Banks' Contribution to Green and Sustainable Growth: Drivers, Opportunities and Challenges A Systematic Review

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Received: 16.02.2023, Revised: 08.04.2023, Accepted: 26.05.2023

Abstract

Banks' active involvement in sustainable growth and their commitment to steer the necessary financial resources to the green economy requires the integration of finance into the macroeconomics of environmental shifts and climate change. Banks' intermediary role, and their capacity to create money and decide on whether to allocate new credits to the economy provide banks with the ability to reinforce companies' commitment to integrate sustainability indicators into their business strategies and therefore contribute to an orderly transition towards a low-carbon economy. Accordingly, this study performs a comprehensive literature analysis to identify, appraise and examine the researchers' perspectives on the substantive factors that may boost banks' role in sustainable growth and their contribution to close the present green finance gap, and therefore, reduce the uncertainty and endogenous risks that may arise from climate and environmental shocks. A total of 60 publications retrieved from the Scopus database and extending over the 2001- 2021 period were examined. In line with the study's review protocol, the main research themes in extant literature are banks' determinants of sustainability behaviour, banks' sustainability performance-financial performance association, customers and depositors' responsiveness to banks' sustainability practices, sustainable banks' risk profile, and the mandatory calibration of "green" supervision, macroprudential regulations and monetary policies to further enhance climate-resilient investments.

Keywords: climate and environmental risks, climate-resilient investments, environmental sustainability, low-carbon economy, sustainable banking

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Introduction

Richardson (2009) claims that financial institutions have progressively become prominent stakeholders in modern economic systems. Therefore, they are key drivers for sustainability transition amidst the global concern about the deep uncertainty and endogenous risks that may arise from climate and environmental shocks (Monasterolo, 2020; Naidoo, 2020). Banks in particular are involved in a wide spectrum of businesses and economic activities, and hence, they can further reinforce sustainability impacts and accelerate the transition towards more green and sustainable growth (Campiglio, 2016; Sustainalytics, 2016; Zimmerman, 2019). The banks' intermediary role in addition to their legal capacity to create and allocate money enables banks' managers to mobilise or rather direct financial resources throughout the entire economic system, and therefore boost innovation, enhance economic growth, and uphold companies' sustainability performance. They hold the ability to shape or reshape -though often indirectly (Climent, 2018; Nizam et al., 2019; Yip & Bocken, 2018)- the structure of business strategies and shift the borrowers' business models to effectively integrate environmental and climate change considerations into their decision-making process (Gangi et al., 2018). In other words, their position to decide on whether to allocate credit to firms provides banks with the capacity to influence firms' business strategies and impel companies to introduce sustainability criteria into their business models (Bose et al., 2017; Campiglio, 2016; Jeucken & Bouma, 1999; Kawabata, 2019).

Nonetheless, the transition towards a low-carbon economy is a non-linear and disruptive process. Therefore, it is important to clearly set the directional transformation of the financial system over the different timespan to consistently respond to the sustainability transition demands and close the actual green finance gap. Several studies (Campiglio, 2016; D'Orazio & Popoyan, 2019; United Nations Environment Programme Finance Initiative [UNEP FI], 2018) underline that any delay in the provision of the necessary financial resources to address the current environmental and climate change issues may have tremendous implications (i.e., significant additional costs and further sustainability challenges). Accordingly, they call for multi-dimensional, multi-scale, time-dynamic, and proactive strategies that involve structural shift in the financial system's position (policies, regulations, guidelines, financial vehicles, financial institutions' relationships, theoretical foundations of finance, institutional incentives) with respect to sustainable growth and green economics objectives. The embeddedness of finance in environmental economics and the macroeconomics of climate change, and the successful alignment of the financial system architecture with the green structural change may create sufficient incentives for greater involvement of banks and financial institutions in sustainability transition, and introduce additional stimulus to close the present green finance gap and support firms to develop more climate-resilient and environmentally sustainable business models/strategies.

Therefore, the purpose of this paper is to perform a comprehensive review of the literature on sustainable banking in the Scopus database from 2001 to 2021 to identify the key research streams in this field of study. More importantly, it will highlight the critical conditions, pre-requisites, and the major impediments for banks to contribute to environmental sustainability and climate

resilience. Finally, it will determine the major research gaps that academics might address to improve consistency in the financial sector's efforts to close the actual green finance gap.

Conventional Banks' Failure and Sustainable Banks' Important Role to Achieve Green Structural Change

Rockström et al. (2009) identify nine planetary boundaries that humans should not transgress in order to safeguard the environmental ecosystem and to not expose societies to existential risks. Companies' linear business model, however, is one of the major causes for the transgression of several planetary boundaries (Rockström et al., 2009)[1] and the impairment of the earth's regenerative capacity. Conventional banks are responsible and accountable for such ecological imbalance. Short-termism in banks' credit allocations and financial decisions in addition to the lack of appropriate risk measurements that can assess/predict banks' exposure and vulnerability to companies' environmental and climate risks create carbon biasness in the economy i.e., banks are likely to allocate financial resources to the "most productive sectors" in the economy to generate competitive returns for their shareholders regardless of their impact on environment[2]. In other words, banks account primarily for companies' credit risks without due consideration to their climate and environmental risks. Nonetheless, recent studies stress that banks' inconsideration of their customers' environmental and climate change risks may generate adverse implications on banks' stability, economic performance, and financial stability (Fabris, 2020; Klomp, 2014).

