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Giuliana Birindelli; Michelangelo Bruno; Alberto Citterio; Umberto Fuso; Guido Luciano Genero; Andrea Magurano

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Giuliana Birindelli (University of Chieti-Pescara); Michelangelo Bruno (Sapienza University); Alberto Citterio (University of Insubria); Umberto Fuso (Oliwer Wyman); Guido Luciano Genero (Intesa Sanpaolo); Andrea Magurano (Oliver Wyman) [1]

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Abstract

The transition towards a sustainable economy is currently one of the most pressing issues for managers, stakeholders and policy makers. For the banking sector, several regulatory initiatives have been promoted by European Supervisors and Regulators, which have recognized the pivotal role of financial sector in enhancing sustainable economic development and the risks to which financial intermediaries are exposed during this transition.

The main purpose of this article is to outline the key elements that are crucial for a proper integration of sustainability and ESG considerations into banks' strategic choices, business processes and risk management framework. In particular, an analysis of the main practices, regulatory requirements and outstanding issues will be performed in order to provide an overview of the main challenges that banks need to address in order to successfully incorporate ESG risks into their business processes and risk management frameworks. In addition, given the ongoing heterogeneity in the application of such regulatory expectations, the article provides an update on the state-of-the-art by reviewing the main international research and studies on this topic and by presenting the findings of some surveys carried out by the ECB and Aifirm (Associazione italiana financial risk managers) on a sample of European and Italian banks respectively.

1. Introduction

Environmental, Social and Governance (ESG) is currently one of the main focus areas for policy makers worldwide.

In December 2016, the European Commission formed a high-level expert group (HLEG) to develop an overarching and detailed EU sustainable finance strategy. On 31 January 2018, the HLEG released its final report[2]. This report presented a holistic view of European sustainable finance and established two financial system imperatives. The first is to increase finance's commitment to long-term, inclusive development. The second goal is to improve financial stability by fostering the awareness about environmental, social and governance (ESG) issues while making investment decisions. The United Nations-backed Principles for Responsible Investment Directive 2016/234 incorporates ESG considerations into the EU legislative framework. The increased attention by policy makers toward this topic has also been followed by an improved appetite of financial investors for ESG funds. According to the ECB's (2020a) Financial Stability Review, the Asset Under Management (AUM) of these funds has increased by 170%, soaring from 500 billion USD in 2015 to more than 1.3 trillion USD in 2020.

Similarly, a number of initiatives have been taken by banking regulators and supervisors worldwide with the aim of increasing the awareness of banks on this matter. All the relevant areas of the governance framework of banks have been affected by the initiatives launched by the regulators and supervisors. More specifically, both the European Banking Authority and the European Central Bank requested the Board of Directors and the Senior Management of banks to properly reflect the ESG considerations into the strategy and the internal governance processes of the credit institutions. As shown in the ECB (2021a) report, the 112 most significant credit institutions supervised by the SSM, are still not fully aligned with the supervisory expectations on this matter, nevertheless, improvements have been done during the past two years. Furthermore, as shown in a survey carried out in 2021 by the Aifirm(2021) on a sample of 31 Italian banks also the less significant institutions are taking important steps in incorporating ESG into their business processes.

The EBA (2021b) also detailed some specific expectations in relation to the control functions of the credit institutions. It is in fact expected that the risk management units will be able to properly gauge the ESG risk exposures of banks. In this respect, it is also relevant to mention that several pilot exercises on climate stress test have been launched recently by several regulators and supervisors worldwide[3]. This will prompt credit institutions to integrate this new source of risk into their stress testing frameworks.

Detailed disclosure requirements have also been defined to enhance the transparency and the consistency of the information reported by banks to the market.

The literature on this topic has substantially increased in the last decade, especially after the 2008-2009 financial crisis. In particular, non-financial performance and corporate social performance have progressively increased their relevance among firms and their stakeholders (e.g. Gramlich and Finster, 2013; Brooks and Oikonomou, 2018) as well as media and regulators (Al-Hadi et al., 2019; Sassen et al., 2016). The behaviour of banks managers – identified in the literature as one of the underlying causes of the global crisis (Branco and Rodrigues, 2006; Miralles-Quirós et al., 2019) - has indeed highlighted the necessity to introduce new business management tools to regain and reinforce credibility toward stakeholders (Brogi and Lagasio, 2019). Civil society has progressively expressed the need for a "moral capitalism" (Nizam et al., 2019) that prompted managers to shift from the maximization of shareholders' wealth to the maximization of stakeholders' value. This theory has been historically made explicit by Freeman (1984), which argued that a firm should consider not only the interests of its shareholders but also those of the plurality of actors involved in its activities (employees, customers, local communities, etc.). Several studies have indeed explicit the need to integrate aspects

[1] This article expresses the views of its authors, not the position or views of other institutions

[2] European Commission. *Financing a Sustainable Economy. Final Report by the High-Level Expert Group on Sustainable Finance*; European Commission: Brussels, Belgium, 2018; pp. 6–8.

[3] The authorities that have launched pilot climate stress test exercises in the last years are: the European Central Bank (ECB), the European Banking Authority (EBA), De Nederlandsche Bank (DNB), Banque de France (BdF), Bank of England (BoE), Australian Prudential Regulation Authority (APRA), New York Federal Reserve and Bank of Canada.

related to social responsibility issues into strategic planning processes and management systems of companies in order to properly consider the expectations of all stakeholders (Post et al., 2002; Porter and Kramer, 2011).

