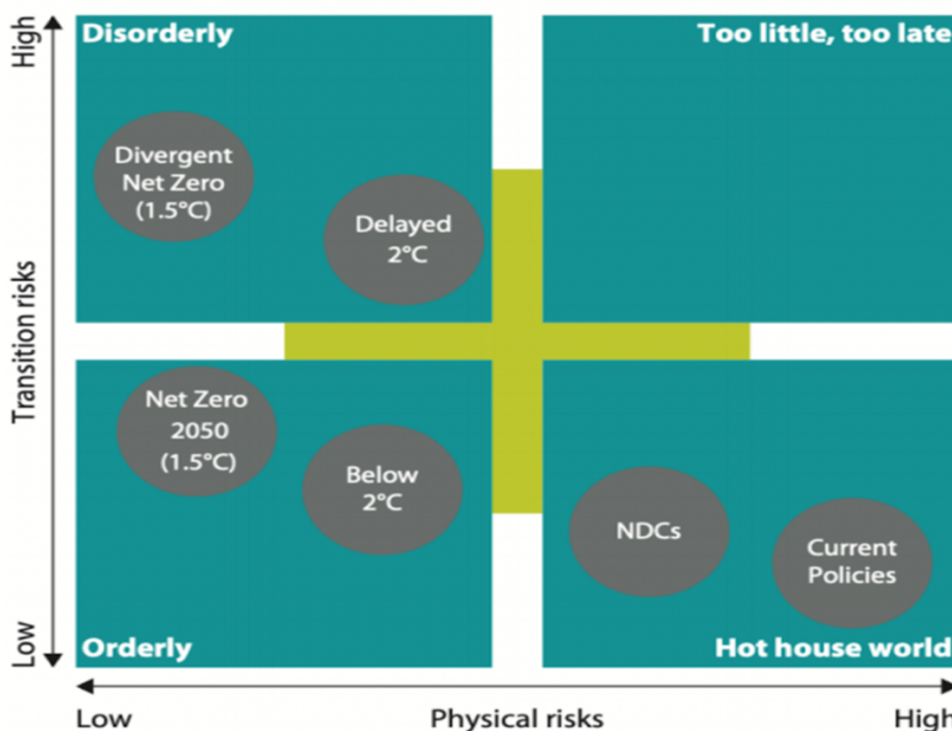
<sup>10</sup> NGFS is a coalition of central banks and financial supervisors aimed at enhancing the role of the financial system in managing climate and environmental risks. It promotes sustainable finance and the integration of climate-related risks into financial stability monitoring and supervision.

are very high as the former increase due to lack of regulation and the latter increase due to late interventions.

- hot house world: this scenario assumes the implementation of mitigation policies only in some countries, resulting in insufficient efforts to avoid climate problems. The scenario foresees low transition risks, due to their low impact and application, and high physical risks such as the effect of excessive warming.
- too little, too late; the last scenario predicts that delays in the transition do not reduce physical risks and consequently neither do transition risks.

The representation of the four scenarios can be represented in Figure 5.

**Figure 5 NGFS scenarios framework**



Source: Breeden Sarah, Holthausen Cornelia, Menon Ravi, 2022, “Scenarios for central banks and supervisors”, NGFS

**The S factor.**

Although most initiatives undertaken at both global and European levels have so far focused primarily on environmental factors; recognizing that the traditional economic pillar was already largely used, the very EU Taxonomy of sustainable investments and activities, in order to be realistic and progressive in time, was deliberately developed initially for climate change adaptation and mitigation, then for the other 4 environmental factors (...) and the social aspects are being developed in a third phase. In recent years there has been a growing recognition of the importance of social factors as well. At the European level, some initiatives have been taken in this direction, including the development of 20 principles by the European Commission, the Parliament, and the Council of the European Union. These principles constitute the European Pillar of Social Rights, focusing on equal opportunities and access to the labor market, creating fair working conditions, and social protection and inclusion. In March 2021, the Action Plan on the



European Pillar of Social Rights was published, representing the European Commission's contribution to implementing these principles through a variety of initiatives. The Action Plan identifies, among others, 3 objectives that EU countries must achieve by 2030:

- at least 78% of the population aged 20-64 should be employed.
- at least 60% of the working-age population should participate annually in specific training activities.
- a reduction of at least 15 million people living at risk of poverty and social exclusion.

In 2022, the European Economic and Social Committee also published an opinion on the idea of the social taxonomy, highlighting the opportunities that could arise from its development, such as disincentivizing the phenomenon known as social washing, facade social sustainability, ensuring transparency to investors, consumers, and businesses wishing to support investments with a positive social impact; minimizing the economic risks that could be generated by socially harmful activities; and the use of the taxonomy by investors and businesses to assess the social impact of their investments.

Differently from the E factor, there is still no specific list clearly falling within the social dimension. Typically, this dimension is referred to by considering factors such as relationships with employees and customers, human rights, and well-being, collectively defined as social issues that can have a positive or negative impact on financial performance or solvency of a sovereign entity or individual<sup>11</sup>. In this dimension, there are also several main factors that can cause social risks, with the most important ones including:

1. Environmental risks, both physical and transitional. These can impact social risks; the former because environmental degradation can cause migration problems and social and political unrest, the latter due to the impacts of regulatory policies on the labor market.
2. Changes in market sentiment: these changes lead to the implementation of economic policies that can affect the financial situation of companies that are not ready or willing to adapt to social principles in terms of pay equality, fair treatment, and representation equality.
3. Changes in social policy, with the aim of ensuring a more inclusive and fair society. Companies that ignore workers' rights or apply lower standards or engage suppliers operating in countries where worker exploitation occurs may face higher compliance costs in the future, which could have impacts on the company's financial situation.

### **The G factor.**

The need to systematically integrate sustainability issues into business strategies and management was highlighted in the "Green Deal Europe" published in 2019. The report emphasized that many companies still focus too much on short-term financial results, ignoring long-term development aspects and sustainability-related issues<sup>12</sup>. This limited vision in companies leads to a lack of recognition of sustainability risks, both environmental and social, resulting in an inability to address them and turn them into investment opportunities.

Currently, there is no universally recognized framework for corporate governance factors. That is because these factors are often incorporated into national legislation. However, with the aim of bridging this gap, the European Commission published an initiative on corporate governance sustainability in 2021. The initiative aims to improve the regulatory framework of EU corporate

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<sup>11</sup> EBA, 2021, "On management and supervision of ESG risks for credit institutions and investment firms", Report

<sup>12</sup> European Commission, 2019, "European Green Deal", page 19

law by aligning the interests of managers and stakeholders, allowing for efficient management of sustainable development issues. Consequently, in 2022, the European Parliament proposed a directive on the duty of diligence of companies for the purpose of sustainability. The proposal aims to define corporate governance rules for respecting human rights and mitigating environmental and social risks. However, these rules are still applied on a voluntary basis.

#### 1.4 The European Action Plan for Sustainable Finance

To address the need to regulate a continuously expanding market such as sustainable investments, both by investment funds and companies, on 10, March 2021, the "taxonomy of sustainable finance" was issued within the European institutions (EU Regulation 2020/852<sup>13</sup>, taxonomy regulation). Furthermore, the regulation on sustainability disclosure in the financial services sector (SFDR Regulation, 2019/2088)<sup>14</sup> has also become operational. These regulations are part of the action plan to finance sustainable growth established by the European Commission in 2018. The European Action Plan aims to achieve the goals set out in the 2015 Paris Agreement<sup>15</sup> and the 17 Sustainable Development Goals (SDGs) of the United Nations' 2030 Agenda. During this period, the European Green Deal of 2019 also represented a significant milestone, marking a regime change in the consideration of environmental, sustainability, and governance factors within the economic planning of the European Union. The main objectives of the European Action Plan for Sustainable Finance can be summarized in macro categories aimed at achieving various goals.

These objectives can be listed as follows:

- Creating a common language for sustainable finance, a unified EU classification system or "taxonomy" to define what is sustainable and identify the areas where sustainable investments can have the greatest impact.
- Creating "European ecolabel" marks for green financial products based on this EU classification system. This would enable investors to easily identify investments that meet environmental criteria.
- Defining a common standard for "European green bonds", a European quality certification for green bonds. The European Union started issuing green bonds in the second quarter of 2021, amounting to 225 billion €.
- Promoting investments in sustainable projects. The Commission encourages sustainable finance tools through the allocation of various funds, including the Sustainable Europe Investment Plan, the "Invest EU" program (40.8 billion € in public guarantees in the 2021 the Just Transition Fund, and other EU funds, including resources from "Next Generation EU" dedicated to the environment totaling 17.5 billion € in the period.

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<sup>13</sup> Regulation (EU) 2020/852 of the European Parliament and of the Council of 18, June 2020, on establishing a framework to encourage sustainable investment and amending Regulation (EU) 2019/2088, provided for the establishment of the Taxonomy.

<sup>14</sup> The European Parliament and the Council adopted Regulation (EU) 2019/2088 on sustainability reporting in financial services on 27, November 2019. The Regulation, published in the Official Journal of the European Union on December 9, 2019, thus entered in force on 29, December 2019, but its rules are implemented progressively as of March 10, 2021.

<sup>15</sup> The Paris Agreement was formally ratified by the European Union on 5, October 2016, and entered into force on 4, November 2016. On 25, September 2015, the United Nations General Assembly adopted the 2030 Agenda for sustainable development, focused precisely on sustainable development goals (SDGs): the Council confirmed the commitment of the European union and member states to implement the 2030 agenda in a comprehensive manner.

- Integrating sustainability into financial disclosure to enforce stricter communication obligations and require insurance and investment companies to advise clients based on their sustainability preferences.
- Integrating sustainability into investor prudential requirements, clarifying the obligation for banks and institutional investors to consider sustainability factors in the investment process. This is achieved through identifying principles and methodologies for integrating ESG risks into the review and assessment conducted by supervisory authorities, and potentially introducing requirements for greater sensitivity to environmental risks, the so-called green supporting factor.
- Increasing transparency for non-climate-related financial information to investors through the SFDR regulation for sustainability reporting in the financial services sector.
- Developing sustainability benchmarks with the amendment of the financial benchmark regulation (DMR Regulation EU 2016/1011) to include new low carbon emission and positive carbon impact benchmarks that will provide investors with more information for their investments.
- improving transparency in corporate communications by revising guidelines on non-financial information to align more closely with recommendations from the Financial Stability Board Task Force on Climate-related Financial Disclosures<sup>16</sup>.
- Promoting sustainable corporate governance and mitigating short-termism in capital markets by integrating ESG criteria and adopting a long-term approach in board decision-making processes. Ultimately, the 2018 action plan for sustainable financing represented a fundamental step towards a greener future, but its implementation requires constant and coordinated commitment at a European and global level.

In conclusion, the 2018 action plan for sustainable finance has represented a fundamental step towards a greener future, but its implementation requires constant and coordinated commitment at the European and global levels.

### 1.5 European taxonomy and SFDR Regulation (Sustainable financial disclosure regulation)

Taxonomy plays a central role among the measures issued by the EU as it translates into a regulatory framework aimed at reducing the risk of unethical practices and greenwashing that are increasingly spreading in the markets. The document "taxonomy: final report of the technical expert group on sustainable finance" (TEG 2020) identifies economic activities capable of contributing to achieve the zero emissions goal by 2050, and the related selection criteria, the so-called green list of sustainable activities<sup>17</sup>. In the taxonomy, 70 activities from 13 economic sectors are classified with the greatest potential to provide positive contributions to climate change. The activities range from agriculture to energy production, from manufacturing to transportation and

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<sup>16</sup> The TCFD (Task Force on Climate-related Financial Disclosures) is an initiative launched in 2015 by the Financial Stability Board (FSB) at the request of G20 leaders. The organization's objective is to develop a set of guidelines to help companies disclose relevant financial information related to the risks and opportunities associated with climate change. These guidelines are designed to provide transparency to investors, creditors, and insurers, thereby improving the ability of financial markets to allocate capital efficiently in the context of a transition to a low-carbon economy.

<sup>17</sup> the document was drafted after more than a year of work by the Technical Expert Group on Sustainable Finance —TEG, a group of experts — 35 members and over 100 consultants — appointed by the European Commission to provide recommendations for guiding sustainable finance. For information on the sectors directly affected and the related sustainability guidelines, see the *Technical annex to the TEG final report on the EU taxonomy* (TEG, 2021) <https://bit.ly/3yYGiwS>, or the interactive taxonomy navigation tool <https://bit.ly/3wlKdft>.

construction, based on their ability to contain and adapt to climate change, and to influence certain environmental risks.

These are sectors that produce 93% of greenhouse gas emissions in Europe: ranging from low carbon, environmentally sustainable sectors, to those that pollute the most but are unavoidable, and finally to those that are helpful to the first two categories, enabling other activities to achieve low carbon performance or significant emission reduction. The taxonomy text establishes 6 environmental objectives and allows classifying an economic activity as environmentally sustainable if it contributes to achieving one of the 6 objectives indicated, without significantly harming any of the other objectives (the so called DNSH - Do No Significant Harm principle). The 6 objectives that sustainable activities must support are:

1. Mitigations of climate change
2. Adaptation to climate change
3. Sustainable protection of water resources and marine resources
4. Transition to a circular economy with a focus on waste reduction and recycling prevention and control of pollution
5. Protection of biodiversity and ecosystem health
6. Protection of biodiversity and ecosystem health

In each of the economic activity, based on their ability to make a substantial contribution to mitigation objectives and not generate negative impacts on other environmental objectives (DNSH Principle). Specifically, these guidelines are provided for each of the 6 objectives through a so-called "technical screening criteria". Strict criteria have been identified for verifying the sustainability and inserted in an Appendix to the taxonomy.

**Figure 6 Classification of NACE Activities by Environmental Contributions in the EU Taxonomy Framework**

Classification		Environmental Contributions							
NACE Macro-sector	NACE Activity	1. Climate change mitigation (Substantial Contribution)			2. Climate change adaptation (DNSH)	3. Water (DNSH)	4. Circular economy (DNSH)	5. Pollution (DNSH)	6. Ecosystems (DNSH)
		Own performance	Enabling activities	Transitional activities					

Source: The European Commission's EU Taxonomy Report

Additionally, the relevant EU directives to be followed in the application of adaptation criteria are indicated, as well as some minimum social safeguards, such as those provided by the OECD guidelines and United Nations documents. The taxonomy represents a tool, and as such can be used for various purposes and in different fields. It was specifically designed for financial operators qualifying as environmentally sustainable. Starting from 31, December 2021, the market operator is required to declare the extent to which the proposed investments are aligned with the taxonomy, expressed as a percentage of the investment, fund, or portfolio. The obligation to use this tool also applies to companies subject to the directive on non-financial reporting <sup>18</sup>.

<sup>18</sup> The NFRD, short for "non-financial reporting directive", is an EU regulation that requires large companies to disclose information related to the environmental, social and governance (ESG) impacts of their operations. This directive was introduced to increase the transparency of large companies in terms of sustainability and to have a clearer view of companies' non-financial practices.

**Figure 7 Market Segments in Scope for EU Taxonomy Disclosure Requirements**

Market segment	In scope for Taxonomy disclosure
Pensions and Asset Management	UCITS funds: - equity funds - exchange-traded funds (ETFs) - bond funds
	Alternative Investment Funds (AIFs) - fund of funds - real estate funds - private equity or SME loan funds - venture capital funds - infrastructure funds
	Portfolio management (under article 4(1) of MiFID II) Pensions: - pensions products - pension schemes (defined with reference to IORP II) - pan-European personal pension products
Insurance	Insurance-based investment products (IBIPs) - Securitisation funds
Corporate & Investment Banking	- Venture capital and private equity funds - Portfolio management - Index funds

Source: TEG Final Report (2020)

These companies are required to provide information on their activities with reference to the taxonomy. However, taxonomy is not a mandatory tool, as investors may use other classification methodologies. Additionally, it can be voluntarily used by companies to develop new "green" products, to express investment preferences. Furthermore, taxonomy can be used to engage with companies interested in sustainability issues and measure the environmental impact of a financial instrument in terms of sustainability. Taxonomy should be read in conjunction with the SFDR (sustainable financial disclosure regulation). This regulation was adopted by the European Commission in November 2019, and requires financial advisors and institutional investors to disclose if and how their products integrate with environmental and social sustainability themes. The European Commission is considering applying the taxonomy in the guidelines of the "Invest EU" program, a program used to direct European investments.

The "Invest EU" program is an initiative of the European Union aimed at stimulating investments in Europe by facilitating the financing of projects in various key sectors for sustainable economic development. The program pools funds from various EU sources and uses them to secure private loans and investments. It focuses on four main areas:

1. Sustainable infrastructure: sectors such as transport, energy, water resource management, and digitalization are funded with the goal of promoting more sustainable infrastructure.
2. Research and innovation: support the development and expansion of technological and scientific innovations, contributing to the progress of industrial competitiveness in Europe.
3. Small and medium-sized enterprises: provide financial instruments to small and medium-sized enterprises to help them grow and so to be able to compete internationally. These investments include access to start-up funding and business expansions.
4. Social investments and skills: invest in projects that improve access to social services, education, training, and employment to support greater social and employment cohesion.

The European Commission wanted to integrate sustainability risks into financial investment choices, linking environmental and social factors in the decision-making process and advisory processes, imposing new financial disclosure obligations on operators proposing such investments. The Sustainable Financial Disclosure Regulation (SFDR, EU Regulation 2019/2088), adopted in late November 2019, requires financial advisors and institutional investors to communicate whether and how their products integrate with environmental and social sustainability themes. The Regulation mandates that asset management companies measure the negative impacts of their investments at a corporate level, in accordance with 18 mandatory predefined ESG indicators. The subject scope of the SFDR regulation consists of two distinct macro-categories of financial operators: on one side, operators providing services involving investment decisions, defined as financial operators, and those providing investment recommendations, defined as financial advisors. Financial operators include insurance companies, credit institutions, and investment fund managers, while the second category includes asset management companies (SGRs), insurance intermediaries, and insurance companies providing advice.

## 1.6 CSRD

The CSRD (Corporate Sustainability Reporting Directive) is an extension of the previous directive known as the NFRD (Non-Financial Reporting Directive). The NFRD is a European Union regulation that requires certain large companies to publish information that goes beyond just financial aspects. The directive was introduced with the aim of improving the transparency of the information provided by companies on environmental, social, and governance issues, to promote sustainable and responsible business practices. The directive applies to large companies that have public interest, specifically companies with over 500 employees that fall into one of the following categories:

- Companies listed on regulated markets within the European Union
- Financial institutions, such as banks and insurance companies
- Other companies designated as public interest entities by their respective national laws.

The directive requires these companies to include in their management report or in a separate document a non-financial statement covering the following aspects:

- **Environmental aspect:** The report should include the environmental impacts caused by business management, the consumption of natural resources, greenhouse gas emissions, energy usage, and waste management.
- **Human rights:** The report must indicate the actions taken by the company to prevent human rights violations throughout the supply chain.
- **Social and personnel responsibility:** The company must provide information on company policies related to personnel, working conditions, respect for human rights, and inclusion.
- **Anti-corruption and bribery practices:** The report must also include all measures adopted by the company to prevent corruption, bribery, and other illicit practices.
- **Governance:** Finally, the report must outline the company's governance structure, its risk management policies, and its approach to sustainability issues.

The European community's objective with this directive was twofold. On one hand, the regulation aims to improve transparency by making the behavior of large companies on critical social and

environmental issues more transparent. This approach facilitates access to information for investors, consumers, and other interested parties. On the other hand, the directive aims to promote sustainability by encouraging companies to reflect on and report on their non-financial practices, thereby fostering more sustainable and responsible behaviors.