Climate and Environmental Shocks' Impact on Banks' Stability

Klomp (2014) ascertains that regardless of the effectiveness of countries' financial regulatory and supervisory frameworks, and their level of economic and financial development, environmental and climate shocks bolster the fragility of banks' institutions due to the increase of banks' likelihood of default. To illustrate, the author claims that natural disasters decrease banks' reserves[3] and therefore reduce their capital adequacy and make banks insolvent; impair banks' asset quality (due to customers' loss of ability to repay their loans and the destruction of collaterals); reduce banks' managerial efficiency due to additional and usually substantial increase of banks' expenses after environmental and climate shocks; decrease banks' profitability due to the decline in banks' efficiency, higher operational and counterparty risks, and significant increase in interbank interest rates in response to uncertainty of customer's repayment capacity; and increase the banks' liquidity risks because of bank runs and considerable customers' demand for loans to replace their lost assets. On top of that, Lamperti et al. (2019) argue that climate change increases the frequency of financial crises by 26-248%. Moreover, the authors report that the regulators'/ governments' interventions to bail out insolvent banks will generate further fiscal

[1]Rockström et. al. (2009) point out that three of nine interconnected planetary boundaries (i.e., rate of biodiversity loss, climate change and human interference with the nitrogen cycle) have already been exceeded, and the ecological ecosystem is heading towards a critical point that threatens the humanity's existence.

[2]Twenty of the world's largest commercial banks provided 171 out of 232 billion to the coal industry from 2005 to 2011 (Schücking et al., 2011).

[3]This is mainly due to the large write-off of loan losses.

burden of approximately 5-15% of GDP per year.

Climate and Environmental Shocks' Impact on Economic Performance

Conventional banks may also contribute to the foreseeable large negative impacts of climate and environmental shocks on potential future economic performance. Banks' carelessness of companies' climate and environmental sustainability performance may reduce labour productivity; disrupt the labour supply market; divert resources from investments in productive capital that promote development, economic growth, and innovation to climate change adaptation; decrease agricultural yields; increase health care costs; destruct physical capital; expose macroeconomic condition[4] and fiscal stability[5] to vulnerabilities; and trigger a price increase in several products and services (Fabris, 2020).

Impact of Climate and Environmental Shocks on Financial Stability

The systemic and non-linear nature of climate and environmental risks may affect financial stability. Carney (2015) argues that there exist three broad channels of risk transmission from climate and environmental shocks to financial stability. Firstly, the physical risks: climate change effects (floods, drought, storms, frequent wildfires) could impair firms' physical assets and production capacities. This may in turn increase banks' credit risk, trigger financial losses for the insurance industry, and increase public costs or rather undermine governments' financial position (Battiston et al., 2021; Lamperti et al., 2019), Secondly, the transition risks: the transition towards a low-carbon economy could lead to unpredictable changes in asset prices and adjustments in defaults for entire asset classes due to the introduction of "green" policies and the integration of revolutionary and climate-resilient/low-emission technologies into the production process. This may ultimately create financial shocks for asset managers, institutional investors, and banks' portfolios (Battiston et al., 2021; Carney, 2015). Finally, the liability risks: the unpredictable future claims of particular groups who have undergone losses or damage from climate and environmental shocks and seek compensation from other parties that are held liable. Such claims may have the potential to affect carbon emitters, their creditors (banks), and their insurers (Carney, 2015).

Banks therefore can play at least three roles in relation to climate and environmental sustainability. First, they are intermediaries that create and allocate financial capital to the entire economic system and therefore they are better able to deploy additional financial resources to climate-resilient investments i.e., reduce the green finance gap. Secondly, they can embed and price climate and environmental risks in their credit allocation policies and their predictions of companies' financial performance (mitigate the sources of climate and environmental risks and set the foundation for financial stability). Thirdly, their position as creditors, advisors, institutional investors, and heads of supply chain, enable banks to transmit the regulators' institutional directions and urge corporates

[4]For instance, the impact on economic growth, employment, public debt, interbank interest rates and other relevant indicators.

[5]The destruction of infrastructure and the reallocation of necessary financial resources to compensate for or subsidy the decline in people's socio-economic welfare.

to introduce climate and environmental considerations into their business strategies and corporate governance structures.

Therefore, this paper conducts a systematic review of sustainable banking literature from 2001 to 2021 and seeks to provide effective answers to this key research question: What are the necessary preconditions to reinforce banks' contribution to close the actual green finance gap and balance the interplay of financial stability and environmental sustainability?

Methodology

To address our research question, the study explores the scope of extant literature and performs a systematic literature review. The objectives to undertake a systematic literature review are (1) to identify current research trends and derive the prevalent research themes; (2) to differentiate, figure out and lay out the relevant theoretical frameworks for future publications; and (3) to derive research gaps and determine potential research topics for further investigation (Sivarajah et al., 2017). Therefore, this review seeks to provide a breadth of coverage across key research themes in sustainable banks and depth of coverage within every topic in order to identify the critical considerations that may reinforce banks' commitment and contribution to green structural change.

The review method involves a three-stage analytical approach (Xiao & Watson, 2019):

1. Set the review process i.e., formulate the research objective/questions (Sections 1 & 2), underline the need for or rather the significance of the review (Section 2), and develop/validate a review protocol (Section 3).
2. Apply the review process i.e., search for, identify, select, screen for inclusion, assess, analyse, and synthesise the relevant studies.
3. Communicate/report the review results.

A review protocol is therefore preset guidelines that describe and specify the process, the purpose, the research questions, the search strategy (the selection of bibliographic database and the development of the search statement), the inclusion and exclusion criteria, the studies' quality assessment process, the synthesis, and the communication of the review results. It identifies the scope and reinforces the validity and reliability of the review results (i.e., reduce the likelihood of researchers' bias). In other words, other researchers can apply the same review protocol to replicate the study, cross-check and verify its results (Xiao & Watson, 2019).

