

Unveiling Sustainable Finance: Frameworks and Challenges: A Systematic Literature Review

Dévoiler la finance durable : taxonomies et défis : une revue de littérature systématique.

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Résumé

La finance durable a émergé en tant que modèle pivot dans l'alignement des pratiques financières avec les considérations environnementales, sociales et de gouvernance (ESG). Bien que ce concept ne puisse être résumé, il peut toutefois être présenté comme étant la finance au service de la durabilité (Migliorelli, 2021). Le présent article propose une revue de littérature systématique depuis 2005 à 2024, couvrant la finance durable, ses instruments, stratégies, taxonomies et défis. Pour ce faire, nous avons adopté le cadre PRISMA. Nous avons basé notre sélection sur la base de données Scopus en premier lieu. D'autres références ont été incluses à travers Google Scholar, JSTOR et les citations enchaînées. La sélection finale consiste en 36 documents, extraits et analysés via Zotero et NVIVO. La revue de littérature met en évidence les principaux instruments de la finance durable (prêts et obligations vertes, ainsi que les prêts et obligations indexées sur la durabilité), les stratégies (filtrage positif, négatif, basé sur des normes ou transversal), les taxonomies (PRB, PRI et TCFD) et les défis.

Mots clés :

Finance, Durabilité, Développement, RSE, ISR

Abstract

Sustainable finance has emerged as a pivotal model for aligning financial practices with environmental, social, and governance (ESG) considerations. Simply put, it is “finance for sustainability” (Migliorelli, 2021). This paper presents a systematic literature review (SLR) from 2005 to 2024 about sustainable finance, its instruments, strategies, frameworks, and challenges. For this purpose, we relied on the PRISMA framework to conduct the review process. We used Scopus as a primary database for article selection. Further literature was identified using Google Scholar, JSTOR, and citation chaining. The final pool consisted of 36 documents, extracted and analysed using Zotero and NVIVO. The review highlights the main instruments of sustainable finance (green and sustainability-linked bonds and loans), its strategies (positive, negative, norm-based, and transversal screenings), its frameworks (PRB, PRI, and TCFD) as well as its challenges.

Keywords

Finance, Sustainability, Development, CSR, SRI.

Introduction

At the dawn of the Industrial Revolution in the 19th century, labour and capital were the only inputs to the production function (Cobb & Douglas, 1928), but they were scarce. However, natural resources were freely available and abundant. Unfortunately, this Revolution was not without impact. It led to a multi-scale change: economic (growth, new consumer goods), social (population growth), and environmental (dependence on non-renewable resources, bigger deforestation). According to Meadows et al. (1972), in *Limits to Growth*, "there are five factors that determine and limit growth on planet Earth: population increase, food production, non-renewable resource depletion, industrial output, and pollution generation". Hence, eternal life on Earth is possible only if humans achieve a global equilibrium with population and production, highlighting that the planet has a limited carrying capacity. The latter is stressed by population growth, which has to adjust to achieve equilibrium (Schoenmaker, 2019).

"We have not inherited the Earth from our fathers, we are borrowing it from our children", states (Brown, 2007) in one of his books. This quote summarises the essence of sustainable development. According to the Brundtland Report (WCED, 1987), "the 'environment' is where we live; and 'development' is what we all do in attempting to improve our life within that environment. The two are inseparable." Therefore, sustainable development is: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Thus, climate change represents one of the most significant risks to society. Considering this presentation, sustainable development results from long-term strategies that allow for fairly fulfilling all generations' needs. Furthermore, it is a global matter that concerns all human beings (rich or poor, youngsters or elderly). Therefore, the urge to respond to environmental resource scarcity and to face social issues (mainly, increasing poverty) raised the interest in sustainable development. The latter relies on three pillars: planet, people, and profit. Indeed, development must be environmentally cautious, socially fair, and economically efficient. Consequently, sustainable development aims for double solidarity and cohesion: horizontally about the poorest (rich countries versus poor countries), and vertically between generations. Nevertheless, achieving sustainable development goals (SDGs) requires appropriate infrastructure, which concerns, among other things, the accurate financing.

To this end, new financing methods have emerged in sustainable finance. In addition to financial data analysis, decision-making processes must include environmental, social, and governance (ESG) considerations to build sustainable economic projects and activities

(European Commission, 2021). These aspects can be considered individually or collectively (at the level of corporations or countries).

At this stage, reflecting sustainable finance isn't a trending matter any longer than 1987. It is a sine qua non for environmental protection and social and economic development. Nowadays, doing business sustainably assures that no decision harms the people or the planet. Moreover, it ensures that economic and financial goals are sustained in the long run (Ziolo et al., 2020). In addition, sustainable finance attempts to equalize financial profit with positive social and environmental impact.

In the wake of this context, this paper aims to give an overview of sustainable finance, including definitions, challenges, and existing frameworks. The research questions we seek to address are: What is sustainable finance? What are the existing frameworks? What challenges arise when implementing sustainable finance?

To that extent, we will first define sustainable finance and its related terms according to the existing literature. In the second section, we'll explore existing sustainable finance frameworks. Finally, we'll review the challenges and issues faced while implementing its frameworks.

