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Research Article

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Green Finance, ESG Disclosure, and Sustainable Financial Performance in Banking: A Systematic Literature Review from a Southeast Asian Perspective

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Abstract: *This study examines the relationship between green finance, environmental, social, and governance (ESG) disclosure, and sustainable financial performance in the banking sector, with particular attention to Southeast Asia. Using a systematic literature review (SLR) guided by the PRISMA 2020 framework, this study analyzes Scopus-indexed publications from 2016 to 2026, with the final search conducted on 12 September 2026. A total of 31 studies were included, comprising 23 bank-level studies and eight complementary non-bank studies. Narrative and thematic synthesis identified five major research themes concerning green finance instruments, ESG performance, disclosure quality, the interaction between green finance and ESG, and regulatory and institutional frameworks. The findings indicate that green credit dominates existing banking research, whereas empirical evidence on green bonds and green investment remains limited. Although green finance is generally associated with reduced banking risks, its effects on profitability vary according to institutional conditions, bank characteristics, and time horizons. Furthermore, the distinction between ESG disclosure quality and ESG performance remains critical, as direct empirical evidence of the moderating role of ESG disclosure quality in the relationship between green finance and bank profitability is still insufficient. The review also identifies significant geographical and methodological gaps in Southeast Asian banking research. To address these limitations, the study develops an integrative conceptual framework and six research propositions emphasizing instrument-specific effects, disclosure credibility, regulatory conditions, and bank-level characteristics. These findings provide a foundation for future empirical investigations and contribute to a more nuanced understanding of sustainable banking performance in emerging Southeast Asian economies.*

Keywords: *ESG Disclosure Quality; Financial Performance; Green Finance; Regulatory Framework; Sustainable Banking; Systematic Literature Review.*

Introduction

The banking sector plays a fundamental role in advancing sustainable economic development through its capacity to allocate financial resources and influence corporate investment decisions. Unlike industries whose environmental impacts primarily arise from direct operational activities, banks exert substantial indirect environmental influence through lending, investment, underwriting, and portfolio-management decisions. These financial activities determine which economic sectors receive capital, under what conditions, and at what financial cost. Consequently, the banking industry has become an important institutional actor in the transition toward a more sustainable economy, particularly through the integration of environmental, social, and governance (ESG) considerations into financial intermediation.

The growing importance of sustainable development has accelerated the adoption of green finance as an alternative approach to conventional financial practices. Green finance incorporates environmental considerations into financial allocation and investment decisions through various instruments, including green credit, green loans, green bonds, green investment, green insurance, and sustainable infrastructure financing. In the banking context, these instruments provide opportunities to redirect financial resources toward environmentally responsible economic activities while potentially improving institutional resilience

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and long-term financial sustainability. Akomea-Frimpong et al. (2021) identify green credit, green securities, green investment, climate finance, green insurance, and green infrastructure bonds as important components of green finance within the banking industry. However, the effectiveness of these instruments depends on several interconnected factors, including regulatory frameworks, institutional capabilities, environmental risk-management practices, and prevailing market conditions.

From a theoretical perspective, financial intermediation provides an important foundation for understanding the relationship between green finance and banking performance. By incorporating environmental criteria into borrower assessment and credit allocation, banks may improve lending quality, reduce exposure to environmentally risky projects, and strengthen asset quality. Green financing may also generate reputational benefits, enhance stakeholder confidence, and create opportunities to access emerging sustainable financial markets. Nevertheless, implementing green finance involves additional costs associated with environmental due diligence, project verification, monitoring, technical expertise, and regulatory compliance. Furthermore, investments in environmentally sustainable projects may require longer realization periods, potentially generating short-term profitability pressures. These competing mechanisms suggest that the relationship between green finance and financial performance is conditional rather than universally positive.

Empirical evidence supports this complexity. Yin et al. (2021) demonstrate that green credit can improve profitability while reducing risk among non-state-owned Chinese banks. Similarly, Lian et al. (2022) find that green credit positively affects commercial bank financial performance through improvements in returns on interest-earning assets. In contrast, Del Gaudio et al. (2022) report that a higher proportion of syndicated green lending is associated with lower profitability, although it simultaneously reduces credit and default risks. These contrasting findings indicate that the financial consequences of green financing may involve a trade-off between profitability and risk reduction. Moreover, the relationship appears to vary across banking institutions. Zhou et al. (2022) find that green credit policies reduce credit risk in large state-controlled banks but may increase risk among regional and city commercial banks, reflecting differences in information availability, project-assessment capabilities, institutional resources, and technical expertise. Therefore, understanding green finance requires greater attention to the specific financial instruments employed and the institutional characteristics of individual banks.