In 2021, the NFRD was reviewed and expanded with the proposal of a new directive known as the CSRD (Corporate Sustainability Reporting Directive). This directive officially came into effect on 5, January 2023, and aims to extend its scope to a larger number of companies, introducing more detailed and standardized reporting requirements and strengthening the control and verification of non-financial information. Therefore, the CSRD introduces a series of changes compared to the previous NFRD directive, aimed at improving the transparency and reliability of sustainability reporting. The need for this revision was also reinforced by the growing demand from investors for companies that consider ESG factors and are reliable and compatible.

The main changes brought by the new directive are as follows:

- **Extension of scope:** One of the most significant changes in the CSRD is undoubtedly the extension of its scope. While the NFRD applied only to large companies with public interest and over 500 employees, the CSRD extends this requirement to all large companies, including those not listed and a significant number of small and medium-sized listed companies. This means that many more companies will be subject to sustainability reporting obligations, with the European Commission aiming to reach around 50,000 companies across the European Union compared to about 11,700 affected by the NFRD.
- **More detailed reporting requirements:** The CSRD requires companies to provide more detailed and standardized information on a wide range of ESG topics, including climate change and environmental impact, social aspects such as human rights, diversity, and inclusion. The report must also include working conditions, the company's relations with local communities, and environmental governance aspects, with particular attention to the board structure and transparency of corporate policies on sustainability. These requirements are designed to be aligned with international initiatives on sustainable reporting, such as the Global Reporting Initiative (GRI)<sup>19</sup> standard and the recommendations of the Task Force on Climate-Related Financial Disclosure (TCFD)<sup>20</sup>.
- **Introduction of European sustainability reporting standards:** One of the innovative aspects of the CSRD is the introduction of European standards for sustainability reporting. These standards, developed by the European Financial Reporting Advisory Group (EFRAG)<sup>21</sup>, will provide a common framework for ESG information disclosure, ensuring consistency and comparability between companies.

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<sup>19</sup> The Global Reporting Initiative (GRI) is an independent organization founded in 1997 in the USA, initially under the auspices of CERES (Coalition for Environmentally Responsible Economies). The GRI was created to develop and promote a global standard for sustainability reporting, with the aim of making information on organizations' sustainability practices more transparent and accessible. The GRI develops a series of guidelines for sustainability reporting, which allow organizations to transparently communicate their performance in the ESG (Environmental, Social, and Governance) areas. These guidelines are known as GRI Standards and are widely recognized and used internationally. The main objective of the GRI is to improve the quality and transparency of sustainability reports, promoting greater accountability of organizations towards stakeholders and supporting informed decision-making.

<sup>20</sup> The Task Force on Climate-related Financial Disclosures (TCFD) is an international body established by the Financial Stability Board (FSB) in 2015. The primary objective of the TCFD is to provide companies with a set of guidelines for disclosing clear, consistent, and comparable information on climate-related risks and opportunities that could impact their financial performance.

<sup>21</sup> The European Financial Reporting Advisory Group (EFRAG) is an independent body founded in 2001 on the initiative of the European Commission. EFRAG is tasked with providing technical advice to the European Commission on matters related to accounting and financial reporting, particularly concerning the adoption and application of International



- **Verification and certification of information:** The CSRD also introduces the obligation for companies to have their sustainability information verified by an external auditor or an accredited certification body. This requirement aims to improve the credibility and reliability of the ESG data provided by companies, addressing concerns from investors and other stakeholders about the quality of available information.
- **Integration with financial information:** Another key feature of the CSRD is the integration of sustainability information with companies' annual financial reports. This integrated approach reflects the growing importance of ESG issues in assessing a company's overall performance, recognizing that sustainability issues are closely linked to financial stability and the long-term value of the company.

The implementation of the Corporate Sustainability Reporting Directive will have significant implications for both companies and the financial sector of the European Union. This directive requires companies to strengthen their data collection and management systems related to environmental, social, and governance (ESG) criteria. Companies will need to develop specific internal skills to meet the new reporting requirements imposed by the CSRD, including the ability to analyze, manage, and communicate ESG information accurately and transparently.

Another crucial aspect of CSRD implementation is the requirement to submit ESG information to an independent external audit. This requirement will increase companies' commitment to ensuring the quality and reliability of the information provided, as they will be subject to rigorous checks to ensure that the disclosed data is complete and compliant with the required standards. This external audit process adds an additional layer of accountability and transparency, reinforcing the trust of investors, consumers, and other stakeholders in the companies' sustainability statements.

For the financial sector, the introduction of the CSRD represents an important step forward toward greater transparency and comparability of ESG information among different companies. This improvement in the quality and comparability of data will greatly facilitate the assessment of risks and opportunities related to sustainability investments. Investors will be able to make more informed decisions and better allocate capital, favoring projects of companies that demonstrate a concrete commitment to environmental, social, and governance sustainability. As a result, the CSRD will help direct capital flows toward more sustainable companies, accelerating the transition to a greener and more resilient economy.

Moreover, in a global context where investors, consumers, and regulators place increasing importance on ESG issues, compliance with the CSRD requirements can be a competitive advantage for companies. Compliance with the directive not only improves corporate reputation but can also attract more sustainability-conscious investors and retain a clientele increasingly aware of the environmental and social implications of their consumption choices. However, it is important to note that adopting these new standards will also involve significant costs for companies, both in terms of investment in new technologies and data management systems, and for staff training and compliance with external verification requirements. Despite these costs, the

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Financial Reporting Standards (FRS) within the European Union. The primary objective of EFRAG is to ensure that the accounting standards applied in the European Union are of high quality, contribute to the transparency and comparability of financial information, and are consistent with the needs of the European Single Market. To achieve this, EFRAG assesses the IFRS issued by the International Accounting Standards Board (IASB) to determine if they are suitable for adoption within the EU.

application of the CSRD represents an opportunity for companies to position themselves as leaders in sustainability and to actively contribute to the transition to a more sustainable and inclusive economy.

The regulation may also have significant future developments. Indeed, with the growing global interest in sustainability and corporate responsibility, the CSRD could evolve in various ways to better respond to new needs and challenges that may arise. Some possible future developments include:

- **Expansion of scope:** Currently, the CSRD applies to a wide range of companies, but in the future, it could be further extended to include more small and medium-sized enterprises (SMEs) or specific sectors with high environmental and social impact. This expansion would ensure more comprehensive and uniform ESG reporting across the European Union.
- **Integration with other regulations and international standards:** With the growing global demand for transparency and sustainability, the CSRD could inspire the other international standards, such as those of the Sustainability Accounting Standards Board (SASB)<sup>22</sup>, the Global Reporting Initiative (GRI), or the Task Force on Climate-related Financial Disclosures (TCFD). This would facilitate the comparability and consistency of ESG information globally.
- **Evolution of reporting technologies:** With the advancement of digital technologies such as artificial intelligence, machine learning, and blockchain, the process of collecting, analyzing, and verifying ESG data could become more efficient and accurate. The CSRD could incorporate new technologies to improve transparency and reduce the costs associated with compliance.
- **Increased transparency requirements along the supply chain:** In the future, the CSRD may require companies to provide even more detailed information on ESG impacts throughout their supply chain, not just on direct operations. This would encourage companies to monitor and improve sustainability practices among their suppliers and business partners.
- **Improvement of ESG information quality:** As the CSRD evolves, there may be a strengthening of quality requirements for disclosed ESG information. Companies may be required to provide more detailed, comparable, and verifiable data, improving the quality and reliability of information for investors and other stakeholders.
- **Greater focus on climate transition risks:** As economies move toward climate neutrality, the CSRD could place even greater emphasis on reporting climate transition risks, such as decarbonization and compliance with environmental regulations. Companies may be required to detail their strategies to address these risks and adapt to a low-carbon economy.
- **Development of new metrics and indicators:** With the evolving needs of stakeholders and the growing awareness of ESG issues, the CSRD could introduce new sustainability metrics and indicators that better reflect emerging expectations and concerns, such as biodiversity, social equity, and the circular economy.
- **Strengthened collaboration with the financial sector:** The CSRD could evolve to include additional specific requirements for the financial sector, encouraging greater transparency in sustainable investment practices and promoting green finance. Specific tools and

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<sup>22</sup> The Sustainability Accounting Standards Board (SASB) is an independent, non-profit organization founded in 2011 in the United States of America. Its primary objective is to develop and promote reporting standards that help companies disclose relevant sustainability information to investors in a clear, consistent, and comparable manner. The SASB Standards provide sector-specific guidance on how companies should report on environmental, social, and governance (ESG) factors that are relevant to long-term financial performance.

methodologies could be developed to help financial institutions better assess and integrate ESG risks and opportunities into their investment decisions.

In summary, the CSRD is destined to become a fundamental pillar of the European Union's sustainability strategy, and its future developments could reflect the evolution of the regulatory, technological, and stakeholder expectations, thus contributing to greater transparency and sustainability at both the corporate and financial levels.

## Chapter 2 THE NEW FINANCIAL INSTRUMENTS OF SUSTAINABLE FINANCE

### 2.1 Introduction

Sustainable finance has seen significant growth in recent years, particularly in Europe, which dominates the global market. As of 2024, Europe accounts for about 84% of global sustainable fund assets. Globally, sustainable finance issuance continues to grow, driven by government agencies and public sector entities, which now represent 44% of the total market. However, there has been a decline in corporate contributions to sustainable finance, influenced by higher interest rates and regulatory challenges. Despite this, new guidelines are being developed to encourage broader participation across sectors. This trend reflects not only a shift in the values and priorities of consumers and investors but also represents a direct response to the pressing needs of the planet and its communities. New financial instruments for sustainable finance are a fundamental component of this change, serving as vehicles to channel capital into initiatives that offer tangible benefits for the environment and society. Sustainable financial instruments range from green bonds, which raise capital specifically for ecological projects, to loans linked to sustainability outcomes, where the loan terms are directly tied to achieving environmental or social goals by the borrower. These instruments are also supported by investments in ethical funds, which exclude harmful activities such as those related to tobacco or arms, and by indices that evaluate companies based on their environmental and social impact.

In this chapter, we will examine in detail the main types of these instruments, analyzing the transformation process in the financial landscape that encourages companies to reconsider their operational or strategic practices in terms of environmental sustainability. The role of financial institutions is crucial in this transformation process. Banks, fund managers, and other financial intermediaries are called upon to develop robust frameworks to assess risks and opportunities related to sustainability. Additionally, transparency and consistency of information regarding the environmental and social impacts of financial initiatives are essential for enabling investors to make informed decisions. These instruments, relatively recent in origin, are enjoying growing popularity among both issuers and investors, including public and private entities. The first bond linked to climate change themes was issued in 2007 by the European Investment Bank, and since then, green bond issuances have steadily increased over time. In Italy, the market is rapidly expanding, with the first Italian company, "Hera" (the Bologna's multiutility, issuing a ten-year green bond worth 500 million € in 2014.

At the European level, in 2020, the European Central Bank launched the Pandemic Emergency Purchase Program (PEPP), distinguishing between green bonds and non-green bonds. This unconventional monetary policy program, adopted by the ECB to mitigate the effects of the Covid-19 pandemic, has proven to be a significant change factor in the bond market, especially concerning green bonds. The researchers who have examined the impact of the European Central Bank's Pandemic Emergency Purchase Program (PEPP) on bond issuance costs and environmental, social, and governance (ESG) performance include Enrique Alberola-Ila, G. Cheng, A. Consiglio, and S.A. Zenios. Their study focuses on how the PEPP not only reduced issuance costs, particularly for green bonds, but also encouraged better ESG performance among its beneficiaries, demonstrating the program's role in promoting more sustainable business practices alongside economic stimulus. Have noted that the PEPP have significantly reduced the issuance costs for bonds eligible for the PEPP, with an even more pronounced effect on green bonds. The study that emphasizes the impact of the European Central Bank's Pandemic Emergency Purchase Program (PEPP) on the issuance costs of green bonds and the improvement of environmental, social, and governance (ESG)

performance among beneficiaries is discussed in research by Enrique Alberola-Ila, G. Cheng, A. Consiglio, and S.A. Zenios. This study is part of the broader analysis found in their paper titled "Debt sustainability and monetary policy: the case of ECB asset purchases," published by the Bank for International Settlements (BIS) that not only has the PEPP affected the issuance costs of green bonds, but it has also catalyzed better ESG performance from the program's beneficiaries. The Italian Republic has also shown a growing commitment and interest in addressing climate change and resolving environmental issues through international cooperation. Since signing the Paris Agreement, the Italian Republic has been consistently involved in international developments in sustainable finance, committing to directing financial flows toward reducing greenhouse gas emissions and achieving climate-resilient development. Furthermore, the Italian Republic has integrated the 2030 Sustainable Development Goals into its economic, social, and environmental planning and in drafting its national sustainable development strategy (SNSS)<sup>23</sup>. The Italian Republic has also decided, through the 2020 budget law, to strengthen its environmental commitment by issuing green government bonds. With the issuance of green government bonds, Italy will finance state expenditures aimed at contributing to the realization of various environmental objectives, as outlined by the European taxonomy of sustainable activities. A special committee has been established to identify information on expenditures potentially eligible for funding the public debt through green bond issuances. Notably, in 2023, the Italian state issued a new green BTP with a maturity date of 30 April, 2035, with two tranches placed for a total nominal value of 8 billion €<sup>24</sup>.

## 2.2 Green Bonds

### 2.2.1 Definition of Green Bonds

Green Bonds are bonds that emerged in the mid-2000s as an innovative financial instrument designed to raise capital to finance projects with a positive impact on environmental sustainability. The goal of green bonds is to facilitate the transition to a less polluting economy, with low greenhouse gas emissions and efficient use of renewable resources. In recent years, green bonds have experienced an exponential growth due to the significant interest shown by both public and private financial institutions, and a shift in the majority of investors' mindset towards a greener economy. Investors are increasingly focusing on achieving environmental sustainability alongside financial returns, a trend known as Environmental, Social, and Governance (ESG) investing. Here are some numbers that illustrate the scale and impact of this movement:

1. Global ESG Assets: According to Bloomberg, global ESG assets are projected to reach 50 trillion \$ by 2025, representing over a third of total assets under management (AUM). This growth reflects a significant shift in investment strategies toward sustainability.
2. ESG Fund Flows: In 2021, global sustainable fund flows reached 649 billion \$, an increase of 71% compared to 2020. This indicates a strong investor demand for funds that prioritize environmental sustainability.
3. Impact Investing: The Global Impact Investing Network (GIIN) reported that the global impact investing market size was estimated at 1.164 trillion \$ as of 2021. Impact investing specifically targets investments that generate social and environmental impact alongside financial returns.

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<sup>23</sup> This strategy aims at a new vision of a low-emission circular economy that is resilient to climate impacts and other global changes that can harm local communities, prioritizing the preservation of biodiversity.

<sup>24</sup> Source: Refinitiv Eikon, in particular Green Bond Guide.

4. **Corporate Sustainability:** A 2022 survey by PwC found that 49% of institutional investors are willing to divest from companies that aren't taking sufficient action on ESG issues. This shows the increasing importance investors place on environmental sustainability in corporate strategies.
5. **Performance of ESG Investments:** A meta-analysis by NYU Stern found that 58% of the reviewed studies showed that ESG practices had a positive impact on financial performance, while 21% showed neutral effects. This suggests that pursuing environmental goals does not necessarily compromise financial returns.
6. **Green Bonds:** The green bond market, which finances projects with environmental benefits, reached a record issuance of 517 billion \$ in 2021, up from 297 billion \$ in 2020. This highlights the growing demand for environmentally focused financial instruments.

These numbers underscore the growing integration of environmental sustainability into investment decisions and reflect a broader trend where investors are increasingly looking beyond just financial returns.

Green bonds are virtually identical to standard bonds, subject to the same general regulations regarding the legal framework and related documentation and have the same financial requirements. However, when issuing a green bond, the issuer is required to provide additional information to investors, specifying how the capital raised will be used for sustainability purposes. Transparency is another key aspect characterizing the issuance of these green bonds. The issuer must justify the reasons for issuing such bonds in terms of environmental sustainability and the procedure by which the capital will be used to achieve the sustainability goals stated in the issuance document.

The concept of bonds for sustainable use can be traced back to the issuance of the "Climate Awareness Bond" by the European Investment Bank (EIB) in 2007<sup>25</sup>. On that occasion, €600 million were raised to finance projects in the renewable energy and energy efficiency sectors. A dedicated index was created for this bond's returns, named the "FTSE4GOOD Environmental Leaders Europe 40 Index," based on the already existing "FTSE Europe Index," which included companies meeting specific ESG standards.

To be included in this index, issuing companies had to meet additional requirements, all related to environmental sustainability. Investors also had the option to use part of their earnings to buy or sell so-called EU ETS certificates. These certificates were part of the "Emission Trading Scheme" program introduced in Europe with Directive 2003/87/EC. The Emission Trading Scheme is a mechanism to reduce greenhouse gas emissions in energy-intensive sectors, i.e., sectors with high energy intensity, through a market-based mechanism based on "cap and trade". After three rounds of reform the ETS is finally giving a somewhat significant price to carbon and is progressively extending its scope.

ETS involves more than 11,000 industrial sites, including 1,200 in Italy. Participants in the program are granted "carbon credit" pollution allowances, with each allowance corresponding to one ton of carbon dioxide (CO<sub>2</sub>). The number of carbon credits allocated to a company is based on emissions calculated using indices related to the most environmentally efficient plants. Each year, participants must report their emissions, and if they emit less CO<sub>2</sub> than the allocated allowance,

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<sup>25</sup> European Investment Bank, "EPOS II — The 'Climate Awareness Bond' EIB Promotes Climate Protection via Pan-EU Public Offering", 2007, [http://www.eib.org/investor\\_relations/press/2007/2007-042-epos-ii-obligation-sensible-au-climat-la-bei-oeuvre-a-laprotection-du-climat-par-le-biais-de-son-emission-a-l-echelle-de-l-ue.htm?lang=en](http://www.eib.org/investor_relations/press/2007/2007-042-epos-ii-obligation-sensible-au-climat-la-bei-oeuvre-a-laprotection-du-climat-par-le-biais-de-son-emission-a-l-echelle-de-l-ue.htm?lang=en).

they can sell the excess carbon credits on a specific market, regulated like a financial exchange. Conversely, those who emit more than their allotted allowance must purchase additional carbon credits.

This is a mechanism to reward those who improve their plant's efficiency from an emissions perspective. Bondholders of the bond issued by the European Investment Bank had the option to purchase or cancel these ETS.

The choice not to use the traditional fixed-coupon structure, commonly used in most debt instruments, but to opt for a variable return linked to an index based on the performance of companies operating according to environmental and social criteria, was made to raise further awareness among market investors on sustainability issues.

The EIB bond was the first debt instrument specifically created to address climate change. However, the first bond officially labeled as a green bond was the "World Bank Green Bond," issued on 6, November 2008, because of collaboration between the International Bank for Reconstruction and Development (IBRD), the Skandinaviska Enskilda Banken (SEB), and various Swedish institutional investors. These investors were the first to express the need for financial actions to address global warming.

They sought a safe and profitable destination for their funds that would also help improve the climate. They approached SEB, which in turn sought advice from the World Bank. The assistance of "CICERO (Centre for International Climate and Environmental Research)," an interdisciplinary climate research center based in Oslo, was also crucial. CICERO's role was to ensure that the projects funded had a real positive environmental impact.

Once an agreement was reached among the various parties, the first green bond was issued. The goal of raising awareness and encouraging public and private investors on the issue of environmental change, thus supporting IBRD's efforts, was clearly stated by the World Bank President Ajay Banga<sup>26</sup>. The goals to be achieved through the issuance of this bond were essentially threefold:

1. To take a clear and detailed stance on the fight against global warming.
2. To fully support the World Bank's strategies on sustainable finance.
3. To ensure that investors who purchased the bond achieved higher returns than they would have obtained by investing in sovereign state bonds.