1. Methods

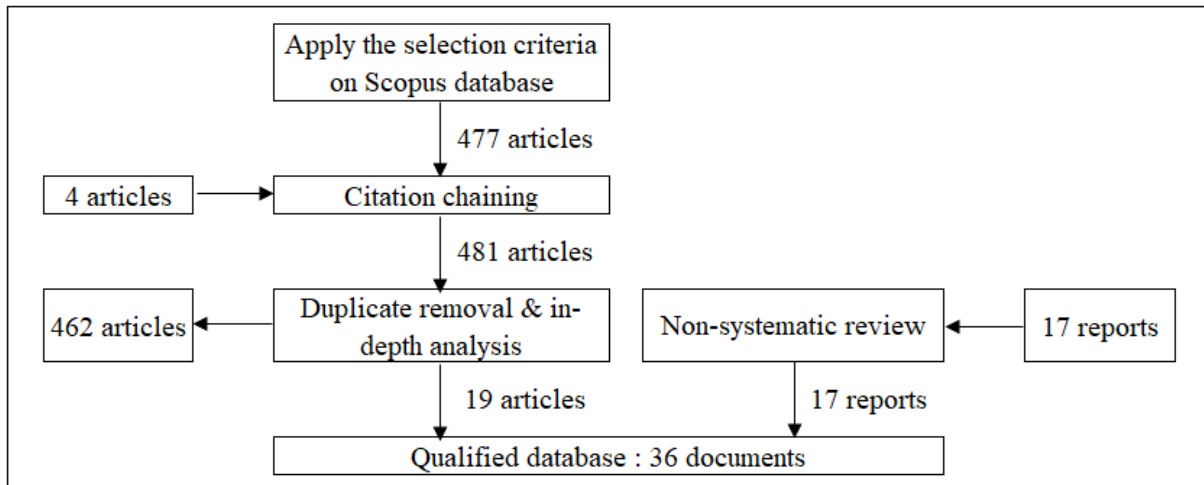
This article provides a synopsis of sustainable finance, current frameworks, and existing and potential challenges. Systematic literature review aligns with a positivist epistemological stance, since it aims to produce objective, reproducible, and data-based knowledge (Santos et al., 2022). This type of review adopts a deductive reasoning mode. Thus, it starts with defining inclusion or exclusion criteria. In this context, we relied on the PRISMA framework (Moher et al., 2009) to conduct the review process. For this purpose, we utilised the Scopus database to identify relevant articles. Only articles published before June 2024, whose subject areas are "Economics", "Finance", or "Business", and containing the following keywords were initially selected: "sustainable finance", "ESG", "CSR", and "impact investing". This resulted in a pool of 477 articles. Then, 4 articles were added to the pool via citation chaining. After removing duplicates and analysing titles and abstracts, the final selection consists of 19 articles that have undergone in-depth analysis. Simultaneously, we conducted a non-systematic review that resulted in 17 international reports discussing sustainable finance and SDGs (*Table 1, Figure 1*). In total, 36 references were selected to be analysed using NVIVO.

Table 1 Systematic literature review process, based on the PRISMA framework.

PRISMA Step	Description	
Eligibility	Period of publication	Before June 2024
	Language	English
	Type	All
Information sources	Primary database	Scopus
	Additional sources	Google Scholar, JSTOR (citation chaining)
	Date of consultation	January – June 2024
Search process	Fields	Article titles, abstracts, and keywords
	Search keywords	Sustainable finance, ESG, CSR, and impact investing
	Subject areas	Economics, Finance, and Business
Study Selection	Exclusion criterion	Not matching the sustainable finance field

Source: Authors' creation

Figure 1 Systematic literature review process



Source: Authors' creation

2. Results

To conduct the literature review, we relied mostly on the Scopus database, through which we identified 18 articles. JSTOR was also explored, from which one article was identified. Further information was gathered based on institutional reports of reputable institutions researching this topic. The corpus included 36 documents.

Table 2 Distribution of resources by type

Reference type	Number
Journal Article	19
Report	17
Total	36

Source: Authors' creation

Table 3 List of scientific databases

Database	Number
Scopus	18
JSTOR	1
Total	19

Source: Authors' creation

Research on sustainability and sustainable finance started in the early 1900s. We identified three major references that contributed to the advancement of this topic, namely: A Theory of Production (Cobb & Douglas, 1928), The Limits to Growth: A report for the Club of Rome's project on the predicament of mankind (Meadows et al., 1972), and Our Common Future: Report of the World Commission on Environment and Development (WCED, 1987).

The interest in and increase of research in this topic is remarkable starting from the 2010s, as shown in the following table.

Table 4 Number of publications per year

Year	Number
Before 2000	3
2000 - 2009	2
2010 - 2019	13
2020 - 2024	18
Total	36

Source: Authors' creation

3. Discussion

3.1. Efforts to define Sustainable Finance

Defining sustainable finance must start with defining the key concepts: “sustainability” and “finance”. Sustainability comes from “*sustentāre*”, which means, in Latin, to uphold and maintain (Veschi, 2020). Sustainability was highlighted by the UN’s General Assembly and the World Commission on Environment and Development in 1987. Since then, sustainability

