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Exploring the Challenges, Strategies, and Prospects of Sustainability Implementation in the Banking Sector

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ABSTRACT

Sustainability has become a strategic priority for the banking sector, yet evidence on how banks translate environmental, social and governance (ESG) commitments into concrete organizational practices remains fragmented. This gap is particularly relevant because banks play a central role in allocating capital, managing climate-related risks and shaping the credibility of sustainable finance. This study examines the challenges, strategies and prospects of sustainability implementation in banking by analyzing how major global banks operationalize ESG principles across strategy, risk management, operations and client-facing activities. The study adopts a qualitative multi-method design, combining multiple case studies of 10 leading global banks with inductive content analysis of sustainability reports, ESG disclosures, annual reports, policy documents and relevant academic literature. The findings identify three dominant sustainability approaches: strategic commitments and sustainable finance pledges, operational decarbonization and ESG risk integration, and market-oriented leadership through green products, transition finance and client engagement. However, the analysis also reveals persistent contradictions, including continued financing of carbon-intensive sectors, inconsistent Scope 3 financed-emissions disclosure, fragmented ESG data, regulatory asymmetries and greenwashing risks. The study contributes by integrating institutional, stakeholder and legitimacy perspectives into a conceptual framework that links external pressures, banking operationalization channels and sustainability outcomes. For practitioners and policymakers, the findings highlight the need to move from symbolic ESG practices toward outcome-based metrics, harmonized reporting standards, stronger accountability mechanisms and cross-sector collaboration capable of supporting a credible low-carbon and inclusive financial transition.

1 | Introduction

Sustainability has shifted from a peripheral corporate social responsibility (CSR) concern to a strategic imperative in the banking sector, shaping resilience, competitiveness, and legitimacy (Avrampou et al. 2019; Duy and Le 2026). Environmental, social,

and governance (ESG) factors increasingly influence banks' risk exposures, stakeholder relations, and strategic positioning (Huy and Dinh 2025; Kim et al. 2025).

This shift is driven by three interconnected pressures: material sustainability risks, growing stakeholder expectations, and

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an increasingly demanding regulatory environment. Banks face material sustainability-related risks. Climate change, biodiversity loss, and environmental degradation threaten asset values and portfolio stability, while social risks such as labor disputes or human rights violations expose institutions to reputational and legal liabilities (Zaman et al. 2025; Xie et al. 2023). Consequently, integrating ESG considerations into credit risk, investment decisions, and enterprise risk management has become essential for safeguarding financial stability (Buallay et al. 2021; Kim et al. 2025).

In parallel, reputational pressures have intensified. Consumers, investors, and civil society demand credible sustainability commitments, with non-compliance risking loss of trust, investor withdrawal, and diminished market valuation (Jan et al. 2023; Liu et al. 2024). Conversely, authentic engagement can strengthen reputation, attract socially conscious clients, and secure stakeholder loyalty (Rao and Shukla 2024).

Regulatory developments further reinforce this transition from voluntary commitment to institutional expectation. Policy-makers and supervisory bodies now embed sustainability into financial regulation through mandatory disclosures, green taxonomies, and prudential rules on climate risks (Nguyen et al. 2023; Xie et al. 2023). Landmark frameworks such as the ISSB's S1/S2 disclosure standards, the EU's CSRD/ESRS, and the TNFD recommendations illustrate a global trend toward harmonization. For banks, these developments make sustainability both a legal obligation and a strategic necessity for market access, competitiveness, and long-term legitimacy (Kim et al. 2025; Syed et al. 2022).

Beyond compliance, sustainability also offers opportunities. Financing renewable energy, green infrastructure, and socially inclusive enterprises allows banks to access new markets while contributing to the structural transformation toward a low-carbon, equitable economy (Hui et al. 2024; Hussain et al. 2024). Innovations such as green bonds and sustainability-linked loans reinforce profitability and long-term value creation (Cao et al. 2024; Gutiérrez-Ponce and Wibowo 2024; Siddik et al. 2024).

Yet, the expansion of sustainable banking also reveals important contradictions. While most global banks publicly commit to net-zero targets and ESG integration, the persistence of financing for carbon-intensive sectors, weak links between commitments and measurable outcomes, and recurring accusations of greenwashing undermine credibility (Gutiérrez-Ponce and Wibowo 2024). Sustainability initiatives often appear fragmented, that is, driven more by reputational pressures and compliance obligations than by transformative change, resulting in a gap between discourse and practice. Furthermore, the rapid proliferation of regulatory frameworks, taxonomies, and disclosure standards creates complexity and uneven adoption across jurisdictions, complicating meaningful comparison and accountability. This tension between symbolic commitments and substantive transformation highlights the urgent need for a critical, integrative analysis that goes beyond documenting practices to interrogate how sustainability is actually being operationalized in banking (Buallay et al. 2021; Kim et al. 2025).

Despite growing research, three knowledge gaps remain. First, existing studies often examine sustainable banking through separate lenses, such as financial performance, regulatory compliance, ESG disclosure, green finance instruments, or digital innovation (Sahoo et al. 2025; Carnevale and Drago 2024). Second, recent evidence has strengthened understanding of the relationship between banking practices, ESG performance, technological innovation, and SDG-related outcomes, but less is known about how leading banks translate these commitments into concrete strategies, operational practices, and client-facing initiatives (Rana et al. 2024; Al Mamun et al. 2025; Rana, Islam, Al Mamun, and Rekha 2025). Third, the literature still provides limited comparative insight into the contradictions between banks' sustainability discourse and measurable outcomes, particularly regarding financed emissions, fossil-fuel exposure, greenwashing risks, and uneven regulatory pressures. Addressing these gaps is relevant because banks occupy a central position in allocating capital, managing climate-related risks, and shaping the credibility of sustainable finance.

To address these gaps, this study is guided by the following research questions:

RQ1. What sustainability practices are implemented by leading global banks?

RQ2. How are ESG commitments operationalized through strategic commitments, risk management, internal operations, and client-oriented initiatives?

RQ3. What contradictions and barriers limit the transition from symbolic sustainability commitments to substantive environmental and social outcomes?

Accordingly, the main objective of this study is to provide an integrative analysis of the challenges, strategies, and prospects associated with sustainability implementation in the banking sector. More specifically, the study seeks to identify the dominant sustainability approaches adopted by major global banks, examine how these approaches are embedded in organizational practices and market-facing activities, and critically assess the gaps between declared commitments and measurable sustainability impacts.

The study adopts a qualitative multi-method design that combines multiple case studies of 10 leading global banks with inductive content analysis of sustainability reports, ESG disclosures, annual reports, policy documents, and relevant academic literature. This approach enables cross-case comparison while situating corporate practices within broader regulatory, theoretical, and scholarly debates on sustainable finance.

The article makes three contributions. First, it combines institutional, stakeholder, and legitimacy perspectives to explain how regulation, market expectations, and reputational concerns shape banks' ESG strategies. Second, it organizes the evidence into a framework that connects external pressures with concrete banking practices, including ESG risk integration, internal decarbonization, sustainable finance instruments, and client-oriented initiatives. Third, it identifies the main contradictions that limit implementation, especially the gap between net-zero pledges

and financed emissions, the risks attached to ESG product innovation, and the uneven role of voluntary and mandatory mechanisms.