This operation, as declared by the World Bank President, represented the first of the major efforts required to address climate change using enormous resources. The "enormous resources" referred to by the World Bank President in the context of addressing climate change typically involves figures in the trillions of dollars. Specifically, estimates for the financial resources needed to tackle climate change globally range around **\$4 to \$5 trillion annually** through 2030. This amount is necessary to finance the transition to a low-carbon economy, including investments in renewable energy, infrastructure, and adaptation measures. Resources that can only come from a flow of both public and private funding.

The main global issuers of green bonds are private companies (financial and non-financial), the public sector (national governments and local administrations), and supranational entities, especially development banks. Green bonds are primarily issued in dollars and euros (accounting for about 80% of issuers globally) and have an average maturity of 5-10 years<sup>27</sup>. Here are some numbers related to the global issuance of green bonds:

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<sup>26</sup> Ajay Banga, who began his five-year term on 2 June 2023.

<sup>27</sup> Reboredo, J.C., 2018. Green bond and financial markets: Co-movement, diversification and price spillover effects. *Energy Economics*, volume 74, p. 38-50.

1. **Global Green Bond Issuance:** As of 2023, the cumulative issuance of green bonds worldwide exceeded \$2 trillion since the market's inception in 2007. This reflects the rapid growth and importance of green bonds in financing environmentally sustainable projects.
2. **Currency Distribution:** About 80% of green bonds are issued in US dollars and euros. This shows the dominance of these two currencies in the green bond market.
3. **Issuer Types:**
  - **Private Companies:** Account for approximately 40-50% of green bond issuance. This includes both financial institutions and non-financial corporations.
  - **Public Sector:** Including national governments and local administrations, contributes to roughly 20-30% of total green bond issuance.
  - **Supranational Entities:** Such as development banks, are responsible for about 15-20% of green bond issuance.
4. **Average Maturity:** Green bonds typically have an average maturity of 5 to 10 years, which aligns with the long-term nature of the environmental projects they are meant to finance.

On the lending side, there is a significant number of institutional investors and organizations in the insurance and banking sectors that are equipping themselves with tools to integrate the effects of climate change into their medium and long-term strategies. Climate change involves a set of risks, including physical, technological, legal, reputational, and social risks, relevant to businesses and institutions and therefore these risks, if not effectively managed, can lead to significant financial damage, which investors should consider not only for environmental and ethical reasons but also for economic and financial ones.

Currently, green bonds represent a small portion of the global bond market, but they are experiencing strong growth. In 2024, the green bond market reached a total issuance value of \$3200 trillion. The data related to the issuance value is reported in Figure 9.

**Figure 8 Green Bonds Market 2024**



Source: Climate Bond Initiative website, published in 2024



The issuance of public green bonds is also growing exponentially. In 2023, a record 31% of total issuances were green bonds. Last year, government issuances reached \$160 billion, accounting for 31% of the total green bonds issued throughout the year. Unlike companies, governments often leverage forms of indirect spending, such as subsidies.

For example, Belgium's green bond issued in 2018 partially funded aid for the railway system, while in France, proceeds from issued green bonds were partly dedicated to tax exemptions for renewable energy and biodiversity projects. A special mention goes to Mexico, the first country to issue a sovereign ESG bond, whose example has been followed by numerous countries. In the Italian market, the Treasury is also issuing green bonds. For example, the BTP green are new Italian government bonds linked to sustainable finance, with proceeds used to finance state expenses with a positive environmental impact to support the country's ecological transition.

In the Italian case, BTP greens are medium/long-term bonds with the same characteristics as other multi-year Treasury bonds: they provide a fixed income set by the semi-annual coupon and the repayment of the nominal value at maturity.

The first BTP green, issued by the Italian Treasury on 3, March 2011, matures on 30, April 2015. Through the issuance of BTP green bonds, Italy is committed to financing state expenses with a positive environmental impact. These include tax expenses, capital expenses, current expenses, and transfers to internal and external public administration entities, to the extent that they are financed by general taxation. Through the issuance of BTP green, Italy will finance all expenses contributing to the achievement of environmental objectives defined by the European taxonomy of sustainable activities. Finally, the use of proceeds collected through the issuance of BTP green will help Italy support the 2030 Sustainable Development Goals (SDGs)<sup>28</sup>.

### 2.2.2 The Green Bond Principles of ICMA

In 2014, the International Capital Market Association (ICMA)<sup>29</sup> issued the so-called Green Bond Principles (GBP), which are voluntary, non-binding guidelines recommending a specific procedure for issuers to follow in the issuance of green bonds. These guidelines aim to encourage transparency and the disclosure of information regarding the use of proceeds raised through these bonds. By doing so, these principles help build investor confidence and stimulate market growth. It is not entirely coincidental that the size of the green bond market has significantly increased since the publication of the GBP. The green bond market aspires to develop the key role that the bond market can play in financing projects that contribute to environmental sustainability.

In this context, the Green Bond Principles promote integrity in the green bond market through guidelines aimed at encouraging transparency, disclosure, and the dissemination of information. They were created for use by market participants and developed to provide the necessary information for raising capital for sustainable projects.

By focusing on the use of proceeds, the GBP aim to guide issuers in transitioning their business models towards greater environmental sustainability through specific projects. An issuance aligned with the Green Bond Principles should represent an investment opportunity characterized by "green" credentials.

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<sup>28</sup> Source: Bank of Italy page.2

[https://www.dt.mef.gov.it/export/sites/sitodt/modules/documenti\\_it/debito\\_pubblico/presentazioni\\_studi\\_relazioni/documentazione\\_btp\\_green/Quadro\\_di\\_riferimento\\_per\\_lxemissione\\_di\\_Titoli\\_di\\_Stato\\_Green.pdf](https://www.dt.mef.gov.it/export/sites/sitodt/modules/documenti_it/debito_pubblico/presentazioni_studi_relazioni/documentazione_btp_green/Quadro_di_riferimento_per_lxemissione_di_Titoli_di_Stato_Green.pdf)

<sup>29</sup> The ICMA is an association dedicated to analyzing a wide range of issues related to market practices and regulatory problems that affect the functioning of international markets. It is formed of financial institutions, including banks, asset managers, issuers, and other participants in the international capital markets, led by a Board of Directors, based in Zurich, Switzerland.

Through communication about the use of green bond proceeds, the principles promote transparency to facilitate the monitoring of investments in environmental projects and improve information about their impact.

The GBP also provide general categories for eligible green projects, considering diverse opinions and developments in defining and understanding environmental issues and their consequences. They may resort to third-party entities to provide complementary definitions, standards, and taxonomies to determine the environmental sustainability of a project.

Moreover, the GBP encourage all market participants to use this methodology to develop robust practices, referring as necessary to a wide set of complementary criteria. The GBP are collaborative and consultative in nature, based on contributions from the members and observers of the Green Bond Principles and a broader range of stakeholders. The principles are coordinated by the ICMA (international capital market association) Executive Committee and are usually updated annually to reflect the development and growth of the global green bond market.

In detail, the GBP are founded on five key components plus an external review activity:

1. Use of Proceeds
2. Process for project evaluation and selection
3. Management of proceeds
4. Reporting
5. External review

**1. Use of Proceeds:** The central focus of a green bond is the use of proceeds from the bond issuance in green projects, which must be adequately described within the legal documentation of the bond. All projects qualified as green projects should result in clear environmental benefits, which must be evaluated and quantified by the issuer. If all or part of the proceeds are used for refinancing a project, it is recommended that the issuer provides an estimate of the proportion allocated to financing versus refinancing and, where appropriate, specify which investments or project portfolios may be refinanced. The Green Bond Principles recognize multiple general categories of eligibility for green projects that contribute to addressing key environmental issues, such as climate change mitigation, climate change adaptation, conservation of natural resources, biodiversity preservation, and pollution prevention and control. The following list of project categories identifies the types of projects most funded through the green bond market. However, green projects may include related costs, such as those incurred in research and development, which may be linked to multiple categories and environmental objectives. The qualifying green project categories include the following:

- Renewable energy includes the production and transmission of energy sourced from renewable sources.
- Energy efficiency derived, for example, from new or renovated buildings, energy storage, and the construction of smart grids.
- Pollution prevention and control, includes the reduction of air emissions, greenhouse gas control, soil remediation, and waste recycling through waste-to-energy processes.
- Environmentally sustainable management of natural resources and land use, includes environmentally sustainable agriculture, environmentally sustainable animal husbandry, smart agricultural production, and environmentally sustainable forestry, which encompasses reforestation and the preservation of natural landscapes.
- Clean transportation: includes electric, hybrid, rail, non-motorized, and multimodal transportation, infrastructure for clean energy vehicles, and the reduction of harmful emissions.

- Sustainable water management, that includes sustainable infrastructure for potable water, wastewater treatment, sustainable urban drainage systems, and river course correction and other forms of flood risk mitigation.
- Climate change adaptation, which includes support information systems, such as monitoring and alert systems.
- Eco-efficient products, production technologies, and circular economy processes, which includes the development and introduction of products with a lower environmental impact, eco-labels, and environmental sustainability certifications.
- Green buildings, buildings that meet regional, national, and international standards or certifications.

The purpose of the Green Bond Principles is not to take a stance on which technologies, standards, claims, or statements are optimal for achieving environmental benefits, but to provide a mapping between environmental support initiatives to ensure comparability. This can offer additional guidance to green bond issuers on what may be considered green and thus appealing to investors. Various institutions provide independent analysis, advice, and guidelines on the quality of different solutions and environmental practices, and the definition of what is "green" or what constitutes a green project can depend on the economic sector or the geographic context where the project is implemented.

**2. In the process of project evaluation and selection,** the issuer of a green bond must clearly communicate the following aspects to investors:

- The environmental objectives.

The processes through which the issuer determines how the projects align with the above-mentioned categories of environmental projects.

- Eligibility criteria related to these projects, including, where possible, exclusion criteria or any other processes applied to identify or manage potential risks that the projects may have on the related environmental/social impacts.

Issuers are encouraged to place this information within the context of the issuer's environmental sustainability goals, strategy, policy, and/or processes. They are also encouraged to communicate any environmental practices or certifications referred to in the project selection process.

In this regard, the Green Bond Principles promote achieving a high degree of transparency and recommend that the issuer's project evaluation and selection process be supplemented by an external review company.

**3. Management of proceeds:** the net proceeds from the issuance of green bonds, or an amount equivalent to such net proceeds, should be credited to a specific account or portfolio, or otherwise tracked in a system managed by the issuer in an appropriate manner. The issuer should also document a formal internal process related to financial and investment operations in environmental projects by the issuer itself. Moreover, if the green bond is outstanding, the balance of the net proceeds should be periodically adjusted and modified to match the allocations to the projects to be undertaken during that period. The issuer is also required to inform investors about the types of temporary placements for those net proceeds.

**4. Reporting:** in the reporting activity, issuers are required to develop, maintain, and update information regarding the use of proceeds. This information must be updated annually until the bond's maturity and promptly in the event of any significant changes from the original plans.

The annual report should include a list of projects where the proceeds from the green bonds have been allocated.

It should also contain a brief description of the projects, the amounts allocated to them, and their expected impact. If confidentiality agreements, market considerations, or many projects limit the level of detail that can be made publicly available, the GBP recommend providing such information even if in general terms or based on an aggregated portfolio (e.g., referencing the percentage of the amount allocated to specific project categories).

In this context, transparency is particularly useful for communicating the expected impact of the various projects. The GBP recommends using qualitative performance indicators and, if possible, quantitative performance measures, like energy capacity, electricity production, greenhouse gas emissions avoided or reduced, water use reduction, as well as disclosing the key methodologies and considerations made for the quantitative determination. Issuers with the ability to monitor actual impacts are also encouraged to include this information in their periodic reporting.

There are non-binding guidelines aimed at achieving a harmonized model for impact reporting regarding energy efficiency, renewable energy, water-related projects, and waste management projects. These guidelines include templates for reporting formats and impact at both project and portfolio levels that issuers can adapt to their needs. Additionally, the GBP encourage further initiatives to provide additional references for reporting that others can adopt and/or adapt to their needs.

In this context, the use of a summary outline indicating the main characteristics that a green bond or green bond program should have and illustrating its key features in line with the four components of the Green Bond Principles, can be very helpful in informing investors in the market. Reports titled “Green Bond Index Mapping Support Document” are thus tools created to clarify and standardize the way index data are managed and disclosed. Their objectives are:

- Standardize data requirements and disclosure policies: it involves establishing a common standard for the type of data that needs to be collected and how it should be shared. This helps ensuring that everyone provides the same information transparently and understandably.
- Clarify the roles and responsibilities of stakeholders: in practice, it means clearly defining who is responsible for each aspect of the project and the various organizations or individuals involved. For example, specifying the tasks of index providers, financial institutions, or other parties involved.
- Facilitate communication among stakeholders: the goal is to improve communication among all involved parties to ensure that everyone is correctly informed and can collaborate efficiently.
- Provide transparent and reliable data: it means ensuring that index data are clear, easily accessible, and accurate, so that anyone using it can trust the provided information.
- Clarify assumptions and calculation methodologies: it involves clearly explaining the assumptions made and how index data are? calculated. This helps in understanding the basis for evaluations and analyses.

In summary, these reporting tools are designed to make the management and sharing of index data easier and more transparent, ensuring that everyone who needs access to this information can obtain accurate and equally comprehensible data.

**5. External review**, the ICMA recommends that issuers, in the context of a green bond issuance, appoint one or more external reviewers to confirm the alignment of their bond or bond program

with the four core components of the Green Bond Principles (GBP) described earlier. There are various ways issuers can obtain such external guidance for their green bond issuance process, and different levels and types of reviews available in the market. An issuer can seek advice from consulting firms and/or institutions with recognized expertise in environmental issues or other matters related to green bond issuances.

This advice may cover topics such as drafting a green bond disclosure or reporting by a green bond issuer. Support or consulting services involve collaboration with the issuer and differ from traditional external and independent reviews.

The GBP encourages independent review of the environmental characteristics of the assets or activities associated with the green bond or green bond program, where applicable. Independent external reviews can vary depending on their purpose and may cover a green bond framework or program, a single green bond issuance, the underlying assets, and/or procedures. These reviews are generally categorized into the following types, with some providers offering more than one type of service either separately or in combination:

1. **Second Party Opinion:** an institution with expertise in environmental issues and that is independent of the issuer can issue a second party opinion (SPO)<sup>30</sup>. The institution should be independent from the issuer's consultant for the green bond framework. Alternatively, appropriate procedures, such as information barriers, should be introduced within the institution to ensure the independence of the SPO. The SPO generally involves an assessment of compliance with the Green Bond Principles. Specifically, it may include an evaluation of the issuer's overall objectives, strategies, principles, and/or procedures related to environmental sustainability, as well as an analysis of the environmental characteristics of the types of projects for which the proceeds are intended.
2. **Verification:** an issuer can obtain an independent verification regarding a specific set of criteria, usually related to business processes and/or environmental criteria. Verification can focus on alignment with internal or external standards, or claims made by the issuer itself. Additionally, the assessment of the underlying environmental characteristics can be defined as verification and may refer to external criteria. Verification may also include assurance or attestation regarding the issuer's internal method of tracking the use of proceeds, the allocation of funds derived from green bond proceeds, the environmental impact statement, or compliance reporting to the GBP.
3. **Certification:** an issuer can have its green bonds, the framework for these bonds, and/or the use of proceeds verified against recognized external environmental assessment standards or labels. An assessment standard or label defines specific criteria and alignment with these criteria, typically verified by qualified and accredited third parties who can confirm compliance with certification criteria.

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<sup>30</sup> A second party opinion (SPO) is an independent assessment provided by a third-party expert regarding the credibility and integrity of a financial product, such as a green or sustainable bond. The SPO ensures that the financial product complies with internationally recognized standards and guidelines, evaluating whether the projects financed through such instruments will have a positive environmental or social impact. Additionally, the SPO verifies that the information provided by the issuer is transparent, accurate, and reliable, thereby increasing investor confidence. Upon completing the evaluation, the experts issue a report expressing their opinion on the financial product's adherence to sustainability standards and the transparency of the information provided. Thus, an SPO is a crucial tool for ensuring the transparency and credibility of sustainable financial products, helping issuers demonstrate their commitment to sustainability and assisting investors in making informed decisions.

4. Scoring/Rating of Green Bonds<sup>31</sup>: an issuer can have its green bonds, their framework, or a key feature such as the use of proceeds evaluated or examined by qualified third parties like rating agencies using a predefined scoring/rating method. The result may include insights into data related to environmental performance, processes related to the GBP, or another reference standard. This scoring/rating is distinct from traditional credit ratings, as it may reflect significant environmental risks.

An external review can also be partial, covering only certain aspects of the issuer's green bond or framework while still assessing compliance with all four core components of the Green Bond Principles (GBP). The GBP acknowledge that the timing of an external review may directly depend on the nature of the review and that the publication of reviews may encounter restrictions related to corporate confidentiality requirements. The GBP recommend the publication of external reviews using standard formats. Additionally, the GBP encourage external reviewers to disclose their qualifications and expertise, clearly outlining the scope and purpose of the review conducted. Voluntary guidelines based on the GBP are available for use by external reviewers.

Currently, the ICMA recognizes four types of green bonds, with additional types potentially emerging as the market develops and the GBP are updated annually:

1. Standard green use of proceeds bond: standard bonds issued directly by issuers with "recourse to the issuer"<sup>32</sup> and are consistent with the GBP.
2. Green revenue bond: a non-recourse debt security conforming to the GBP, where the credit exposure within the security is attributable to cash flows from and secured by revenues, and its use is linked to environmental projects related or unrelated to these flows.
3. Green project bond: a bond issued for one or more green projects, where the investor has direct exposure to the project risk, with or without recourse to the issuer, and aligned with the GBP.
4. Green securitized bond a bond backed by one or more specific green projects, consistent with the GBP and associated with covered? bonds. In these securities, the primary source of repayment typically comes from the cash flows generated by the underlying assets.

### 2.2.3 EU Green Bond Standard

In March 2018, the European Commission published the Action Plan on Financing Sustainable Growth, outlining a comprehensive strategy to better align finance with sustainability. This plan has three main objectives:

1. Redirecting capital flows towards sustainable investments to promote inclusive and sustainable growth.
2. Managing financial risks related to climate change, resource depletion, environmental degradation, and social issues.
3. Fostering transparency and long-term perspectives in financial and economic activities.

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<sup>31</sup> Environmental scoring/rating is a quantitative and qualitative assessment of the environmental performance of a company, product, or investment. This evaluation is typically conducted by specialized agencies or independent entities and provides an indication of the level of environmental sustainability, helping investors, consumers, and other stakeholders make informed decisions. It is therefore an essential tool in the current context of focus on sustainability, offering a comprehensive overview of a company's environmental performance.

<sup>32</sup> "Recourse to the issuer" is a term used in the context of structured finance and securities issuance, especially in securitization transactions. It refers to the right of bondholders to seek repayment or payment of their investments directly from the underlying assets that have been issued as collateral, rather than from the issuer itself. This provides an additional level of security for investors, increasing transparency and reducing credit risk.

As part of the Action Plan on Financing Sustainable Growth, the European Commission committed to creating standards and labels for green financial products. In 2018, it established the Technical Expert Group on Sustainable Finance (TEG)<sup>33</sup> to assist in four key areas of the action plan: developing a unified classification system for sustainable economic activities, a European standard for green bonds (EU-GBS), a benchmark for low-carbon investment strategies, and guidelines for improving corporate climate-related disclosures.

As previously mentioned, green bonds have provided traditional capital markets with a quick way to link visible green sustainability trends in public debate to investments and real economy functions. The standardization of this market was significantly facilitated in 2014 with the publication of the Green Bond Principles (GBP) supported by the International Capital Market Association (ICMA).

The European Green Bond Standard (EU-GBS) came into effect on December 20, 2023, although its actual application will begin on December 21, 2024. This regulation complements the green bond principles described by the ICMA and aims to promote the EU's objectives for a climate-neutral economy by supporting the financing of sustainable activities and increasing investor protection against greenwashing.