related to “Development”. The Commission was responsible for formulating "A global agenda for change". According to the Brundtland Commission (WCED, 1987), sustainable development allows the current generation to meet their needs without compromising those of future generations. Thus, sustainable development is at once concerned with environmental, social, and economic matters. Therefore, achieving sustainability of development arises posterior to accurate financing. Lagoarde-Segot (2019) states that sustainability implies that the current generation “manages the resource base such that the average quality of life that we ensure ourselves can potentially be shared by all future generations”. Finance refers to the system by which money is created and managed, including related activities: banking, investment, credit, and raising capital (Editors of Encyclopaedia Britannica, 2024; Hayes, 2024; Vipond, 2022). The merger of finance with sustainability brings sustainable finance to life. Sustainable finance is therefore managing money and investment to achieve sustainable development. In other words, it is “finance for sustainability” (Migliorelli, 2021). The European Commission (2021) specifies that sustainable finance is "the process of integrating environmental, social and governance (ESG) considerations when making investment decisions in the financial sector, leading to longer-term investments in sustainable economic activities and projects”. The main objective of sustainable finance is to promote investments in activities and companies that support economic development while protecting society and the environment. It is oriented towards positively impacting society and the environment through collecting and investing capital in social and environment-friendly projects, including social enterprises (Cunha et al., 2021; Mikołajczak, 2017). In a larger scope, the International Capital Market Association (ICMA, 2020) defines sustainable finance as “finance that incorporates climate, green and social finance while also adding wider considerations concerning the longer-term economic sustainability of organisations and the stability of the overall financial system in which they operate”.

In this regard, the European Parliament and the Council of the European Union (2020) established criteria for which economic activity will be identified as “environmentally sustainable”. Under these criteria, economic activities that contribute to achieving environmental goals and do not cause any harm in the process, while complying with nominal safeguards are considered “environmentally sustainable”.

Table 5 Sustainable finance definitions

Authors	Definition
Migliorelli (2021)	It is “finance for sustainability”.
European Commission (2021)	"The process of integrating environmental, social and governance (ESG) considerations when making investment decisions in the financial sector, leading to longer-term investments in sustainable economic activities and projects”.
Mikołajczak (2017)	Sustainable finance is oriented towards creating a positive impact on society and the environment through collecting and investing capital in social and environment-friendly projects, including social enterprises.
European Parliament and the Council of the European Union (2020)	It is when consideration is given to “the sustainability impact of financial products and services.”

Source: Authors' creation

A fundamental part of implementing sustainable finance is to define ESG considerations first, as it will facilitate their integration into the financing and investment decision-making process. No shared understanding of these considerations exists (Coleton et al., 2020; PRI Association, 2018). However, the UN PRI and the United Nations & Swiss Federal Department of Foreign Affairs (2004) recommended a list to use as a guide for establishing frameworks (*Table 6* Table 6). Other initiatives supplemented the list with further examples that financial institutions are currently using to build their frameworks (*Table 7*).

Table 6 ESG considerations

Environmental	Social	Governance
<ul style="list-style-type: none"> • Climate change • Resource depletion • Waste • Pollution • Deforestation 	<ul style="list-style-type: none"> • Human rights • Modern slavery • Child labour • Working conditions • Employee relations 	<ul style="list-style-type: none"> • Bribery and corruption • Executive pay • Board diversity and structure • Political lobbying and donations

		• Tax strategy
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Source: adapted from UN PRI (2024)

Table 7 Other Initiatives for ESG Considerations definition

Considerations	Definition	Providers	
		International frameworks and initiatives	Banks
Environmental	Measuring the impact of a business on the natural ecosystem.	<ul style="list-style-type: none"> ▪ Energy use and efficiency ▪ Water use ▪ Use of ecosystem services ▪ Innovation in environment-friendly products and service 	<ul style="list-style-type: none"> ▪ Resource consumption ▪ Water and waste management ▪ Biodiversity protection ▪ Research and development in environmental technologies
Social	Company's relationship with its employees, clients, and society.	<ul style="list-style-type: none"> ▪ Health and safety (workforce and customers) ▪ Diversity, equity, and inclusion ▪ Training and Education ▪ Customer Privacy 	<ul style="list-style-type: none"> ▪ Access to credit and financial inclusion ▪ Personal data security ▪ Quality and innovation in customer relations
Governance	Mechanisms that direct the management decisions and actions for the best interest of its shareholders.	<ul style="list-style-type: none"> ▪ Codes of conduct and business principles ▪ Accountability ▪ Transparency and disclosure ▪ Stakeholder engagement ▪ Shareholder rights 	<ul style="list-style-type: none"> ▪ Stakeholders' relations regulation: rights, responsibilities, and expectations ▪ Integrity in corporate conduct/conduct frameworks

Source: Authors' creation

3.1.1. Sustainable finance strategies

Sustainable finance strategies are joint efforts that allow players to achieve sustainable financial outcomes. There are various investment strategies by which investors can consider ESG factors

in their investment decisions. Foremost, these strategies can be active or passive. In a passive strategy, the investment replicates the performance of a benchmark index and follows a predefined buy-and-hold approach without attempting to actively perform. In contrast, in active investment strategies based on research and analysis, a fund manager selects and trades financial instruments aiming to outperform the market's benchmark index (Investopedia, 2023). Next, investors can choose which ESG incorporation strategy suits their objectives: investment screening, thematic investing, or integration (Liang & Renneboog, 2020; PRI Association, 2018). Investment screening refers to the identification and selection of investments according to investors' criteria including values and ethics. Three forms of screening are utilized:

- Positive screening: investing in assets¹ exclusively for having a high positive ESG impact and performance.
- Negative screening: excluding "sin assets" from the investment scope (alcohol, weaponry, drugs, ...etc.).
- Norm-based screening: investment is conducted based on adherence to international standards of business practices.
- Transversal screening: investors can choose to combine the screening strategies above.

Regarding thematic or sustainability-themed investing, assets closely related to sustainability (e.g., green technology) are chosen for investment. Whereas the integration of ESG factors is the deliberate consideration of these factors in the investment decision-making process.