2 | Background

2.1 | The Emergence and Institutionalization of Sustainability in the Banking Sector

The integration of sustainability principles into banking reflects a progressive transformation of financial institutions' role in society. Early initiatives largely resembled traditional CSR activities, such as philanthropy and community engagement, with limited integration into core business strategies (Siddik et al. 2024). The articulation of the triple bottom line (Elkington 1997) expanded corporate objectives beyond profit to include environmental stewardship and social equity, laying the foundation for a broader reconceptualization of banks' responsibilities (Erhemjamts et al. 2024; Hui et al. 2024; Hussain et al. 2024).

This evolution was reinforced by the establishment of global frameworks such as the UN Environment Programme Finance Initiative (1992), the UN Global Compact (2000), and the UN Principles for Responsible Investment (2006), which mobilized financial institutions toward sustainability commitments. More recently, initiatives specific to banking—such as the Equator Principles and the UN Principles for Responsible Banking (2019)—have sought to align financial intermediation with the Sustainable Development Goals (SDGs), emphasizing banks' role as catalysts of societal transformation (Jan et al. 2023).

From the lens of institutional theory, banks' sustainability integration has been shaped by coercive pressures (emerging regulations and supervisory expectations), normative pressures (standards set by multilateral institutions and industry associations), and mimetic pressures (peer emulation in response to reputational competition) (DiMaggio and Powell 1983). This explains why voluntary initiatives, despite their lack of enforceability, have played a major role in establishing industry norms and expectations.

In parallel, regulatory bodies have introduced binding requirements that accelerate institutionalization. The EU Sustainable Finance Disclosure Regulation (SFDR) and EU Taxonomy seek to harmonize definitions and disclosures (Avrampou et al. 2019), while the International Sustainability Standards Board (ISSB) has issued the IFRS S1 and S2 standards (IFRS Foundation 2023) to establish a global baseline for sustainability reporting. The European Sustainability Reporting Standards (ESRS) further extend disclosure obligations under the Corporate Sustainability Reporting Directive (EFRAG 2023), and the Taskforce on Nature-related Financial Disclosures (TNFD 2023) has introduced guidance on biodiversity-related risks.

Central banks and supervisory networks have also embraced sustainability. The Network for Greening the Financial System (NGFS) promotes climate scenario analysis and prudential supervision of transition and physical risks (NGFS 2022). The Basel Committee on Banking Supervision (BCBS) has integrated climate risk into its supervisory agenda, reinforcing the

recognition of sustainability as a systemic financial concern (Campiglio et al. 2018).

Finally, recent developments reveal both institutional progress and fragility. The disbanding of the Net-Zero Banking Alliance (NZBA) in 2025 highlights the limitations of voluntary collective action, increasing the salience of binding regulation and accountability mechanisms. This underscores the contested nature of sustainability in banking: institutionalized through global frameworks, yet unevenly enforced and often vulnerable to legitimacy challenges (Kim et al. 2025).

2.2 | Operationalization of Sustainability: ESG Integration, Product Innovation and Internal Practices

The operationalization of sustainability in banking occurs through three main channels: risk management, product innovation, and internal practices.

First, risk management processes increasingly incorporate ESG criteria. Environmental and social risks, such as climate change, biodiversity loss, and social unrest, materially affect borrower creditworthiness and portfolio stability (Aslan et al. 2022; Campiglio et al. 2018; Xie et al. 2023). Banks have developed internal ESG scoring systems to guide lending and investment, aligning credit allocation with long-term risk mitigation (Caby et al. 2022; Li and Pan 2022).

Second, product innovation has positioned banks as key enablers of sustainable finance. Green bonds and sustainability-linked loans illustrate this shift, providing mechanisms to finance renewable energy, low-carbon infrastructure, and transition pathways (Hu and Scholtens 2014). By embedding ESG performance targets in loan agreements, banks incentivize corporate sustainability while benefiting from preferential capital costs and access to socially conscious investors (Nguyen et al. 2023).

Third, banks are greening their internal operations by reducing carbon footprints, digitizing processes, and deploying technologies such as AI and blockchain to improve ESG data verification and reporting (Chen et al. 2022; Birindelli and Palea 2023). Recent evidence suggests that digital financial technologies can support sustainability when they are perceived as useful, trustworthy, and compatible with organizational and user needs. For example, Al Mamun et al. (2025) show that blockchain adoption in the banking sector can enhance sustainability-related transparency and efficiency, while studies on FinTech adoption highlight the importance of trust, perceived usefulness, digital infrastructure, and public policy support for expanding sustainable and inclusive financial practices (Rana et al. 2026; Rana, Islam, Abdelwaheb, et al. 2025). These findings indicate that technological innovation should not be treated as inherently sustainable; focusing instead on its contribution depends on adoption conditions, governance mechanisms, and its integration into broader ESG strategies.

Recent studies also reinforce the need to connect banking sustainability with measurable SDG outcomes. Rana, Islam, Al Mamun, and Rekha (2025) demonstrate that bank loan performance, financial stability, and risk factors influence SDG progress

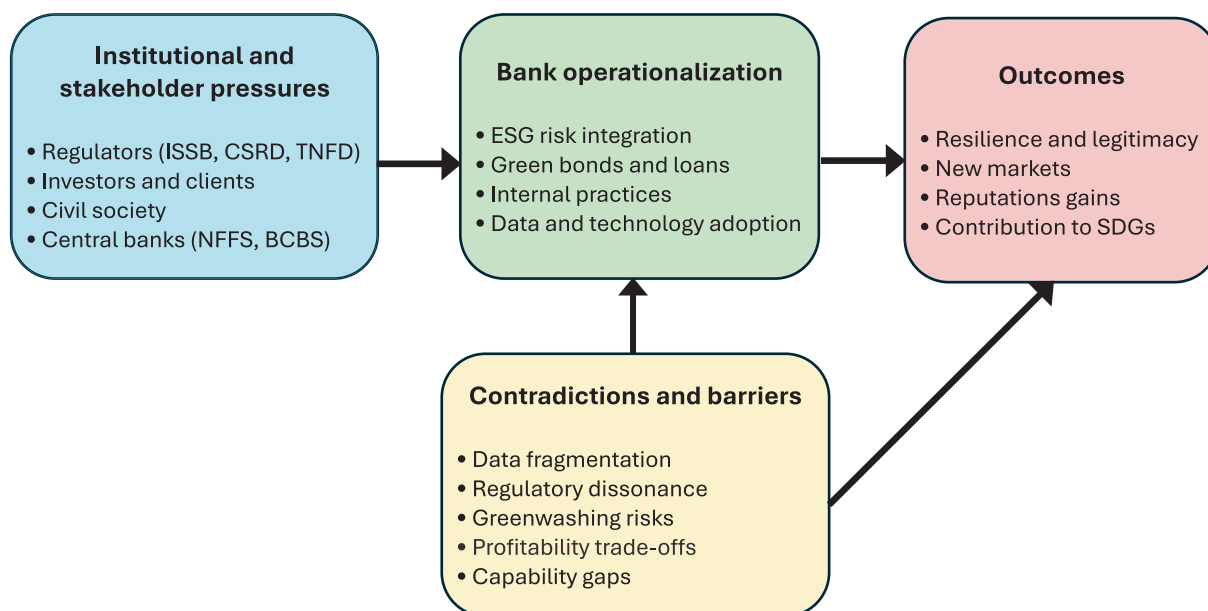


FIGURE 1 | Conceptual framework: Pressures, operationalization, and outcomes in the banking sector. *Source:* Authors' own creation.