Environmental, social, and governance considerations introduce another important dimension to the relationship between sustainable financing and banking performance. ESG integration can strengthen corporate accountability, improve transparency, and enhance the legitimacy of sustainable financial activities. However, ESG disclosure and ESG performance represent conceptually different constructs that should not be treated interchangeably. ESG performance reflects an institution's actual achievements across environmental, social, and governance dimensions, whereas ESG disclosure concerns the quality, completeness, transparency, comparability, consistency, and credibility of information communicated to stakeholders. This distinction is particularly important because extensive sustainability reporting does not necessarily demonstrate substantive improvements in environmental or social performance. Failure to distinguish these constructs may weaken measurement validity and produce misleading interpretations of the relationship between sustainability practices and financial outcomes.

Existing empirical studies reveal considerable variation in the relationship between ESG and banking performance. Tommaso and Thornton (2020) find that higher ESG scores are associated with lower risk-taking among European banks but may also correspond to lower bank value, indicating a potential trade-off between financial stability and valuation. Azmi et al. (2020), examining 251 banks across 44 emerging

economies, identify a nonlinear relationship in which ESG activities initially increase bank value, although their marginal benefits decline as ESG intensity increases. Chiaramonte et al. (2022) demonstrate that ESG strategies can reduce bank fragility, particularly during periods of financial distress. Conversely, Do et al. (2024) report that ESG activities negatively affect bank stability in ASEAN countries, suggesting that implementation costs and potential overinvestment may offset the expected benefits. Collectively, these findings indicate that ESG integration does not automatically translate into improved financial performance and that its effects depend on institutional environments, implementation quality, and the characteristics of banking institutions.

Despite growing research interest in ESG integration, the role of ESG disclosure quality as a moderating mechanism in the relationship between green finance and banking performance remains insufficiently investigated. High-quality disclosure may strengthen the credibility of green financing by reducing information asymmetry, improving stakeholder assessment, and providing more reliable information about the environmental characteristics of financed activities. Gupta and Kashiramka (2024), using 1,568 observations from 178 commercial banks across the Asia-Pacific region during 2010–2019, demonstrate that ESG disclosure positively moderates the relationship between liquidity creation and bank stability. Their findings provide an empirical basis for considering disclosure as a potential moderating mechanism in banking research. Nevertheless, direct empirical investigations examining whether ESG disclosure quality strengthens the relationship between green finance and bank profitability, particularly return on assets (ROA) and return on equity (ROE), remain limited. This gap is particularly important because the quantity of sustainability information disclosed may differ substantially from its actual quality and credibility.

The institutional and regulatory environment represents another important condition influencing the effectiveness of sustainable finance. In Indonesia, the Financial Services Authority (Otoritas Jasa Keuangan/OJK) introduced Regulation No. 51/POJK.03/2017 concerning the Implementation of Sustainable Finance for Financial Services Institutions, Issuers, and Public Companies. The regulation establishes sustainable-finance principles, Sustainable Finance Action Plans (Rencana Aksi Keuangan Berkelanjutan/RAKB), and sustainability reporting requirements. At the regional level, ASEAN has developed the ASEAN Taxonomy for Sustainable Finance to provide a common classification framework for sustainable economic activities. Version 4, released on 6 November 2025, completes the Plus Standard across six focus sectors and three enabling sectors (ASEAN Taxonomy for Sustainable Finance, 2025). Although these initiatives represent important institutional developments, the existence of common regulatory frameworks does not necessarily guarantee consistent implementation, enforcement, disclosure quality, environmental risk management, or supervisory effectiveness across Southeast Asian countries. Differences in institutional capacity and regulatory enforcement may therefore influence the extent to which green finance contributes to sustainable banking performance.

Against this background, four interconnected research gaps can be identified. First, existing banking literature frequently treats green finance as a relatively homogeneous construct, despite substantial differences between green credit, green bonds, and green investment in terms of their balance-sheet implications and financial mechanisms. Green credit primarily involves lending activities and credit-risk assessment, whereas green bonds may involve issuance, underwriting, and investment portfolio activities. Second, ESG disclosure is frequently examined alongside ESG performance without sufficiently distinguishing the informational quality of sustainability reporting from actual institutional achievements. Third, banking performance is predominantly evaluated through profitability indicators, particularly ROA

and ROE, while broader dimensions of financial sustainability, including asset quality, non-performing loans, default risk, funding stability, and long-term resilience, receive comparatively less integrated attention. Fourth, regulatory architecture is often treated as a contextual or country-level control variable rather than an institutional condition that may strengthen or weaken the relationship between green finance and banking performance.