Therefore, our review protocol undertakes the same process and follows particularly the following steps:

a. Identify the purpose of the review (section 1).
b. Set the research question (section 2).
c. Select the Scopus database as the primary source for publications' search on the topic of interest.
d. Incorporate the most relevant keywords into a logical search statement to derive the primary research publications. Our search statement for the purpose of this review is as follows: "sustainable banking" OR "green banking" OR "green lending". We introduce the Boolean operator 'OR' to expand the scope of coverage over extant literature.
e. To enhance the quality of analysis, the review focuses the search process

exclusively on peer-reviewed journal articles.

f. Limit the search strategy on a relevant timespan that extends from 2001 to 2021 to account for the most revolutionary international frameworks for environmental and climate resilience such as the Kyoto Protocol (2005)[6], Paris Climate Agreement (2015), and the Sustainable Development Goals (2015).
g. Include the most relevant subjects to the topic of interest and authors' backgrounds, namely economics, econometrics, and finance; social sciences; business, management and accounting; environmental science; and energy.
h. This systematic review accounts primarily for empirical studies. Exceptions to the rule are the articles that address the necessary modifications/adaptations of macroprudential regulations and monetary policies to comply with the structural green change.
i. To further define the scope of coverage, the analysis predominantly considers articles that examine various sustainable applications of commercial banks only. In other words, publications that address sustainability issues, practices or challenges of multilateral development banks and cooperative banks, for instance, are excluded.
j. The alignment of articles' selection process with the review objectives -it helps validate the inclusion of a specific article- impels the authors to extensively read every single article and perform a content analysis to check whether it helps address the review question and gathers adequate/ relevant empirical data.
k. Perform a selective backward and forward search to find out other relevant articles that may increase the likelihood of integrating and examining the most pertinent publications to the topic of interest (reinforce the scope and the quality of the review).

The second phase of the review process consists of three stages:

1. The introduction of the search statement in the Scopus database in accordance with the conditions (d), (e), (f), and (g): this step generates a total of 116 articles.
2. The application of conditions (h) and (i) reduces the number of eligible articles to 36 as of 26 December 2021.
3. Consistently with the final steps of the review process, namely (j) and (k), the authors proceed with the content analysis process over the previously defined articles and conduct a selective and progressive backward and forward search to incorporate additional relevant articles to further enhance the analysis and effectively address the review question. Conditions (j) and (k) produce a final sample of 60 articles.

[6]It came into force in 2005.

In the third phase of the review, we thematically synthesise, analyse, and report the review results. Table 1 below summarises the process of our systematic review.

Table 1
Process of Our Systematic Literature Review

1. Set the review process and develop the review protocol:
1. Formulate the research objective/ questions.
2. Highlight the significance of the review.
3. Develop/validate the review protocol.
2. Conduct the review
1. Select Scopus database as the primary source for publications' search [c].
2. Search for literature [Incorporate the most relevant keywords into a logical search statement to derive the primary research publications] [d].
3. Introduce relevant inclusion and exclusion criteria [e, f, g, h, i].
4. Assess the quality of publications [j]
5. Reinforce the scope and the quality of the review [selective forward and backward search] [k].
6. Analyse and synthesise the final dataset.
3. Report the review results

Data Analysis/Findings

Theme 1: Determinants/Drivers and Enablers of Banks' Sustainability Behaviour

Institutional Drivers

To identify the key determinants of banks' engagement in climate finance across various countries, Kawabata (2019) introduces climate policy as a coercive isomorphism structure, and banks' membership in international climate finance initiatives as a normative pressure. Banks may find themselves under legal obligations to abide by regulators' guidelines and government policies that strive to steer additional financial capital to climate-resilient investments. Moreover, banks' involvement in sustainable professional networks create "soft institutional pressures" that may gently spur banks to embed environmental and climate considerations into their investment practices/decisions. Unlike Chih et al. (2010), Guenther et al. (2016), Khan et al. (2020), Rehman et. al. (2021), and Tan et al. (2017), the results of this study show that climate policy is not yet a determinant of financial institutions' commitment to direct funds to climate finance. In contrast, the author reveals that banks' membership in professional networks [e.g., UNEP FI, Equator Principles (EP)] does significantly and positively stimulate financial institutions' engagement in climate finance actions (consistent with Tan et al., 2017). Contreras et al. (2019) support this result. They examine the effectiveness of peer pressure on banks' willingness to voluntarily contribute to sustainable development through self-adoption of Equator Principles, i.e., banks' self-regulation. They report that banks' higher exposure to peer pressure from the adherents' counterparts increases their likelihood to adopt the EP by 33%. [7]Sustainable finance initiatives provide banks with opportunities to boost their institutional capacities, to actively participate in the development of appropriate sustainable finance standards, and to get effective assistance in the implementation of sustainability criteria. In other words, they

[7]Moreover, they document that a mere banks' collaboration with active adherents to Equator Principles increases their susceptibility to self-regulate their business activities to comply with sustainability criteria.

are subject to higher institutional pressures, which may explain the significantly positive association.

Similarly, Bose et al. (2018) examine banks' responsiveness to institutional drivers and investigate whether they reinforce their green disclosure practices in Bangladesh. The study seeks first to assess the influence of the central bank's guidelines as an institutional coercive isomorphic factor on banks' green disclosure. Since commercial banks' growth is substantially dependent upon their compliance with the regulator's policies/ guidelines, and as long as banks' financial resources and capital bases are under the control of the regulatory/supervisory authority, banks are bound to comply with the sustainability disclosure guidelines introduced by supervisory bodies.

Therefore, the authors conjecture that the issuance of the central bank's guidelines in 2011 may positively influence the banks' green disclosure.