The mere incorporation of ESG factors may not be sufficient for achieving sustainability. That is said, investors can motivate their investees to enhance their ESG performance and risk management and to establish more sustainable business practices. To achieve this, investors engage with their investees (actual or potential) in interactions and cooperation about ESG issues they're facing. Additionally, they can use proxy voting for approving (or disapproving) and submitting ESG-related resolutions.

¹ Sectors, companies, stocks, or funds.

Table 8 Summary of ESG investment strategies

Considering ESG issues when building a portfolio (known as: ESG incorporation)			Improving investees' ESG performance (known as: active ownership or stewardship)	
ESG issues can be incorporated into existing investment practices using a combination of three approaches: integration, screening and thematic			Investors can encourage the companies they are already invested in to improve their ESG risk management or develop more sustainable business practices.	
Integration	Screening	Thematic	Engagement	Proxy voting
Explicitly and systematically including ESG issues in investment analysis and decisions, to better manage risks and improve returns.	Applying filters to lists of potential investments to rule companies in or out of contention for investment, based on an investor's preferences, values, or ethics.	Seeking to combine attractive risk-return profiles with an intention to contribute to a specific environmental or social outcome. Includes impact investing.	Discussing ESG issues with companies to improve their handling, including disclosure, of such issues. Can be done individually or in collaboration with other investors.	Formally expressing approval or disapproval through voting on resolutions and proposing shareholder resolutions on specific ESG issues.

Source: adapted from UN PRI (2024)

3.1.2. Sustainable finance instruments

Sustainable finance instruments are financial instruments for sustainable development. They refer to assets that are or can be traded to support sustainable development. The European Parliament (2021) presents them as follows:

- Green bonds are a form of capital allocation to projects with a positive impact on the fight against climate change. Simultaneously, it allows stakeholders to monitor this capital allocation and projects (Romani, 2022; Sertore, 2022). Their investment scope includes renewable energy, pollution prevention and control, biodiversity, sustainable

water management, climate change adaptation, and environment-friendly products and services.

- Social bonds aim to finance social projects whose goals are securing food and clean water, reducing poverty, reducing unemployment rates, providing affordable housing, and ensuring education equity.
- Sustainability bonds are a combination of social and green bonds. They're issued to finance or refinance projects and activities with a positive impact on society and the environment (Japan Securities Dealers Association, 2019; Redfield, 2022).
- Green loans are similar to green bonds in terms of goals and objectives. However, they're specific to the private market. Moreover, the lender tracks the use of proceeds through periodic reporting of the borrower.
- Blue bonds aim to finance projects and activities with a positive impact on the marine and ocean, namely the protection and preservation of marine ecosystems (Santander, 2023).
- Sustainability-linked bonds (SLBs) are behaviour-oriented bonds. In other words, their financial characteristics depend on the issuer's achievement of the preset targets.
- Sustainability-linked loans (SLLs) are similar to SLBs as they're behaviour-based loans. Yet, their main fluctuating characteristic is the interest rate which can be low for the borrower if he achieves the ESG goal assigned to his project. Otherwise, the interest rate paid to the lender will be higher.

As with the sustainable finance strategy selection, the choice of the effective instrument depends on the investor's preferences, expectations, and goals, and especially on his values and ethics.

3.2. Sustainable finance framework initiatives

Sustainable finance frameworks are a set of guidelines, standards, and protocols that stakeholders track and utilize to assess the sustainability of financial instruments, investments, and institutions. They contribute to the promotion of sustainable finance and ensure the alignment of the financial system with sustainable development goals. Moreover, the frameworks provide benchmarks for assessing and mitigating ESG-related risks.

The choice of a framework over another relies on multiple factors, such as the sector's requirements and characteristics, the financial institution's strategy, and the ESG report's audience (Cockrum et al., 2022). To this day, there have been multiple initiatives to establish sustainable finance frameworks. Some of the existing frameworks were developed by the

UNEP FI, such as Principles for Responsible Banking (PRB) and Principles for Responsible Investment (PRI), or by the Financial Stability Board (FSB) for the case of the Task Force on Climate-related Financial Disclosures (TCFD). Other frameworks are the fruit of academic studies, in particular, the “New Framework of Sustainable Finance” developed by Schoenmaker in 2019.

3.2.1. A new framework for sustainable finance

The financial system functions are, according to Levine (2005), to produce information ex-ante about possible investments and allocate capital, monitor investments and exert corporate governance after providing finance, facilitate the trading, diversification, and management of risk, mobilize and pool savings, and finally ease the exchange of goods and services. The acceleration of the transition towards a more sustainable system depends in a manner of speaking on the decisions made by the financial actors. For example, bankers implement lending strategies that specify the eligible projects and sectors. Similarly, investors opt for some assets and not for others. Therefore, they have enough governance power to lead investments toward more sustainable projects. Involving finance in sustainable development will help in a better assessment of the inherent risks and uncertainties related to environmental changes.

According to Schoenmaker (2019), the sustainable finance model is about moving and transitioning from a shareholder's value to a global approach which is the stakeholder's value, that is concerned equally with the planet, the people, and the profit. The stakeholder's value is strongly related to the common good, which doesn't separate public and private goods, as long as they're all goods that serve the Planet and People first. Hence, this model puts environmental and societal challenges first and above any economic concerns. The model expects sustainable finance to be a three-step process, detailed as follows:

3.2.1.1. SF 1.0: Profit maximization & avoiding sin stocks

Sin stocks or sin companies are stocks or companies having high negative impacts on the environment and/or society. Taking a step towards sustainable finance obliges financial institutions (FIs) to divest or avoid investing in sin stocks, as a first step into sustainability. An exclusion or divestment strategy may have limited effects, but still, be effective. Divestment will block sin companies from raising capital since it'll become more expensive. Besides, an exclusion strategy led by FIs will limit investments in sin sectors and will higher the standards so that the sector becomes investable. The shareholder's foundation is to maximize profit. However, including sustainability aspects in the model is more likely to create some positive side effects for the planet and the people.