in South and Southeast Asia, suggesting that credit quality, liquidity, and risk management are central to the developmental role of banks. Similarly, Rana et al. (2024) examine the relationship between ESG practices and SDG achievement in South Asia, emphasizing that ESG integration should be assessed not only through institutional commitments but also through its contribution to broader social, environmental, and economic outcomes. Together, these recent contributions strengthen the argument that sustainable banking requires a shift from symbolic commitments and isolated green products toward evidence-based, outcome-oriented practices.

Stakeholder theory helps explain this operationalization: regulators demand credible disclosures, investors require ESG-aligned products, clients seek green financing, and employees and communities expect internal sustainability commitments. Nevertheless, these practices remain uneven across jurisdictions and contingent on regulatory stringency, market maturity, stakeholder activism, technological capabilities, and institutional capacity (Nieto and Papathanassiou 2024; Rana, Islam, Al Mamun, and Rekha 2025; Rana et al. 2024). This unevenness reinforces the need to evaluate sustainable banking not only through the presence of ESG initiatives but also through their ability to generate verifiable contributions to SDGs, financial inclusion, and low-carbon transition.

2.3 | Challenges, Barriers and Risks in Advancing Banking Sustainability

Despite progress, banks face structural barriers that constrain sustainability implementation. To better situate the discussion of challenges, Figure 1 presents a conceptual framework mapping the relationships between pressures, operationalization, and outcomes.

Figure 1 treats institutional, stakeholder and legitimacy theories as complementary explanations of sustainable banking.

Institutional theory accounts for the pressures that push banks to respond: regulation and supervision create coercive pressure, international standards create normative pressure, and peer comparison encourages imitation (Aracil et al. 2021; Nieto and Papathanassiou 2024). These pressures increase the salience of stakeholders capable of affecting banks' legitimacy, access to capital, and regulatory standing, including supervisors, investors, clients, civil society, and employees (Jan et al. 2023; das Chagas et al. 2022; Rao and Shukla 2024). Stakeholder theory therefore helps explain how these expectations are translated into demands for credible ESG disclosures, sustainable finance products, climate-risk governance, and measurable contributions to SDG-related outcomes (Avrampou et al. 2019; Rana et al. 2024; Rana, Islam, Al Mamun, and Rekha 2025). Legitimacy theory complements this interpretation by explaining why banks' responses may vary in depth. When sustainability commitments are embedded in lending criteria, financed-emissions measurement, third-party assurance, and internal accountability, they are more likely to support substantive transformation. When they are mainly adopted to match peers, preserve reputation, or satisfy disclosure expectations without changing core banking decisions, they may remain symbolic and increase greenwashing risks (Buallay et al. 2021; Galletta and Mazzù 2023).

This framework highlights the contradictions and barriers that constrain banks' sustainability transformation. A central barrier is the lack of standardized, reliable ESG data. Divergent methodologies among rating agencies produce inconsistent assessments and weak comparability, undermining risk models and strategic decisions (Cao et al. 2024; He et al. 2019). Regulatory fragmentation compounds this problem: banks operating across multiple jurisdictions face conflicting definitions, disclosure obligations, and supervisory expectations, generating compliance costs and opportunities for arbitrage (Washington et al. 2022; Nieto and Papathanassiou 2024).

Another pervasive issue is greenwashing, that is, the exaggeration or misrepresentation of sustainability credentials (Liu and

Li 2024). Heightened scrutiny from civil society, regulators, and investors has exposed reputational vulnerabilities and legal risks (Galletta and Mazzù 2023). Critics argue that voluntary initiatives often serve as symbolic legitimacy-seeking rather than substantive transformation (Liu and Li 2024).

Strategic trade-offs further complicate sustainability integration. Restricting financing to carbon-intensive sectors reduces long-term liabilities but can harm short-term profitability and regional development agendas (Chaudhry et al. 2021). Smaller institutions, moreover, face resource constraints in developing the expertise, technology, and governance structures required for advanced ESG integration (Leal Filho et al. 2026; Galletta et al. 2021).

Legitimacy theory underscores these tensions: banks must balance the symbolic need to demonstrate alignment with sustainability norms against the substantive challenges of embedding ESG into their business models. The resulting contradictions between commitments and outcomes, voluntary and mandatory initiatives, profitability and sustainability, highlight that banking sustainability is institutionalized but contested (Carnevale and Drago 2024).

These dynamics suggest that while banks have made significant strides in integrating sustainability, realizing its transformative potential requires overcoming data fragmentation, regulatory dissonance, greenwashing risks, and capability gaps. More fundamentally, it raises the question of whether banks can move beyond compliance and legitimacy-seeking to play a credible role in financing an inclusive low-carbon transition (Adu et al. 2024).

Figure 1 synthesizes this analytical logic by linking institutional and stakeholder pressures, operationalization channels, mediating barriers, and expected outcomes. Thus, the framework provides the conceptual basis for examining how sustainability commitments are translated into strategies, operational practices, and market initiatives, and why gaps persist between declared ambitions and measurable sustainability impacts.

3 | Methods

This study adopts a multi-method qualitative design, combining multiple case studies of leading global banks with inductive content analysis of their sustainability disclosures. The empirical component of the study is based on case evidence and secondary data, particularly publicly available sustainability reports, ESG disclosures, annual reports, and policy documents from the selected banks. The literature review was used to consolidate the conceptual basis of the study, supporting the interpretation of sustainability implementation through institutional, stakeholder, and legitimacy perspectives.

For conceptual consolidation, studies were included when they directly addressed sustainability implementation, ESG integration, sustainable finance instruments, banking regulation, risk management, or sustainability outcomes in the financial sector. Conversely, studies were excluded when they focused on non-financial firms, lacked direct relevance to banking or

sustainable finance, or did not contribute to the conceptual or empirical focus of the study.

For the case analysis, the secondary data corpus was built separately for each selected bank and included: (i) the most recent annual or integrated report; (ii) sustainability, ESG, or climate reports; (iii) net-zero, climate-transition, responsible banking, or sustainable finance policy documents; and (iv) public disclosures describing sustainable finance targets, financed-emissions strategies, exclusion policies, ESG risk governance, green products, and client-transition initiatives.