Consistent with Khan et al. (2020), the study documents a significantly positive impact association[8]. On top of that, the authors test whether banks are sensitive to industry leaders' initiatives that seek to develop, promote, and implement better green disclosure practices. They argue that better market appreciation and responsiveness to new banks' environmental disclosure standards may stimulate other banks to collectively develop a set of organisational imitation processes to introduce "the up-to-date best practices" into their disclosure policies and get similar positive recognitions from market stakeholders. Accordingly, the authors argue that peer pressure (normative pressure) will cause disclosure structures/ practices to converge over time. Moreover, they posit that with more social acceptance and higher institutionalization, they become a routine process. The study's empirical results support of all their conjectures.

Corporate Governance Structures

The stakeholders' set of expectations from banks' impact on environment and climate change require banks' managers to translate their responses into formal company-wide environmental and climate policies embedded in their corporate governance structures and practices (Cogan, 2008). Accordingly, Bose et al. (2018) and Kawabata (2019) investigate whether board oversight (senior management commitment to monitor climate change strategic responses) and board structure (board independence and board size) determine the financial institutions' involvement in climate finance and banks' commitment to enhance their green disclosure practices respectively. Moreover, they introduce other relevant variables in this respect, namely employee awareness and institutional ownership to examine additional determinants that may identify or increase the banks' willingness to deploy financial capital to address climate change issues and uphold their environmental sustainability and impact. While senior management commitment, board size (consistent with de Villiers et al., 2011) and institutional ownership report a positive and statistically significant impact on banks' involvement in climate finance and their commitment to upgrade their green disclosure practices, employee awareness and board independence on the other hand do not exhibit a statistically significant implication on banks' sustainability behaviour.

[8] Moreover, Khairunnessa et al., (2021) provide an extensive review of the recent evolution of green banking in Bangladesh and further approve the major role of the Central Bank of Bangladesh in the development of green financial system through the effective introduction of green policies and regulatory guidelines.

Digitalisation

Amidijaya and Widagdo (2019) claim that digital transformation may increase banks' likelihood to enhance their environmental management efficiency (e.g., reduce their environmental footprints) and spur their customers' awareness of sustainability issues. Sustainable banks may therefore leverage their digital platforms to promote and stimulate their customers' involvement in their climate change and environmental initiatives. Moreover, the successful integration of the various banks' stakeholders into their sustainability strategies may drive banks to promote their information disclosure and better report on their environmental impact. Unlike the theoretical assumption, Amidijaya and Widagdo (2019) document a statistically insignificant impact of digitalisation on banks' sustainability performance of listed banks in Indonesia.

Theme 2: Risk Management

Cui et al. (2018) assess the effectiveness of the green credit policy in China from a credit risk perspective. Banks in China are under legal obligation to adhere to the green credit guidelines to sustain their regulatory compliance and maintain their legitimacy. This regulatory policy aims to transform the Chinese banks' lending and credit allocation behaviour to steer and increase the financial capital flows to climate-resilient investments while reducing the banks' credit risk. In other words, this study seeks to understand and measure the impact of a mandatory policy, namely the green credit guidelines, on banks' credit risk. The study's results may have significant implications on the yet inconclusive debate about environmental sustainability (environmental risk) and banks' financial performance relationship. The authors argue that financial institutions that account for their borrowers' environmental sustainability and risk indicators in their credit risk assessment may reduce their credit risk. The empirical results are supportive of their research hypothesis. To illustrate, banks with higher credit allocation to green investments, i.e., a higher ratio of green credit manage lower counterparty risks. This is consistent with Gangi et al. (2018), Weber et al. (2010), and Weber et al. (2015). The policy implication of this study in the light of institutional theory is that the introduction of green credit guidelines has had a positive impact on banks' commitment to increase their green lending ratio.

In addition, the People's Bank of China's control over banks' credit allocation to pollution-intensive and over-capacity industries and its active role in the promotion of green lending to energy conservation, renewable energy and circular economy may reduce the credit risk for green firms in opposition to environmentally unfriendly corporations. In other words, over-capacity companies are subject to lower profits due to the potential decrease in demand for their products as an implication of the regulator's priorities for the country's economic growth and development.

From the credit risk perspective, corporations with higher environmental risks may potentially bear higher liquidity, profitability and solvency risks due to the regulator's integration of comprehensive environmental economic policies (environmental tax, ecological compensation mechanism, green trade, green insurance, and green securities) (Aizawa & Yang, 2010). Moreover, the higher interest rates these companies are subject to, coupled with the central bank's control over the credit

allocation across sectors (window guidance)[9], may reduce their accessibility to banks' credit and therefore reduce their activity or efficiency and solvency ratios.

On this particular point, Goss and Roberts (2011) report that banks in the US integrate borrowers' social and environmental risks into the interest rates they may impose. The study ascertains that firms with higher CSR scores pay 7 to 18 basis points less than firms with lower environmental sustainability performance (consistent with Cheng et al., 2015; Hasan et al., 2017; Kim et al., 2014; Kleimeier & Viehs, 2016). Similarly, Nandy and Lodh (2012) indicate that banks in the US introduce firms' environmental performance into their credit allocation decisions. They document that more environment-conscious corporates are more likely to get a favourable loan contract than firms with lower environmental sustainability scores. Additionally, the authors establish that banks' consideration of borrowers' environmental performance in their process of financial allocation, will provide banks with additional factors to mitigate their default risk.

Theme 3: Sustainability Performance-Financial Performance Relationship

Neoclassical economists -consistent with negative synergy hypothesis- claim that the introduction of sustainability criteria into corporates'-banks'- business strategies may create additional costs they might otherwise avoid or externalise to keep their competitive position and strengthen their financial returns (Jo et al., 2014; Waddock & Graves, 1997). Today's clear evidence of environmental and climate shocks' negative impacts on financial stability and economic performance calls in question or rather disproves this argument. Therefore, it is important to investigate the sustainability performance-banks' financial performance associations across jurisdictions and derive the relevant factors that identify the dynamics of this relationship.

