

THE BANKING INDUSTRY IN THE CLIMATE TRANSITION: RISKS, REGULATORY DEVELOPMENTS AND TRANSFORMATION PATHWAYS

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Abstract

Climate change is exerting unprecedented pressures on the financial system, positioning the banking industry as a central actor in the transition towards a low-carbon economy. This paper examines how climate-related risks are being integrated into banking activity both internationally and within the Romanian banking system. Drawing on the academic literature and recent institutional and supervisory documents, the study highlights the shift from traditional risk approaches towards embedding physical and transition risks into risk-assessment models, climate stress testing, and credit policies. It further reviews developments in green financial products, banks' participation in global sustainability initiatives, and the strengthening of climate-related disclosure and reporting frameworks. In the Romanian context, the paper discusses the role of the National Bank of Romania in aligning prudential supervision with international standards, as well as the efforts of leading commercial banks to incorporate ESG criteria into business strategies and risk management. The findings suggest that adaptation remains at an early stage, characterised by incremental progress but also by significant constraints related to data availability, analytical capacity, and greenwashing risk. The paper concludes that the climate transition requires a structural transformation of banking business models and enhanced coordination among public authorities, financial institutions, and international stakeholders.

Keywords: climate change; climate-related risks; banking industry; sustainable finance; ESG; financial stability

Classification JEL: G21; G28; Q54; Q01

1. Introduction

Over the past two decades, climate change has emerged as a major source of risk for the economy and the financial system. The intensification of extreme weather events, the transition towards a low-carbon economy, and the associated regulatory changes are exerting significant pressure on the traditional model of financial intermediation. In this context, the banking industry can no longer be assessed solely through its conventional functions; rather, it is increasingly expected to play an active role in financing the climate transition and in managing the related risks.

The academic literature emphasises that integrating climate-related risks and sustainability criteria into banks' decision-making processes is a necessary condition for preserving long-term financial stability (Campiglio, 2016; Weber, 2020). Central banks and supervisory authorities, in turn, are expanding their analytical toolkits to incorporate physical and transition risks into prudential assessments (NGFS, 2019; ECB, 2021).

Against this background, the aim of this paper is to analyse and synthesise how the climate transition is reshaping financial activity and, in particular, the banking industry, with a focus on the Romanian banking system. The paper combines a review of the relevant literature with an examination of recent institutional developments at both the international and national levels, in order to highlight the current stage of adaptation, the key challenges, and the main pathways for future transformation.

The remainder of the paper is structured as follows: Section 2 outlines the changes in financial activity driven by climate change; Section 3 examines the adaptation of the banking industry at the international level; Section 4 discusses the specific features of the Romanian banking system; finally, Section 5 summarises the main conclusions and proposes selected directions for policy and future research.

2. Climate Change and the Reconfiguration of Financial Activity

Climate change significantly affects financial activity at all levels, from the strategies of financial institutions and the regulatory architecture to risk-assessment models and investor behaviour. The economic literature points to a growing consensus that the financial system must adapt rapidly in order to address climate-related challenges and to support the transition towards a low-carbon economy (Carney, 2015; NGFS, 2019).

A key step in this process is the incorporation of climate-related risks into the core of financial theory and practice. According to the framework proposed by the Task Force on Climate-related Financial Disclosures (TCFD, 2017), climate risks fall into two main categories: physical risks, generated by extreme weather events or gradual climatic shifts, and transition risks, associated with the adjustment to a greener economy (policy, technological, market and reputational changes). Both types of risks have direct implications for asset valuations, corporate profitability and the solvency of financial institutions, and ultimately for systemic stability (Batten et al., 2016; Bolton et al., 2020).

These developments have prompted a revision of essential paradigms in finance: risk-assessment models are being expanded to include climate variables, stress tests are adapted to simulate adverse climate scenarios, and financing eligibility criteria are recalibrated according to exposures to environmental risks. Central banks and regulatory authorities—such as the Bank of England, the European Central Bank (ECB), and members of the Network for Greening the Financial System (NGFS)—have begun integrating climate risks into prudential assessments and recommending that financial institutions embed them in internal risk models and resilience testing frameworks (NGFS, 2020; ECB, 2021).