Addressing these gaps, this study develops an integrative analytical perspective connecting green finance instruments, ESG disclosure quality, regulatory architecture, and sustainable financial performance in the banking sector. Its principal contribution lies in distinguishing green finance according to its underlying instruments, separating ESG disclosure quality from ESG performance, and conceptualizing banking performance as a multidimensional construct encompassing profitability, asset quality, financial risk, stability, and long-term resilience. Furthermore, regulatory architecture is positioned as an institutional boundary condition that may explain variations in the effectiveness of sustainable financial practices across different banking environments. By integrating these dimensions, the study seeks to advance the understanding of how financial instruments, information credibility, institutional capacity, and regulatory arrangements jointly shape sustainable banking outcomes, particularly in the context of Southeast Asia.

To achieve these objectives, this study employs a systematic literature review (SLR) guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) framework. The review is structured around three research questions:

1. RQ1. How are green credit, green bonds, and green investment defined and operationalized in the banking literature?
2. RQ2. To what extent does existing empirical evidence support ESG disclosure quality as a moderator of the relationship between green finance and bank profitability, particularly return on assets (ROA) and return on equity (ROE)?
3. RQ3. How do differences in sustainable-finance regulatory frameworks across Southeast Asia shape the effectiveness of green finance in improving asset quality and bank stability?

By addressing these questions, this review seeks to consolidate fragmented empirical findings, evaluate the strength and limitations of existing evidence, and identify important theoretical and methodological opportunities for future research. Ultimately, the study aims to provide an integrative foundation for understanding the institutional and financial conditions under which green finance and credible ESG disclosure can contribute to sustainable banking performance.

Method

This study adopted a systematic literature review (SLR) methodology to identify, evaluate and synthesise previous research on green finance, ESG disclosure and sustainable financial performance in the banking sector, with particular emphasis on the Southeast Asian context. The SLR approach was selected because it provides a structured and transparent procedure for consolidating fragmented knowledge, identifying dominant research themes, evaluating methodological developments and highlighting future research opportunities.

The review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses 2020 statement (Page et al., 2021). PRISMA structures the process into identification, screening, eligibility assessment and inclusion, which makes literature selection transparent and reproducible and limits selection bias. The overall search and selection design is shown in Figure 1.