Notwithstanding the efforts made so far still much needs to be done. On one side banks will need to collect more data on ESG risks to properly integrate them into their risk management frameworks. On the other side regulators, policy makers and supervisors will have to provide more clear guidelines to avoid inconsistencies and ensure that credit institutions could be properly assessed by the market participants. The aim of this work is to identify the key challenges faced by the credit institutions in integrating ESG risks in their governance and risk management frameworks as well as providing useful recommendations on how to address these challenges.

This article is presented as follows: paragraph 2 will discuss the role of the Board of Directors and the Senior Management in the implementation of a comprehensive strategy for incorporating ESG factors in banks' business processes; paragraph 3 will be focused on the role of the risk management function identifying the main challenges for the integration of the ESG risks in the risk management frameworks of banks; paragraph 4 will provide some examples of banks' business processes affected by the introduction of the ESG risks and, finally, paragraph 5 will present the results of some surveys carried out by different institutions/associations with the aim of reviewing banks' practices for the inclusion of ESG risks in their operational frameworks.

2. Specificities of the ESG risks and the role of the Board and the Senior Management in the definition of a comprehensive strategy for ESG factors

The United Nations Environment Programme (UNEP) and the Principles for Responsible Investment (PRI) define ESG as the following: (i) Environmental (E) issues are related to the natural environment and natural systems; (ii) Social (S) issues refer to the rights of people and communities; and (iii) Governance (G) issues are linked to the corporate governance of firms. Given the heterogeneity and complexity that characterize ESG risks (i.e. their potential effects will materialise over a medium to long time horizon and will have an impact on most of the activities performed by a bank), credit institutions must promptly implement a number of actions aimed at integrating these sources of risks in their operational processes.

Against this background, the Board[4] of a credit institution needs to adequately plan all the necessary steps to be taken to review the management and control systems of the institution to duly integrate the ESG considerations into the corporate strategy and its operational processes.

When dealing with ESG risks, the first activity that the Board should undertake is a thorough analysis of the areas potentially affected by the introduction of the ESG considerations with the aim of identifying the necessary organisational and strategic changes to be undertaken. The Board should define a clear execution strategy by deciding whether to rely on external consultants able to offer benchmarking solutions or by setting up an internal working group. While performing this activity the Board should not only be focused on discussing and evaluating proposals, but it should also stimulate a conducive working environment. Among the other relevant Board's responsibilities are the assessment of potential organisational and regulatory interventions, the potential changes to the risk appetite framework (RAF) and the potential changes to the ICAAP and ILAAP of the institution.

With regards to the competencies, the EBA (2021b) in its report highlights the need for the Board of financial institutions to have adequate skills and experience on ESG in order to fully understand the potential impact of ESG factors and related ESG risks on the business model; in the same report is also emphasised the need to organise induction sessions aimed at providing all Directors with adequate knowledge of ESG risks to be able to make informed decisions and also to efficiently perform their role.

Moreover, with specific reference to climate risk, the ECB (2020b) defines four expectations on the duties of the Board of the banks falling under its remit. It requires the Board:

- to explicitly assign roles and responsibilities to its members and/or committees in relation to climate and environmental risks;
- to consider the knowledge, skills and experience of its members in the field of climate and environmental risks when assessing their suitability;
- to adequately consider climate and environmental risks in the overall business strategy and risk management systems;
- to conduct effective oversight of the institution's exposures to climate and environmental risks.

In defining and composing the internal Board-level structures responsible for overseeing ESG risks, the EBA guidelines on Internal governance require that the roles and responsibilities should be explicitly defined and assigned either to pre-existing structures or newly created bodies. A KPMG (2021) survey on climate risk on a sample of major global banks found that more than half of the respondents (56%) reported that they created new roles or new committees for sustainability and climate change in 2020[5]. These newly created ESG committees have responsibilities such as the oversight of the inclusion of ESG and climate risks in the various business processes, the adequate assessment of ESG aspects in commercial relations, the introduction of new ESG compliant products (e.g. insurance and asset management products).

It is worth noticing that the existing literature on the topic has found evidence of a positive correlation between the presence of specialised committees with enhanced ESG disclosure and performance by banks (Aifirm, 2021).

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[4] Article 3 of the Directive 2013/36/EU states the following: "'management body' means an institution's body or bodies, which are appointed in accordance with national law, which are empowered to set the institution's strategy, objectives and overall direction, and which oversee and monitor management decision-making, and include the persons who effectively direct the business of the institution". And also: "'senior management' means those natural persons who exercise executive functions within an institution and who are responsible, and accountable to the management body, for the day-to-day management of the institution".

[5] Examples are: Global Head of Climate Change, Global Head of Sustainability or Sustainability Officer, Global Head of Climate Risk, Head of Policy and Corporate Responsibility, Board Climate Committee, Climate Risk Management Forum, Investment Committee for responsible investing.

Also the Senior Management plays a prominent role in the introduction of the ESG risks into the processes and strategies of the institution. The CEO has an important role as he/she is the head of the company while being also in charge of liaising with the Board of Directors. In the opinion of the writers, it would be desirable the appointment of a top manager (Chief Sustainability Officer) responsible for supervising the implementation of the ESG considerations into the business processes of the institution. Equally important is the assignment to an existing management committee of the tasks and powers to build and implement the various initiatives included in the ESG strategy. The EBA (2021b) specifies in its report that the banks should involve their management (and particularly the control functions) at an early stage of the ESG risks implementation process. In addition to the risk management function, the EBA also assigns a key role to the compliance function, which is tasked with verifying the compliance of internal policies with ESG regulatory requirements. Finally, in the context of a broad involvement of the management, it is necessary to clearly define the allocation of responsibilities so that they are distinct, consistent, enforceable and properly documented.