This research design is particularly suited to examining complex, context-dependent phenomena where both organizational depth and cross-case comparison are needed (Yin 2018; Elo and Kyngäs 2008). By triangulating corporate reports, ESG disclosures, policy documents, and academic literature, the study balances empirical detail with broader analytical generalization.

3.1 | Multiple Case Study of Leading Global Banks

The study adopts a multiple case study design focusing on 10 leading global banks, selected for their systemic relevance, market leadership, and documented engagement with sustainability initiatives. Case study research is particularly appropriate for analyzing how sustainability is embedded within organizational practices, as it allows for nuanced examination of “how” and “why” banks adopt ESG strategies within diverse regulatory and market contexts (Yin 2018; Siggelkow 2007) regarding the adoption and implementation of sustainability practices within banking institutions, facilitating a nuanced understanding of the organizational, strategic, and environmental factors influencing ESG integration.

The selection of cases in this study follows a purposive sampling strategy, focusing on 10 of the world’s leading financial institutions: HSBC, JPMorgan Chase, BNP Paribas, ING, Bank of America, Santander, Goldman Sachs, UBS, Deutsche Bank, and Citibank. Table 1 summarizes key factors why the selected sample consists of essential case studies for understanding sustainability and ESG transition in the financial sector.

The term “leading banks” was operationalized through four selection criteria. First, the banks had to be large, internationally active financial institutions with substantial market presence and systemic relevance in global banking. Second, they had to represent different regulatory and geographic contexts, particularly North America and Europe, where sustainable finance regulation and ESG disclosure practices are highly visible. Third, they had to have diversified business models, including retail, commercial, investment banking, wealth management or capital markets activities, allowing the analysis to capture different channels of sustainability implementation. Fourth, they had to provide publicly available sustainability-related disclosures during the most recent reporting cycles analyzed, including annual or integrated reports, ESG/climate reports, sustainable finance targets, net-zero commitments, financed-emissions information, exclusion policies or client-transition initiatives. The selection therefore reflects not only size or reputation, but also systemic

TABLE 1 | Key factors of influence on sustainability and ESG transition in the banking sector.

Key factors	Case studies characteristics
1. Scale and global reach	The selected banks' size and interconnectedness create a massive ripple effect on industries and economies worldwide. Studying them helps understand how large financial flows can be directed towards sustainable activities or how their financing of carbon-intensive industries can impede climate goals. Their global footprint means diverse regulatory environments, stakeholder expectations, and climate risks, making their adaptation approaches interesting.
2. Diverse business models	Different business lines (e.g., investment banking, retail/commercial banking) face distinct ESG challenges and opportunities, leading to varied approaches to risk management, product development, and reporting. This allows for an understanding of how ESG integrates at various levels, from financial innovation for a low-carbon economy to grassroots sustainable practices.
3. Pioneers in sustainable finance	The selected banks' early adoption of ambitious sustainable finance targets and development of new financial products offer valuable insights into the practical implementation of sustainable finance strategies, the challenges of defining "green" and "sustainable," and the measurement of impact.
4. Net-zero commitments	The selected banks' journeys towards achieving net-zero financed emissions by 2050 provide critical lessons on setting meaningful targets, developing credible transition plans, engaging with clients on decarbonization, and the inherent complexities of managing "financed emissions" (Scope 3 emissions from their lending and investment activities). Cases like HSBC highlight practical difficulties and tensions.
5. Regulatory scrutiny and greenwashing concerns	Cases like Deutsche Bank's "greenwashing" allegations underscore the increasing regulatory focus on the credibility and transparency of ESG claims. It highlights the importance of robust internal controls, data integrity, and clear definitions in ESG reporting to avoid misleading investors and facing penalties.
6. Data and disclosure challenges	The selected banks' efforts and struggles in collecting, verifying, and reporting ESG data across vast, diverse portfolios provide insights into the practicalities of ESG data management, the need for standardized metrics, and the ongoing evolution of global disclosure requirements (e.g., TCFD, CSRD, SASB, ISSB).
7. Integration of ESG into risk management	Studying how these banks actively integrate climate and other ESG risks into their core risk management frameworks (credit, operational, reputational) offers valuable lessons for the broader financial industry on identifying, measuring, monitoring, and mitigating these emerging risks.

Source: Authors' own creation.

importance, disclosure availability and relevance to the study's focus on sustainability implementation.

3.2 | Inductive Content Analysis of ESG Disclosures

To systematically examine how sustainability commitments are articulated and operationalized in practice, the study applies an inductive content analysis of ESG disclosures, sustainability reports, annual reports, and related public documents. This method enables categories and themes to emerge directly from the data, offering insights into both explicit sustainability practices and the underlying patterns that shape banks' strategies (Elo and Kyngäs 2008; Elo et al. 2014). The coding approach was inductive, while the interpretation of the resulting categories was informed by the conceptual framework developed in the background section.

The application of content analysis followed a structured process, designed to enhance transparency and replicability. First,

relevant documents—including corporate sustainability reports, ESG disclosures, press releases, and publicly available policy documents—were collected for each bank. These materials provided a rich corpus of data reflecting each institution's sustainability commitments, initiatives, and performance. The unit of analysis was text segments and disclosure items (i.e., tables, graphics) that described bank-specific sustainability commitments, ESG governance, climate-risk management, sustainable finance targets, financed-emissions strategies, exclusion policies, green products or client-transition initiatives.

Second, an open coding process (Elo et al. 2014) was conducted, whereby text segments were systematically reviewed to identify recurring themes and practices related to sustainability. The coding scope covered how each bank operationalized sustainability across strategy, risk management, internal operations, product innovation, and client-facing activities. The coding process was iterative and reflexive, allowing for the refinement of categories as the analysis progressed. Following coding, a categorization phase was undertaken, where similar codes were grouped into higher-order categories through similarity analysis.

TABLE 2 | Analytical procedures to identify sustainability practices in case studies.

Step	Application in the analysis of cases
1. Develop research questions	The following research questions were formulated: • What are the key sustainability practices implemented by major global banks? • What similarities can be identified in the sustainability strategies of these institutions?
2. Choose content	The content selected for analysis includes: • Sustainability reports • Annual reports • Publicly available statements
3. Define units and categories	• Units of analysis: Sustainability practices as outlined in the reports and statements (e.g., emission reductions, green financing initiatives, diversity programs). • Categories of analysis: (1) Environmental sustainability practices, (2) Social sustainability practices, (3) Governance and corporate responsibility practices.
4. Codification	The coding system identified sustainability practices and themes, such as emission reduction, renewable energy investment, social impact initiatives (e.g., community development, financial inclusion), governance structures (e.g., transparency, ethical investments).
5. Apply the coding scheme	The selected reports and statements are read and analyzed, with sustainability practices highlighted and coded. Occurrences of each sustainability theme are noted, and quotes or data are linked to the relevant themes. Based on that, a similarity analysis was performed.

Source: Authors' own creation.

The coding framework and analytical steps are detailed in Table 2, which outlines the systematic procedure employed to ensure methodological rigor and coherence.