3.2.1.2. SF 2.0: Internalization of externalities to avoid the risk

In the medium term, FIs embody the negative externalities in their decision-making process. It helps them reduce the risk of the non-viability of their investments, as well as re-establish the overall trust (that promotes their reputation). Internalization of negative externalities might be enforced by the force of the regulatory texts along with societal claiming. At this stage, the objective is to reach the stakeholder value, where the three factors are equally weighted. Consequently, the optimization process is improved by the financial worth of the social and environmental aspects. Improving the total value can lead to detrimental results, such as the challenge of pricing due to the inherent uncertainty, in addition to stakeholders' participation in the process. For the avoidance of these possible side effects, some conditions must be verified over the optimization process. It's mainly about maintaining the initial social-environmental value. SF 2.0 is, in short, an extended stakeholder approach, that involves the indirect stakeholders in the total value optimization process, alongside the direct stakeholders.

3.2.1.3. SF 3.0: Contributing to sustainable development, while observing financial viability

In SF 3.0, FIs are more selective and invest exclusively in socially and environmentally sustainable projects and companies. Thus, at this level of sustainable finance, finance is a booster of the sustainable development plan. On the way to social and environmentally sustainable development, financial and economic viability is a condition to keep on track. Financial shortfalls should be prevented to maintain sustainable investment and lending. The financial viability or minimum financial value depends on a fair financial return. It can be risk-adjusted market-rate returns, below-market-rate returns, or capital preservation returns. In this context, socially responsible investors are highly willing to let go of financial returns as a reward for getting social and environmental returns. Yet, to what extent impact investing will influence financial outcomes? Several studies have shown a positive correlation between the integration of ESG factors in decision-making and higher financial performance, or at least a negative correlation didn't exist. Aside from superior financial performance, sustainability helps in preserving the financial stability of banks during the crisis period. It fosters organizational resilience, in the long term, while maintaining the same level of financial returns in the short term. SF 3.0 is additionally underpinned by the legitimacy theory. Companies and FIs only operate within an area of norms and standards that are exclusively defined by society. Instead of reducing their social and environmental impacts (inside-out), FIs and companies should put

their efforts into responding to and solving social & environmental challenges & problems (outside-in).

The first two stages aim to avoid reputation risk because the public demands a minimum level of corporate social responsibility, and externalities are expected to be priced in at some stage. The third stage aims to grasp the opportunities of realizing social-environmental impact through investment and lending (Schoenmaker, 2019). According to the same author, most corporations are still at the SF 1.0 level where financial profit matters the most. The challenge is to push FIs and companies to move from SF 1.0 to SF 3.0 to maximize the social-environmental value. In the situation of confrontation of the stakeholders' model against the shareholders' model, the first one must be protected, to stop the bias, and stop any financial dominance over social-environmental considerations.

3.2.2. Principles for Responsible Banking

The Principles for Responsible Banking² are a set of guidelines dedicated to the banking sector to harmonize their strategies, products/services, and practices (lending, investment, and decision-making) with the SDGs, the Paris Climate Agreement (PCA), and any other relevant local or regional frameworks. The PRB aim to “accelerate a positive global transition for people and the planet” (UNEP FI, 2022). For that purpose, The Principles encourage banks to commit to their stakeholders (customers, governments, and communities) by comprehending their demands and aspirations and working together to formulate solutions that tackle shared difficulties and challenges. Moreover, the Principles address complex topics and areas of reflection that weren't considered by finance, such as biodiversity loss, resource efficiency, and social impact. The principles are built around six core areas (*Table 9*). The first principle is about strategic alignment, which means that the bank's strategy must be consistent with the SDGs and the PCA. Consequently, the bank will make profits and support a sustainable future at once. Second, a signatory bank commits to reducing negative impacts while increasing positive ones and tracking impact targets. The third principle creates a collaborative environment between the signatory bank and its customers to achieve the SDGs. Through the fourth principle, the signatory bank undertakes to involve stakeholders in achieving society's objectives. To do that, effective governance procedures, as well as effective management

² The principles were launched in September 2018 and created by 30 banks from all over the world. There are 300 signatory banks to date that are using the PRB as a guiding framework. Becoming a signatory bank requires its commitment to implement the principles within a four-year deadline with initial reporting 18 months from signing, and every year thereafter. The membership is a three-step process: signing the PRB by the bank's CEO, then becoming a UNEP FI member, and finally publicly announcing the membership via a press release.

systems, and sustainability culture, are key factors in reaching SDGs (the fifth principle). Finally, transparency is required from a signatory bank as it is accountable to stakeholders (employees, investors, customers, communities, etc.). In this context, the latter publishes reporting periodically and is reviewed regularly regarding its sustainability performance.