3. What is the role of Risk Management in the implementation of the ESG principles in the governance processes of the banks?

When dealing with ESG risks, the risk management team must consider new perspectives, for example, not only the impact that theserisks have on the organization, but also the potential impact to which the bank is exposing its stakeholders and the environment due to its business activities.

The EBA's report (2021b) underlines the need for the institution's risk management team to be able to capture the risks associated with ESG factors when they account for them in their risk appetite, thus applying their risk management frameworks with appropriate and accurate risk metrics and limits. It is of the utmost importance that the risk management team is able to incorporate ESG risks into the risk appetite framework as this would allow the institution to embed the ESG aspects in all the relevant processes of the risk management framework and would lead it to regularly assess its counterparties' risk profiles also from this perspective.

With reference to the relevant risk limits, the risk management team might need to review or extend them to include new types of limits that are relevant from the ESG perspective (e.g. sectors excluded from eligibility based on the institution's business strategy). As an example, having regard to physical risks (in the context of the climate risk assessment), the risk management team could decide to set up new limits aimed at taking into account the potential physical impact of climatic events such as floods and droughts on land, real estate, infrastructure projects and business activities in their counterparties' production cycle. Similarly, risk management policies could envisage limits on financing projects, activities or, where they can be identified, counterparties that significantly harm environmental or social objectives, in line with the institution's business strategy. Against this background it is important to point out that the introduction of new risk limits could be mainly done with regards to the climate/environmental risk. With reference to the "social" considerations, credit institutions may decide to avoid lending money/investing to firms operating in specific sectors to avoid ethical and reputational risks whereas they may take into account the "governance" considerations (by screening the governance arrangements of its counterparties) when taking lending decisions even if not directly including it into their RAF.

Furthermore, as the influence of ESG risks can be expected to increase over time, the risk management team should be in a position to assess whether ESG risks are becoming material financial risk drivers and, where appropriate, use all the available risk monitoring and mitigating tools for the relevant exposures.

Finally, considering the latest regulatory trends and the expectations set by some Supervisory Authorities (see ECB, 2020b, but also DNB, 2020 and ACPR, 2021) the risk management team, having regards to the climate-related and environmental risks to which the institution is exposed, should evaluate the appropriateness of the internal stress testing framework with a view to incorporating primarily the climate and environmental risks (as noted above, the other considerations, notably social and governance risks, cannot easily be included as risk limits in the risk management framework of the institutions) into their baseline and adverse scenarios (see ECB 2021b).

3.1. The integration of climate risk in the risk management framework

The integration of the recommendations provided by the Task Force on Climate Related Disclosure (2017) within the Risk Appetite Framework of banks has represented the first effort to link climate change issues with banks' attitude toward risk. With regards to this objective, the Task Force in its report has indeed developed a framework with four widely adoptable recommendations on climate-related financial disclosures that "would enable stakeholders to understand better the concentrations of carbon-related assets in the financial sector and the financial system's exposures to climate-related risks". In particular, the TFCD provides a set of recommendation - applicabile to organizations across sectors and juridictions - which refers to four thematic areas representative of the core elements of how organizations operate, i.e. governance, strategy, risk management, and metrics and targets.

With specific reference to the risk management disclosure, the TCFD defined three specific recommendations in order to support investors and stakeholders in evaluating and understanding how climate-related risks are identified, assessed and managed. The Risk Management should:

- Describe the organization's processes for identifying and assessing climate-related risks. In general, the recommendation emphasizes the relevance of transparency and clarity in the description of the underlying processes and highlights the importance to assess the relevance of climate-related risks in relation to other risks. This is particularly suitable for financial institutions, which have to evaluate the exposure to climate risk in the context of their typical financial risks (e.g., credit risk, market risk, liquidity risk, operational risk).
- Describe the organization's processes for managing climate-related risks, including the process behind the decisions to mitigate, transfer, accept or control those risks.

- Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.

Briefly put, an accurate and timely disclosure of financial implications of climate change is essential to promote a more informed understanding of climate risks and opportunities by investors and stakeholders and to ensure that appropriate controls govern the production of the required information. In addition, an accurate disclosure can result in more informed capital allocations in line with the mitigation objectives of climate-related risks.

Starting from the contribution of the TCFD, Central banks and supervisors are now working on these issues in order to introduce and regulate new risk management and monitoring practices. The EBA (2019) action plan and the ECB (2020b) guide have indeed introduced new recommendations to stimulate the internalization of policies and models for the measurement and management of climate-related risk, which must be carried out in line with strategies, policies, procedures, and, in particular, the risk appetite framework (RAF). Sustainability issues will therefore have to enter the strategic and operational agendas of banking institutions on a permanent basis. The internalization of climate-related risks in the risk appetite framework is thus fundamental for the full integration of such issues in the strategic decision process of financial institutions and for the accurate evaluation of their impact on capital adequacy.

Introduced by the FSB in 2013, the RAF is indeed a mandatory and crucial tool for the definition and the execution of the bank's business strategy. The institution's risk appetite specifies the scope and relevance of the risks to which the institution is exposed. This document, which is under the responsibility of the risk management in cooperation with the Chief Financial Officer (CFO), shows the overall approach through which risk appetite is established, communicated, and monitored. In particular, the RAF specifies the maximum level that can be assumed, the risk objectives, the tolerance thresholds as well as the operating limits for each risk category, which have to be in line with the bank's risk capacity and its business model (EBA, 2017). Banks must therefore guarantee a strict coherence between the RAF and the strategic plan, the ICAAP process, the business organization, and the structure of the internal control system.