The proposal is part of the broader European Union agenda on sustainable finance and lays the foundation for a common framework for issuers who wish to use the "European green bond" designation. This designation applies to issuances where the proceeds are used to finance environmentally sustainable activities or projects according to EU Regulation 852/2020 on taxonomy (the so-called taxonomy regulation).

The regulation was introduced because, according to the European Commission, existing standards provide high-level guidelines or recommendations essentially based on the issuance process but do not offer sufficiently standardized, rigorous, and comprehensive definitions regarding the projects for which the proceeds are used.

Moreover, the European Commission noted that current market standards do not ensure adequate transparency and accountability for external reviewers, nor are these external reviewers subject to continuous regulatory oversight.

These aspects pose difficulties for investors in identifying, comparing, and relying on green bonds that are genuinely environmentally sustainable, potentially leading to instances of greenwashing. This legislative proposal for the European Green Bond Standard was initiated with the main goals of:

- Supporting investors in identifying and reliably assessing the quality of issued green bonds.
- Facilitating the issuance of higher-quality green bonds by providing definitions for economic activities and projects to which the proceeds should be allocated, thereby reducing potential reputational risks for issuers.
- Standardizing external review activities and improving the reliability of external reviewers through the introduction of a voluntary registration and supervision regime.

The legislative proposal is closely connected to the taxonomy regulation, which, as mentioned earlier, serves as the reference point for classifying the environmental sustainability of economic activities and related goods or projects. The scope of the European Green Bond Standard includes

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<sup>33</sup> The TEG began its work in July 2018 with a one-year mandate, conducting formal plenary meetings and individual work area sessions. The TEG's mandate was extended until the end of 2019 and consisted of 35 members from civil society, academia, the corporate and financial sectors, as well as ten additional members and observers from EU and international public bodies.

all issuers, both public and private, who voluntarily wish to use the "European green bond" or "EU-GB" designation for their green bond issuances.

In summary, to use the European green bond or "EU-GB" designation, issuers must:

- Fully invest the proceeds of such bonds in sustainable economic activities covered by the EU taxonomy regulation (Regulation EU 2020/852) before their maturity.
- Alternatively, allocate the proceeds to a portfolio of real financial assets in compliance with taxonomy requirements using the portfolio approach.
- Under certain flexibility rules, invest up to (not more than) 15% in economic activities that meet specific requirements, even if not officially covered by taxonomy requirements.

Regarding transparency obligations, green bond issuers must:

- Complete the dedicated information sheet for European green bonds and ensure it is approved by an external verifier before issuing a bond (pre-issuance review procedure).
- Provide an annual report on the allocation of proceeds until all proceeds are fully invested.
- Obtain a post-issuance review from an external verifier.
- Publish an environmental impact report on the use of funds at least once a year throughout the bond's duration.
- Publish a prospectus in line with Regulation EU 2017/1129 using the term European green bond.
- Make the information sheet, prospectus, various reviews, and other relevant information freely available on their website for at least one year after the bond's maturity.

For securitization-related bonds, the following rules apply:

- Bonds issued for synthetic securitization cannot be defined as European green bonds.
- Securitized exposures cannot be used to finance fossil fuel-related activities but can be used for electricity generation from fossil fuels or fossil fuel-based heating/cooling production, provided they meet the do no significant harm test.
- Issuers of securitization-related bonds designated as European green bonds must indicate the nature of the bond in their prospectus, confirm responsibility for the use of proceeds, and provide additional information on supported economic activities.

Regarding the inspection process, external verifiers must:

- Be registered with the European Securities and Markets Authority (ESMA)<sup>34</sup>.
- Meet practical and professional requirements and employ adequate systems, resources, and procedures to perform their tasks.
- Maintain a permanent, independent, and effective compliance system, implementing internal due diligence policies and procedures to prevent conflicts of interest.
- Correct methodological errors by notifying ESMA directly.
- Ensure their examinations are based on an accurate analysis of all relevant and available information.
- Ensure third-party service providers, to whom some activities can be outsourced but not all, can perform reliable and professional assessments, for which external verifiers remain responsible.

For inspection and supervision by competent national authorities, they must:

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<sup>34</sup> ESMA is a European Union agency tasked with ensuring the stability of the EU's financial system by protecting investors and maintaining orderly financial markets. Founded in 2011 and headquartered in Paris, this institution plays a crucial role in regulating and supervising European financial markets, contributing to financial stability, protecting investors, and ensuring fair and transparent markets.



- Oversee issuers of European green bonds and their use of common models.
- Have broad supervisory and investigative powers regulated by appropriate national laws.
- Collaborate with each other on investigations, supervision, enforcement, and information exchange.
- Regularly and periodically report relevant information to ESMA.

ESMA can:

- Request any necessary information from external verifiers.
- Conduct supervisory inspections, examine regulations, data, procedures, and other materials, and question involved parties during investigations.
- Temporarily or permanently remove the rights of an external verifier and impose fines ranging from 20,000 € to 200,000 €.
- Maintain a publicly accessible register of external verifiers on its website.
- Charge external verifiers for registration, recognition, and supervision, as well as any other incurred costs.
- Issue various regulatory technical standards necessary for the regulation's implementation.

The European Green Bond Standard will start being applied from November 2024. The EU's goal is to create a uniform sustainable bond market for all issuers through this standard.

### 2.3 Climate Bond Standard (CBS)

The Climate Bond Initiative (CBI) is an international NGO founded in 2010 with the goal of mobilizing the global market to develop climate solutions through the introduction of the "Climate Bond Standard and Certification Scheme" (CBS<sup>35</sup>). CBS is a certification scheme based on specific criteria to ensure that debt instruments and other financial tools are consistent with the Paris Agreement's objective of limiting global warming to 1.5 degrees Celsius. CBS is based on guidelines established by the ICMA; being certified by CBI means also aligning with the Green Bond Principles of ICMA. However, unlike the green bond principles, the Climate Bond Initiative issues certifications in its own name.

The Climate Bond Initiative is dedicated to mobilizing the bond market and other financial instruments to address climate change. Its primary goal is to promote large-scale investments in sustainable, low-carbon solutions through the issuance of green bonds and other climate-related debt forms. The organization plays a crucial role in promoting and facilitating the growth of the global green bond market by providing tools, resources, and advice to issuers, investors, and governments. It regularly produces reports and analyses on the state of the climate bond market, highlighting emerging trends and best practices. Additionally, it works with governments and institutions to develop policies supporting green finance.

The Climate Bond Standard comprises specific criteria for each sector, based on the Climate Bonds Taxonomy, which is drafted with the help of scientific research on environmental issues from the

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<sup>35</sup> <https://www.climatebonds.net/standard/the-standard>

Intergovernmental Panel on Climate Change (IPCC)<sup>36</sup> and the International Energy Agency (IEA)<sup>37</sup>. The standard aims to create an independent, science-based method to classify which investments have a real positive environmental impact and align with the transition to a zero-carbon economy. The most recent version of the Climate Bonds Taxonomy dates to September 2021, originally drafted in 2012 and periodically updated<sup>38</sup>. It serves as the fundamental pillar used by CBI to determine which projects or assets underlying bonds are eligible as green. The document classifies eight macro categories in which projects financed by bond proceeds must fall:

1. Energy
2. Transport
3. Water
4. Buildings
5. Land Use and Marine Resources
6. Industry
7. Waste and Pollution Control
8. Circular Economy

For each category, different types of projects that are consistent with the Paris Agreement and thus certifiable by CBI are defined. Therefore, the taxonomy provides an overview of green investment opportunities in key sectors of the global economy, serving as an initial selection tool to identify which sectors to include and which to exclude. It is used by CBI when evaluating bonds or other debt securities to include in its list of green bonds. A crucial element in determining if a bond is classifiable as green is the sector eligibility criteria. Each sector has specific criteria that must be met for assets to be considered eligible. These criteria are determined through a lengthy process involving various stakeholders. Initially, a Technical Working Group is created to discuss the criteria with an Industry Working Group specializing in the sector under analysis. The process also includes non-profit organizations, academic organizations, and government bodies to provide consultation.

As mentioned above, in addition to the taxonomy and eligibility criteria, CBI issues the Climate bond standard, the latest version of which was published in April 2023. This document is based on international best practices in green finance and defines the processes to follow and sector criteria to meet to obtain certification through the Climate Bond Standard. The document is divided into four sections, each for a type of instrument that can be certified through CBS. The types are as follows:

- Use of Proceeds (UoPs): Certification of debt instruments which proceeds must be allocated to specific projects that meet the eligibility criteria of the respective sector.
- Assets: This section includes environmental certifications for specific assets that meet the eligibility criteria.
- Entities: Certifications for entities that provide non-financial products or services but have goals to reduce their environmental impact in line with CBS.
- Sustainability-Linked Debt: Debt instruments issued by non-financial entities which proceeds depend on the issuer achieving certain sustainability targets. These can be certified if they meet all sector eligibility criteria and the transparency and disclosure standards set out in CBS.

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<sup>36</sup> The IPCC is a scientific forum established in 1988 by two United Nations bodies, the World Meteorological Organization, and the United Nations Environment Program. The forum was created to study the phenomenon of global warming.

<sup>37</sup> The IEA is an international, intergovernmental organization founded in 1974 by the Organization for Economic Cooperation and Development (OECD).

<sup>38</sup> <https://www.climatebonds.net/standard/the-standard>

Each section clearly outlines all the requirements and practices to be adopted to obtain certification for each type of green instrument. In general, the requirements reflect the four founding principles of the Green Bond Principles issued by ICMA: the use of proceeds, the process for project evaluation and selection, the management of proceeds, and reporting. However, CBS is more structured and precise, ensuring that these four criteria are met both before and after issuance to obtain certification. In both phases, the issuer must clearly and transparently declare all required information through official reports.

Specifically, before or at the time of bond issuance, the issuer must publish the “Green Finance Framework”, a document that must include:

- A declaration attesting to conformity with CBS or other standards.
- A summary of how the proceeds from the bond issuance will be used, i.e., the projects in line with CBS that are intended to be financed.
- A description of the processes that led to the selection of eligible projects, certifying that they meet the eligibility criteria and the climate and environmental objectives the issuer aims to achieve.
- A description of the policies and procedures intended to be used to transparently track and monitor fund allocation to ensure they are used exclusively for projects that meet the criteria. This point also includes the management of unallocated proceeds.
- A description of the reporting and external review methods the issuer must implement.

Another document that the issuer must publish along with the Green Financial Framework is the so-called “Disclosure Documentation”. This document should include a list of projects underlying the bond and the macro area in which they fall. It should also include information on the methodology and assumptions used to confirm that the characteristics of these projects conform to sector criteria. The document must also include the “Approved Verifier” that the issuer intends to rely on for an independent verification of compliance with the Climate Bond Standard. If the approved verifier certifies the Green Finance Framework, the bond then receives certification, which attests that the bond is indeed green. This certification is called Pre-Issuance Certification and is valid for up to 12 months from the bond's issuance<sup>39</sup>. To receive the Post-Issuance Certification, the issuer must publicly provide an update report, which must also be guaranteed by an approved verifier and must contain:

**Allocation Report:** this document confirms the allocation of bond proceeds to eligible projects and activities. It is mandatory for all certified debt instruments. Its objective is to ensure that the funds raised are indeed used to finance eligible projects and activities that align with the declared bond objectives. Additionally, the document must include a list of projects, indicating the portion of funds allocated to each.

**Eligibility Report:** it serves to confirm the characteristics or performance of projects and activities to demonstrate their eligibility according to relevant criteria. This report is also mandatory for all certified debt instruments. It verifies that the funded projects and activities meet the specific sector criteria, thus maintaining compliance with environmental sustainability standards.

**Impact Reporting:** it discloses the metrics or indicators reflecting the expected or actual impact of eligible projects and activities. Although recommended for all certified debt instruments, its completion is not mandatory. The impact report aims to provide a transparent view of the real

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<sup>39</sup> There is a list of all the organizations that have been approved by the Climate Bond Standard Board and can certify the bond's compliance with the Climate Bond Initiative.

effect of the projects on climate and the environment, allowing investors to assess the sustainability of their investment. To maintain the green bond certification, the issuer must provide the CBI and make public to all investors an update report annually until the bond matures.

The Pre-Issuance Certification and Post-Issuance Certification can only be obtained by entities approved by the Climate Bonds Standard Board. However, there are other types of external reviews that the issuer can also request. The main ones are:

- Third Party Assurance and Second Party Opinion. Both can be performed before and after issuance.
  - Third Party Assurance is provided by an auditing or accounting firm. If conducted before issuance, it guarantees that the bond is aligned with the green bond principles.
  - Second Party Opinion is provided by organizations offering environmental and social governance services. It certifies the greenness of the projects, i.e., whether the projects to be financed meet the criteria set by CBS. After issuance, both types of reviews ensure that the proceeds of the issued bonds have been allocated to eligible projects.

The standards have now expanded to include debt instruments, assets, and general-purpose entities. Certification under this extended standard confirms that debt instruments, assets, or entities meet the published criteria established by the climate bond standard. Additionally, a broader definition of research and development has been included, recognizing the crucial role of scientific research and emerging technologies in achieving net-zero emissions transitions. A minimum of 95% of net proceeds must finance projects that meet the sector eligibility criteria of the climate bond. Additionally, a maximum of 5% of the proceeds of a certified debt instrument can be allocated to projects or assets not fully aligned with the eligibility criteria, provided these projects comply with the green bond principles or social bond principles issued by ICMA.

The standard provides transparent, scientifically based sector criteria for climate change mitigation. These are used to certify non-financial corporate entities or parts of them, and sustainability-linked debt (SLD) instruments issued by these entities. This can include companies whose emissions are already near zero and those that are not yet but are undertaking a credible transition process. The certification rules for entities and SLDs aim to address the concerns of issuers and investors regarding the burden of due diligence and reporting requirements, while maintaining robustness and credibility. These rules are based on existing frameworks and methodologies, emphasizing ambitious objectives, such as climate mitigation aligned with the Paris Agreement goals. Additionally, they require credible transition plans that inspire confidence in the entity's ability to achieve these goals, as well as a phase of disclosure and verification that allows adequate oversight by both investors and stakeholders.

Obtaining CBI certification, however, comes at a cost<sup>40</sup>. The Climate Bond Initiative requires a minimum fee of 2000 \$ for issuers from developed countries. Conversely, for developing countries, the minimum fee is 1,000 \$. Additionally, a "variable fee" is charged, amounting to one-tenth of a basis point of the total amount issued. In this context, the CBI provides guides for potential green bond issuers to enhance the demand for green bonds and increase the volume of green bonds issued, such as:

- Green City Bonds
- Green bonds from green banks and development banks
- Green sovereign bond

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<sup>40</sup> Fees to be paid for certifying "Use of Proceeds" bonds.

## Chapter 3 THE MARKET FOR GREEN SOCIAL AND SUSTAINABILITY BOND AND THE MAIN ESG RATING METHODOLOGIES FOR BUILDING SUSTAINABILITY INDICES

### 3.1 The Structure of the GSS Securities Market Today

From 2008 to 2023, a total of 7,240 green bonds were issued by 2,336 distinct issuers, amounting to approximately 2.5 trillion \$<sup>41</sup>. Although the market is still relatively small compared to the global bond market, which issued bonds worth over 22 trillion \$ in 2022 alone, the green bond market has seen tremendous growth, with an average annual increase of 74%. The first green bond was issued in 2007 by the European Investment Bank (EIB) to finance climate-related projects. This bond was called the "Climate Awareness Bond." In 2008, the World Bank also issued its first green bond. The first private green bond issuances began in 2013, notably by the Swedish real estate company Vasakronan, followed by EDF (Électricité de France). After the publication of the 2030 Agenda for the SDGs and the COP21 Paris Agreement, in 2017, Cassa Depositi e Prestiti issued the first Italian social bond. In 2019, following the publication of the European Green Deal, Italy's SNAM gas company issued the first climate action bond, followed by Enel (electricity company), which issued the first SDG-linked bond. The data on green bonds issued globally from 2008 to 2023 are presented in Figure 9.

**Figure 9 Yearly Issuance of Green Bonds from 2008 to 2023: Total Issuance, Number of Bonds, and Issuers**

Year	Total issued (M\$)	N° of Green Bonds	Issuers
2008	109	1	1
2012	673	4	4
2013	388	1	1
2014	11.727	30	20
2015	13.208	90	22
2016	32.033	59	39
2017	101.370	195	111
2018	86.843	211	130
2019	220.265	681	392
2020	256.752	890	462
2021	644.191	1.858	967
2022	565.699	1.678	867
2023	567.106	1.542	824
<b>Totale</b>	<b>2.500.363</b>	<b>7.240</b>	<b>2.336</b>

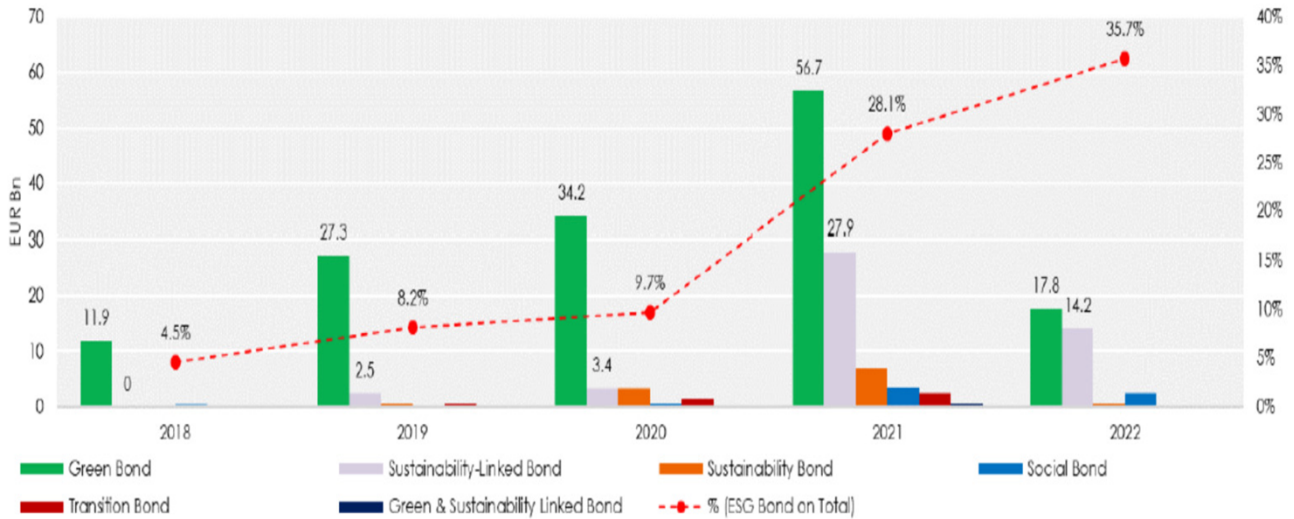
Source: Climate Bonds Initiative annual report 2023

Regarding the type of issuer, the dominant sector is the private sector, labeled as corporate, accounting for more than 91% of issuers. This sector includes traditional companies, as well as

<sup>41</sup> Source: Refinitiv Eikon, specifically from the dedicated section 'Green Bond Guide'

banks and private financial services. Concerning the European market, the following figure shows the evolution of the corporate green bond market.