In a specific institutional context, Bose et al. (2020) examine environmental sustainability performance and banks' financial performance relationship in Bangladesh after the introduction of green finance regulatory guidelines by the central bank. The authors' results clearly report a significant positive impact of environmental sustainability on banks' profitability. More distinctively, the study reports that cost efficiency[10] is the primary driver of this relationship.

In light of the legitimacy theory, Weber and Chowdury (2020) investigate the impact of the introduction of Environmental Risk Management Guidelines in Bangladesh in 2011 on the sustainability performance-banks' financial performance association. The Granger causality test underlines a unidirectional causal effect that runs from sustainability performance to financial performance and not the other way around. Accordingly, the authors argue that banks in Bangladesh are reactive to institutional pressures that compel financial institutions to account for regulators' sustainability guidelines. In other words, banks do not develop proactive behaviour i.e., they do not prospectively integrate sustainability criteria

[9] People's Bank of China holds a monthly meeting with banks to monitor and check the banks' operations in alignment with the government's sustainable development and growth strategies (Campiglio, 2016).

[10] PThe study compiles the green banking performance into three key categories: cost efficiency, revenue growth and non-financial benefits.

into the banks' core business strategies and do not steer part of their slack resources to enhance their sustainability performance.

On the same note, Yin et al. (2020) examine the impact of green credit allocation (i.e., environmental financing) on banks' financial performance in China pursuant to the introduction of "green credit policy" in 2007 and "green credit guidelines" in 2012. The authors' sample consists of 20 banks with different ownership structures. Their empirical simultaneous system of equations that accounts for banks' specific variables and macroeconomic indicators documents that financial performance indicators have a significantly positive impact on banks' green lending behaviour. In other words, the higher the banks' profitability, the more the banks are willing (or rather able) to extend green credits to the economic system (in line with the slack resource theory).

Moreover, consistent with the good management theory, the green credit ratio is reported to positively influence the banks' financial performance. Nizam et al. (2019) provide further analysis in this respect and seek to identify the channels through which environmental sustainability performance generates positive impacts towards banks' financial performance. The authors report that loan growth is the key catalyst factor for the positive environmental sustainability performance and banks' profitability relationship.

The institutional framework and the market structure theories may provide an interpretation of the previous studies' results. First, the green credit policy/guidelines together with the supervisory oversight and monetary and macroprudential regulations induce banks to effectively explore the green market and climate-resilient investments and look for "good value customers". Second, the green finance markets in Bangladesh and China are still at the introduction stage, and they are yet subject to government support. Therefore, the banks' ability to identify creditworthy customers is relatively easy.

Torre Olmo et al. (2021), on the other hand, seek to examine how sustainability practices influence the banks' profitability and banks' financial stability (insolvency risk) given the customers' sceptical attitude towards banks after the global financial crisis of 2007-2008. Furthermore, they investigate how/whether banks' commitment to sustainable behaviour defines the impact of market power and efficiency[11] on the banks' financial performance. The authors find out that sustainable banks generate more profits relative to conventional banks. Moreover, they report that sustainable banks do not spur their financial performance through the leverage of their market power (greater market concentration) i.e., the imposition of higher interest rates for their customers. Rather, they tend to enhance their profitability by means of better reputation, different business culture, and greater balance of sustainability performance. Finally, in line with the efficiency hypothesis, the results document that cost scale efficiency may positively influence banks' profitability for both sustainable and conventional banks regardless of the further costs the former may bear in order to balance the interplay of environmental, social, and economic performance. In this regard, Bassen et al. (2020) and Clarkson et al. (2011)

[11] Banks' profitability according to authors can find theoretical foundations in the market power hypothesis and the efficiency theory.

argue that the successful integration and implementation of sustainability strategies and initiatives may boost banks' reputation, and this may in turn reduce their cost of fund on one hand and enhance the industry's peer pressure on the other, which may definitely increase the competitors' costs.

As for Islamic banks, literature that examines the sustainability performance-financial performance association is scant. Jan et al. (2019) investigated the sustainability practices-financial performance relationship of Islamic banks in Malaysia over a 10-year period (2008-2017) in accordance with the stakeholders' theory. Commensurate with Platonova et al. (2016), the GMM statistical analysis method indicates that sustainability indicators have a significant positive impact on Islamic banks' financial performance from the shareholders' and management perspectives. Nonetheless, this association does not hold true from the market perspective. Interestingly, Jan et al. (2019b) replicate the same econometric model but they introduce Shari'a governance and managerial ownership as moderator variables.

The results prior to the introduction of the moderator variables are similar to their previous study. Noteworthily, the insignificant sustainable business practices-banks' financial performance association from the market stakeholders' perspective becomes statistically and positively significant after the incorporation of the moderator variables. The effective involvement of the Shari'a Supervisory Board (SSB) in the enhancement of banks' sustainable business practices may provide positive indicators to market stakeholders. This may mitigate their reluctance and increase their confidence in Islamic banks' ability to generate higher financial returns through socially responsible behaviour. In this regard, Siti Nurain et al. (2021) provide evidence that Islamic banks with larger SSB show greater commitment to sustainability in comparison with their counterparts. Hence, they clearly ascertain the role of SSB in the improvement of Islamic banks' accountability to sustainability performance.

Theme 4: Supervision, Macroprudential Regulations and Monetary Policy

The introduction of climate change, biodiversity loss and environmental risks into the macroprudential financial regulations, monetary policies, and financial stability debates have started to gain prominence recently (Battiston et al., 2021; Brainard, 2019; Kedward et al., 2022).