The first step of the construction of the RAF consists in the identification of elements and metrics that allow to identify and measure the relevant material risks and to establish internal limits, which have to be consistent with the risk appetite and commensurate with financial strength, capital and strategic goals. Following the recommendation of the TCFD, the integration of climate-related risk within the RAF takes place especially in the abovementioned step, where the bank's strategy is concretely embodied in the risk framework. The proper implementation of an adequate and robust framework for the assessment of ESG factors thus requires the identification of a taxonomy of ESG risks, as well as the development of qualitative/quantitative indicators that allow measuring the impacts both in the short and in the long term. The recommendations and approaches explicated by the international and European authorities can therefore be traced back to this context (TCFD, 2017; BCE, 2020b; EBA, 2021b).

3.2. The integration of climate risk with traditional banking risks

The need to provide a standardized framework of climate-related financial disclosure was primarily concretized in the necessity to define a consistent categorization of climate-related risks into a proper taxonomy. The TCFD was the first institution to provide such taxonomy, which was later also adopted by the ECB within its guidelines (2020b). In particular, the TCFD divided climate-related risks into two major categories:

- Physical risk: it is linked to financial impacts deriving from climate-related events. Physical risk could be caused by extreme weather events (acute risk), such as droughts, floods, and storms, as well as gradual climate changes deriving from air, water and land pollution, water stress, deforestation, biodiversity loss, and resource scarcity (chronic risk). This could have a direct impact, for example, through damage to property or reduced productivity, or could lead to indirect subsequent events, such as the disruption of supply chains.
- Transitional risks: it reflects the risk connected to the transition to a lower-carbon economy, which could entail extensive policy, legal, technology, and market changes.

Starting from the abovementioned categorisation, climate related risk (and ESG risks in general) may be assessed as a stand-alone risk or as an extension of the traditional risks identified in the bank's practice, in the supervisory framework, and in the literature. More precisely, while from a theoretical point of view the climate risk might be considered as an autonomous risk, literature and authorities suggest that they cannot be unbundled from traditional risks.

On the one hand, although the topic has not yet been fully explored in the literature, there are some contributions that highlighted the potential impact of climate risks on traditional financial risks. In particular, some authors suggested that (i) climate risks could impact the market value of financial assets (Dietz et al., 2016) and that (ii) a late and abrupt implementation of climate policies could cause adverse systemic consequences for the financial system (Battiston et al., 2017; Nieto, 2019). The disclosure of climate-relevant financial information and the timing and credibility of the implementation of climate policies could therefore have a pivotal role in the reduction of the negative effects of ESG risks on the traditional financial risks.

On the other hand, the TCFD guideline and the ECB recommendations seem to confirm the necessity to integrate climate-related risks among the existing prudential categories (e.g. credit risk, operational risk, liquidity risk). The "ECB Guide on climate-related and environmental risk" provided a set of 13 recommendations about the prudent management and disclosure of aspects linked to climate-related and environmental risks. In particular, banks are expected to understand the impact of climate-related and environmental risks on the business environment in which they operate (expectation 1) and introduce them in their risk appetite framework (expectation 4) in order to integrate such risks in the definition and implementation of the business strategy (expectation 2), looking at the short, medium and long term. Banks should thus identify a business unit responsible for the management of the climate-related risks (expectation 5), which have to be evaluated and integrated as drivers of existing risk categories into their existing risk management framework (expectation 7).

In general, the definition of ESG as a horizontal financial risk theme that can influence the traditional financial risk should help to ensure that the impacts of ESG risks are correctly managed and identified. Briefly put, ESG risks could affect:

- Credit and counterparty risk: ESG factors may challenge banks throughout the credit process, from granting to monitoring. The occurring of harmful environmental events may cause financial difficulties for the counterpart, which could, in turn, generate repercussions on creditworthiness and probability of default. It should be therefore necessary to integrate the overall rating with a score as a proxy for the counterpart's environmental compliance.
- Market risks: the investments in financial instruments of companies belonging to a sector perceived as not sustainable may be more prone to be exposed to the effects of news flow or more affected by policy and regulatory actions. This could result in higher return volatility.
- Operational risk: banks are exposed to reputational and legal risks deriving from unsustainable activities carried out by the bank itself and by its counterparties. Institutions should ensure that operational risk management adequately considers physical risk impacts.
- Liquidity risk: although the banking industry is not yet considering the relationships between ESG factors and liquidity risks , ESG factors could also result in funding issues or make some assets less liquid.

Therefore, specifically for the "E" dimension, banks are expected to reflect climate-related and environmental risks by introducing a set of key performance indicators (KPIs) that should be cascaded down to individual business lines (e.g. retail banking, private banking, commercial banking, and corporate banking) and portfolios. This analysis should be conducted considering the specificities of the business model and the bank's risk profile and adapted taking due consideration of the vulnerabilities of the economic sector, operations and physical locations of the institution and its counterparties.