In parallel, investor behaviour is undergoing a paradigm shift. Investments aligned with environmental, social and governance (ESG) standards are increasing in prominence, and capital-allocation strategies increasingly rely on exclusion mechanisms for highly polluting sectors as well as thematic green investments. Empirical evidence suggests positive associations between ESG performance and long-term financial returns (Friede et al., 2015), reinforcing the economic rationale for integrating sustainability considerations into investment decisions.

The transformation of financial activity is also visible in the area of disclosure and reporting. Transparency regarding climate-related risks has become an essential requirement for investors, regulators and the broader public. The TCFD framework (2017) and the Corporate Sustainability Reporting Directive (CSRD, 2022) require large companies to disclose detailed information on the climate impacts of their activities, climate governance, and transition plans. Digitalisation and emerging technologies—fintech, artificial intelligence and big data—support this transformation by enabling the development of ESG scores, the modelling of environmental risks and innovation in green financial products.

Nevertheless, the financial system’s adaptation to climate change is not a linear process. Persistent challenges include the lack of standardised data, unequal access to green capital between advanced and developing economies, regulatory uncertainty, and the risk of greenwashing, which can undermine the credibility of the entire sector (Monasterolo & Raberto, 2018; NGFS, 2022).

3. The Banking Industry in the Climate Transition: International Perspectives

In response to mounting pressures driven by climate change, the banking industry is undergoing an accelerated adaptation process, marked by structural, operational and strategic transformations. Commercial banks can no longer be viewed solely through the lens of their traditional intermediation role; rather, they are becoming key actors in the transition towards a sustainable economy, with increasing responsibility to actively integrate climate-related risks and sustainability criteria into decision-making processes (Campiglio et al., 2018; Weber, 2020).

A central element of this shift is the integration of climate risks into credit analysis. Recent studies show that banks are increasingly using ESG scores, climate-modelling tools and assessments of geographic exposure to adjust lending conditions and to refine borrower creditworthiness assessments (NGFS, 2022). In this context, banking institutions are developing internal methodologies to measure both transition and physical risks, in parallel with updating risk-management policies in response to evolving regulatory requirements.

Beyond the development of green financial products and services (e.g., green loans, green mortgages and green bonds), the banking sector has become more actively involved in global voluntary initiatives aimed at strengthening sustainability commitments. Prominent examples include the Principles for Responsible Banking (UNEP FI, 2019), the Net-Zero Banking Alliance (NZBA)—which brings together banks committed to achieving net-zero emissions by 2050—and the TCFD framework, which provides recommendations for climate-related risk disclosure.

Nevertheless, adaptation remains uneven and challenges are substantial. These include the absence of sufficiently detailed historical climate data series, difficulties in modelling climate risks and quantifying their financial impacts, as well as the risk of banking-sector greenwashing, whereby climate commitments remain largely declarative, without credible operational backing and without verifiable impact indicators.

Overall, the banking industry represents a central pillar of the green transition and is gradually adapting its business model to climate-related requirements. Key trends include the diversification of green products, stronger engagement in international initiatives and an expansion of institutional capacity to assess climate risks, alongside the need to accelerate efforts to achieve a coherent and systemic integration of such risks.

4. The Romanian Banking System and Climate-Related Risks: Current Stage and Outlook

Against this international backdrop, the Romanian banking system is gradually shaping a strategic approach to integrating environmental and climate-related risks into banking activity and the regulatory framework. Although the current stage remains relatively early compared to Western European economies, both the literature and institutional evidence point to increasing awareness among authorities and credit institutions regarding the transformative role that banks can play in supporting the climate transition.