The vulnerability of economic and financial systems to climate change and environmental shifts and their likelihood to trigger global systemic risks that may generate intergenerational negative impacts become more obvious (Bank of England, 2018). Nonetheless, the International Monetary Fund (IMF, 2018) argues that investors and financial markets do not totally figure out, at least not so far, the negative impact of weather and environmental shocks on financial stability, macroeconomic indicators, economic and social welfare, and productivity (Fabris, 2020). Moreover, the supervisory response to the financial crisis of 2007-2008 did not embed or rather introduce relevant prudential regulations that help address the problem of banks' credit allocation to climate-resilient investments. Green investments usually bear higher counterparty risk (due to the substantial initial capital costs of investment), market risk, liquidity risks

(Kedward et al., 2022), technology risks (Campiglio, 2016), and maturity risk (green investment extends usually over a larger timespan). Liquidity requirements of Basel 3 accord on the other hand will most likely impel banks to reset their credit allocation policies to target liquid and short-term investments (Campiglio, 2016; D'Orazio & Popoyan, 2019; Esposito et al., 2019; Mazzucato, 2013; Nelson & Shrimali, 2014). This misalignment may impede banks' effective involvement in sustainability transition.

Keeping that in mind, Alexander (2014), Battiston et al. (2021), Brainard (2019), Campiglio (2016), D'Orazio and Popoyan (2019), Esposito et al. (2019), Esposito et al. (2021), Ferron and Morel (2014), and Kedward et al. (2022), seek to integrate green investment and sustainable growth prospects into the monetary policy and macroprudential regulatory discussions in order to (1) ensure the financial system's stability for sustainable growth and set an orderly transition process towards a low-carbon economy; (2) get over the "credit market failure" that undermines the efficiency of carbon price mechanism; (3) address the substantial uncertainty and endogenous risks that may arise from climate change and ecological imbalance; (4) reshape "shareholders' mindset" to shift away from short-termism and increase their willingness to direct the mandatory financial capital to "long-run" climate-resilient investments; (5) reduce the green finance gap; and finally (6) decarbonise banks' balance sheets and ensure the effective alignment of the financial system with sustainability transition.

The introduction of a price on carbon aims primarily to internalise the environmental externalities in economic decisions. It is a method that seeks to compensate for market failure and integrate the environmental goods into the market pricing system. This policy may mitigate the private sector's reluctance to invest in green industries. Nonetheless, Campiglio (2016) claims that even a stable and efficient carbon price may not be sufficient to direct the necessary economic and financial resources to green investments. This is attributable to additional market failures associated with the process of creation and allocation of credit. This issue originates from the misalignment of banks' private interests (banks create a large portion of the money supply) with the society's development objectives (their realisation is conditional upon the availability of economic resources and a certain level of monetary and financial stability). Therefore, the author argues that the dependence on a single policy - the imposition of carbon price - may not redress the credit market failure. Accordingly, the aforementioned studies recommend the development of green monetary, micro and macroprudential policies and regulations that may induce banks to steer higher financial flows towards low-carbon investments and tackle climate-related financial risks.

Notwithstanding, Carney (2015) claims that the green transformation of the global economic system and the effective alignment of the financial system to sustainable growth may trigger systemic risks to the financial sector due to higher market volatility and disruptions in the dynamics of business cycle and capital flows (Raberto et al., 2019). Therefore, the authors call for a progressive implementation process of those policies and regulations to avoid such adverse implications.

Theme 5: Depositors'/Customers' Behaviour in Response to Banks' Sustainability Practices

Depositors are key stakeholders to banking institutions in addition to shareholders, borrowers, and regulatory authorities. They are the banks' prime source of financial resources, and they are able to discipline banks through their withdrawal behaviour. Therefore, banks' voluntary disclosure of environmental information - indicators of banks' awareness of environmental and climate change issues - aims to further influence the customers'/depositors' selection process to choose their respective banks. The banks' ability to attract and hold depositors/customers may positively affect several banks' fundamentals such as deposit growth, loan growth and definitely banks' profitability and financial stability (Basel Committee on Banking Supervision [BCBS], 2001). Accordingly, several studies attempt to (1) investigate whether banks' sustainability performance may influence or define depositors' choice of a bank; (2) examine the factors that may determine or justify customers'/depositors' behaviour as to their choice of a bank i.e., conventional or sustainable; (3) assess whether green image, corporate reputation, and bank trust - in addition to other factors - may mediate the relationship between sustainability performance and bank loyalty; (4) and figure out or explore the determinants or rather the antecedents of customers' intention to undertake green or environmentally sustainable behaviour.

Unexpectedly and in contrast to their conjecture, Galletta et al. (2020) document a negative banks' carbon disclosure - customers' deposits association. Furthermore, they report that banks with the best environmental performance pay a lower interest rate on deposits. The authors argue that the successful integration of sustainability criteria into banks' business strategies may urge banks' boards to draw on their competitive edge and reputation to define or pay relatively lower interest rates on deposits and gain considerably on the intermediation margin (net interest income) albeit it may negatively affect the deposit growth. In other words, sustainable banks tend to leverage their "green image" to increase their reputation and asset side.