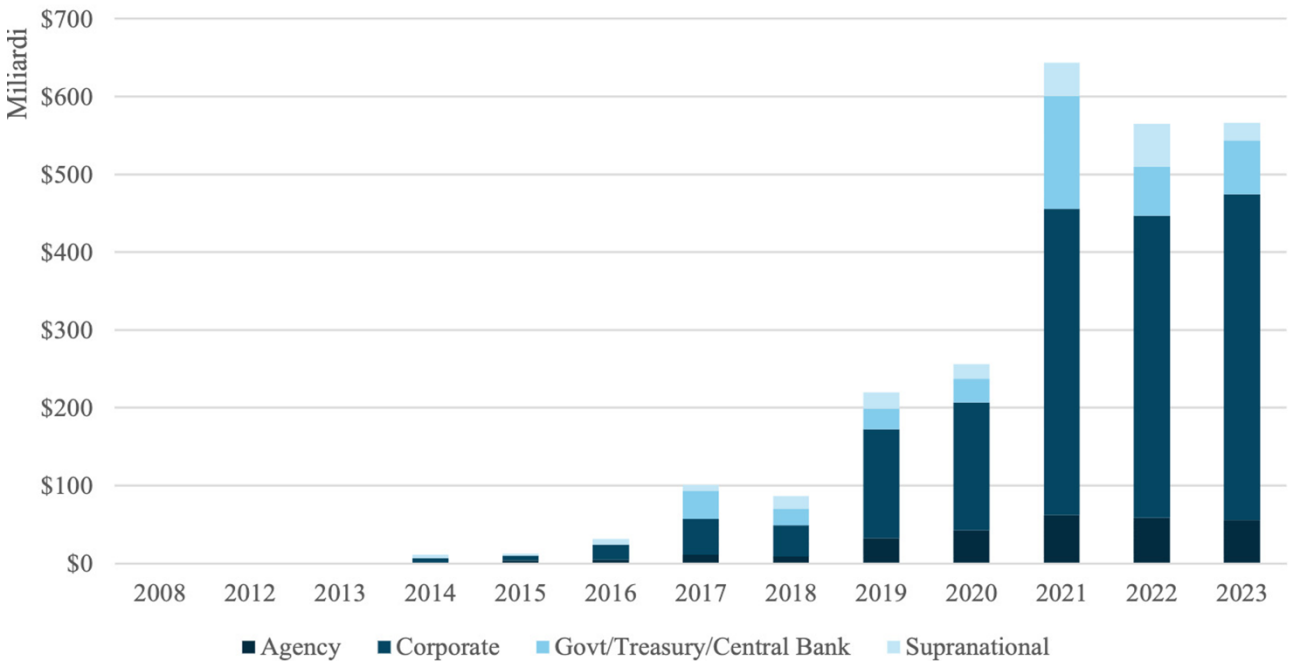
**Figure 10 ESG Volumes Dynamics - Green Bond keep highest volumes with SLB growing (Eur bn)**



Source: EIB publications, year 2023

"Agency" issuers refer to government agencies that aim to support specific social or economic objectives. This category includes green bonds issued directly by governments or a country's central bank. Finally, "Supranational" refers to international organizations formed by multiple national governments to promote economic cooperation and development.

**Figure 11 Annual Bond Issuance by Issuer Type (2008-2023)**



Source: Climate Bond Initiative Report, year 2023

The following table shows the green bonds based on the type of issuer. As shown in the table, all non-private organizations combined represent less than 9% of issuers. However, they have issued green bonds amounting to 35% of the total value, as reported in the following table.

**Figure 12 Summary of Green Bond Issuance by Issuer Type: Total Issuance, Number of Bonds, and Issuers**

Tipology of user	Total issued		Nº of green bonds		Issuer		average bond	average issuer
	Value (M\$)	% of total	Total Value	% of total	value	% of total		
agency	285.068	11%	502	7%	87	4%	568	3.277
corporate	1.622.605	65%	6.080	84%	2.216	91%	267	763%
govt./treasury/central bank	393.396	16%	109	2%	80	3%	3.609	4917
supranational	199.294	8%	549	8%	43	2%	363	4635%
total	2.500.363	100%	7.240	100%	2.336	100%	345	1070%

Source: Climate Bond Initiative report, year 2023

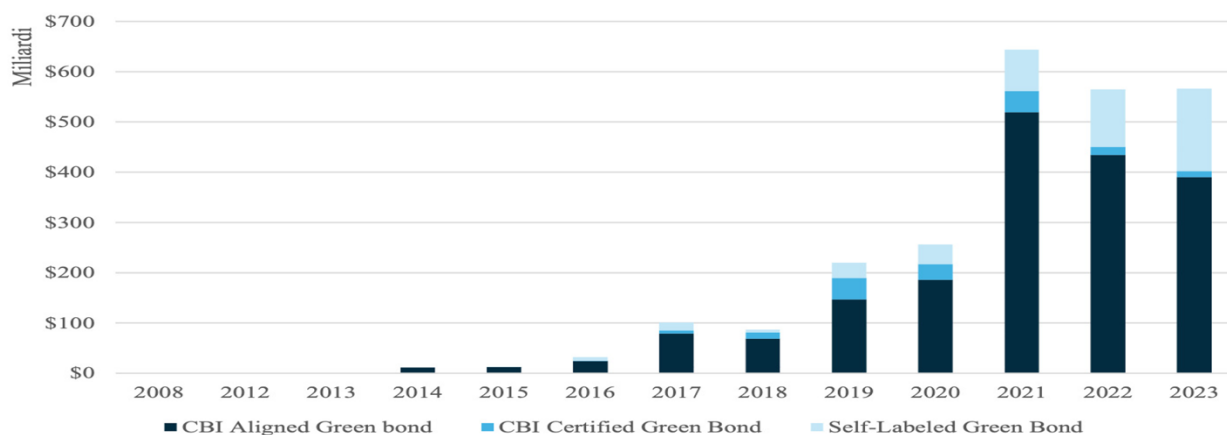
The most common green bonds issued are those with a fixed box, while the remaining 19% have variable coupons.

As mentioned in the previous chapter, the most widely used standard for classifying green bonds is the Climate Bond Standard, defined by the Climate Bond Initiative. This classification is also used by Refinitiv Ekon, which differentiates bonds according to the type of certification obtained through the "ESG bond type" label. Three types of labels are distinguished:

- CBI aligned green bond, indicating that the green bonds are genuinely aligned with the principles established by the Climate Bond Initiative.
- CBI certified green bond, indicating green bonds that have been certified by the Climate Bond Initiative.
- Self-labeled green bond, indicating that the green bonds are not certified by the CBI and are not even in line with its principles.

The following table shows the green bonds issued from 2008 to 2023 based on certification classification.

**Figure 13 Green bond for typology of certification**



Source: Climate Bond Initiative report, year 2023

In 2023, most green bonds issued, representing 68%, are bonds aligned with the principles and criteria established by the CBI, while only 4% of green bonds issued are certified. The remaining bonds are self-certified by the issuer. The data is presented in the following table.

**Figure 14 Green bond for typology of certification – 2023?**

ESG Bond-Type	Total issued		N° of Green Bonds	
	Valore (M\$)	% sul totale	Valore assoluto	% sul totale
CBI Aligned Green bond	1.876.840	75%	4900	68%
CBI Certified Green Bond	164.579	7%	318	4%
Self-Labeled Green Bond	458.945	18%	2022	28%
<b>Total</b>	<b>2.500.363</b>	<b>100%</b>	<b>7240</b>	<b>100%</b>

Source: Climate Bond Initiative report, year 2023

The most used currency for green bond issuers is the euro. In fact, more than a quarter of green bonds issued were denominated in euros, covering almost half of the total issuances. The U.S. dollar and Chinese yuan follow, accounting for 21.7% and 10.3% of the cumulative value issued from 2008 to December 2023, respectively. Other currencies include 37 different types, each representing less than 1% of the total cumulative value.



**Figure 15 Currency Breakdown of Global Green Bond Issuance: A Detailed Analysis – 2023 (or 2022?)**

Currency	Value (M\$)	Total issued		Total Value	Nº of green bonds	
		% of total	% of total		% of total	% of total
Euro	1.244.130	50%		1888		26%
US Dollar	541.949	22%		1173		16%
Chinese Yuan	257.089	10%		1144		16%
British Pound	98.991	4%		130		2%
Swedish Krona	60.809	2%		621		9%
Canadian Dollar	55.196	2%		110		2%
Japanese Yen	43.731	2%		502		7%
Australian Dollar	31.298	1%		97		1%
Swiss Franc	30.474	1%		142		2%
Norwegian Krone	21.921	1%		248		3%
South Korean Won	19.549	1%		273		4%
other	95.227	4%		912		13%
<b>Total</b>	<b>2.500.364</b>	<b>100%</b>		<b>7240</b>		<b>100%</b>

Source: World Bank Finances, year 2023

Regarding the distribution by country, the nations with the highest green bond issuance volumes are Germany in first place, followed by France and China. The following table shows the average values of green bonds issued per country.

**Figure 16 Green Bond Issuance by Nation: Detailed Analysis of Volume, Number of Bonds, and Issuers - 2023?**

Currency	Value (M\$)	Total issued		Nº of green bonds		Issuer		average per bond (M\$)	average per issuer
		% of total	% of total	Total Value	% of total	Total Value	% of total		
Germany	290.350	12%		708	10%	64	3%	410	4.537
France	287.424	11%		372	5%	70	3%	773	4.106
China	254.125	10%		1.118	15%	595	25%	227	427
US	187.736	8%		470	6%	138	6%	399	1.360
Great Britain	175.025	7%		222	3%	65	3%	788	2.693
Luxemburg	110.790	4%		176	2%	60	3%	629	1.846
Italy	95.764	4%		214	3%	31	1%	447	3.089
Belgium	88.998	4%		93	1%	35	1%	957	2.543
Spain	82.932	3%		36	0%	20	1%	2.304	4.147
Japan	79.094	3%		136	2%	40	2%	582	1.977
Sweden	76.742	3%		535	7%	203	9%	143	378
other	70.973	3%		615	8%	117	5%	115	607
	700.409	28%		2.545	35%	898	38%	275	780
<b>Total</b>	<b>2.500.362</b>	<b>100%</b>		<b>7240</b>	<b>100%</b>	<b>2336</b>	<b>100%</b>	<b>345</b>	<b>1.070</b>

Source: Report on green bond issuance, 2023

It is noticeable that China, despite having many issuers, has a significantly lower average issuance value per bond compared to the global average. The country with the highest average value per bond is Belgium, with an average exceeding 4 billion \$ per bond. This is because Belgium is home to the European Union in Brussels, an institution that issued its first green bond in 2021 for over 20 billion \$, followed by a three-tranche issuance in 2022 for a total value exceeding 33 billion \$. Regarding the use of proceeds, Refinitiv Ekon classifies green bonds into different categories, as shown in the following table.

**Figure 17 Allocation of Green Bond Proceeds by Sector: An Analysis of Issued Value, Number of Bonds, and Average Bond Size**

Currency	Value (M\$)	Total issued		N° of green bonds		average per bond (M\$)
		% of total	Total Value	%of total		
clean transport	986.122	39%	2.137	30%	461	
energy efficiency	485.889	29%	1.965	27%	247	
climate change adaption	377.475	15%	840	12%	449	
renewable energy projects	159.511	6%	394	5%	405	
green construction/ buildin	126.876	5%	529	7%	240	
acquatic biodiversity conse	98.164	4%	101	1%	972	
circular economu	44.018	2%	121	2%	364	
other	222.309	9%	1.153	16%	386	
<b>Total</b>	<b>2.500.364</b>	<b>100%</b>	<b>7.240</b>	<b>100%</b>	<b>345</b>	

Source: global green bond market analysis reports,2023

At the top of the list is the "clean and transport" category, followed by energy efficiency and climate change adaptation. Clean transport and energy efficiency are areas defined by the Green Bond Principles, while climate change adaptation is an objective defined in the European standard. Using the TRBC classification (The Reference Data Business Classification), green bond issuers can be distinguished by sector and industry. The following chart shows the value issued and the number of green bonds issued for each sector identified by the TRBC classification.

**Figure 18 Characteristics green bond for sector**

TRBC Sector	Value (M\$)	Total issued		N° of green bonds		average per bond (M\$)
		% of total	Total Value	%of total		
Financials	952.084	38%	2.869	40%	332	
Utilities	493.490	20%	1.395	19%	354	
Real Estate	389.022	16%	870	12%	447	
Industries	297.347	12%	873	12%	341	
Government Activity	150.575	6%	480	7%	314	
Basic materials	68.501	3%	222	3%	309	
energy	49.919	2%	176	2%	284	
consumer cyclicals	45.665	2%	148	2%	309	
consumer non-cyclicals	22.160	1%	72	1%	308	
technology	21.187	1%	99	1%	214	
healthcare	5.145	0%	19	0%	271	
academic & educational services	4.639	0%	12	0%	387	
institutions, associations & organization	637	0%	5	0%	127	
<b>Total</b>	<b>2.500.371</b>		<b>7.240</b>	<b>100%</b>	<b>345</b>	

Source: Green Bond Issuance by Industry Sector: TRBC Sector Analysis of Value, Number of Bonds, and Average Bond Size

The financial sector, which includes all companies operating in the financial sector, such as banks, insurance companies, and investment funds, comprises almost 40% of the market, both in terms of total issuance and the number of green bonds.

For the latest available data, it is expected that the global amount of green bonds issued will reach 5 trillion \$ in 2024. Analysts emphasize not so much the total value but the pace at which the market is expanding and growing. This is a logical consequence of the Paris Climate Agreement, which aims to achieve climate neutrality by 2050. By the end of last year, according to figures from the Climate Bond Initiative, the amount of green social and sustainability debt (GSS) had reached 4.4 trillion \$ globally.

The use of GSS debt by companies worldwide, including in Italy, has become an alternative way to finance the ESG transition at relatively sustainable costs. Over the past 10 years, the so-called climate bonds in circulation have gone from zero to nearly 5 trillion \$. The largest portion, nearly 60%, comes from green bonds, a subcategory issued to finance environmental projects such as energy efficiency or the transition to renewable energy. Europe, the primary source of GSS instruments globally, dominates this category. The continent also led the market in 2023, with a volume of 309.6 billion \$ in green bonds out of a total issuance of 587.6 billion \$. The United Kingdom tops the list, followed by Germany and Italy in third place (the nominal value of GSS bonds in circulation in Italy is 90 billion €, 86% of which are green).

On the issuer side, non-financial companies stood out, contributing 29% of the market last year by issuing 692 instruments and subscriptions for 171.8 billion \$. Another 28% is held by financial companies. The social bond sector, issued to support projects like infrastructure improvements, saw a significant decline. Volumes in 2023 dropped 7% compared to 2022 and are further down in the first half of 2024. The leading player in this case is the Pacific region, particularly Asia, which accounts for 43% of social bonds issued. Notably, South Korea has implemented strong government policies supporting social welfare. Korea Housing Finance Corporation<sup>42</sup> alone, active in the housing sector, has issued 30.6 billion \$ in new social bonds.

The results are more stable in the sustainable bond sector, a hybrid between the two previous types, where proceeds are invested in projects pursuing both environmental and social objectives. In this case, the major player is South America, characterized by deep social disparities and about 60% of the world's biodiversity. In September of last year, Brazilian Eletrobras<sup>43</sup> issued 616 million \$ in sustainable bonds, while Mexico's Comisión Federal de Electricidad<sup>44</sup> issued a total of over 1.1 billion \$ to expand internet access to the entire population. Finally, the sustainability-linked bond market is small but growing rapidly. These are more complex instruments tied to specific sustainability goals, where coupons can increase upon achieving predetermined performance

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<sup>42</sup> The Korea Housing Finance Corporation is a South Korean government agency founded in 2004 with the aim of improving access to housing and stabilizing the real estate market in South Korea. The KHFC was created by the South Korean government to support the real estate market by offering affordable financial solutions to families and individuals, and by contributing to the stabilization of the mortgage and real estate bond markets.

<sup>43</sup> Eletrobras is the largest electric power company in Latin America and one of the leading ones in the world. It was founded in 1962 and is a mixed-capital company, with the Brazilian government as the major shareholder. The company is active in various segments of the energy sector, including the generation, transmission, and distribution of electric power.

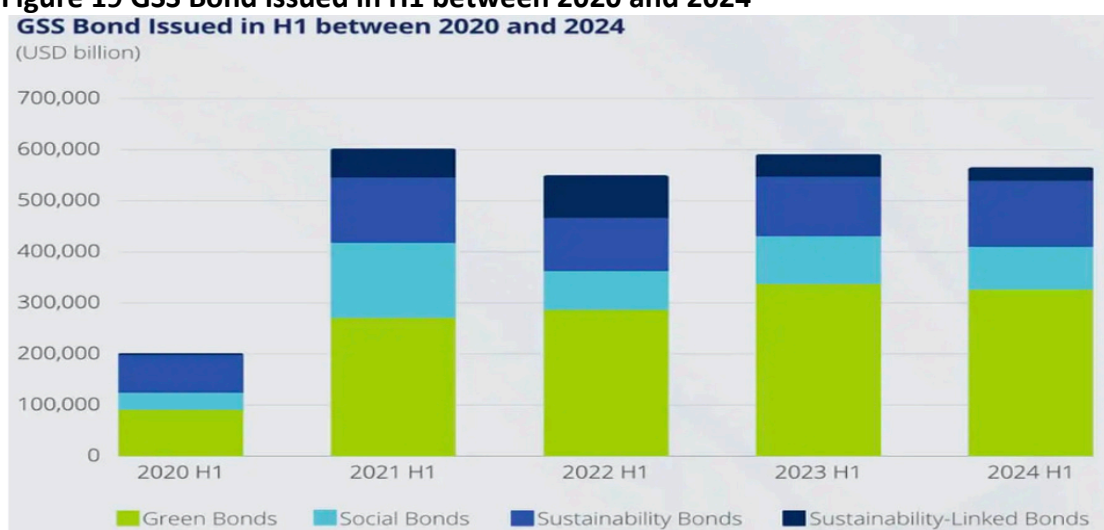
<sup>44</sup> The Comisión Federal de Electricidad is the Mexican public company responsible for the generation, transmission, distribution, and commercialization of electric power in Mexico. Founded in 1937, the CFE is one of the largest energy companies in Latin America and is fully owned by the Mexican government.

metrics. Currently, they account for just 2% of the entire GSS market, but they grew by 95% in 2023 compared to 2022, raising \$11.7 billion from investors.

On the investor side, this market has a low-risk profile but equally modest returns. S&P Global Ratings analyzed the quality of green bonds maturing by 2028, totaling \$1.23 trillion. About 25% of GSS bonds are triple-A rated, and another 22% are double-A rated. Only 6% of maturing debt is speculative, half of which stems from a surge in non-financial issuances seen in 2021 in Europe, where accommodative monetary policy allowed lower-rated issuers to tap into the market and benefit from low financing costs. Since 2022, there has been a reversal in this trend, with annual coupons rising from an average of 1.5% to the current 4%.

The GSS bond issuances from 2020 to 2024 are graphically presented in Figure 19.

**Figure 19 GSS Bond issued in H1 between 2020 and 2024**



Source: GSS Bond Report of Mainstreet Partners, Year 2023

### 3.2 The main advantages of green securities

International bond markets are primarily used to raise capital for a variety of purposes, both private and public. These markets are characterized by the risk profile of the issuer, which is represented by its credit rating, and the remuneration offered to investors in the form of interest paid on the issued bonds. Investors who purchase traditional bonds, therefore, focus mainly on these two parameters: the credit quality of the issuer and the yield offered by the bonds themselves. Typically, less attention is given to the actual use of the funds raised by the issuers.

Traditional bonds, in fact, are generally considered refinancing instruments, where capital is raised based on the overall financial strength of the issuer. This means that investors evaluate the issuer's ability to sustain a certain level of debt and to manage its financial commitments responsibly. The main goal is to ensure that the issuer can repay the capital and pay the interest on time, rather than assessing how the issuer will specifically use the raised funds.

In this context, green bonds represent a significant innovation in the bond markets. Unlike traditional bonds, green bonds are specifically designed with a focus on the sustainable use of the proceeds raised. Green bond issuers commit to allocating the funds to projects that have a

positive environmental impact, such as renewable energy, energy efficiency, sustainable natural resource management, pollution reduction, and other ecological initiatives. This transparent approach not only ensures the responsible use of capital but also encourages greater environmental awareness among investors.