3.3. Indicators and methods to assess ESG risks: approaches and open challenges

The integration of ESG factors in the bank's prudential framework thus depends not only on the definition of a taxonomy but also on the identification of qualitative and quantitative indicators and methodological tools to assess their financial impacts. However, the implementation of ESG factors was hampered by the lack of data on the ESG characteristics of the counterparties and by methodological issues. In general, the evaluation of financial risks linked to climate-related issues suffers from (i) uncertainty about the timing and effects of related policies and regulatory interventions; (ii) insufficient data or low-quality data in terms of relevance, comparability, and reliability, which is especially true for SMEs, local and regional governments, and companies from developing countries; (iii) methodological constraints deriving by the traditional use of historical data to estimate current or future risks, which might be not feasible when ESG risks are introduced in risk management models; (iv) time-horizon mismatch between traditional management models and the timeframe for the occurrence of ESG risks. Most common approaches are indeed usually based on historical data that are not able to clearly assess the impact of ESG factors, which usually spread their effects in longer time windows. In addition, such risks could have quantitative or qualitative manifestation and could materialize at various levels, such as international, national, sectorial levels or specific for single entities.

In order to address such methodological issues and to help authorities to better identify ESG factors, the "EBA report on management and supervision of ESG risks for credit institutions and investment firms" provides a specific contribution to the identification and evaluation of such risks. Firstly, the identification implies the classification of assets based on their ESG characteristics that allow to identify specific quantitative and qualitative indicators. This step is preparatory for the evaluation activity, which consists of the application of methodological tools to determine the potential impact of ESG risks on banks' portfolio. In recent years, increasing efforts have been made to develop indicators for the classification of exposures to ESG risks, especially those applicable to climatic and environmental factors (e.g. regulation EU 2020/852). With this regard, the EBA highlighted the opportunity to refer to existing standards, and in particular:

- ESG taxonomies: they identify criteria for the classification of economic activities in terms of sustainability level (i.e. conducive to a low-carbon, resilient and resource-efficient economy);
- ESG standards and guidelines: they provide well-accepted measures or norms that allow comparative evaluations of sustainability results of counterparties (e.g. ISO, UN Global Compact principles);
- Investment benchmarks: they allow to compare the performance of sustainable investments over time through the definition of specific sustainable objectives (e.g. EU climate Transition Benchmarks or EU Paris-aligned Benchmarks);
- Sustainability-related frameworks: defined by national or international entities (e.g. UN, COSO) with reference to ESG factors necessary to fulfil non-financial reporting obligations (e.g. GRI e SASB).

The identification of a proper strategy capable to manage ESG risk needs a detailed analysis of the overall impact of such risks on a bank's portfolio. Although the presence of adequate indicators able to assess the financial implications of ESG factors is still very limited for several sectors and portfolios over the short, medium and long term[6], the EBA has identified three different approaches, which have to be applied coherently with the size, complexity, risk profile and business model of the respective institution. More in detail, the EBA suggests the implementation of the following methods:

- Portfolio alignment method: this method consists of the comparison of a portfolio's sustainability performance with globally agreed (climate) targets. With respect to climate-related issues, the ultimate goal is thus to define how the institution should modify its portfolio in order to be aligned with the Paris Agreement. On the one hand, this method results to be very results-oriented. However, on the other hand, it is very linked to current industries' technologies or current potential plans to change technology and it does not take into account potential future developments.

[6] European Banking Federation (2021), Management and supervision of Esg risks for credit institutions and investment firms: Ebf response to Eba consultation.

- Risk framework method: it focuses on the sensitivity of the portfolio and the impact that climate change has on the real risk of the exposures, without making any evaluation on how the portfolio composition is aligned or not with global sustainability targets. This approach relies on the fact that climate risk is by nature forward-looking, while the other components of risk are usually more backwards-looking. It is a method essentially driven by two different approaches: climate stress tests (analysis of future development path of transition variables, such as carbon price, GDP growth, unemployment) or climate sensitivity analysis (changes in portfolio risk by changing some of the inputs in the financial model).
- Exposure method: it consists of the direct assessment of ESG factors on individual counterparties and individual exposures. This evaluation can be used as a complement to the standard assessment of financial categories. The indicators are usually calibrated at company level, considering the characteristics at sector level of each counterpart. It is an easier methodology, which relies on backwards-looking metrics and does not take into account sensitivity analysis.

Although the latest interventions by regulators and authorities have contributed to defining a less fragmented prudential framework, some critical issues are still in place. First of all, information availability still remains an open issue, given the lack of transparency and the difficulty in obtaining relevant, reliable and comparable data. Particularly problematic is the reliability of ESG ratings, whose definition by the specialized agencies still follows different and heterogenous logics. As reported by the European Commission (2020), the sustainability-related products and services market still suffer of lack of transparency, accuracy and reliability of sustainability-related ratings. The absence of a clear and consistent terminology, the low level of comparability and consistency among company sustainability disclosures, and the lack of engagement with and by companies on sustainability-related issues are indeed considered to be obstacles to the further development of the market. The lack of both standardized and formal auditing processes adds a subjective nature to ratings (LaBella et al., 2019) that could lead to different evaluations of the same portfolio or counterpart. As validation, Berg et al., (2019) argued that ESG ratings differ mainly due to measurement deviations and, residually, to deviations in weight and scope. The study indeed confirms the poor correlation among such ratings (0.61), in contrast to the correlation of credit ratings, which is stronger at 0.9 (Kerber and Flaherty, 2017). The risk to receive mixed signals from rating agencies on which actions are expected and evaluated by the market could in turn reduce the companies' incentives to improve their ESG performance (Berg et al., 2019). On one hand, several authorities and organizations such as the GRI, the SASB, and the TFCD are now encouraging company level transparency and they are contributing to the development of frameworks, which will help in improving standardization levels in reporting. On the other hand, in order to guarantee better quality and reliability of ESG ratings, the ESMA (2021) suggested to the European Commission to introduce similar forms of supervision and regulation to those already existing for credit ratings.