The findings derived from the case study and content analysis were subsequently synthesized with the existing literature on sustainability approaches in the banking sector. This integrative step aimed to situate empirical insights within broader scholarly and policy debates, enabling a critical examination of both the progress made by leading banks and the challenges they continue to face in embedding sustainability into core banking operations.

By juxtaposing the practices identified in real-world cases with conceptual frameworks and empirical findings from the literature, the study advances a holistic understanding of how sustainability is operationalized within the banking industry. This approach also facilitates the identification of gaps between rhetorical commitments and practical implementation, as well as the recognition of emerging trends and best practices that may inform future regulatory and managerial efforts.

To enhance reliability and transparency, the coding process followed Elo et al. (2014) in three iterative stages: open coding, categorization, and abstraction. Coding was cross-checked against regulatory frameworks (ISSB, CSRD/ESRS, TNFD) to mitigate greenwashing bias and ensure alignment with internationally recognized sustainability standards. This procedure reduces subjectivity and increases the robustness of the findings.

The combination of multiple case studies and inductive content analysis allows for the identification of both context-specific practices and cross-case patterns in how sustainability is embedded within banking. Triangulating case evidence with regulatory and scholarly sources further enhances validity and situates the findings in the wider debates on sustainable finance. While the reliance on publicly available disclosures introduces the risk

of selective reporting, impression management, and overstatement of sustainability performance, the integrative design mitigates this limitation by critically comparing corporate claims with academic critiques and regulatory requirements. Accordingly, reported initiatives were treated as evidence of disclosed strategies and practices, not as direct proof of real-world sustainability impact. Overall, this methodological approach ensures both analytical rigor and practical relevance, enabling a comprehensive understanding of the opportunities, contradictions, and future prospects of banking sustainability.

4 | Results

The case studies confirm that sustainability has become embedded within the strategic discourse of major global banks. However, the depth, consistency, and credibility of implementation remain highly uneven. The findings reveal three major categories of sustainability approaches (Table 3).

Table 4 presents banks that are leading the way in incorporating sustainability into their core business strategies, demonstrating a commitment to addressing climate change, supporting sustainable development, and promoting responsible banking practices.

4.1 | Strategic Commitments and Financing Pledges

All banks analyzed have made high-profile strategic commitments, usually expressed as multi-billion or trillion-dollar financing targets intended to support climate action and sustainable development. Examples include JPMorgan's US\$ 2.5 trillion commitment over 10 years, HSBC's US\$ 1 trillion by 2030, and Bank of America's US\$ 1.5 trillion by 2030. These pledges are designed not only to mobilize capital for low-carbon transitions, but also

TABLE 3 | Sustainability approaches categories and key elements.

ID	Category	Description	Key elements
C1	Strategic sustainability commitments	Long-term pledges and financial commitments for sustainable financing and alignment with global climate frameworks	• Pledges for sustainable financing (e.g., green bonds, climate-related investments) • Sector exclusion policies (e.g., coal financing bans) • Alignment with international agreements (e.g., Paris Agreement)
C2	Operational decarbonization and internal climate strategies	Internal measures for carbon neutrality, renewable energy use, and emissions reduction	• Carbon neutrality in internal operations • Operational net-zero targets (scope 1 and 2 emissions) • Transition to renewable energy for internal electricity consumption
C3	Market-based climate leadership and client-focused initiatives	Client-oriented products and services promoting sustainability, climate risk integration, and sustainable finance leadership	• Green product offerings (e.g., green bonds, ESG investments) • Advisory and financing for clients' decarbonization • Integration of climate risks into lending and investment decisions • Establishment of dedicated sustainability units

Source: Authors' own creation.

TABLE 4 | Sustainability approaches in major banks.

Bank	Strategic commitments (C1)	Operational decarbonization (C2)	Market/client initiatives (C3)
 HSBC	Pledged US\$ 1 trillion in sustainable finance by 2030; aligned with Paris Agreement	Net-zero operations by 2030; financed emissions net-zero by 2050	Active in green bond market; advisory for client decarbonization; sustainability risk integration
 JPMorganChase	Pledged US\$ 2.5 trillion over 10 years for climate and SDG-aligned finance	Operationally carbon neutral since 2020; annual review of net-zero plans	Expanding ESG investment products; climate finance advisory
 BNP PARIBAS	Integrated climate risk into strategy; strict coal exclusion policy	Operational sustainability targets; alignment with ECB climate stress tests	Offers broad ESG/green products; strong EU disclosure compliance
 ING BANK OF AMERICA	"Terra Approach" to align lending with Paris Agreement goals Committed US\$ 1.5 trillion in sustainable finance by 2030	Net-zero operations targets; portfolio alignment strategy Carbon neutral since 2019; 100% renewable electricity target	Leading in green bond issuance and client transition finance Expanding sustainable lending portfolios; community sustainability projects
 Santander	Target of €120 billion green finance by 2025	100% renewable energy sourcing goal by 2025	Focus on renewable energy financing; ESG-linked consumer loans
 Goldman Sachs	Established Sustainable Finance Group; pledged US\$ 750 billion by 2030	Net-zero commitments; sustainability principles integrated in internal operations	Expanding sustainable growth products; transition finance
 UBS	Aligned investment portfolio with net-zero 2050; integrated sustainability principles into wealth management	Net-zero operational commitments; ESG data integration	ESG-focused wealth management offerings; green investment funds
 Deutsche Bank	Committed €200 billion in sustainable finance by 2023	Target of operational carbon neutrality (2022)	Subject to greenwashing investigations; ESG products under regulatory scrutiny
 citibank	Pledged US\$ 1 trillion in sustainable finance by 2030	Net-zero operations by 2030; financed emissions net-zero by 2050	Green bonds, client transition financing, sustainability advisory

Source: Authors' own creation.

to signal alignment with international frameworks, including the Paris Agreement, the UN Principles for Responsible Banking, and the Equator Principles.

A notable trend is the increasing adoption of sector exclusion policies, such as BNP Paribas's strict exit from coal financing. These measures represent a shift from generic pledges to specific restrictions that directly affect credit allocation and portfolio composition. Yet, such policies remain the exception, and most U.S. banks continue financing fossil fuel projects even while declaring long-term net-zero goals.

The credibility gap is further illustrated by the mismatch between headline figures and disclosure practices (Chen et al. 2022). While commitments appear ambitious, few banks provide transparent breakdowns of capital allocation by sector or robust methodologies for calculating financed emissions. This aligns with critiques in the literature that financial institutions often engage in symbolic rather than substantive commitments, aimed at satisfying regulatory and stakeholder expectations without necessarily transforming lending practices (Polzin and Sanders 2020).

4.2 | Operational Decarbonization and ESG Integration

Operational sustainability measures are widely adopted, with nine out of 10 banks committing to net-zero internal operations (Scope 1–2 emissions). Several institutions, including Bank of America and JPMorgan, already claim operational carbon neutrality. Typical measures include transitioning to renewable electricity, upgrading to energy-efficient building standards, and adopting paperless or digital banking platforms. These efforts are highly visible and relatively easier to implement, serving as quick wins for reputational gains.