An additional innovative aspect of green bonds is the tracking and reporting of the environmental impacts associated with the financed projects. Green bond issuers must provide periodic reports to investors, detailing how the funds have been used and what environmental results have been achieved. This type of transparency is generally not required for traditional bonds and represents an additional incentive for investors who wish to align their investments with environmental sustainability goals.

In summary, while traditional bonds focus mainly on the financial stability of the issuer and the offered remuneration, green bonds introduce an additional dimension of responsibility and transparency regarding the use of funds and environmental impacts. This makes green bonds an increasingly attractive tool for investors seeking to combine financial returns with positive contributions to global sustainability. As a result, green bonds are gaining increasing popularity in international financial markets, marking an important step forward in promoting sustainable investments.

As mentioned in previous paragraphs, green bonds can be defined as bond instruments issued with the specific objective of raising funds exclusively to finance or refinance, in whole or in part, projects with environmental purposes. These projects can be new or existing, but they must have characteristics that positively contribute to environmental sustainability. Green bonds, therefore, represent an important resource for supporting a wide range of initiatives aimed at protecting and improving the environment.

Among the projects that can be financed through green bonds are, for example, those related to wastewater and waste treatment, which aim to reduce pollution and promote the recycling and reuse of resources. Additionally, these bond instruments can be used to finance initiatives focused on pollution prevention and control, thus helping to reduce harmful emissions and improve air quality. Another area of application for green bonds is the development of renewable energy, such as solar, wind, hydroelectric, and geothermal energy, which play a crucial role in reducing dependence on fossil fuels and lowering greenhouse gas emissions. Finally, green bonds can also be used to support the creation of clean transportation infrastructure, such as the construction of sustainable public transportation networks, bike paths, and electric vehicles, which help reduce the environmental impact of the transportation sector.

Initially, green bonds were predominantly issued by supranational financial institutions, such as the World Bank and the European Investment Bank (EIB). These institutions played a pioneering role in the green bond market, promoting the issuance of these instruments to finance sustainable projects worldwide. However, in recent years, the green bond market has significantly expanded and diversified. An increasing number of issuers, including individual companies, municipalities, and state agencies, have started to use green bonds to raise funds for their environmental sustainability projects. This development has made the green bond market more dynamic and accessible, contributing to a greater spread and adoption of sustainable practices in various sectors of the global economy.

The growing interest in green bonds reflects an increasing awareness of the importance of sustainability and the need to address global environmental challenges through targeted investments. Investors, increasingly attentive to environmental, social, and governance (ESG) issues, see green bonds as an opportunity to align their portfolios with their values and actively contribute to the transition towards a low-carbon and more sustainable economy. Consequently, green bonds have become a key tool in the international financial landscape, promoting a paradigm shift towards more responsible and sustainable finance. According to the publication "TEG Report on EU Green Bond Standard - June 2019"<sup>45</sup>, the benefits of green bonds can be classified as follows:

1. **Transforming Bond Markets Towards Sustainability:** Green bonds are gaining more ground in international bond markets, attracting a growing number of issuers interested in financing sustainable projects. This phenomenon is of fundamental importance as it reflects a significant shift in how capital is allocated, with increasing attention toward initiatives that promote environmental sustainability. In recent years, capital flows dedicated to green projects have significantly increased, reaching substantial figures that demonstrate the strong commitment of the financial market toward sustainability. This increase in interest for green bonds is accompanied by a growing level of transparency and reporting from issuers. Green bond issuers are now required to provide detailed information on the use of the raised funds and the environmental impacts of the financed projects. This level of reporting, which is unprecedented in the traditional bond world, allows investors to have a clear and accurate view of the effectiveness and efficiency of investments in terms of sustainability.
2. This transparency increases investor confidence, especially for those who prioritize the environmental impact of their investment choices. The growing confidence of investors is further fueled by the fact that many of these green bonds are issued with the specific objective of addressing global environmental challenges, such as combating climate change, promoting renewable energy, and improving natural resource management. Investors, increasingly aware of the risks associated with climate change and eager to contribute positively to sustainability, see green bonds as an investment opportunity that aligns their ethical and environmental values with their financial objectives. Already in 2018, green bonds accounted for approximately 3.5% of the total non-governmental bonds issued globally. This figure highlights the rapid growth of these financial instruments within the bond market and indicates a trend toward greater commitment to financing sustainable projects. The increasing share of green bonds in the global market demonstrates that there is a growing demand for financial instruments that offer not only economic returns but also a positive impact on the environment. Furthermore, the rising popularity of green bonds could encourage further regulatory developments and policy incentives to support the market. Governments and regulatory authorities could introduce new policies to encourage issuers and investors to participate in the green bond market, promoting greater integration of environmental considerations into investment processes. This regulatory push, combined with increasing investor awareness and their desire to support sustainable projects, could further accelerate the transition of bond markets toward a greener and more sustainable model. Therefore, the growing momentum of

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<sup>45</sup> The TEG Report on the EU Green Bond Standard, published in June 2019, is a document prepared by the Technical Expert Group on Sustainable Finance (TEG), established by the European Commission to develop standards and guidelines to promote sustainable finance within the European Union. This report represents one of the key initiatives of the EU as part of its Action Plan on Sustainable Finance, with the goal of facilitating access to capital for sustainable projects and promoting transparency and integrity in the green bond market.

green bonds in international bond markets represents an important evolution towards more sustainable finance.

3. This trend not only offers new investment opportunities but also helps direct significant capital flows toward projects that can generate a positive environmental impact, promoting a global transition to a greener and more resilient economy.
4. **Facilitating the Transition of Businesses and Institutions Through Green Bonds:** Green bonds are bringing unprecedented visibility to financial markets regarding sustainability projects, involving both public and private issuers. This innovative financial instrument has captured the attention of a growing number of companies and institutions that see green bonds as an opportunity to demonstrate their commitment to environmental sustainability and to finance projects that contribute to a greener future. The issuance of green bonds has pushed many companies and institutions to communicate their sustainable transition strategy more prominently to the market and investors. Green bond issuers are highlighting how these financial instruments are an integral part of their overall sustainability strategy. It is not just about financing individual green projects but about embedding these initiatives within a broader plan of transition to more sustainable business practices. Companies and public institutions that issue green bonds tend to emphasize the importance of their green projects within the context of their general sustainability goals.

These issuers are making a significant effort to position their green projects as a central part of their long-term strategies, policies, and operational processes. This positioning not only helps enhance the credibility and reputation of issuers in the eyes of investors but also demonstrates a clear alignment with global sustainability goals, such as the United Nations Sustainable Development Goals (SDGs). Moreover, this emphasis on transparency and communication of sustainability strategies helps build trust among investors, who are increasingly interested in supporting projects that not only guarantee a financial return but also have a positive impact on the environment.

Investors are attracted to issuers who demonstrate a clear commitment to sustainability, integrating ecological practices into their business models and showing how the projects financed through green bonds fit into a global strategy of transition to a low-carbon economy. Ultimately, green bonds not only provide capital for sustainable projects but are also fostering greater awareness and behavioral change among businesses and institutions. These bond instruments are encouraging a more holistic approach to sustainability, pushing issuers to consider how their green projects can contribute to long-term environmental sustainability goals. This process of integrating sustainability into business strategies helps build a more responsible and environmentally conscious market, promoting a transition to a greener and more sustainable economy.

**3. Making Green and Climate Projects Profitable:** The green bond market has played a significant role in advancing the discussion on what should truly be considered "green." This has facilitated the development of clearer and more universally accepted definitions of the term "green," which are used to assess the eligibility of financed projects. These definitions stem from both market practices and guidelines issued by regulatory bodies, which operate with maximum transparency to ensure that the regulations are comprehensible and accessible to all market participants.

Simultaneously, an ecosystem has emerged, composed of companies and organizations from various sectors, including academia, auditing, rating agencies, and consulting firms.

These entities, collectively known as external reviewers, offer specialized consulting services on how to interpret and verify the validity of projects considered green. These external reviewers play a crucial role in ensuring that projects financed with green bonds align with accepted definitions and regulations, thereby contributing to greater investor confidence. The existence of this support ecosystem has enabled markets to navigate more confidently toward investments in sustainable projects.

Thanks to external reviewers, investors can rely on independent and verified assessments regarding the compliance of projects with sustainability criteria. This process eliminates much of the uncertainty and doubt that could arise from the complex scientific and academic debates on the precise definitions of what is truly "green." In essence, the green bond market, supported by clear definitions and a robust ecosystem of external reviewers, has made it easier and safer for investors to allocate capital toward ecological projects. This has contributed to strengthening confidence in the green bond market, further incentivizing the development and adoption of sustainable financial practices. Investors can thus actively participate in the transition to a greener economy, knowing that their investments are indeed directed toward projects with positive environmental impacts.

**4. Fostering Political Debate on Green Finance:** The green bond market has provided policymakers with a clear example of a successful, largely market-driven initiative that effectively addresses environmental challenges and contributes to climate change mitigation. This development has encouraged a lively debate on how the process can be further supported and how it can give rise to broader and more coordinated public policies to promote sustainability. The G20 has also recognized the importance of the growth of the green bond market.

This recognition has come through official statements and specific reports, such as those produced by the Green Finance Study Group<sup>46</sup>. These documents have highlighted the critical role that green bonds can play in promoting sustainable investments and combating climate change. A growing number of governments around the world have developed various public policy programs to facilitate and encourage the issuance of green bonds. For example, in China, government authorities have issued specific guidelines for green bond issuance across different sectors. These guidelines include interest rate incentive policies and capital repurchase programs designed to make green bonds more attractive to issuers and investors.

In France, the government has introduced an official label for green funds, aimed at ensuring the transparency and credibility of sustainable investments. This label helps investors identify and select funds that meet strict environmental criteria, thereby promoting a greater influx of capital into ecological projects. In India, the Securities Exchange Board of India (SEBI<sup>47</sup>) has published detailed disclosure requirements for the listing of green bonds. These requirements ensure that the information provided by issuers

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<sup>46</sup> The Green Finance Study Group (GFSG) is an initiative of the G20, the international forum that brings together the governments of the world's major economies. The GFSG was established in 2016 under the Chinese presidency of the G20, with the aim of promoting and supporting green finance at a global level. The group focuses on analyzing the challenges and opportunities related to sustainable finance, seeking to identify policies and strategies that can encourage greater capital flows towards projects that have a positive environmental impact and that support the transition to a low-carbon economy.

<sup>47</sup> The Securities and Exchange Board of India (SEBI) is the regulatory body for financial and securities markets in India. Founded in 1988 and made a statutory body with the enactment of the SEBI Act in 1992, SEBI is tasked with protecting the interests of investors in the securities market and promoting the development and regulation of the securities markets in India.



is sufficiently transparent and detailed, allowing investors to assess the environmental impact of their investments more accurately.

At the international level, the International Standard Organization (ISO<sup>48</sup>) is working on developing a specific standard for green bonds, known as ISO 14030. This standard aims to provide clear and uniform guidance for the issuance and management of green bonds, thereby enhancing investor confidence and increasing the credibility of these financial instruments globally. These initiatives demonstrate how the green bond market is not only growing rapidly but also driving institutions and governments to implement more structured and coherent policies to support sustainable finance. The success of the green bond market is a positive signal of how public-private collaborations can address environmental challenges and contribute to the transition to a greener and more resilient economy.

**Challenges in the Green Bond Market:** Despite the wide range of benefits associated with green bonds and their growing market, there are still some challenges that could limit their spread. Although some issuers have benefited from a pricing advantage in issuing green bonds, the relatively low liquidity of these securities in secondary markets suggests an imbalance between high investor demand and a still insufficient supply of green bonds from issuers. According to the Technical Expert Group (TEG), this shortage of supply can be attributed to several reasons. Firstly, some potential issuers may struggle to perceive and clearly communicate the specific advantages of issuing green bonds compared to other traditional forms of financing, such as bank loans or conventional bonds. This lack of clarity may make green bond issuance less attractive, especially when compared to more established and familiar financing options. Another significant barrier concerns regarding the definition of what is truly "green". While efforts are underway to develop a clear and internationally shared green taxonomy, many companies are still uncertain about which projects can be classified as sustainable or ecological. This uncertainty can discourage issuers, as they fear that an imprecise definition might expose them to potential reputational risks if their green bonds are perceived as "greenwashing", i.e. as merely a marketing ploy rather than a genuine commitment to sustainability. The main barriers hindering the further development of the green bond market can be summarized as follows:

- **Lack of Suitable Green Projects and Activities:** Currently, most green assets financed through green bonds are concentrated in key sectors: renewable energy, sustainable real estate, green transportation, and sustainable water resource management. These sectors are seen as particularly suitable for green investments, as they offer projects and initiatives that directly contribute to reducing greenhouse gas emissions and promoting environmental sustainability. Despite the growing success and interest in green bonds, investor demand far exceeds issuers' ability to identify and propose green projects and assets that are considered eligible for financing. Investors are increasingly eager to allocate capital to sustainable projects that offer tangible environmental benefits, leading to a very high demand for green bonds.

However, many issuers struggle to meet this demand due to a lack of qualified projects or uncertainty about which projects can be classified as "green." This discrepancy between demand and supply can be partly attributed to the lack of a clear definition of what constitutes an acceptable "green" asset or project for the green bond market. While some

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<sup>48</sup> The International Organization for Standardization (ISO) is an independent, non-governmental international organization that develops and publishes international standards to ensure the quality, safety, and efficiency of products, services, and systems across a wide range of sectors. Founded in 1947, ISO is headquartered in Geneva, Switzerland, and currently has 168 member countries, each represented by their national standards body.

projects, such as those related to renewable energy or low-emission transportation, clearly align with sustainability goals, other areas can be more ambiguous. For example, not all initiatives in the real estate or water resource management sectors can be immediately recognized as sustainable, leading to uncertainty about which projects can qualify for financing through green bonds.

Moreover, the uncertainty about what can be considered "green" affects not only markets but also issuers themselves, who must navigate an evolving regulatory and market context. Guidelines and standards for defining what constitutes a green investment often vary from country to country and can be interpreted in different ways. This makes it more challenging for issuers to be confident that their projects will be accepted by investors as genuinely green, leading to a more cautious approach to issuing green bonds.

As a result, to bridge this gap between demand and supply and facilitate a more robust expansion of the green bond market, it would be beneficial to develop and adopt a clearer and more internationally shared green taxonomy. Such a taxonomy would help issuers more easily identify which projects can be considered green and reduce the risk of disputes or accusations of "greenwashing," thereby improving investor confidence and interest.

- **Issuers' Concerns Regarding Reputational Risks and Green Definitions:** Bond issuers are willing to use green bonds only if they do not entail additional risks or liabilities compared to traditional bonds. The issuance of green bonds, in fact, requires a series of complex decisions related to the selection and definition of green projects, detailed reporting on the use of proceeds, and the issuance processes themselves, which must meet recognized sustainability standards and criteria. In some cases, though rare, green bond issuers have faced reputational issues.

These problems often result from negative criticism from the market, media, non-governmental organizations (NGOs), or shareholders, who may question the validity of projects financed through green bonds. For example, a green bond may be perceived as "not green enough" or accused of greenwashing, i.e., promoting a false image of sustainability. This negative perception can generate adverse publicity that impacts the issuer's reputation and can have significant economic repercussions. Consequently, the fear of being criticized or suffering reputational damage prevents many potential issuers from entering the green bond market. This is particularly true for issuers operating in sectors crucial to the transition to a low-carbon economy, such as energy, transportation, and manufacturing.

In these sectors, identifying assets and projects that can be clearly classified as "green" is often complex and subject to different interpretations. The lack of a universally accepted definition of what constitutes a green project, combined with the fear of potential negative reactions, deters many issuers from issuing green bonds. To overcome these challenges and encourage more issuers to participate in the green bond market, it is essential to develop clearer and more widely shared international guidelines and standards.

This would include the creation of a unified green taxonomy that precisely and transparently defines which projects can be considered sustainable and eligible for financing through green bonds. Additionally, providing support and guidance to issuers to help them navigate the complexities of green finance could increase their confidence and reduce the perceived risk of reputational damage. This approach would foster greater participation and liquidity in the green bond market, supporting the transition to a more sustainable global economy.

- **Lack of Clear Economic Benefits for Green Bond Issuers:** For many companies with green assets, issuing green bonds entails only relatively low additional costs compared to issuing

traditional bonds. However, there are also internal costs associated with issuing green bonds that should not be underestimated. These costs include the additional effort required by internal teams to manage the entire issuance process and the complex reporting activities necessary to ensure compliance with sustainability criteria. These internal costs can be significant, especially for companies that do not already have the infrastructure in place to support green bond issuance. As an advantage, companies that issue green bonds often experience diversification of their investor base. Institutional investors, particularly those focused on sustainability and responsible finance, are attracted to green bonds, thereby increasing demand for these bonds.

This increased demand can translate into more favorable issuance conditions, such as a lower new issue premium compared to traditional bonds. In theory, this should reduce the cost of capital for the issuer. However, the pricing advantage derived from issuing green bonds, when present, appears to be rather limited and not always guaranteed. Studies on the subject have produced mixed results. For example, a study conducted by Schiereck in 2018<sup>49</sup> found that there are no significant price differences between green bonds and similar conventional bonds in terms of structure and risk. This conclusion has been confirmed by various analyses conducted by banks on a selected sample of corporate issuers, which found that the price advantages of green bonds compared to conventional bonds are often marginal.

Additionally, a study by Karpf and Mandel (2017<sup>50</sup>) found that green bonds tend to have lower returns in secondary markets compared to conventional bonds issued by the same issuer. This suggests that, while green bonds may offer some benefits in terms of investor diversification and marketing, they do not necessarily translate into higher returns for investors in secondary markets. On the other hand, recent research suggests that there is emerging evidence that issuing green bonds could lead to lower long-term financing costs for companies. This advantage could be attributed to increased investor confidence in the issuer's long-term strength and sustainability. Moreover, some evidence indicates that issuing green bonds could have a positive impact on short-term stock prices, thereby improving the company's market value immediately after issuance.

This effect could be due to the market's positive perception of the company's commitment to sustainable practices and social responsibility. In summary, while green bonds may offer some benefits, such as investor diversification and potentially lower long-term financing costs, the overall economic advantages for issuers are not always clear or guaranteed. Companies must therefore carefully evaluate the additional costs and potential benefits before deciding to enter the green bond market, considering their specific circumstances and strategic sustainability goals.

- **Complex and Costly External Review Procedures:** In the green bond market, there is a wide range of practices regarding external reviews, which can create potential conflicts of interest and raise quality control issues. External reviews are essential to ensure the credibility and integrity of green bonds, but the diversity of approaches used by market operators can create uncertainties and complications for both issuers and investors. The green bond market involves a broad spectrum of actors, including credit rating agencies, audit firms, certification bodies, and environmental consulting firms. These entities provide external review services for green bonds, both in the preliminary

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<sup>49</sup> Schiereck (2018): Are green bonds priced differently from conventional bonds? *Journal of Asset Management*, 2018, vol. 19

<sup>50</sup> Karpf and Mandel (2017): Does it pay to be green? Université Paris I Panthéon-Sorbonne ; *Climate Finance Alpha*, 24, February 2017

phase, before issuance, and subsequently, during the monitoring of the performance of the financed projects. However, these operators adopt very different approaches, which can vary significantly in terms of methodology, evaluation criteria, and scope.

For example, in the current market, external reviews of green bonds can differ in many aspects. Some reviews include an assessment of the issuer's ESG rating, while others focus solely on the project's compliance with green bond principles, such as the Green Bond Principles issued by the International Capital Market Association (ICMA). Some reviewers may provide certifications valid for multiple transactions, while others limit their validity to a single issuance. Additionally, reviews may be based on specific categories of green projects, while others may take a more general approach.