Another key element is the definition of the timeframe for the identification and assessment of ESG factors. However, this integration remains challenging, since traditional credit score systems still mainly rely on evaluations based on historical evidence, which allows assessing the creditworthiness of the counterpart solely on the basis of its past or recent economic and financial results. It is, therefore, necessary to incorporate proper prospective indicators, which have to be defined consistently with the characteristics of each counterpart and economic sector.

Finally, the full integration of ESG factors in the banks' risk framework will require the development of indicators related to social and governance dimensions, which are not yet fully assessed but they are rapidly gaining increasing attention among regulators and media.

4. Introduction of the ESG principles in the key internal processes of banks

Giveàn that ESG issues are of increasing concern for the investor community and the regulators alike, banks are expected to embed these sources of risks in all their relevant business processes.

As noted in the European Commission study (2020) , ESG risks can affect key aspects of the credit risk management process, including but not limited to: i) Lending and investment policies, often referenced in the risk appetite and connected to high-level position statements, ii) client onboarding and transaction due diligence, iii) portfolio monitoring, and iv) credit strategies and portfolio steering.

To properly integrate the ESG considerations into its lending processes, the bank needs to review the policies to ensure that the assessment of the creditworthiness of the potential borrowers properly takes into account also these aspects. Moreover, the bank should define metrics and indicators that should enable it to properly capture the exposure to climate risk deriving from its lending activities (by taking into account the exposures to the sectors and counterparties). In this respect, it would desirable that the bank duly incorporates the EU taxonomy[7] in its lending policies. It would also be desirable to review the internal rating system to properly reflect ESG considerations. Finally, the bank should ensure compliance with the provisions laid out in the revised EBA's guidelines (2020) and the other relevant regulatory products.

With regards to its investment activity, the bank needs to properly integrate the ESG considerations in the management of the treasury portfolio as well as in the capital market underwriting activity. In order to do that, it needs to clearly identify criteria for defining suitable investment opportunities. It also needs to set up processes that would allow its traders to closely monitor the market for new issues of ESG compliant financial instruments. Finally, it would be desirable to define thresholds for the composition of the portfolio (with ESG compliant instruments) to properly inform the management body on the improvements made towards the achievement of strategic goals (EBA, 2021b).

[7] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

4.1. Consideration of ESG risk in pricing new products

Pricing decisions for commercial lending have almost exclusively been made by pricing specialists in the middle and back office of the bank due to the complex nature of commercial deals, the varying profitability models, their associated credit risk data and the non-linear business processes. Nowadays, thanks to the banks' digital transformation plans, pricing and profitability analysis are readily available to all the relevant departments of the institution.

It is absolutely crucial for the bank to use the latest available financial and credit risk data. More specifically, the bank should use the most updated ESG information to structure the best price offer to its customers, based on the risk it is taking. Furthermore, as pointed out by Choi et al. (2021) credit institutions are now developing practices with regards to how to assess whether a loan with ESG-linked adjustments has cash flows that are solely payments of principal and interest (SPPI). Considering the ESG dynamism, the bank therefore needs to access real-time ESG data as these must be taken into account as part of the initial pricing negotiations with customers as well as for the classification of the financial instruments in accordance with the IFRS9 provisions. In order to do that, the bank could leverage the use of artificial intelligence (AI) / machine learning (ML) and cloud computing tools that offer structured ESG real-time data based on a wide array of sources. Thanks to the developments in this area, it should be possible to construct models that can quickly analyse large volumes of documents. Such models can also automatically identify, extract and quantify a company's ESG practices. This task has not always been readily viable due to the inconsistency in the requirements detailing how organizations are expected to disclose their ESG information, as well as the way the information is typically spread across various reports. The recent developments in the European regulatory framework (see the following paragraph) aimed at improving the disclosure of relevant information should help in providing more clarity on this aspect. Moreover, further steps need to be taken in order to improve the quality of the ESG ratings. In this respect, ESMA[8] urged the European Commission to "address the unregulated and unsupervised nature of the market for "ESG" ratings and ESG assessment tools" in order to increase transparency. The academic literature has observed that the ESG scores assigned to the major listed companies in the euro area by three of the main providers vary significantly for the same firm, while the correlation between the more traditional credit ratings is over 90 per cent (Dimson, Marsh, Staunton, 2020) .

The ability of the bank to quickly incorporate ESG considerations into its pricing processes will ensure that it will be able to offer the right product to its customers as well as set competitive pricing in the initial commercial engagement process.

4.2. Reporting/Pillar 3 Disclosure of ESG risks and the impact on supervisory authorities and stakeholders

Specific disclosure requirements have been introduced in the current European regulatory framework for industrial companies and banks alike in order to support the implementation of the so-called European Green Deal.

In January 2022, the EBA published a consultation paper on draft implementing technical standard (ITS)[9] on Pillar 3 disclosures on environmental, social and governance risks. In line with the provisions laid down in the Capital Requirements Regulation (CRR), the draft ITS proposes comparable quantitative disclosures on climate-change related transition and physical risks, including information on exposures towards carbon related assets and assets subject to chronic and acute climate change events. They also include quantitative disclosures on institutions' mitigating actions supporting their counterparties in the transition to a carbon neutral economy and in the adaptation to climate change. In addition, they request significant institutions to disclose their GAR. The GAR identifies the institutions' assets financing activities that are environmentally sustainable according to the EU taxonomy, such as those consistent with the European Green Deal and the Paris agreement goals. Finally, the draft ITS provides qualitative information on how institutions are embedding ESG considerations in their governance, business model and strategy and risk management framework.