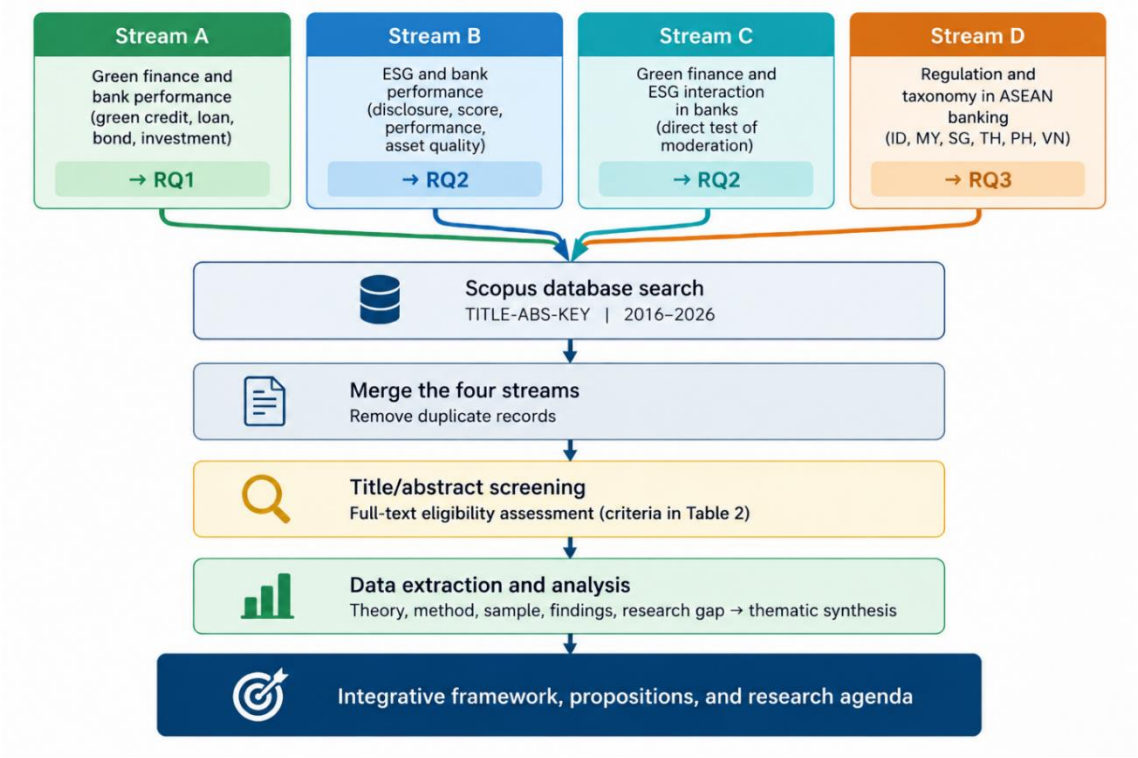


Figure 1. Literature search framework: four Scopus search streams mapped to the research questions.

Records were retrieved from the Scopus database through four complementary search streams, each designed to address a distinct dimension of the research problem (Table 1). The literature search employed structured Boolean search strings applied to article titles, abstracts, and keywords (TITLE-ABS-KEY), covering publications from 2016 to 2026. The searches were last conducted on 12 September 2026. The four search streams and their corresponding search strings are presented below.

1. Stream A: green finance-bank performance.
   TITLE-ABS-KEY: (("green financ*" OR "green credit" OR "green lending" OR "green loan*" OR "green bond*" OR "green investment*" OR "green banking") AND (bank* OR "commercial bank*" OR "financial institution*") AND (profitability OR ROA OR ROE OR NIM OR "financial performance" OR "asset quality" OR "non-performing loan*" OR NPL OR "credit risk" OR "bank risk" OR "bank stability"))
2. Stream B: ESG-bank performance.
   TITLE-ABS-KEY: (("ESG disclosure" OR "ESG reporting" OR "ESG performance" OR "ESG score*" OR "sustainability disclosure" OR "sustainability reporting") AND (bank* OR "commercial bank*") AND (profitability OR ROA OR ROE OR NIM OR "asset quality" OR "bank stability" OR "credit risk" OR "financial distress"))
3. Stream C: direct green finance × ESG interaction.
   TITLE-ABS-KEY : (("green financ*" OR "green credit" OR "green bond*" OR "green loan*" OR "green investment*") AND ("ESG disclosure" OR "ESG performance" OR "ESG reporting" OR "sustainability disclosure") AND bank*)
4. Stream D: ASEAN regulation.
   TITLE-ABS-KEY: (("green finance" OR "sustainable finance" OR "green banking") AND (regulat* OR taxonomy OR policy OR "environmental risk management") AND (ASEAN OR Indonesia OR Malaysia OR Singapore OR Thailand OR Philippines OR Vietnam) AND bank*)

Table 1. Search strategy and database

Stream	Focus	RQ	Search scope	Records retrieved
A	Green finance instruments and bank profitability, asset quality and risk	RQ1	Scopus; TITLE-ABS-KEY; 2016-2026	52
B	ESG disclosure/performance and bank profitability, asset quality, distress	RQ2	Scopus; TITLE-ABS-KEY; 2016-2026	46
C	Direct interaction of green finance and ESG information in banks	RQ2	Scopus; TITLE-ABS-KEY; 2016-2026	32
D	Sustainable-finance regulation and taxonomy in ASEAN banking	RQ3	Scopus; TITLE-ABS-KEY; 2016-2026	23
Total	After merging the four streams and removing duplicates			153

Eligibility criteria were defined before full-text assessment and are summarised in Table 2. Bank-level studies form the core of the review. Firm-level studies outside banking were admitted only as adjacent evidence, and only where they test the interaction between green finance and ESG disclosure or performance, because bank-specific evidence on that interaction is scarce. Adjacent studies are reported separately (Panel B of Table 3) and are not used to draw bank-specific conclusions.

Table 2. Inclusion and exclusion criteria

Dimension	Inclusion	Exclusion
Population	Commercial, Islamic or other banks and banking systems; bank-level regulation and policy. Non-bank firms only as adjacent evidence on the green finance–ESG interaction	Studies on asset classes or firms unrelated to banking or to green finance/ESG
Constructs	Green finance instruments or green banking; ESG disclosure or ESG performance; sustainable-finance regulation	Studies without a green finance, ESG or sustainable-finance regulatory construct
Outcomes	Profitability, asset quality, risk, stability, firm value, ESG performance/disclosure quality, regulatory effectiveness	Studies without any of these outcomes
Design	Empirical (quantitative or qualitative), systematic review, or doctrinal/policy analysis of banking sustainable-finance regulation	Reporting guidelines, editorials, commentaries (retained only as methodological references)
Source and period	Peer-reviewed journal article, 2016–2026	Non-peer-reviewed sources; publications before 2016
Verifiability	Full text retrievable and verifiable	Full text not retrievable or not verifiable