This wide range of practices and approaches, adopted by operators with varying levels of expertise and experience in environmental sustainability, can create significant uncertainties for all parties involved. Issuers may be confused about which type of external review is best suited to their needs and which provides the most credibility to their green bonds. Investors, on the other hand, may have difficulty assessing the actual value and quality of the different external reviews, not knowing which offer the best guarantees of compliance with sustainability standards. This variety of approaches can also lead to unnecessary duplication of efforts. For example, an issuer may need to request multiple external reviews to meet the diverse expectations of investors or to comply with various standards and criteria.

This not only increases the overall costs of issuing green bonds but can also dilute trust in the review process if the assessments differ significantly. Furthermore, the lack of standardization in external reviews can lead to potential conflicts of interest. Some entities that offer review services may also provide consulting to the issuer on how to structure their green bonds, creating a conflict between the role of consultant and that of an independent reviewer. This can compromise the perception of impartiality and independence of the reviews, undermining investor confidence in green bonds. To address these challenges, it is essential that the green bond market adopts more uniform and consistent standards for external reviews.

A clearer and more widely shared regulatory framework, developed in collaboration with all stakeholders, could help reduce uncertainties, increase investor confidence, and contain the costs associated with green bond reviews. Stricter standards could also improve the transparency and quality of reviews, ensuring that only truly sustainable projects are financed through green bonds, thereby promoting greater integrity and trust in the market.

- **Labor-Intensive Reporting Procedures:** In the green bond market, it is common practice for green bonds to be accompanied by the publication of detailed reports on the projects and activities financed through these issuances. These reports are essential for ensuring transparency and accountability, as they provide clear information on the environmental impacts of the projects supported by the funds raised through green bonds. Typically, the reports include specific data on the results achieved, such as the reduction of greenhouse gas emissions, increased energy efficiency, or the sustainable management of natural resources.

These reports are prepared and published annually until all the proceeds of the bonds have been fully allocated to the designated green projects. The preparation and maintenance of these reports represent a considerable commitment for issuers, who must dedicate significant resources to this process. This additional activity is often perceived as a significant burden that can make the issuance of green bonds less attractive compared to

other forms of financing. Issuers must not only collect and analyze detailed data on the environmental impacts of their projects but also ensure the consistency and accuracy of the information presented in the reports.

This requires specialized expertise and a significant time commitment, increasing the overall operational costs associated with issuing green bonds. Moreover, issuers are already facing a context in which reporting requirements are constantly increasing, both for financial and non-financial information. Companies are increasingly required to provide detailed data on their performance in terms of sustainability, governance, and social impacts, in line with emerging regulations and investor expectations. This increase in transparency and reporting demands translates into an already high administrative workload for many organizations. Faced with these growing pressures, issuers may be reluctant to take on additional reporting responsibilities related to green bonds. The burden of having to produce annual reports specifically for green bonds, with all the necessary technical and environmental details, may seem excessive, especially for companies that lack sufficient internal resources or experience in managing this type of documentation.

This may lead to some resistance to adopting the green bond model, despite the potential benefits in terms of attracting sustainability-focused investors and improving corporate image. To encourage greater adoption of green bonds, it would be helpful to simplify the associated reporting process and provide support to issuers in better managing these requirements. This could include clearer and standardized guidelines for report preparation, automated reporting tools, and recognition of companies' efforts in transparently communicating their environmental impacts. Additionally, the development of centralized reporting platforms or the creation of partnerships with organizations specialized in managing sustainability information could reduce the administrative burden and make green bond issuance a more feasible and attractive option for a larger number of issuers.

- **Uncertainty About the Types of Activities and Expenditures That Can Be Financed:** To date, green bonds have played a crucial role in financing a wide range of projects and activities related to environmental sustainability. In particular, the funds raised through these bonds have been used to finance the purchase of sustainable real estate and loans secured by real estate assets, as well as to cover various types of capital expenditures, such as the installation of renewable energy systems, building renovations to improve energy efficiency, or the adoption of eco-friendly technologies.

These investments aim to reduce the environmental impact of real estate assets, improving the overall sustainability of the financed real estate portfolio. In addition, green bonds have also financed a variety of operational expenses and subsidies, some of which are directly linked to green assets, such as the maintenance of solar or wind energy facilities, while others may be less clearly associated with sustainable projects. This includes ongoing expenses for the operation of green infrastructure, incentives for the use of clean technologies, and sustainability programs that are not always directly tied to specific green assets. The lack of a clear and universally accepted definition of what constitutes a "green" use of funds raised through green bonds has led to some uncertainty in the market.

This ambiguity about what can be considered an eligible and sustainable use of capital raised through green bonds represents a significant challenge for both issuers and investors. Issuers may find themselves needing to justify how financed projects align with investor expectations regarding sustainability, while investors may have difficulty assessing

the actual environmental impact of their investments. This situation can generate uncertainty and even mistrust toward green bonds, limiting the market's growth potential. Greater clarity and standardization on what can be considered a legitimate and appropriate "green use" of capital raised through green bonds could eliminate much of this uncertainty. Defining precisely which projects and activities are eligible for green bond financing would not only increase transparency and confidence in the market but also broaden the scope of projects that could be financed.

This would allow issuers to plan and develop a more diversified portfolio of sustainable projects while ensuring that funds are used in a controlled and consistent manner with the declared objectives. Moreover, stricter standardization could encourage further innovation in sustainable finance, allowing the exploration of new "green" investment areas that have so far been overlooked due to a lack of clarity. With clearer and more defined rules, both issuers and investors could navigate the green bond market with greater confidence, thereby contributing to the sustained and responsible growth of the market itself.

### 3.3 The ESG Rating and the evaluation of green bonds

ESG rating agencies were created to meet the growing need of investors for detailed and reliable information on companies' environmental, social, and governance practices. This information has become essential in supporting investment decisions, especially in a context where sustainability and corporate social responsibility are increasingly relevant. Investors want to ensure that their investments not only generate financial returns but are also aligned with sustainability principles and ethical responsibility.

There are several types of ESG rating agencies, each with a specific focus. Some agencies concentrate exclusively on non-financial data, which refers to information not strictly related to the company's economic performance, but which has a significant impact on the environment, society, and governance. This data includes e.g. information on greenhouse gas emissions management, responsible use of natural resources, workplace inclusion and diversity practices, and corporate governance, including board transparency and accountability.

Other ESG rating agencies, however, take a more integrated approach, combining non-financial data with traditional financial data. This approach allows for a more comprehensive assessment of companies, considering both their ability to generate economic value and their commitment to managing ESG-related risks and opportunities. For example, a company may have strong financial performance, but if it does not adopt sustainable practices or has governance issues, it may be considered a riskier investment in the long term.

To gather this information, ESG rating agencies use a variety of sources. Firstly, they send detailed questionnaires to the companies themselves, asking them to provide data and answer specific questions about their ESG programs and policies. These questions can cover a wide range of topics, including emission reduction policies, community engagement, labor practices, and governance strategies.

The responses provided by companies are then integrated with publicly available data, such as sustainability reports, financial statements, regulatory statements, and other public data sources. A team of experts analyzes and combines this information to create a complete picture of the company's ESG performance. This analysis process is highly complex and requires multidisciplinary expertise to correctly assess the impact of a company's ESG practices on its overall results.

Finally, all this information is translated into an "ESG rating", a kind of score that reflects the company's performance in various environmental, social, and governance areas. The ESG rating is designed to be an easily understandable indicator of the company's sustainability and responsibility, allowing investors to compare different companies and make informed decisions based on a deep understanding of the risks and opportunities associated with ESG practices.

The role of ESG rating agencies is therefore crucial to the efficient functioning of modern financial markets, as they provide an objective and independent assessment of companies' ESG performance, helping investors identify sustainable investment opportunities and manage the risks associated with unsustainable practices. This process also incentivizes companies to improve their ESG practices, as a good rating can attract investments and improve the company's long-term reputation.

Moreover, the pressures exerted by regulatory bodies and the scientific community have driven companies to view inclusion in an ESG market index and the communication of concrete results in terms of social responsibility as advantageous. Being part of an ESG index or demonstrating real commitments to sustainability and social responsibility practices is seen as an effective way to generate consensus among all stakeholders, including shareholders. This approach allows

companies to highlight their genuine commitment to ethical and responsible behavior, improving their reputation and market attractiveness.

Companies recognize that transparency regarding their ESG practices can have a positive impact on public perception and investor confidence. ESG indices, which rank companies based on their performance on environmental, social, and governance criteria, have become an important reference for investors seeking sustainable investment opportunities.

As a result, inclusion in such indices can help companies improve their risk profile and position themselves as leaders in sustainability. In the financial sector, ratings from different agencies tend to be very similar, with a 99% agreement between the judgments issued. However, this level of consistency is not found in the field of corporate social responsibility, where ratings vary greatly from one agency to another. This is due to several factors that influence the assessment of companies' sustainability and social responsibility practices.

One of the main problems is the lack of transparency. Many ESG rating agencies do not provide sufficient details about the criteria and evaluation processes they use. This makes it difficult for investors and other stakeholders to understand how scores are assigned and on what basis the evaluations are made. The lack of transparency also complicates the comparison between the ratings of different agencies, as users cannot easily determine which methodologies have been adopted and whether the criteria are comparable.

Another factor contributing to the variability of ESG ratings is related to theorization (what is measured) and commensurability (how it is measured). ESG rating agencies do not assign the same importance to all social responsibility issues. Some agencies may focus more on environmental issues such as carbon emissions, while others may place more emphasis on social aspects, such as diversity and inclusion or labor practices. Additionally, even when two agencies assess the same issue, they may use different metrics to measure it, leading to very different results.

Another point of disagreement among agencies concerns the trade-offs between criteria. Each agency has the freedom to decide how to balance high scores in one area with low scores in another. For example, a company might score high on governance but poorly on environmental impact. The decision on how these scores compensate for each other is often arbitrary and unregulated, leaving significant discretion to individual agencies. This lack of uniformity can lead to divergent assessments of the same company by different ESG rating agencies.

Finally, there is also a lack of a standardized overall score. Different aspects of sustainability — environmental, social, and governance — can be difficult to "weigh" using an objective weighting method. There is no unified methodology to determine how these factors should be combined to create a single overall score that accurately represents the entire ESG profile of a company. This difficulty in combining various factors into a unified score creates further discrepancies between agency evaluations.

While financial ratings provide a relatively reliable basis for comparing the financial health of companies, ESG ratings require a deeper understanding of the underlying methodologies and greater interpretation of the data. Investors must therefore carefully consider which rating agencies to use and how to interpret their judgments to make informed decisions that reflect both sustainability values and financial goals.

Below is a brief presentation of the world's leading ESG rating agencies<sup>51</sup>:

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<sup>51</sup> Landi, Sustainability and Business Risk: Evidence and Critical Issues of ESG Ratings.



A. Moody's ESG Solutions was created in 2019 following Moody's Corporation's acquisition of Vigeo-EIRIS. Vigeo-EIRIS was itself the result of a 2005 merger between EURIS, a UK-based company, and Vigeo, a French company specializing in evaluating corporate sustainability performance. With ten offices located in different parts of the world, Moody's ESG Solutions provides in-depth research and analysis on environmental, social, and governance (ESG) factors to investors and other organizations. Their work focuses on helping companies improve their sustainability and social responsibility performance, providing tools and expertise to support sustainability-oriented decision-making.

In 2020, Moody's ESG Solutions had approximately 350 employees, demonstrating significant growth in both research capacity and global presence. The company is committed to helping investors understand ESG risks and opportunities, contributing to promoting sustainable investments, and encouraging the transition to more responsible corporate practices.

Thanks to its expertise and international network, Moody's ESG Solutions has become a key partner for organizations seeking to integrate ESG criteria into their business and investment strategies.

MSCI ESG Research Group was established in 2010 following MSCI's acquisition of Risk Metrics. Risk Metrics had previously acquired KLD Research & Analytics, one of the first companies to provide sustainability ratings for businesses, and Invest Strategic Value Advisors, which specialized in advanced analysis of environmental, social, and governance (ESG) impacts. Although Morgan Stanley is the majority shareholder, MSCI operates as an independent company, focused on providing ESG risk data and analysis.

B. MSCI ESG Research is listed on the New York Stock Exchange and has reached a market capitalization of approximately \$13.5 billion. With a global workforce of over 2,600 employees, 150 of whom are researchers specialized in ESG issues, the company has become one of the world's leading ESG rating providers. Currently, MSCI ESG Research provides ESG ratings to more than 6,000 companies worldwide, covering a wide range of sectors and geographic regions.

The company is known for its rigorous and transparent methodology in evaluating companies' ESG performance, helping investors better understand the risks and opportunities associated with sustainability.

MSCI's ESG ratings are used by fund managers, financial institutions, and other investors to integrate environmental, social, and governance factors into their investment decisions. The ratings provided by MSCI ESG Research are based on a combination of public data, direct corporate information, and ESG impact analysis, offering a comprehensive and accurate perspective on companies' sustainability practices.

In addition to providing ESG ratings, MSCI ESG Research also offers a wide range of products and services, including ESG risk analysis tools, screening solutions for sustainable investment, and thematic research on emerging topics such as climate change, gender diversity, and natural resource risk management. Thanks to its expertise and global resources, MSCI ESG Research is considered one of the most influential authorities in the ESG analysis field, supporting investors in their commitment to more responsible and sustainable investment practices.

MSCI ESG Research Group stands out as a leader in the field of ESG ratings, thanks to its combination of operational independence, extensive market coverage, and advanced analytical capabilities. Its continued growth and innovation in providing ESG data and analysis tools reflect the increasing importance of these factors for the investment community and the global financial market.

C. Oekom-Iss is a company founded in 1993 in Germany as a startup with the goal of developing environmental ratings, initially targeting clients such as German church institutions and international organizations, including Greenpeace and WWF. Over the years, Oekom has grown

significantly, expanding its rating coverage to over 4,000 companies in 57 countries and serving 180 asset managers. Thanks to the work of 90 employees, including 60 analysts, Oekom's ratings today influence approximately 1.5 trillion \$ in assets under management.

Institutional Shareholder Services Inc. (ISS) was founded in 1985 in England to promote corporate governance and strengthen the practice of proxy voting among institutional investors.

D. In 2010, ISS was acquired by MSCI, a major provider of investment indices and analysis, and later, in 2017, it was acquired by Genstar Capital, a private equity firm. In 2018, ISS acquired Oekom, creating ISS-Oekom, combining ISS's corporate governance expertise with Oekom's strong sustainability ratings.

ISS-Oekom is a major ESG rating agency that has developed a methodology to assess companies' impacts in relation to the United Nations' Sustainable Development Goals (SDGs), defined in 2015. The agency focuses on 15 of the 17 SDGs, divided into 7 social and 8 environmental goals. ISS-Oekom's ratings provide both an aggregate analysis and detailed information on companies' contributions to individual SDGs. The methodology aims to evaluate a company's product and service portfolio in terms of its contribution to achieving the 15 selected SDGs. The assessment is based on a scale that defines the company's impact on each goal:

- Significant positive impact: The company contributes substantially to achieving the specific goal.
- Limited positive impact: The company has a positive impact, but its contribution to achieving the goal is limited.
- No significant positive or negative impact: The company's activity has neither a significant positive nor negative effect on the goal.
- Limited hindrance: The company presents a limited obstacle to achieving the specific goal.
- Significant hindrance: The company presents a significant obstacle to achieving the goal.

ISS-Oekom's approach is significant because it provides a detailed assessment of how companies contribute to or hinder progress toward the SDGs. This methodology helps investors and other stakeholders better understand a company's impact not only in terms of financial performance but also in terms of sustainability and social responsibility. The information provided by ISS-Oekom allows for more informed investment decisions and supports companies adopting more sustainable practices. ISS-Oekom is a key player in the sustainability ratings market, integrating corporate governance with a strong focus on environmental and social impacts, in line with the United Nations' Sustainable Development Goals.

Sustainalytics is an ESG research and analysis company that was founded in 2009 through the merger of several research organizations specializing in sustainability. In 2016, Sustainalytics was acquired by Morningstar, an American multinational company listed on the stock exchange, known for its financial research and analysis services. This acquisition strengthened Sustainalytics' position as one of the leading providers of ESG data and analysis globally, giving investors tools to assess companies' environmental and social impact.

E. Morningstar Sustainalytics focuses on measuring and analyzing the environmental and social impact of companies, providing investors with a detailed overview of corporate sustainability practices. Sustainalytics' approach is largely driven by the United Nations' Sustainable Development Goals (SDGs). Building on the SDGs, Sustainalytics has identified five key environmental and social themes on which to base its assessments:

- Human Development: Measures companies' commitment to improving human conditions, including human rights, decent working conditions, and social inclusion.
- Resource Security: Evaluates how companies manage critical resources such as water, energy, and materials, and their commitment to the efficient use of natural resources.
- Climate Action: Analyzes companies' strategies for addressing climate change, including carbon emissions, energy efficiency, and the adoption of renewable energy.

- Healthy Ecosystems: Examines the impact of corporate activities on natural ecosystems, including biodiversity management practices and pollution reduction.
- Basic Needs: Considers companies' contributions to meeting fundamental human needs, such as access to clean water, health, and education.

Additionally, there is a further focus on Governance, Leadership, and Collaboration, which assesses how companies manage governance-related risks, transparency, and integrity in their operations, and how they collaborate with other entities to achieve sustainability goals.

In 2019, Sustainalytics further expanded its global reach by acquiring GES International, a company specializing in sustainability consulting and responsible investment. This acquisition allowed Sustainalytics to further strengthen its position as a leader in ESG assessments, offering clients broader access to high-quality data and analysis.

Thanks to its vast expertise and ability to analyze a wide spectrum of ESG factors, Sustainalytics today influences approximately \$200 billion in assets under management. This means that Sustainalytics' assessments and analyses are used by a wide range of institutional investors, fund managers, and other financial entities to make informed and sustainable investment decisions. Sustainalytics' ratings have become a crucial tool for investors seeking to align their portfolios with global sustainability goals.

By providing a detailed and quantifiable view of companies' ESG practices, Sustainalytics helps investors identify sustainability-related risks and opportunities. This is especially important in a context where investors are increasingly aware of the importance of integrating ESG factors into their investment decisions to reduce risks and promote sustainable economic development. Sustainalytics continues to play a fundamental role in the sustainable investment landscape, providing investors with the information they need to navigate financial markets with a focus on sustainability and social responsibility.

Standard Ethics is a rating agency based in London, specializing in assessing the sustainability of companies and organizations. Its methodology is based on the 1987 United Nations guidelines, which promote sustainable development defined as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." In addition to these guidelines, Standard Ethics also uses the recommendations and directives from the UN, the OECD (Organization for Economic Cooperation and Development), and the European Union to formulate its sustainability assessments.

Standard Ethics primarily operates through a request-based evaluation model, known as the applicant-pay model or solicited rating. In this model, clients (companies or other organizations) request a rating and become the owners of the produced report. This approach ensures that the evaluated companies have a direct interest in improving their sustainability based on the provided guidelines.

The rating scale used by Standard Ethics is divided into nine classes, ranging from "excellent" to "unrated." The rating classes are as follows:

- EEE: Excellent
- EEE-: Very good
- EE+: Good
- EE: Adequate
- EE-: Sufficient
- E+: Mediocre
- E: Insufficient
- E-: Poor
- F: Not rated

These categories reflect the company's level of sustainability, ranging from "sustainable company" (EEE) to "non-sustainable company" (F).

Standard Ethics' methodology for assessing a company's sustainability is based on a complex formula that weighs multiple variables, including:

- Competition: Evaluation of how the company positions itself compared to its competitors in terms of sustainable practices and social responsibility.
- Shareholder Agreements Constraints: Analysis of limitations placed on minority shareholders or potential new shareholders through shareholder agreements, which can affect governance and transparency.
- Governance Aspects: Examination of the company's governance structure, including board composition, internal control mechanisms, remuneration policies, and operational transparency.
- ESG Factors: Evaluation of how the company manages risks and opportunities related to the environment, social issues, and governance. This includes policies for reducing carbon emissions, managing natural resources, workers' rights, diversity, and inclusion, as well as ethical conduct and corporate responsibility.