More substantively, banks are beginning to integrate ESG risk management into their lending and investment processes. European banks, particularly BNP Paribas and ING, have advanced in applying climate scenario analyses and stress testing, largely under regulatory pressure from the ECB and ESMA. ING's Terra approach, for instance, explicitly aligns its portfolio steering with the Paris Agreement, representing one of the more sophisticated operational strategies identified.

Nonetheless, disclosure of Scope 3 financed emissions, which account for the vast majority of banks' climate impact, remains highly inconsistent. While HSBC and Citibank have published methodologies, most banks rely on partial disclosures or vague estimates. The dissolution of the Net-Zero Banking Alliance (NZBA) in 2025 further highlights the fragility of voluntary initiatives, casting doubt on whether banks can credibly self-regulate their financed emissions pathways without stronger regulatory enforcement.

4.3 | Market-Based Leadership and Client Engagement

Beyond internal operations, banks increasingly position themselves as market leaders in sustainable finance, offering

innovative products that serve both clients and reputational goals. The expansion of green bonds, sustainability-linked loans, and transition finance instruments has been central to this strategy. ING, for instance, plays a leading role in structuring green bonds, while Santander emphasizes renewable energy financing and consumer loans tied to sustainable goods (e.g., electric vehicles, solar-powered housing). UBS differentiates itself by embedding sustainability principles into wealth management offerings, appealing to high-net-worth clients seeking ESG-aligned investments.

These initiatives illustrate the dual role of banks as financiers and market shapers: by designing new products, they not only respond to client demand but also actively influence the trajectory of sustainable markets. However, the analysis reveals a strong tendency toward branding-driven innovation, where product launches are framed as climate leadership while evidence of tangible environmental or social impact remains limited. The Deutsche Bank greenwashing case exemplifies the reputational risks of overstated claims, showing how sustainability initiatives can backfire when not backed by transparent and verifiable metrics.

4.4 | Cross-Cutting Contradictions and Systemic Gaps

While banks have made considerable progress in mainstreaming sustainability into strategy, several systemic contradictions persist:

- Ambitious pledges vs. continued fossil financing: All 10 banks commit to sustainable finance, yet many still fund carbon-intensive industries, undermining the credibility of their climate goals.
- Operational neutrality vs. financed emissions: Internal decarbonization is widespread, but financed emissions (Scope 3) remain opaque and insufficiently addressed.
- Innovation vs. greenwashing risks: The proliferation of ESG products is not consistently matched by rigorous verification, creating reputational and legal vulnerabilities.
- Regional asymmetries: European banks display stronger regulatory-driven integration, while U.S. banks rely more heavily on voluntary pledges and self-regulation.
- Symbolic vs. substantive practices: Many initiatives remain fragmented, compliance-driven, or branding-oriented.

These contradictions suggest that sustainability in banking has become institutionalized in discourse but remains contested in practice. The persistence of credibility gaps and uneven adoption raises critical questions about whether voluntary initiatives and market-led innovations are sufficient or whether stronger regulatory harmonization and accountability mechanisms are required to close the gap between ambition and impact.

The findings are broadly consistent with recent studies showing that sustainability in banking has advanced through ESG integration, sustainable finance commitments, digital innovation, and stronger links with SDG-oriented outcomes.

The identification of strategic financing pledges and climate commitments aligns with studies emphasizing the growing role of banks in mobilizing capital for Sustainable Development and low-carbon transition (Avrampou et al. 2019; Jan et al. 2023; Siddik et al. 2024). Similarly, the evidence on ESG risk integration and operational decarbonization supports prior findings that sustainability practices are increasingly embedded in banks' governance, lending decisions, and risk management processes (Buallay et al. 2021; Carnevale and Drago 2024; Rana, Islam, Al Mamun, and Rekha 2025).

The results also extend previous research by showing that technological and market-based initiatives, including green products, transition finance, FinTech, and blockchain-enabled transparency, are becoming important channels for sustainability implementation (Hussain et al. 2024; Al Mamun et al. 2025; Rana, Islam, Abdelwaheb, et al. 2025). However, in line with studies on greenwashing, ESG controversies, and disclosure limitations, the findings confirm that these initiatives do not automatically translate into measurable sustainability outcomes (Galletta and Mazzù 2023; Liu and Li 2024). The persistence of incomplete Scope 3 disclosure, continued fossil-fuel financing, and uneven regulatory pressure reinforces prior arguments that sustainable banking remains shaped by a gap between symbolic commitments and substantive transformation (Aracil et al. 2021; Rana et al. 2024). Thus, the results both corroborate existing literature and add cross-case evidence on how leading banks combine sustainability leadership with unresolved credibility and accountability challenges.

5 | Discussion

The results show that the banking sector has considerably expanded its portfolio of sustainability approaches, from strategic financing pledges and net-zero targets to operational decarbonization and client-oriented green products. These initiatives represent progress, but they also raise a fundamental question: to what extent are these measures translating into substantive environmental and social benefits, rather than serving primarily as instruments for reputational gain or regulatory compliance? This tension reflects the broader critique in the literature that sustainable banking remains fragmented, uneven, and frequently symbolic (Aracil et al. 2021; Carnevale and Drago 2024).

5.1 | From Symbolic Commitments to Substantive Transformation?

High-profile financing pledges and exclusion policies (e.g., coal divestment) demonstrate banks' willingness to align with climate frameworks and stakeholder expectations (Avrampou et al. 2019; Jan et al. 2023). However, as Gulzar et al. (2024) emphasize, such policies remain inconsistent, partial, and often undermined by loopholes that allow continued support for carbon-intensive sectors. This fuels the credibility gap between public commitments and actual portfolio transformation, echoing findings that banks often engage in symbolic actions to secure legitimacy (Buallay et al. 2021; Rao and Shukla 2024).

Moreover, newer initiatives such as impact investing, designed to deliver environmental and social returns alongside financial

gains, risk becoming largely rhetorical when not accompanied by robust accountability and transparent reporting (Avrampou et al. 2019; Edunjobi 2024). This underlines the importance of shifting the sector from input-based reporting (e.g., capital mobilized) toward outcome-oriented measures that demonstrate real-world impact.

5.2 | Operational Decarbonization: Necessary but Insufficient

Operational measures such as paperless banking, energy-efficient buildings, and renewable energy sourcing are widely adopted (Chen et al. 2023; Samour et al. 2022). These initiatives reinforce reputation, generate efficiency gains, and have symbolic value for internal culture (Birindelli and Palea 2023). However, they represent only a minor share of banks' climate footprint, especially when compared to financed emissions across loan and investment portfolios (Xie et al. 2023; Gutiérrez-Ponce and Wibowo 2024).

While banks like HSBC and ING have taken steps to integrate financed emissions into portfolio management, most institutions continue to under-report Scope 3 emissions or apply inconsistent methodologies (Liu et al. 2024). This discrepancy illustrates what Campiglio et al. (2018) describe as the limits of voluntary initiatives: internal decarbonization is easier to achieve than systemic reallocation of capital, but it fails to address the true scale of banking's environmental impact.

5.3 | Market Innovation and Client Engagement: Leadership or Branding?