Table 9 Principles for Responsible Banking

Principle 1 Alignment	Principle 2 Impact & Target Setting	Principle 3 Clients & Customers
We will align our business strategy to be consistent with and contribute to individuals' needs and society's goals, as expressed in the Sustainable Development Goals, the Paris Climate Agreement and relevant national and regional frameworks.	We will continuously increase our positive impacts while reducing the negative impacts on, and managing the risks to, people and environment resulting from our activities, products and services. To this end, we will set and publish targets where we can have the most significant impacts.	We will work responsibly with our clients and our customers to encourage sustainable practices and enable economic activities that create shared prosperity for current and future generations.
Principle 4 Stakeholders	Principle 5 Governance & Culture	Principle 6 Transparency & Accountability
We will proactively and responsibly consult, engage and partner with relevant stakeholders to achieve society's goals.	We will implement our commitment to these Principles through effective governance and a culture of responsible banking	We will periodically review our individual and collective implementation of these Principles and be transparent about and accountable for our positive and negative impacts and our contribution to society's goals.

Source: adapted from UNEP FI (2019)

3.2.3. Principles for Responsible Investment

The United Nations Principles for Responsible Investment³ (UNEP FI & UN GC, 2021) are six principles formulating a standard for responsible investment. Unlike the PRB which are dedicated to banks in particular, and FIs in general, the PRI are dedicated to investors. The signatories of the PRI commit to the following:

- Principle 1: Incorporate ESG issues into investment analysis and decision-making processes.
- Principle 2: Practice active ownership while taking ESG issues into account.
- Principle 3: Require ESG disclosure from the investees.
- Principle 4: Promote the Principles within the investment industry.
- Principle 5: Implement the Principles effectively.
- Principle 6: Report about activities and progress.

The PRI provided a list of feasible actions to facilitate the implementation of the Principles above (*see Table 10 for examples*). Each principle can be established via one or more actions depending on the organization, its sector, its strategy, its characteristics..., etc.

Table 10 Examples of possible actions related to the PRI

Principle 1	Principle 2	Principle 3
<ul style="list-style-type: none"> • Address ESG issues in investment policy statements. • Assess the capabilities of internal investment managers to incorporate ESG issues. • Advocate ESG training for investment professionals. 	<ul style="list-style-type: none"> • Develop and disclose an active ownership policy consistent with the Principles. • Develop an engagement capability (either directly or through outsourcing). • Engage with companies on ESG issues. 	<ul style="list-style-type: none"> • Ask for standardised reporting on ESG issues (using tools such as the Global Reporting Initiative). • Ask for ESG issues to be integrated within annual financial reports. • Support shareholder initiatives and resolutions

³ The UN PRI was founded in 2005 in response to the then UN Secretary-General Kofi Annan to reflect and address investment challenges originating from ESG issues. As of April 2021, there were nearly 3900 signatories with 120 trillion US dollars worth of assets under management.

		promoting ESG disclosure.
Principle 4 <ul style="list-style-type: none"> • Include Principles-related requirements in requests for proposals (RFPs). • Communicate ESG expectations to investment service providers. • Revisit relationships with service providers that fail to meet ESG expectations. 	Principle 5 <ul style="list-style-type: none"> • Support/participate in networks and information platforms to share tools, pool resources, and make use of investor reporting as a source of learning. • Collectively address relevant emerging issues. • Develop or support appropriate collaborative initiatives. 	Principle 6 <ul style="list-style-type: none"> • Disclose how ESG issues are integrated within investment practices. • Communicate with beneficiaries about ESG issues and the Principles. • Report on progress and/or achievements relating to the Principles using a comply-or-explain approach.

Source: adapted from UNEP FI & UN GC (2021)

3.2.4. Task Force on Climate-related Financial Disclosures

The Financial Stability Board (FSB) created the TCDF in 2005 to price and assess climate-related risks and opportunities, by providing significant climate data to investors, lenders, and insurance underwriters (TCFD, 2020). The TCFD released its first recommendations in 2017, followed by yearly status reports to evaluate and measure the progress made by its members and highlight potential areas of improvement.

The recommendations approach four areas of concern advising for each one a set of disclosures (TCFD, 2022):

- Governance: reporting the governance actions about climate-related risks and opportunities including risk management.
- Strategy: point out the impact of identified climate-related risks and opportunities on the organization and show the results of the climate-related stress tests (for example, the 2°C scenario).

- Risk management: describe the risk management process of climate-related risks (identification and assessment mainly) and the way they're embedded in the global risk management system.
- Metrics and targets: outline the data and targets used to track and control climate-related risks and opportunities.

For a better comprehension of climate change's impact on organizations, TCFD users should respect 7 principles for useful disclosure:

- Data relevance,
- Preciseness and completeness,
- Clarity, balance, and intelligibility,
- Consistency,
- Comparability,
- Reliability, verifiability, and objectivity,
- and Disclosure timeliness.

Starting from November 2023, the FSB delegated the mission of monitoring the progress of companies' climate-related disclosures to the IFRS Foundation (TCFD, 2023).