Standard Ethics' assessments provide a crucial indicator for investors, asset managers, financial institutions, and other stakeholders seeking to understand the sustainability and responsibility levels of companies. These ratings help identify companies aligned with sustainable development goals and following best governance practices, offering greater transparency, and promoting responsible corporate behavior.

By using a methodology based on internationally recognized guidelines, Standard Ethics helps promote greater corporate responsibility and improve sustainability practices in the private sector. The formula used by the agency considers a wide range of variables, ensuring a balanced and accurate evaluation of companies' sustainability profiles.

Standard Ethics stands out as one of the leading rating agencies specializing in corporate sustainability assessments, offering evaluations that help promote more sustainable and responsible business practices. With its applicant-centered business model and focus on international standards, Standard Ethics provides essential tools for better understanding the risks and opportunities associated with sustainability, thereby supporting a more responsible and sustainable economy for the future.

Refinitiv is a global provider of financial data and market infrastructure, created from the sale of Thomson Reuters' Financial & Risk (F&R) division to the private equity group Blackstone Group LP. This transaction, completed on 1 October 2018, gave Blackstone a 55% majority stake in F&R, valuing the entire business at around \$20 billion. Refinitiv quickly established itself as a key player in the sector, providing advanced data and technology solutions to financial institutions and businesses worldwide.

In January 2021, the London Stock Exchange Group (LSEG) completed its acquisition of Refinitiv in a deal that valued the company at 27 billion \$. This merger solidified Refinitiv as one of the leading global providers of data and analytics, making LSEG a prominent leader in the financial markets' ecosystem.

Thomson Reuters' acquisition of ASSET 4 AG in 2009 was a significant turning point for Refinitiv. Founded in 2002, ASSET 4 AG was already considered one of the world's most reliable sources for collecting and analyzing environmental, social, and governance (ESG) data. The company stood out for its ability to collect detailed information on companies' ESG performance, relying solely on publicly available data. These data were then cross-referenced with financial information from Thomson Reuters' extensive database, enabling investors to access a comprehensive and detailed picture of companies' sustainability.

Building on this strong legacy, Refinitiv positioned itself as a leader in providing reliable and transparent ESG data, becoming an essential partner for those operating in global financial markets.

Today, Refinitiv offers a range of advanced services and technology solutions to support risk management, market analysis, regulatory compliance, and data transparency. Its platform is used by over 40,000 clients in more than 190 countries, making it one of the world's largest financial data providers. Refinitiv's database contains detailed information on over 2,600 of the largest global companies, calculating and comparing more than 250 key performance indicators (KPIs) related to sustainability.

These KPIs are organized into 18 predefined categories covering all aspects of ESG performance, allowing institutional investors and corporate executives to make informed decisions and assess the sustainability strategies of the companies they work with. By combining financial and non-financial data, Refinitiv provides a complete view of businesses, integrating aspects ranging from carbon emissions to gender equality, from natural resource management to corporate governance practices.

Refinitiv does not just collect data; it provides investors with sophisticated tools to analyze and compare the ESG performance of companies worldwide. With its vast database, the company offers a clear picture of global sustainability trends and supports institutional investors seeking to align their portfolios with ESG criteria.

Its advanced solutions enable investors to integrate ESG risks and opportunities into their investment decisions, improving transparency and contributing to better risk management. Through access to detailed and objective financial and ESG data, Refinitiv has helped transform how companies and investor's view sustainability, making the integration of ESG criteria a standard practice in corporate and investment decisions.

With its acquisition by the London Stock Exchange Group (LSEG), Refinitiv has further expanded its reach. The merger allowed the integration of Refinitiv with other group activities, including LSEG's trading platform and data management solutions, creating a comprehensive infrastructure to support global financial market operations. This synergy has enabled Refinitiv to increase its commitment to technological innovation and sustainability, with a strong focus on automation, artificial intelligence, and data management.

**RobecoSAM:** Founded as a subsidiary of Robeco, a historic Dutch investment management company established in 1929, RobecoSAM has become a global benchmark for corporate sustainability assessment over the years. Robeco and RobecoSAM are both part of the Robeco Group, whose majority shareholder is the Japanese conglomerate ORIX Corporation, one of the world's leading financial services and infrastructure companies. Thanks to this solid ownership structure, RobecoSAM has been able to expand its global impact, particularly distinguishing itself for its expertise and leadership in ESG evaluation.

In 1999, RobecoSAM launched one of the most prestigious and globally recognized sectoral sustainability evaluations, which serves as the foundation for the Dow Jones Sustainability Index (DJSI). This index is one of the key standards for measuring corporate sustainability performance and is updated annually based on the results of a detailed evaluation. RobecoSAM invites the 2,500 largest companies in the world to participate in this process, which evaluates their sustainability practices across the three ESG dimensions: environmental, social, and governance. Each company is scored on a scale of 0 to 100, where the score reflects the degree of sustainable practices adoption and the company's ability to create long-term economic value through responsible ESG management. Only the top 10% of companies in each sector, based on their

scores, are selected for inclusion in the DJSI World, an international recognition that attracts the attention of investors and stakeholders interested in sustainability performance.

RobecoSAM's evaluation process is based on a rigorous and scientific approach that considers both sectoral characteristics of the companies and the specific peculiarities of individual businesses. The distinctive element of RobecoSAM's evaluation is its ability to correlate ESG factors with financial performance, thereby demonstrating how sustainability practices can positively influence companies' economic outcomes.

RobecoSAM's analysts, leveraging their experience and expertise, thoroughly analyze the data and information provided by companies, aiming to link environmental, social, and governance practices to the potential for economic value creation. The evaluation not only quantifies ESG aspects but contextualizes them within the relevant sector, assessing the relative importance of each factor for the company.

For instance, for a manufacturing company, particular attention is given to carbon emissions management and the environmental impact of the production process. Conversely, for a financial services provider, the ESG evaluation focuses more on the company's ability to offer financial products that support the transition to a sustainable economy. This sectoral approach ensures that companies are evaluated based on criteria that reflect their specific challenges and opportunities. One of the most innovative aspects of RobecoSAM's methodology is the ability to tailor ESG ratings to the specifics of the sector in question. This means that not all ESG factors have the same weight for all companies but are weighted based on their relevance to the industry in which the company operates.

For example, workplace safety might be a critical factor for a manufacturing or industrial company, while it would carry less weight for a bank or financial institution, where aspects like transparency and risk management are considered more relevant. Thanks to this sectoral weighting, the rating assigned by RobecoSAM is more accurate and relevant, offering investors a more realistic assessment of each company's sustainability capabilities.

Additionally, the Dow Jones Sustainability Index (DJSI), based on ESG scores assigned by RobecoSAM, is one of the most prestigious global indices for measuring corporate sustainability. Being included in the DJSI is a significant recognition for companies, as it demonstrates their commitment to sustainable and responsible practices and signals to potential investors that the company is well-positioned to face future challenges.

Inclusion in the DJSI can positively influence a company's reputation and attract the attention of institutional investors and investment funds with a specific focus on sustainability. Furthermore, many companies see participation in the DJSI as an opportunity to improve their management practices and set ambitious goals for reducing emissions, resource management, and transparent governance.

Thanks to its methodological rigor and ability to adapt to the needs of investors and companies, RobecoSAM has become a global reference point in sustainable finance. The company not only helps define sustainability standards but also promotes the integration of ESG criteria into corporate and investor decision-making processes.

With the growing global focus on sustainability and the challenges posed by climate change, RobecoSAM's ESG evaluation is set to play an increasingly important role in shaping corporate strategies and risk management. Companies that achieve a high ESG score not only improve their reputation but also attract new capital and optimize their long-term growth potential.

Each agency uses a specific methodology to assign an ESG rating to the companies it analyzes, but all share the use of the concept of "materiality." This concept serves to evaluate and measure which environmental, social, and governance aspects are most relevant in determining the final rating of each company.

According to the guidelines of the GRI (Global Reporting Initiative), the most widely used standard for sustainability reporting, material aspects are those economic, environmental, and social issues that are particularly important. These aspects influence the evaluations and decisions made by stakeholders.

In other words, materiality indicates how relevant a particular issue is and how much it can influence a company's economic decisions. The materiality analysis is the process through which the company identifies which environmental, human capital, social capital, innovation, and corporate governance issues are most significant for the long-term sustainability of the business. This process determines which of these topics are most important for the company and why.

According to the IIRC (International Integrated Reporting Council), material information is that which affects a company's ability to create economic value in the short, medium, and long term. The goal of integrated reporting is to provide useful information to those who contribute financial resources.

In the process of determining materiality, stakeholders and their assessments of aspects that may influence the company's ability to create value are essential. However, a critical aspect of this process is finding a balance between the information provided by the company and that gathered from stakeholders. This balance represents one of the most complex challenges of integrated reporting.

To bridge the gap between financial and sustainability information, the SASB (Sustainability Accounting Standards Board) was founded in 2011 as a non-profit organization in the United States. The SASB has developed standards for the disclosure of sustainability information that is financially relevant, by identifying specific criteria that highlight the environmental, social, and governance issues most significant to financial performance across 77 industries.

In finance, SASB's equivalent is the FASB (Financial Accounting Standards Board), while in Europe, the main reference is the GRI. SASB was founded as an independent organization with the goal of creating ESG reporting standards for publicly listed companies in the United States, to be integrated into filings with the SEC (Securities and Exchange Commission), the U.S. federal authority overseeing the stock market. SASB aims to incorporate sustainability into existing financial reporting.

Regarding the methodologies adopted in ESG rating formulation, MSCI (Morgan Stanley International Corporation) plays a significant role. The company uses an evaluation methodology that assesses both the risks and opportunities posed by ESG factors to a specific company, considering its industry.

The methodology quantifies the "materiality" of each ESG threat or opportunity, calculating the cost the company might incur in the medium to long term if the identified threat materializes. Similarly, it evaluates the benefits that an ESG factor may generate for the company, such as the opportunities offered by clean technologies in the renewable energy sector.

The MSCI ESG Ratings model focuses on four key questions to evaluate companies:

1. What are the most relevant ESG risks and opportunities for the company and the sector in which it operates?
2. How exposed is the company to those key risks and/or opportunities?
3. To what extent does the company manage these risks and/or opportunities?
4. What is the overall picture of the company, and how does it compare to its competitors in the sector?

This approach allows for a thorough evaluation of a company's ability to manage ESG challenges and capitalize on opportunities to create sustainable value over time. The assessment is carried out by assigning each of the three ESG factors a set of key aspects on which materiality for the company is measured, thus determining an overall score.

According to MSCI, 35 key points are considered: 13 related to the environment, 16 to social factors, and 6 to governance. The methodology not only assesses the exposure to ESG risks and opportunities but also considers the company's ability to manage them. The obtained score is normalized against the company's industrial sector, with a range from a minimum score of 0 to a maximum of 10, distributed between the 2.5th and 97.5th percentiles. This score is then associated with a rating scale, where:

- AAA (score between 8.6 and 10) represents the highest,
- CCC (score between 0 and 1.3) represents the lowest.

In this way, the rating reflects both the company's exposure to ESG factors and the effectiveness of its management of these risks and opportunities compared to its competitors in the same sector.

**Figure 20 ESG indicators**

3 Pillars	10 Themes	35 ESG Key Issues	
Environment	Climate Change	Carbon Emissions Product Carbon Footprint	Financing Environmental Impact Climate Change Vulnerability
	Natural Capital	Water Stress Biodiversity & Land Use	Raw Material Sourcing
	Pollution & Waste	Toxic Emissions & Waste Packaging Material & Waste	Electronic Waste
	Environmental Opportunities	Opportunities in Clean Tech Opportunities in Green Building	Opportunities in Renewable Energy
Social	Human Capital	Labor Management Health & Safety	Human Capital Development Supply Chain Labor Standards
	Product Liability	Product Safety & Quality Chemical Safety Consumer Financial Protection	Privacy & Data Security Responsible Investment Health & Demographic Risk
	Stakeholder Opposition	Controversial Sourcing Community Relations	
	Social Opportunities	Access to Communications Access to Finance	Access to Health Care Opportunities in Nutrition & Health
Governance	Corporate Governance	Ownership & Control Board	Pay Accounting
	Corporate Behavior	Business Ethics Tax Transparency	

Source: MSCI, year 2023

ESG indicators are considered only if they present a significant likelihood of turning into costs or profits for the company under evaluation. Each environmental and social issue contributes to the overall ESG score by up to 30%, with the weight varying based on its relevance to the specific sector. This weight is assigned by evaluating both the magnitude of the company's social and environmental impact and the time frame in which the risk is expected to materialize. If a high impact is anticipated in the short term, the assigned weight can be up to three times higher than for a lower impact over a longer time frame.

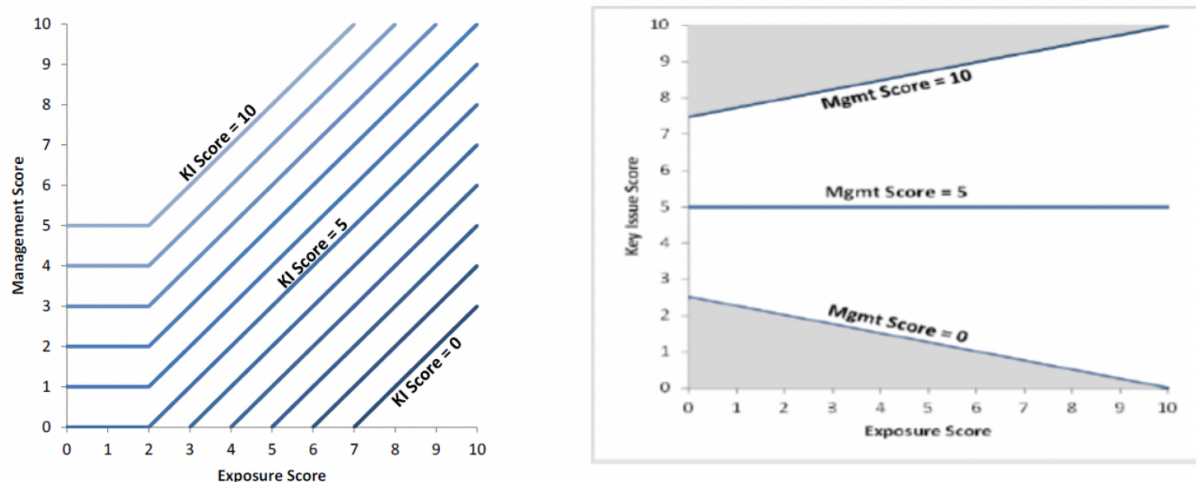
This assessment is then related to the company's risk management. If risk management is ineffective, the company receives a low rating, especially in cases of high exposure. Conversely, excellent risk management can result in a high rating, even if the company is exposed to significant threats. Essentially, the rating reflects how well the company can effectively mitigate the risks it faces.



The "Key Issue Score" represents the score used to evaluate risk management. This score is determined by cross-referencing exposure (x-axis) with management level (y-axis): a combination of high exposure and high management leads to a high score.

In assessing opportunities, the Key Issue Score is calculated by following a curve that cross-references the company's management score with its exposure level (x-axis). When exposure is low, scores depend mainly on management quality and tend to vary less. However, in cases of high exposure, the score can vary significantly, from 0 to 10, depending on the effectiveness of managing environmental and social factors.

**Figure 21 Key Issue Score**



		Short-Term (<2 years)	Long-Term (5+ years)
Level of Contribution to Environmental or Social Impact	Industry is <b>major</b> contributor to impact	Highest Weight	
	Industry is <b>minor</b> contributor to impact		Lowest Weight

Source: MSCI, year 2023

Starting from November 2020, the weight of the Governance pillar is determined for all GICS sub-industries by assigning a rating of "High Contribution/Long Term" for Corporate Governance and "Medium Contribution/Long Term" for Corporate Behavior (ethics and anti-corruption). The maximum weight of the governance pillar on the ESG rating is capped at 33%. The Governance Pillar Score evaluates a company's governance on a scale from 0 to 10, applied universally. This score is calculated using a "deductive approach", starting from a "perfect 10" and subtracting points based on the distance from the ideal situation.

Additionally, MSCI's evaluation considers controversies, which are situations where the company has faced legal sanctions, community protests, or accusations of discriminatory behavior. The analyst assesses whether these controversies are isolated events or indicative of structural problems, measuring their significance and the potential economic impact on the company in the medium term.

## CONCLUSIONS

Sustainable finance is now one of the most effective and necessary tools for addressing global challenges related to climate change, biodiversity loss, social inequality, and the scarcity of natural resources. The growing awareness of the negative impacts of traditional economic activities on the environment and society has led to a true cultural and operational revolution within financial markets and businesses. Once just a trend, sustainable finance has become a consolidated reality, with tangible effects both in terms of risk reduction and the creation of new opportunities.

One of the main objectives of sustainable finance is to overcome the traditional dualism between financial returns and environmental/social impact. Companies, financial institutions, and investors are gradually realizing that a responsible approach to investments can generate stable long-term returns while minimizing the risks associated with unsustainable resource management. For example, risks related to climate change—such as extreme weather events, stricter regulations, or declining consumer trust—can have devastating impacts on investment portfolios and business performance. Integrating ESG (Environmental, Social, Governance) criteria helps mitigate these risks and contributes to more resilient economic growth.

The role of European regulations, such as the EU Taxonomy and the SFDR (Sustainable Finance Disclosure Regulation), has been fundamental in providing structure and credibility to the sector. These regulatory tools are key pillars in the fight against greenwashing, ensuring that companies' claims about ESG impacts are based on verifiable and transparent data. However, despite the progress made, there are still challenges to be addressed. Global harmonization of ESG standards, the creation of clear and unified criteria for defining what can be considered "sustainable," and the adoption of mandatory reporting practices for all companies are necessary steps to consolidate the sector and attract more investment.

Furthermore, sustainable finance should not only be seen as a matter of risk mitigation. On the contrary, it represents an extraordinary opportunity for innovation and value creation. New technologies, such as renewable energy, sustainable mobility, and energy efficiency, offer enormous growth potential. Green bonds, social bonds, and sustainability-linked bonds, as well as other sustainable financial instruments, have proven to be effective tools for financing innovative projects and supporting the transition to a low-carbon economy.

Academic literature and studies conducted by leading international institutions confirm that the shift to a sustainable economic model is not only desirable but also inevitable. Studies by the World Economic Forum, the United Nations, and central banks highlight how the failure to integrate ESG factors could increase costs for businesses, not only in terms of reputation but also in terms of access to capital and competitiveness in the global market.

However, for sustainable finance to fully realize its potential, a concerted effort from all actors involved is required: from supranational institutions to businesses, regulators, and investors. The creation of a solid regulatory framework and the spread of a culture of sustainability are essential for promoting systemic change. Moreover, it is necessary to ensure that SMEs, which form the economic backbone of many countries, have access to the financial tools needed to actively participate in the sustainable transition.

Another crucial aspect is the importance of financial education and public awareness. Many investors, particularly retail investors, are still not fully aware of the opportunities offered by sustainable finance or the risks associated with investments in non-sustainable sectors. Therefore, greater efforts are needed to inform and educate investors so they can make conscious and responsible choices.

Finally, the role of central banks and monetary policies in accelerating the transition to a sustainable economy cannot be underestimated. The introduction of a digital euro, for example, could have significant implications for sustainable finance, promoting transaction transparency and enabling more effective tracking of financial flows toward green projects.

In conclusion, sustainable finance is not only a necessary response to the environmental and social crises we are experiencing, but it is also an extraordinary opportunity to redefine the future of our economic system. The integration of ESG factors, supported by solid regulations and constant technological innovation, can transform the way we invest, produce, and consume, making the world fairer and more sustainable for future generations. The path to sustainability has just begun, but the foundations have been laid, and the future of global finance will increasingly depend on the ability to combine profit and social responsibility.

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