The rapid growth of green bonds, sustainability-linked loans, and renewable energy financing demonstrates the sector's role in creating and shaping markets (Hu and Scholtens 2014; Chen et al. 2023; Hussain et al. 2024). Examples such as ING's Terra approach and Santander's renewable energy loans highlight how banks can use client engagement to steer capital flows toward sustainability.

Yet, as with strategic commitments, the credibility of these instruments depends on verification. Without standardized reporting, there is a risk that innovative products serve as branding rather than substantive tools for transition. The case of Deutsche Bank illustrates the reputational consequences of overstated claims (Galletta and Mazzù 2023). Similar concerns apply to impact investment vehicles, which often promise transformative returns but remain weakly regulated (Edunjobi 2024). Ultimately, market innovation must be assessed not by the number of products launched but by their measurable contribution to decarbonization and inclusion (Amuakwa-Mensah and Näsström 2022; Samour et al. 2022).

5.4 | Structural Barriers and Systemic Contradictions

Persistent barriers prevent sustainability integration from reaching transformative levels. One of the most significant challenges concerns inconsistencies in ESG data and disclosure,

as divergences among ratings, indicators, and reporting practices continue to undermine the reliability and comparability of sustainability-related risk assessments (He et al. 2019; Arjun et al. 2021). Regulatory fragmentation further complicates implementation. Although the EU has advanced relatively comprehensive frameworks such as the CSRD and EU Taxonomy, requirements remain uneven across jurisdictions, increasing compliance complexity and creating opportunities for regulatory arbitrage (Nieto and Papathanassiou 2024; Washington et al. 2022).

These challenges are reinforced by strategic and organizational constraints. Banks may face tensions between short-term profitability and longer-term sustainability objectives, particularly when their portfolios remain dependent on carbon-intensive sectors (Chaudhry et al. 2021; das Chagas et al. 2022). At the same time, effective ESG integration requires specialized expertise, technological capabilities, reliable information systems, and appropriate governance structures, which are not equally available across institutions (Adu et al. 2024; Buallay et al. 2021). Taken together, these barriers indicate that the transition toward substantive sustainable banking depends not only on stronger external pressures but also on banks' internal capacity to translate such pressures into consistent governance, risk management, and capital allocation practices.

These contradictions confirm the risk of incrementalism: banks adopt compliance-oriented postures, meeting minimum regulatory thresholds but avoiding systemic change (Galletta and Mazzù 2023). The distance between operational decarbonization and financed emissions is especially relevant because internal carbon neutrality has limited climate impact if lending and investment portfolios continue to support carbon-intensive activities (Gutiérrez-Ponce and Wibowo 2024). Incomplete Scope 3 disclosure and weak links between financed-emissions measurement and credit allocation therefore constrain banks' contribution to decarbonization (Campiglio et al. 2018). Similarly, green bonds, ESG products and transition finance can expand capital flows toward sustainability, but their social and environmental relevance depends on credible criteria, transparent reporting and evidence of outcomes (Hussain et al. 2024; Rana et al. 2024). Without these safeguards, sustainable finance may be evaluated mainly by the volume of capital mobilized, while its contribution to emissions reduction, biodiversity protection, financial inclusion and SDG-related progress remains unclear (Avrampou et al. 2019).

5.5 | Toward Systemic and Outcome-Oriented Sustainable Banking

Looking forward, sustainability in banking must shift from fragmented, symbolic measures to systemic, measurable, and transparent strategies. This requires not only better internal governance (Adu et al. 2024) but also more proactive roles in reshaping markets and supporting climate-vulnerable communities (Hui et al. 2024; Siddik et al. 2024).

This shift also depends on moving beyond purely voluntary sustainability commitments. The dissolution of the NZBA illustrates the limits of voluntary coalitions when climate pledges are not supported by enforceable standards, comparable metrics, and

clear accountability mechanisms. Mandatory and harmonized frameworks, such as ISSB, CSRD/ESRS, and TNFD, can help reduce credibility gaps by standardizing disclosure requirements, improving cross-jurisdictional comparability, and limiting selective reporting or greenwashing.

Achieving this transition requires greater emphasis on standardized and outcome-oriented reporting. Banks should disclose not only the volume of financial resources classified as sustainable but also the environmental and social outcomes associated with these activities, thereby improving comparability and reducing opportunities for greenwashing (Galletta and Mazzù 2023; Liu and Li 2024). Greater cross-sector collaboration among financial institutions, governments, civil society, and international organizations is also necessary to support the development of more harmonized frameworks and green taxonomies (das Chagas et al. 2022; Daszyńska-Żygadło et al. 2021).

At the organizational level, this transition also requires stronger mechanisms for evaluating whether sustainability strategies generate measurable outcomes. Rather than assessing performance primarily through commitments or the volume of capital mobilized, banks should increasingly consider indicators related to financed-emissions reductions, biodiversity impacts, and social inequalities. Such outcome-based evaluation should be supported by internal accountability mechanisms, including ESG-linked lending KPIs, board-level oversight, executive incentives connected to sustainability outcomes, and third-party verification of financed-emissions disclosures and sustainable finance instruments. These mechanisms can strengthen the connection between sustainability commitments, organizational decision-making, and measurable impact.

Ultimately, sustainable banking must be reframed not as a voluntary niche strategy, but as a core driver of business resilience, legitimacy, and societal value in the face of climate change and inequality (Buallay et al. 2021; Adu et al. 2024). Without these changes, sustainability may remain closer to branding than to measurable transformation.

6 | Conclusion

This study examined how sustainability is implemented in the global banking sector through multiple case studies of leading international banks and inductive content analysis of ESG disclosures, sustainability reports, annual reports, and policy documents. The findings show that banks have considerably expanded their sustainability approaches through strategic financing commitments, operational decarbonization, ESG risk integration, and client-focused market initiatives. However, these developments coexist with persistent contradictions, including continued financing of carbon-intensive sectors, limited transparency regarding financed emissions, uneven regulatory pressures, and compliance-driven practices. Overall, sustainability has become embedded in banking discourse and strategy, but its transformative potential depends on the ability of financial institutions to convert commitments into transparent, measurable, and accountable environmental and social outcomes.

6.1 | Theoretical Contribution

This study contributes to the sustainable banking literature by integrating institutional, stakeholder, and legitimacy theories into a complementary explanation of sustainability implementation in banking. Institutional pressures associated with regulation, international standards, and peer behavior have been recognized as important drivers of sustainability adoption in financial institutions (Aracil et al. 2021; Nieto and Papathanassiou 2024), while stakeholder expectations influence how banks respond to demands from regulators, investors, clients, and civil society (Rao and Shukla 2024). The findings connect these pressures with legitimacy dynamics that influence the depth of organizational responses and help explain the persistence of symbolic forms of sustainability adoption documented in previous research (Carnevale and Drago 2024). This theoretical integration helps explain why the institutionalization of sustainability practices may coexist with uneven environmental and social outcomes.