The table below presents a summary of the aforementioned frameworks:

Table 11 PRI vs PRB vs TCFD Summary

Framework	PRB	PRI	TCFD
Purpose	"To transform the banking industry to enable it to play a leading role in achieving society's goals"	"Enable a sustainable global financial system"	"Help organizations meet existing disclosure obligations more effectively"
Vision	"A responsible banking industry that is an integral part of the society of the 21st century because it serves and contributes to an inclusive society that uses its natural resources sustainably"	"An economically efficient, sustainable global financial system is a necessity for long-term value creation."	"Improved and increased reporting of climate-related financial information."
Mission	"We will take a leadership role and use our products, services, and relationships to	"The PRI will work to achieve this sustainable global financial system by encouraging adoption	The TCFD was established to "help identify the information needed by investors,

	support and accelerate the fundamental changes in our economies and lifestyles necessary to achieve shared prosperity for both current and future generations”	of the Principles and collaboration on their implementation; by fostering good governance, integrity, and accountability; and by addressing obstacles to a sustainable financial system that lie within market practices, structures, and regulation.”	lenders, and insurance underwriters to appropriately assess and price climate-related risks and opportunities”
Principles	<ul style="list-style-type: none"> ▪ Alignment to the SDGs ▪ Impact & target setting ▪ Clients & customers ▪ Stakeholders ▪ Governance & culture ▪ Transparency & accountability 	<ul style="list-style-type: none"> ▪ Investment analysis and decision-making process ▪ Ownership policies and practices ▪ ESG disclosure ▪ Acceptance and implementation in the investment industry ▪ Effective implementation of the Principles ▪ Activities and progress reporting 	<ul style="list-style-type: none"> ▪ Governance ▪ Strategy ▪ Risk management ▪ Metrics and targets

Source: Authors' creation

Considering the current context, the implementation of sustainable finance isn't uncomplicated, as there are many challenges that all organizations will face in this course, which we'll examine in the next section.

3.3. Challenges to sustainable finance

The shift towards sustainable finance is motivated by several arguments. First, finance has a special role to play in environmental sustainability (Schoenmaker, 2019) and climate change mitigation (Ryszawska, 2016). Additionally, the current generation is concerned with ensuring sustainable wealth for present and future generations (Fatemi & Fooladi, 2013). However,

sustainable finance isn't effortless to operate. In the following, we'll discuss sustainability challenges and obstacles to sustainable finance.

3.3.1. Challenges of and obstacles to sustainable finance

Relating to the literature, these challenges and obstacles can be categorized into three major categories: social, environmental, and governance-related.

3.3.1.1. Social challenges and obstacles

Historically, mass production resulted in the violation of social foundations, first in the developed world, and the developing world later. According to Ross (2019), social foundations should permit human beings to be well, productive, and empowered. In contrast, sustainable development adds the social foundations to the planetary boundaries to ensure the same level of resources for both current and future generations without destabilising the Earth system. The social foundations concern the following aspects of human life: food, health, education, income and decent work, water and sanitation, energy, networks, housing, gender equality, social equity, political voice, peace, and justice (Schoenmaker, 2019).

Population growth and consumption habits remain two noteworthy problems to face in sustainability. Faced with a growing population - 9.8 billion by 2050 (United Nations, 2017) -, the main problem that future generations will encounter is food shortage. Although technologies have been developed to deal with it (nitrogen fertilisers), they threaten the ecosystem and biodiversity and have remarkable repercussions. In addition, consumption challenges are to be considered by sustainability, to enable both current and future generations to enjoy the available resources. Managing food waste resulting from consumption habits can be more challenging than other sustainability problems since it's linked to water consumption issues (Fatemi & Fooladi, 2013).

Yucel et al. (2023) and Aboagye et al. (2021) stressed the lack of sustainable finance literacy as a challenge facing us to move forward to the SDGs, as well as raising awareness of the different stakeholders. Along the same line, Halimatussadiyah et al., (2018) highlighted that existing human resources lack the needed skills and competencies to engage in sustainable finance practices.

3.3.1.2. Environmental challenges and obstacles

The main objective is to maintain the liveability of Earth not only for the current generation but also for future ones (Pop & Borza, 2015). Traditional business models are based on a linear production and consumption system that is launched by the extraction of raw materials, then the production and consumption of goods, and finally the disposal of waste. These business

models assume that natural resources are available, unlimited, and cheap (Aracil & Sancak, 2024). Knowing that non-renewable resources are continuously stressed, and potentially renewable resources are losing progressively their regenerative capacity, the risk is getting higher and the planetary boundaries are being crossed, which already destabilized the Earth system (Schoenmaker, 2019). Consumption challenges are also considered by sustainability, to enable both current and future generations to enjoy the available resources. Managing food waste resulting from consumption habits can be more challenging than other sustainability problems since it's linked to water consumption issues. According to the UN, people who will face water scarcity will be 3 billion in 2025 instead of 700 million in 2013. Consequently, diseases will be mostly water-related, and wars will be water-supply-motivated (Fatemi & Fooladi, 2013).

3.3.1.3. Governance challenges and obstacles

The devoted efforts to sustainable finance may not be enough. A positive correlation between sustainable investment and sustainable development does not automatically exist. Here we should avoid the fallacy of composition: companies can internalize their negative impacts on society and the environment, still, planetary boundaries are crossed, and carbon emissions get higher and higher. Should be also addressed the boundary problem. The side effect of divesting sin stocks/assets/companies is that some investors invest in them when they're easily affordable (Schoenmaker, 2019).

In addition to the lack of collective and private effort, short-termism is an issue to address in sustainable finance. The investment costs are borne in the present, yet the gains are saved for the future. While in traditional finance, the investment results are concretely visible in the short term. It's also a matter of corporate governance, that facilitates the shift to sustainable practices. The issue is that the environmental risks aren't entirely priced, due to the lack of investments. Short-termism is caused by multiple factors, namely: quarterly financial reporting, variable pay systems (especially among executives), quarterly performance benchmarking, and short political horizon (Schoenmaker, 2019). About reporting, one must recall the essence of mandatory ESG reporting which is to make firms accountable for their decisions' repercussions on society and the environment. Yet, when firm executives aren't fully convinced of sustainable finance, ESG reporting becomes nothing more than a paperwork process (that is counter-sustainable) (Ozili, 2021).