The National Bank of Romania (NBR), as the monetary authority and prudential supervisor, has expressed growing interest in recent years in the implications of climate change for financial stability. Public statements by NBR officials emphasise that climate change is becoming a systemic risk factor, with potential effects on the Romanian economy through exposure to extreme weather events, volatility in international energy markets, and regulatory developments at the European level (NBR, 2022).

At the institutional level, the NBR became a member of the Network for Greening the Financial System (NGFS) in 2021, signalling a formal commitment to align with international best practices for integrating climate risks into banking supervision. The 2022 Financial Stability Report includes a dedicated section on climate and environmental risks, identifying key transmission channels to banking institutions and formulating adaptation recommendations. The NBR also highlights the importance of establishing a sustainable reporting framework and a national climate-data infrastructure as prerequisites for a rigorous assessment of financial exposures to both transition and physical risks. At the same time, the institution acknowledges that overall preparedness remains limited and that commercial banks are still at an early stage of integrating ESG factors into risk analysis.

At present, the integration of environmental and climate considerations into the activities of Romanian credit institutions is uneven and concentrated particularly among foreign-owned banks or those embedded in European banking groups with more mature ESG standards. For example,

Banca Comercială Română (BCR) has introduced green mortgage products and incorporated climate-performance objectives into its medium-term financing strategy, publishing annual sustainability reports aligned with GRI standards since 2022. ING Bank Romania offers sustainable loans for SMEs and large corporates and applies a strict policy of excluding financing for highly polluting industries, consistent with group-level commitments. Raiffeisen Bank Romania published its first ESG report in 2021, integrating climate objectives into its strategic plan through 2025 and developing partnerships to finance energy-efficiency and green infrastructure projects. A state-owned institution, CEC Bank, has also begun offering green loans for sustainable agriculture and participating in financing initiatives in cooperation with EU funds dedicated to the green transition.

The analysis suggests that large banks in Romania have begun to embed ESG-related components into risk policies and to develop initial methodologies for assessing climate exposures. However, these efforts remain largely at a pilot stage and are not yet harmonised across the entire system. The Romanian Banking Association (ARB) plays a catalytic role through educational initiatives and consultations on adapting the regulatory framework to evolving European standards for sustainable finance, in partnership with the NBR. Moreover, the increasing participation of Romanian banks in international fora supports the transfer of know-how and best practices.

Overall, the Romanian banking system’s capacity to respond to climate-related challenges remains at an early but evolving stage. Progress by the NBR and by some commercial banks is encouraging; nevertheless, the systematic integration of climate risks into banking activity remains a major challenge, requiring investment in analytical infrastructure, regulatory harmonisation and broader skills development across the sector.

5. Conclusions and Transformation Pathways

The academic literature and banking practice converge on the view that future financial resilience will depend on the financial system’s ability to embed sustainability into its core operating logic. The climate transition is no longer a hypothetical scenario but an ongoing reality, requiring structural reforms in financial governance, risk architecture and the behaviour of market participants.

The analysis shows that the banking industry is a central pillar of the green transition, given its role in capital allocation and risk management. Internationally, key trends include the diversification of green products, the progressive integration of climate-related risks into internal risk frameworks, and active participation in global sustainability initiatives. At the same time, major challenges persist, particularly with respect to data availability, the complexity of climate-risk modelling and the risk of greenwashing.

In Romania, the banking system is undergoing a gradual convergence towards European and international standards. The National Bank of Romania has taken meaningful steps to align the supervisory framework with global best practices, while some commercial banks have begun to incorporate ESG criteria into strategies, risk analysis and product offerings. However, adaptation remains uneven and is concentrated primarily among larger institutions or those with foreign ownership.

In the medium term, key transformation priorities include: developing a national climate-data infrastructure; strengthening analytical capabilities for assessing climate-related risks; harmonising regulation and reporting practices; fostering innovation in green finance; and enhancing cooperation among authorities, financial institutions and international stakeholders. The Romanian banking system’s ability to respond effectively to climate-related challenges will depend critically on the implementation of these priorities and on the speed at which the climate transition is internalised within banking business models.

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