Furthermore, following the introduction of the sustainable finance disclosure regulation (SFDR) the European banks are expected to disclose in the information provided to investors the risks related to ESG factors to which they are exposed, and the related mitigating actions being undertaken to reduce their severity.

Under the taxonomy regulation, the EBA has also been requested to propose to the European Commission a number of key performance indicators (KPIs), together with the related methodology for the disclosure by credit institutions and by investment firms, on how and to what extent their activities qualify as environmentally sustainable. In its report released in March 2021, the EBA (2021a) underlined the importance of the green asset ratio (GAR) as a key means to understand how institutions are financing sustainable activities and meeting the Paris agreement targets.

Finally, as outlined in the previous paragraphs the management of ESG data is becoming increasingly important for banks. In particular, credit institutions will need to be able to develop a sound ESG data governance and architecture with quality controls.

ESG data comes from different sources: the clients during loan origination and on an ongoing basis, external data provider, machine learning/artificial intelligence tools. All these sources will need to be processed in a systematic manner in order to improve the quality of the reported information, reinforce credibility among stakeholders and improve reporting processes while avoiding a lack of standardisation and transparency.

When defining the new data architecture to properly include ESG data banks should leverage on the principles outlined in the BCBS' principles (2013) and on the standards issued by the Sustainability Accounting Standards Board (SASB)[10] and the Task Force on Climate-Related Financial Disclosures (TCFD)[11].

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[8] https://www.esma.europa.eu/press-news/esma-news/esma-calls-legislative-action-esg-ratings-and-assessment-tools

[9] https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Draft%20Technical%20Standards/2022/1026171/EBA%20draft%20ITS%20on%20Pillar%203%20disclosures%20on%20ESG%20risks.pdf

[10] https://www.sasb.org/

[11] https://www.fsb-tcfd.org/

5. Where do we stand?

In the recent years, an increasing number of surveys and studies have monitored the level of implementation of corporate governance

mechanisms and operational practices for the assessment of ESG factors among banks and financial institutions.

In mid-2018, Oliver Wyman and the International Association of Credit Portfolio Managers (IACPM) conducted a survey across 45 international banking institutions. The survey reveals that banks need to treat climate risk as a financial risk, not just a reputational, and integrate such considerations into their financial risk management frameworks. It is noted that only half of the institutions (57%) have planned to fully implement the TCFD recommendations. European banks seem to be more prone to adopt TCFD recommendations (77%) while American banks show a lower level of integration. Similarly, in the fourth quarter of 2019 the Institution of International Finance (IIF), in conjunction with the European Banking Federation (EBF), surveyed their members across the world (53 banks and 17 other financial institutions) and found that the adoption of TCFD is at an advanced stage in the more mature economy (60%), while only the 37% of financial institutions in emerging markets are fully or partially compliant with the recommendations. However, the survey confirms that better processes for risk management are still needed: if 45% of survey participants stated that their risk management framework includes an explicit process for the identification and assessment of climate-related issues, only 17% have fully integrated this process into their organization's overall risk management framework.

In the same year, the EBA (2019) conducted a survey on 38 banks aimed at collecting information from credit institutions on current practices on the definition of ESG factors and the incorporation of sustainability into business strategies. The results suggest that, although the large majority of institutions have already disclosed ESG information (81%), very few institutions (fewer than one in five) have specific risk management practices in place. In particular, despite the growing acknowledgement of climate-related risks from a prudential risk management perspective, the incorporation in the risk management framework, the development of proper risk management functions and the definition of identification and assessment tools are still at preliminary stages. The survey by the NGFS (2020) confirms that only a small percentage of banks use scenario analysis or stress tests (22%), while even fewer banks have incorporated climate risk or ESG risks in their internal model for credit evaluation. More commonly, banks tend to choose to not finance sectors with a high negative environmental impact or to limit credit exposure to more controversial sectors. Despite the low level of integration, the ECB (2020c) in a survey on 107 significant institutions (SIs) and 18 less significant institutions (LSIs) observed a clear positive trend in the level of climate-related disclosures over the past two years. In detail, the number of institutions that do not disclose any information on climate-related risks has reduced substantially, from 35% in 2019 to 14% in 2020. In addition, most institutions (58%) incorporate the information in their annual report. Finally, although the diffusion of scenario analysis and stress tests is very limited, the survey highlights that all the indicators are increasing from 2019, suggesting a growing awareness about the importance of climate-related risk for a bank's business strategy in the short, medium and long term. Another relevant initiative was the survey carried out in 2021 by Aifirm (2021) on a sample of 31 Italian banks (16 of which LSIs and the remaining 15 SIs[12]). Also this survey underlined the difficulties of the banks in integrating the ESG factors in their risk management frameworks. The tables below will present in more details some other relevant findings of the survey carried out by the Aifirm.