Bayer et al. (2019), on the other hand, claim that the negative customers' perceptions about sustainable banks' financial returns is a key impediment for depositors'/customers' intention to select or switch to a sustainable bank. Therefore, economic benefit is still a major determinant of customers' bank selection criteria. Other barriers in this respect include the lack of pertinent information, the insignificant pressure from the social context, and the weak moral intensity. Nonetheless, ethical banks' reputation, low levels of customers' distrust, and concern (ethical consciousness, product interest and involvement with sustainability) denote a positive customers' common belief towards sustainable banks. Accordingly, ethical banks should devise and implement effective

[12] Such as the differentiation of reserve requirements (DRR) in accordance with the nature of the investment the banks would lend to; the adjustment of banks' capital requirements with green finance objectives through the introduction of green supporting factors (this may help banks assess and account for the effect of climate and environmental-related risks on banks' exposure); the limitation of banks' overleverage positions to carbon-intensive assets (sectoral leverage ratio); the integration of specific incentives into the liquidity requirements (LCR and NSFR) to relate climate strategies with liquidity regulations.

information and communication policies and foster their marketing strategies to (1) uphold customers'/depositors' knowledge and moral awareness (in line with Ellahi et al., 2021); (2) improve customers' ability to effectively link their responsible behaviour to the positive environmental impacts they may generate (moral judgement); and (3) reinforce the customers' likelihood to switch from conventional to sustainable banks (spur the customers' moral intent and moral behaviour). Ultimately, this may contribute to increasing the number of sustainable banks' customers/depositors and strengthen their market share, which in turn may result in higher pressure from the social context to choose or switch to ethical banks. Additionally, with more conducive institutional environment; more conventional banks' shift towards impactful business models; and consistent increase in market share, sustainable banks are more likely to provide competitive financial returns to their depositors and definitely change the customers' prevalent perception.

On the same note, Aramburu and Pescador (2019), Ibe-enwo et al. (2019), Igbudu et al. (2018), and Sun et al. (2020) assess whether customers' perception of banks' sustainability practices may influence bank loyalty. Banks' managers in contemporary socially and environmentally conscious societies are more aware of the significant banks' sustainability performance-bank loyalty association. Accordingly, the authors integrate additional factors into their models namely, corporate image, green image, corporate reputation, co-creation[13], and bank trust as potential mediator variables. Moreover, they introduce banks' green initiatives as a moderator variable that may further help figure out the banks' sustainability practices-bank loyalty relationships. The significantly positive influence of banks' sustainability performance on corporate and green image is obvious from the studies' results (inconsistent with Alshebami, 2021). Furthermore, corporate image, green image, co-creation, and corporate reputation are shown to significantly and positively mediate the relationship between banks' sustainability practices and bank loyalty. Bank trust, on the other hand, does not significantly mediate the banks' sustainability performance-bank loyalty relation. On top of that, Sun et al. (2020) establish that banks' green initiatives do positively moderate the Corporate Social Responsibility-Co-creation association. Therefore, they further reinforce the indirect CSR-green consumer loyalty relations.

The studies' results suggest that banks need to improve their green and sustainable initiatives and set more innovative and purposive strategies to enhance their contribution to sustainable development. This will help banks strengthen their green image, spur their corporate reputation, boost their customers' trust, and influence their perceptions on banks' honesty, willingness and care of environmental issues, and definitely increase their bank loyalty.

Bank loyalty is also subject to banks' manager awareness of the determinants or rather the antecedents of customers' intentions to undertake green and environmentally

[13] Co-creation is the effective alignment of customers' expectations from businesses and their willingness to pay a premium as per the businesses' aspirations. In the context of sustainable development, the inconsistencies may result from the intellectual discourse and action gap. This gap, according to Sun et. al. (2020), will prevail except if customers (demand-side) and companies or banks (supply-side) set effective collaborative strategies, i.e., (co-creation), to both generate suitable financial products for sustainable growth and get adequate acknowledgement from customers.

sustainable products and services. Bryson et al. (2016) and Taneja and Ali (2021) use the theory of planned behaviour's constructs i.e., attitude, subjective norms, and perceived behavioural control, in addition to other context-dependent variables, namely environmental consciousness, perceived environmental outcomes, collectivism and trust to investigate the customers' behavioural intentions to use banks' environmentally friendly services. The studies' findings document a significant influence of all the TPB constructs on customers' perceptions and behavioural intentions to embrace environmentally sustainable banking offerings.

Furthermore, environmental consciousness that reflects customers' awareness[14], knowledge and concern for environmental issues and banks' green instruments is a significant antecedent of perceived environmental outcomes[15], trust, and attitude - that may ultimately determine customers' behavioural intentions. On the same note, the authors report that trust[16] and collectivism[17] do positively define customers' attitudes and intentions to adopt environmentally sustainable behaviour. The studies' implications from the managerial perspective require banks to (1) lay down effective marketing campaigns to promote their environmentally sustainable initiatives and (2) develop impactful communication techniques to boost customers' environmental awareness/ consciousness and spur their understanding of the positive impacts they may trigger for the environment and society. Such processes may contribute to the creation of a bank trust[16], green image, and collective shift towards sustainable behaviour and definitely uphold customers' attitudes and behavioural intentions.

Discussion in Consistence with Review Objective

Banks' commitment and contribution to sustainability transition is dependent upon multi-dimensional, multi-scale and dynamic response from different stakeholders, namely regulators, supervisors, banks, and customers/depositors, to sustainability demands. Regulators and supervisors should first embed finance into environmental economics and the macroeconomics of climate change and transform the current financial system architecture to curb short termism in investment allocations and financialisation (Naidoo, 2020). In other words, they should set relevant sustainability guidelines/ standards, develop green macroprudential regulations, and introduce appropriate monetary policies to reinforce banks' involvement in climate-resilient investments and therefore, mitigate the potential negative impacts of environmental and climate risks on financial stability and economic performance. Moreover, they may help banks decarbonise their balance sheets (reduce carbon biasness in banks' allocation decisions) and "change" banks' shareholders' mindset to promote long-

[14] In line with Bouteraa et. al. (2021) who report that awareness, personal innovativeness, and perceived economic benefit are the individual determinants of customers' adoption of green banking initiatives.