Furthermore, the aversion to change remains a critical obstacle to sustainable finance. It is an inherently human problem. Change provokes anxiety and discomfort. That's why, while

introducing innovative sustainable projects, changes must be launched in a smooth way that sets assurance and comfort and shows the long-term benefits at once. While offering to change, alternative frameworks should be offered too. These frameworks can be developed by education institutions, international banks, and investment promotion agencies (Ozili, 2021; Schoenmaker, 2019).

While regulation can be seen as a motive to cope with sustainability, it is not systematically the case. The stick-and-carrot approach isn't effective in making FIs adhere to the sustainable finance agenda. Since the financial sector is already "heavily regulated", FIs will be burdened to commit to this agenda. In consequence, they'll choose either to transfer the compliance cost to their clients or to quit sustainability and find other alternatives. Moreover, the top-down approach to setting up sustainable finance is certainly advantageous because it supports sustainable activities via policies and oversights. However, under this approach, transaction costs are more likely to increase, which consequently influences the price of green finance products (Ozili, 2021).

3.3.2. Possible ways to tackle the challenges

Facing sustainability challenges and obstacles in the current context is itself challenging. The three ESG factors are evenly substantial to the achievement of the SDGs. First, it's essential to prepare the required infrastructure (public and private) for sustainable finance, which confirms that the financial system is inherently a part of a global social and environmental construct. The scalability of ESG investing and innovations relies mainly on transparency that occurs in the form of standardized accounting and reporting. Significant efforts were made in this context to normalize methods of ESG reporting for public and private companies, as well as to develop green bonds' standardization, and to elaborate valuation and reporting of natural and human capital. The infrastructure includes also public sector regulation, subsidies, taxes, and restrictions" that are referred to, in a traditional finance context, as "interventions". Infrastructure remains a determinant for investors to trust market stability and develop asset classes and financial innovations. Consequently, prices, returns, and liquidity will emerge to strengthen sustainable finance (Fullwiler, 2015).

To mitigate the environmental and social risks, actions including sustainable production and consumption, use of renewable energy, reuse of materials, and land restoration might re-establish the stability of the Earth system (Schoenmaker, 2019).

Concerning governance, the lack of private effort or coalitions can be covered in coalitions, ESG activism, and impact investing (Liang & Renneboog, 2020; Schoenmaker, 2019).

Investors are lenders who are powerful enough to provide the financial resources needed to set up businesses. Similarly, they have the power to withdraw these resources. For this specific reason, investors and lenders can be part of the lead toward a sustainable and inclusive economy. Sustainable development implies the management of the common good (limited resources). To govern sustainably and equitably, building coalitions can improve the process. In a coalition, membership is optional, but following its rules is mandatory (Schoenmaker, 2019).

Regarding ESG activism, the results of efforts are beyond marketing and reputational purposes. Per contra, it's profitable to the activist and boosts ESG practices and corporate sales, as well as operating performance and corporate governance. It's noteworthy that the effectiveness of ESG activism varies across countries, depending on legal rules, corporate orientations, and the adoption of ESG policies (Renneboog & Liang, 2020).

With the same backdrop, impact investing is led by private equity investors, to make a financial profit, along with a positive social and environmental impact. Measuring impact investing is the most critical part of this investment. In this context, Addy et al. (2019) have suggested a framework called "impact multiple of money" (IMM). The framework assesses the relevance and scale, identifies target social or environmental outcomes, estimates the economic value of those outcomes to society, adjusts for risks, estimates the terminal value, and calculates social returns on every dollar spent.

Knowing that the SF sector is still in its early stage, a "light-touch" regulation is needed to encourage the financial agents to contribute actively. Strict regulation can be implemented later when this sector has grown enough. Similarly, a bottom-up approach is more adapted to the needs of SF agents, as it allows them to build the framework in which they want to operate case-by-case analysis, to freely define investments' time horizons (short-term vs long-term) and expected returns. In this context, the government's mission will be to monitor compliance with existing regulations (Ozili, 2021).

Finally, when ESG reporting is not mandatory, companies will possibly learn further about SF and how it's advantageous to their profitability and their value in general (Ozili, 2021).

Conclusion

Sustainable finance has been defined in general as the integration of ESG considerations in investment decisions for long-term value creation. To date, the concept of sustainable finance is used as an alternative for responsible investment and ESG investment for example. Like traditional finance, sustainable finance has its instruments too. They can be specific (like green bonds, blue bonds, and social bonds) or general (like sustainability bonds). Similarly, sustainable finance offers investment strategies to investors depending on their preferences and investment criteria. Investment strategies are mainly based on screening. Along with all the efforts made to define and draw the scope of sustainable finance, many framework initiatives emerged to guide and advise on the implementation of sustainable finance. The most notable ones are those developed by the UN (PRI and PRB), and the FSB (TCFD). Other initiatives rose in the academic place, such as the “New framework” of Schoenmaker, which suggests a three-level sustainable finance. However, sustainable finance isn’t uncomplicated to implement. Many challenges and obstacles are ahead that all stakeholders must consider. These challenges are social, environmental and governance related.

However, the current challenge in the implementation of sustainable finance is not only related to institutions but also to individuals. In this context, more research is needed in the Moroccan setting to assess the level of awareness individuals have regarding this context.

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