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The Effects of Climate Change on the Financial Sector: Risk Dynamics and Strategic Opportunities ¹

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Abstract

This study investigates the dual impact of climate change on the financial sector—as both a systemic risk and a catalyst for strategic transformation. Drawing upon sustainable finance and stakeholder theory, the paper categorizes climate-related risks into physical, transition, and liability types. It also examines how financial institutions are adapting to these evolving risks through instruments such as green bonds, sustainable banking practices, and digital innovations like FinTech and InsurTech. Particular attention is paid to Turkey's climate finance landscape, highlighting recent regulatory developments and institutional responses. The findings emphasize that addressing climate change is not only a financial imperative but also a responsibility that aligns with broader sustainability goals. The paper concludes with a call for interdisciplinary research and proactive policy-making in the climate-finance nexus.

Keywords: climate change, risk, sustainability
Jel codes: Q54

1. Introduction

Climate change has transcended its traditional classification as merely an environmental concern and has emerged as a comprehensive, cross-cutting challenge with profound implications for global economic and financial systems. The increasing frequency and severity of extreme weather events, rising sea levels, water stress, and disruptions to ecosystems are not only jeopardizing biodiversity but also undermining the physical and financial infrastructure that supports modern economies. As a result, climate change is now widely recognized by policymakers, regulators, investors, and financial institutions as a systemic risk to financial stability (TCFD, 2017; IPCC, 2022).

The implications of climate change for the financial sector are multifaceted. On one hand, climate-related risks—categorized as physical, transition, and liability risks—are already affecting the asset portfolios, lending practices, and insurance policies of financial institutions. On the other hand, these risks also present opportunities to innovate, diversify, and align financial flows with long-term sustainability goals. This dual

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character of climate change—as both risk and opportunity—necessitates a paradigm shift in the governance, risk management, and strategic orientation of financial actors (NGFS, 2020; Schoenmaker & Schramade, 2019).

The present study aims to explore the effects of climate change on the financial sector through an integrated framework that highlights both the risks and strategic opportunities embedded in the transition to a low-carbon economy. The paper is grounded in the theoretical underpinnings of sustainable finance and stakeholder theory and analyzes how financial institutions are positioning themselves within the growing ESG (Environmental, Social, and Governance) landscape. The study also provides a special focus on Turkey's evolving climate finance landscape, shedding light on regulatory developments and institutional responses at the national level.

2. Theoretical Framework: Sustainable Finance and Stakeholder Theory

In order to comprehensively examine the climate-finance nexus, the study builds on two key theoretical perspectives: sustainable finance theory and stakeholder theory. Sustainable finance refers to the process of taking due account of environmental, social, and governance considerations in investment decision-making, with the aim of promoting long-term value creation and resilience (Schoenmaker & Schramade, 2019). It underscores the financial sector's role in driving the transition to a more sustainable economic model.

Stakeholder theory, introduced by Freeman (1984), expands the traditional shareholder-centric view of corporate governance by advocating for the inclusion of all stakeholders—employees, communities, regulators, and the environment—in strategic decision-making processes. In the context of climate change, this theory implies that financial institutions must act not only in the interest of shareholders but also in the broader interest of society and the environment.

These theoretical lenses collectively underscore that responding to climate change is not merely a financial necessity but also an ethical and strategic responsibility for financial institutions.

3. Classification and Implications of Climate-Related Risks

3.1 Physical Risks

Physical risks refer to the direct economic impacts resulting from climate-related events such as floods, droughts, storms, and rising temperatures. These risks can damage real assets, disrupt supply chains, reduce agricultural yields, and lead to increased insurance claims and credit defaults (IPCC, 2022). Financial institutions that are exposed to these sectors—either through loans, investments, or insurance—are increasingly vulnerable to climate-induced losses.

3.2 Transition Risks

Transition risks arise from the policy, regulatory, technological, and market shifts associated with the transition to a low-carbon economy. These include the introduction of carbon pricing mechanisms, new emissions regulations, shifts in consumer preferences, and technological disruptions. Financial institutions face credit and market risks if their portfolios are concentrated in carbon-intensive industries that may become stranded assets (NGFS, 2020).

3.3 Liability Risks

Liability risks are legal and financial penalties resulting from lawsuits or regulatory actions against companies or financial institutions for environmental harm. As climate litigation increases globally, investors and insurers may face rising exposure to legal claims and reputational damage (UNEP, 2021). Financial firms are thus under pressure to conduct rigorous climate risk assessments and ensure transparent disclosures.

4. Strategic Opportunities: Green Finance and Technological Innovation

4.1 Green Bonds

Green bonds are fixed-income securities issued to finance environmentally friendly projects, such as renewable energy, sustainable agriculture, or energy-efficient infrastructure. As of 2023, the global green bond market has surpassed \$600 billion (Climate Bonds Initiative, 2023). These instruments help channel private capital into sustainable development and enhance the climate resilience of economies.

4.2 Sustainable Banking

Banks are integrating climate considerations into their credit risk assessments and lending policies. Practices such as carbon-sensitive loan pricing, ESG scoring for borrowers, and green credit facilities are becoming mainstream. These measures enable banks to reduce their exposure to high-carbon sectors while aligning with global climate goals (OECD, 2022).

4.3 FinTech and InsurTech Innovations

Technological innovation plays a critical role in addressing climate risks. FinTech and InsurTech companies are deploying artificial intelligence for climate risk modeling, blockchain for carbon credit trading, and digital

platforms for sustainable investment products. These tools provide enhanced transparency, data accuracy, and scalability for sustainable finance solutions (PwC, 2021).

5. The Turkish Context: Regulatory Landscape and Institutional Response

Turkey is gradually integrating climate finance principles into its national financial infrastructure. Regulatory authorities such as the Capital Markets Board (CMB) and the Banking Regulation and Supervision Agency (BRSA) have issued guidelines on sustainable finance. Moreover, Borsa İstanbul has introduced a sustainability index that enables investors to evaluate companies based on ESG performance.

Institutions such as the Industrial Development Bank of Turkey (TSKB) and the European Bank for Reconstruction and Development (EBRD) are actively supporting green finance projects aimed at improving energy efficiency, promoting renewable energy, and enhancing climate resilience in the Turkish economy (TSKB, 2022).

Academic research in Turkey, including studies by Yücel and Elitaş (2021) and Demirgil and Kara (2020), has highlighted that while awareness of climate-related financial risks is growing among Turkish banks and insurers, a comprehensive strategic integration remains in progress. These findings emphasize the need for improved regulatory alignment, risk analysis capacity, and investment in climate-aligned assets.

6. Conclusion

This study reaffirms that climate change is not just an environmental issue but a complex and evolving systemic risk that directly impacts the financial sector. However, it also represents a strategic frontier for innovation, investment, and responsible leadership. Financial institutions are no longer passive actors reacting to climate disruptions; they are key enablers of the global sustainability transition.

The findings suggest that the financial sector must deepen its engagement with interdisciplinary research and policy innovation to address the climate-finance nexus effectively. Forward-looking institutions that proactively manage climate risks and leverage green opportunities will be better positioned to ensure long-term resilience and contribute to achieving global sustainability goals.

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