Table 1

	Have ESG considerations been integrated in the loan origination process?				
	No	No, but expect to integrate them by 2023	Yes, with ad-hoc procedures	Yes, into pre-existing processes	Yes, both (ad-hoc procedures and pre-existing processes)?
LSIs sample (16 banks)	25%	56%	13%		6%
SIs sample (15 banks)	7%	53%	20%	13%	7%

Source: AIFIRM (2021)

As reported in Table 1, one of the questions of the survey asked the banks to state whether they integrated the ESG risks in their loan origination process. The majority of the respondents of the LSIs sample (56%) have not integrated yet the ESG considerations (they nevertheless plan to do so by 2023) in their loan origination process; another 13% responded that they created ad-hoc procedures to incorporate the ESG considerations into the loan origination process of the bank while an additional 6% incorporated the ESG considerations by changing the pre-existing loan origination process and creating ad-hoc procedures; the remaining 25% of the respondents did not incorporate the ESG considerations nor plans to do so in the near future. Of the SIs sample, 53% of the respondents reported not having integrated yet the ESG considerations in the process (they plan to do it by 2023); another 20% responded that ad-hoc procedures have been implemented and 13% integrated the ESG considerations in the pre-existing process; an additional 7% integrated the ESG considerations by both changing the pre-existing processes and by creating ad-hoc procedures. The remaining 7% of the respondents declared that they have not yet incorporated the ESG considerations into the loan origination process and do not intend to do it in the near future.

[12] 52% of the banks in the sample have less than 30 bn of assets, 26% between 30 and 150 bn and the remaining 23% more than 150 bn of assets.

Table 2

	Have you got information on the CO2 emissions of the corporate borrowers to which you lend money/invested in?		
	Yes	No	Under development
LSIs sample (16 banks)	6%	75%	19%
SIs sample (15 banks)	7%	53%	40%
All institutions in the sample	6%	65%	29%

Source: AIFIRM (2021)

Another question (see Table 2) asked the banks to state whether they have data on the CO2 emissions of the corporate borrowers to which they lend money or invest in. Overall, 29% of the respondents in the whole sample replied that they are in the process of collecting such information. However, the percentage of the respondents that is envisaging to gather this information is somewhat higher (40% vs 19%) in the sample of SIs as compared to those of the LSIs. The percentage of respondents that already collects this information is equal to 6% (7% of the SIs and 6% of the LSIs) whereas the remaining 65% (53% of SIs and 75% of LSIs) responded that they do not have this information.

Table 3

	Do you take into account the impact of different policy scenarios (e.g. potential policies aimed at curbing the increase in temperatures by 2 degrees) when managing your credit/investment portfolio?			
	Yes, for credit portfolio	Yes, for both	No, but we aim to implement it by 2023	No
LSIs sample (16 banks)	6%		44%	50%
Sis sample (15 banks)	7%	7%	60%	27%

Source: AIFIRM (2021)

The respondents were asked if they are already considering the potential impact of a policy change (e.g. policies aimed at curbing the increase in temperatures at 2 degrees) when managing their credit or investment portfolios (see Table 3). Of the banks belonging to the SIs sample, 7% reported they already take into account this scenario while managing their credit portfolio; another 7% reported that they are currently doing it for both (credit and investment portfolios), 60% will do it by 2023 and 27% are not doing it and will not do it in the near future. For the banks belonging to the LSIs sample, 50% reported that they are not considering it and they do not intend to do so in the near future; 6% consider the impact of a policy change scenario when managing its credit portfolio and the remaining 44% will do so by 2023.

Table 4

	Do you publish an annual non financial report aimed at presenting information on sustainability?		
	Yes, as it is requested by national laws	Yes, on a voluntary basis	No
LSIs sample (16 banks)	56%	25%	19%
Sis sample (15 banks)	86%	14%	
All institutions in the sample	70%	20%	10%

Source: AIFIRM (2021)

Finally, questioned on whether they currently publish a non financial report disclosing information on sustainability, the entirety of the SIs institutions replied that they do it (in 86% of cases as it is requested by national laws and the remaining 14% on a voluntary basis). For the LSIs 56% of the respondents reported that they publish such a report to comply with the law, 25% publishes it on a voluntary basis and the remaining 19% does not publish any non-financial report featuring sustainability information. Thus, with regard to the entire sample, 70% of the respondents disclose information to comply with the national regulation, 20% disclose information on a voluntary basis and the remaining 10% do not disclose any non-financial information related to sustainability.
All in all, as shown in the results of the abovementioned surveys and particularly in the ECB's report (2021a) credit institutions are taking steps to adapt their policies and procedures to properly integrate the climate and environmental risks in their risk management practices but much more still has to be done (such as for instance improving the data quality, develop suitable risk reports for the managent bodies). Along these lines, the survey on the Italian banks carried out by Aifirm highlighted that the SIs sample of banks has shown more readiness for the implementation of the ESG risks in their business processes. Notwithstanding the slight delay, the sample of LSIs banks seems to be on track for introducing the ESG considerations in their most relevant internal process.

6. Conclusions

The article discussed the challenges credit institutions face in integrating the ESG risks into their governance and risk management frameworks. It also included some recommendations for banks on how to successfully address these challenges. These recommendations are drawn from best practices as well as from expert judgement. As such, they are not meant to be exhaustive and comprehensive. Additional works in this area could further enhance the recommendatios for banks based on the analysis of other relevant practices.

As shown in the surveys that have been presented in the article, European banks will still need to make extra efforts to successsfully integrate the ESG risks in their business processes. Indeed, it is expected that further improvements in this regard are underway and will be further developed in the course of this year and the next. Finally, to properly assist the banks in this activity, Euroepan regulators and supervisors will have to continue to define clear expectations as well as clear standards on how to assess and manage these sources of risks.

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