[15] Customers' perceptions of positive environmental impacts they may generate as a consequence of their sustainable behaviour.

[16] Customers perceived environmental integrity of banks' practices.

[17] Customers are more likely to develop sustainable behaviours in response to social pressures and favourable social context.

run environmentally sustainable investments and accordingly, reduce the green finance gap.

Banks' comprehensive risk management system (that accounts for specific risks inherent in green investments and can assess banks' exposure and vulnerability to their customers' environmental and climate risks); better banks' ability to generate competitive financial returns in the long-run; applicable corporate governance frameworks to climate-resilience and environmental sustainability; and depositors' awareness of and responsiveness to banks' sustainability strategies are key implications of proper transformation of financial institutional framework on banks' involvement in green structural change.

Green investments are relatively riskier due to policy uncertainty, technology risks, negative market perception about financial yields of climate-resilient investments, risk of disorderly transition towards a low-carbon economy, and substantial default and maturity risks. Accordingly, green investments' risk profile may thwart banks' involvement in sustainable and responsible projects despite the supportive evidence that banks' external environmental policy may reduce their credit risk exposure[18]. To address those risks, analysts suggest a progressive introduction of green macroprudential regulations, more public-private-philanthropic partnerships to de-risk climate-resilient investments, the calibration of pertinent monetary policies that seek to buffer the economy and the financial system from climate and environmental shocks (Brainard, 2019), and the issuance of specific set of guidelines to each individual industry to properly manage its sustainability transition.

The integration of sustainability criteria into banks' business strategies may change shareholders' perceptions of value creation to include environmental impacts, and therefore help banks shift their intermediation strategies to target climate-resilient investments, better manage their various stakeholders' interests, and ultimately promote a triple bottom line objective i.e., people, planet, and profit. Moreover, with better management of supply chain environmental sustainability performance, banks are better able to strengthen their financial performance in the long run. Accordingly, better banks' financial performance in addition to a comprehensive risk management framework reinforces the sustainable banks' risk-return profile.

On top of that, the senior management commitment to set and monitor proper banks' climate and environmental strategic responses (banks' exposure to and involvement in local and international sustainable finance initiatives may create "normative pressure" on banks' leaders to introduce sustainability criteria into their business strategy); the active involvement of institutional investors and banks' employees in sustainability issues, may uphold banks' sustainability performance and increase their likelihood to direct the necessary financial flows to address the sustainability-transition challenges.

Better banks' risk-return profile and the integration of effective corporate processes to report on banks' climate and environmental impacts are key factors that may change the negative-predominant-customers/depositors' perceptions about sustainable banks' financial returns and boost their corporate image, trust, and reputation. Positive depositors' and customers' responsiveness to banks'

[18] Results in this regard are inconclusive or not sufficient yet.

sustainability practices may help ethical banks increase their deposits' inflow and then steer additional financial resources to sustainable growth. Accordingly, banks should figure out the factors that may determine or justify depositors' behaviour with respect to their choice of banks and clearly identify the antecedents of customers' intention to undertake green or environmentally sustainable actions.

Conclusion and Recommendations for Future Research

Banks' intermediary role or rather banks' position to decide on whether to allocate credits to companies, and their capacity to create money and allocate new credits to the economy give banks greater ability to steer and deploy further financial resources to balance the interplay of environmental sustainability, financial stability, and economic growth. Accordingly, banks are subject to considerable pressure from various stakeholders, particularly regulators and civil society groups, to show greater accountability and commitment to environmental sustainability and climate resilience. Nonetheless, their active involvement requires the transformation of the current financial system architecture and the effective alignment of the financial system to sustainable growth.

The introduction of mandatory green policies and guidelines from the regulatory and supervisory authorities together with an active reinforcement of industry-specific criteria for sustainability transition may gradually enhance banks' role. This progressive improvement/evolution will definitely shift the shareholders' short-term focus on profit-maximisation to include a wider prospect of value creation that accounts for environmental and climate considerations. The long-term business and strategic direction of both banks' institutions and companies may solve the inconsistencies of sustainable investments' risk profile with return expectations. Furthermore, the calibration of macroprudential regulations to accommodate for the specific features of green and climate-resilient investments may further help address the structure-objective mismatch. Looser liquidity and capital requirements for environmentally-sustainable investments may induce banks to increase their proportion of green lending and definitely close the present green finance gap.

The integration of sustainability criteria into the core systems of banks' and corporates' business strategies in addition to conducive institutional framework, macroprudential regulations, and monetary policies may contribute to boost banks' financial performance. Moreover, better banks' financial performance, effective disclosure of banks' sustainability impacts, and good communication strategies may spur the sustainable banks' image and corporate reputation and reinforce depositors' bank trust. A positive depositors' responsiveness to banks' sustainability practices may contribute to increasing banks' deposit growth, and loan growth, and therefore channel additional financial resources to sustainable growth and close the green finance gap.

Our systematic review derives some critical research gaps that may have important implications on banks' active involvement in sustainable development and growth. Banks' sustainability performance-financial performance association requires further research due to the controversial and inconclusiveness of the prior studies' results on one hand, and the lack of material

data that effectively reports the banks' sustainability scores on the other. Depositors' responsiveness to banks' sustainability performance is another important topic to banks institutions from different perspectives. First, researchers may investigate whether banks' environmental financing (proxy to environmental performance), for instance, may lead to an increase in banks' deposits. Second, they may examine whether depositors may develop an active moral judgment to environmental issues and upgrade their behaviour to discipline banks due to their "excessive" environmental risks. Last but not least, empirical studies on the impact of sustainability performance and regulatory guidelines - throughout different jurisdictions - on credit risk, for instance, are still scant. ■

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