The study also advances understanding of how external sustainability pressures are translated into banking practices. The proposed framework connects institutional and stakeholder pressures with specific operationalization channels, including strategic commitments, ESG risk integration, operational decarbonization, and market- and client-oriented initiatives. Previous studies have documented the increasing incorporation of sustainability into banks' governance, lending decisions, and risk management processes (Buallay et al. 2021; Rana, Islam, Al Mamun, and Rekha 2025), while the present findings show how these practices form part of a broader process linking external pressures to organizational implementation. This process is affected by data inconsistencies (He et al. 2019), regulatory fragmentation (Nieto and Papathanassiou 2024), profitability trade-offs (Chaudhry et al. 2021), and governance and capability limitations (Adu et al. 2024). The framework therefore provides an explanation for the persistent differences between declared sustainability ambitions and their implementation in banking activities.

The findings further contribute to the theoretical understanding of symbolic and substantive sustainability by showing that both forms of response can coexist within the same institution. Previous research has identified a persistent gap between sustainability commitments and substantive transformation in banking (Carnevale and Drago 2024), as well as credibility problems associated with greenwashing and limited verification of ESG claims (Galletta and Mazzù 2023; Liu and Li 2024). The cross-case evidence developed in this study shows how banks can demonstrate substantive progress in areas such as operational decarbonization and ESG risk integration while showing lower levels of transparency or implementation in financed emissions and carbon-intensive portfolios. Sustainable banking therefore emerges as a multidimensional and uneven process in which the degree of sustainability integration varies across practices, institutions, and regulatory contexts. This perspective also contributes to the debate on voluntary and mandatory governance mechanisms, whose effectiveness in promoting substantive sustainability integration remains uneven (Campiglio et al. 2018).

6.2 | Practical and Policy Implications

The findings have implications for banking managers because they indicate that the credibility of sustainability strategies depends on how effectively commitments are incorporated into core financial decisions. The coexistence of ambitious sustainable finance targets with continued exposure to carbon-intensive sectors suggests that portfolio-level sustainability criteria should be more closely connected to lending, investment, and client-selection processes. Banks can strengthen this connection by incorporating financed-emissions indicators into credit assessment and portfolio management, defining sector-specific transition criteria, and linking sustainability objectives to internal performance indicators and executive accountability. The persistent gap between operational decarbonization and financed emissions also indicates that reductions in banks' own Scopes 1 and 2 emissions should be accompanied by greater attention to the environmental impact of lending and investment portfolios (Campiglio et al. 2018; Gutiérrez-Ponce and Wibowo 2024).

The findings also have implications for the design and governance of sustainable financial products. Green bonds, sustainability-linked loans, transition finance, and ESG investment products can support the allocation of capital toward sustainability objectives, but their credibility depends on transparent eligibility criteria, reliable data, and evidence of environmental and social outcomes (Hussain et al. 2024; Rana et al. 2024). Banks should therefore complement measures of capital mobilized with indicators showing the results associated with that financing, including emissions reductions, transition progress, financial inclusion, or other relevant sustainability outcomes. Greater use of independent assurance, clear methodologies, and internal controls can also reduce the risk that product innovation becomes disconnected from measurable impact and thereby contributes to greenwashing concerns (Galletta and Mazzù 2023; Liu and Li 2024).

For policymakers and financial regulators, the cross-case differences identified in the study reinforce the importance of greater regulatory coordination and comparability across jurisdictions. Divergent disclosure requirements, ESG classifications, and supervisory expectations increase compliance complexity and make sustainability performance more difficult to compare across institutions (Nieto and Papathanassiou 2024). Harmonization of sustainability reporting standards, green and transition finance taxonomies, and financed-emissions methodologies can therefore strengthen market transparency and reduce opportunities for regulatory arbitrage. Regulatory frameworks can also place greater emphasis on the connection between disclosed commitments and portfolio-level outcomes, supported by assurance requirements and supervisory scrutiny of sustainability claims.

These implications extend to investors, clients, civil society, and other stakeholders that assess banks' sustainability performance. The findings show that highly visible commitments and sustainable finance volumes provide only partial information about the depth of sustainability implementation. Stakeholders should therefore consider the consistency between banks' stated targets, lending and investment portfolios, financed-emissions

trajectories, exclusion or transition policies, and reported environmental and social outcomes. Such an outcome-oriented perspective can strengthen external accountability and create stronger incentives for banks to demonstrate substantive progress. More broadly, collaboration among financial institutions, regulators, standard-setting bodies, investors, and civil society can support the development of more comparable metrics and credible mechanisms for evaluating banks' contributions to the low-carbon transition, financial inclusion, and the SDGs (das Chagas et al. 2022; Avrampou et al. 2019).

6.3 | Limitations and Future Research

This study is not without limitations. First, the analysis focused on a purposive sample of leading global banks, which means the findings may not fully capture the practices of smaller or regionally oriented financial institutions, particularly in emerging economies. Second, the reliance on publicly available reports and disclosures raises the risk of selective reporting and potential greenwashing, which could obscure the actual depth of sustainability integration. Third, the qualitative multi-method design provided both breadth and depth; the study does not quantify the real environmental and social impacts of banks' practices, which remains a critical area for future empirical research. Despite these limitations, the study offers important value by systematically mapping the strategies, contradictions, and prospects of sustainable banking. By combining cross-case analysis with critical reflection, it advances theoretical debates on institutional and legitimacy dynamics while providing actionable insights for regulators, managers, and stakeholders committed to aligning finance with sustainable development.

Further research is needed to assess the real-world impacts of sustainable finance instruments, moving beyond self-reported commitments to evaluate measurable contributions to decarbonization, biodiversity conservation, and social equity. Comparative studies across regions, particularly in emerging economies, will be crucial to understanding how contextual factors shape ESG integration. Finally, more interdisciplinary work linking finance with environmental sciences, social equity studies, and governance research is needed to clarify the conditions under which sustainable banking can act as a driver of systemic transformation rather than incremental adaptation.

While the banking sector has made notable strides in embedding sustainability, a credibility gap remains between ambition and practice. Closing this gap requires stronger internal governance, harmonized reporting standards, and clearer evidence that financial practices contribute to climate and social outcomes. Only through such coordinated action, including stronger accountability, harmonized reporting standards, and clearer links between financial practices and real-world sustainability outcomes, can banking fulfill its potential as a lever for sustainable development.

Author Contributions

Walter Leal Filho: conceptualization, investigation, methodology, funding acquisition, writing – original draft, validation, visualization, writing – review and editing, formal analysis, project administration,

resources, data curation, supervision. **Tiago F. A. C. Sigahi:** investigation, writing – original draft, writing – review and editing, visualization, validation, methodology, software, formal analysis, project administration, resources, data curation. **Izabela Simon Rampasso:** investigation, writing – original draft, writing – review and editing, visualization, validation, methodology, software, formal analysis, data curation, resources. **Rosley Anholon:** investigation, funding acquisition, writing – original draft, writing – review and editing, visualization, validation, methodology, software, formal analysis, project administration, resources, supervision, data curation.

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Conflicts of Interest

The authors declare no conflicts of interest.

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