A total of 153 records were identified through four Scopus search streams. After removing 18 duplicates and five records with incomplete metadata, 130 records underwent title and abstract screening, of which 82 were excluded. Subsequently, 48 reports were sought for retrieval, but three could not be retrieved. The remaining 45 full-text reports were assessed against the eligibility criteria in Table 2, resulting in 14 exclusions due to methodological incompatibility (n = 5), absence of measurable financial performance indicators (n = 4), overlapping datasets or publications (n = 3), and insufficient information for analysis (n = 2). Ultimately, 31 studies were included in the systematic review, comprising 23 core bank-level studies and eight studies providing complementary financial-sector evidence (Figure 2).

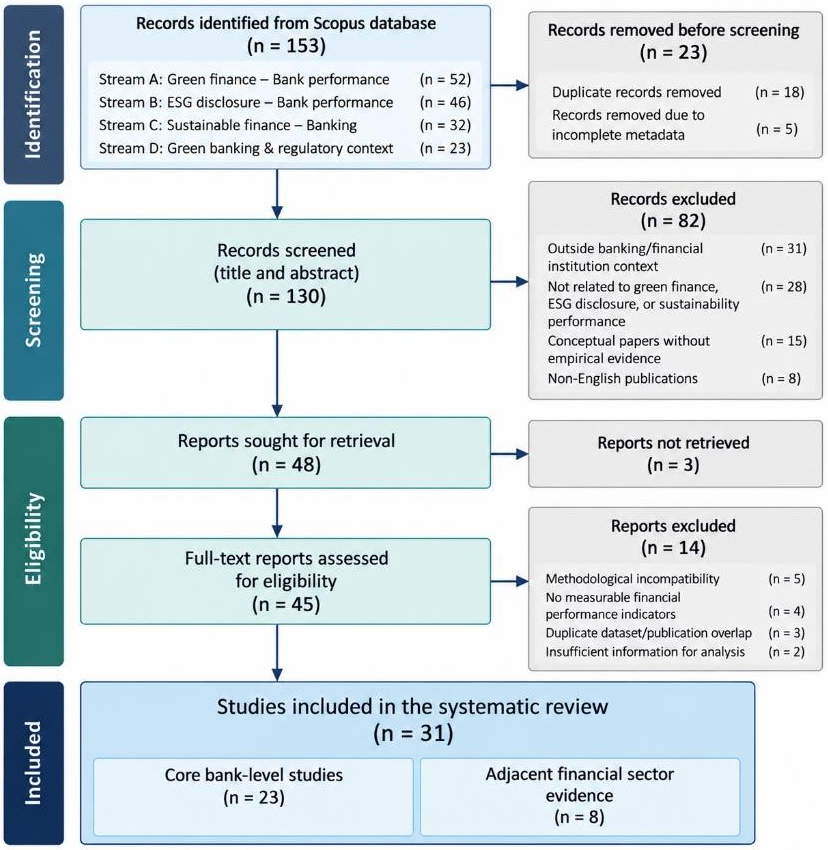


Figure 2. PRISMA 2020 flow diagram of literature selection.

Studies were synthesised narratively and thematically due to heterogeneity in constructs, estimation methods, and financial outcomes, making meta-analysis inappropriate. Findings were compared based on the direction and magnitude of effects across bank types, time horizons, institutional contexts, and ESG dimensions. Each study was classified into five themes (T1-T5, Table 4).

A descriptive quality appraisal assessed theoretical foundations, sample transparency, and methods addressing endogeneity, including quasi-experimental designs, GMM, and instrumental variables. Appraisal results were reported in the Profile of the Reviewed Literature section without serving as exclusion criteria. Evidence was classified as direct (bank-specific relationships), indirect (related relationships or non-bank evidence), or absent (no relevant empirical evidence).

Results and Discussion

This section presents the profile of the reviewed corpus and synthesizes the empirical evidence in relation to each research question. The analysis first examines the conceptualization and key characteristics

of green finance instruments (RQ1). It then synthesizes evidence concerning the relationship between green finance and bank risk and profitability, with particular attention to the role of ESG disclosure (RQ2). Finally, the review examines the regulatory and institutional context shaping the development and implementation of green finance in Southeast Asia (RQ3). The findings are subsequently integrated and critically interpreted in the Discussion section, where the study develops an integrative conceptual framework and formulates the resulting propositions based on the identified patterns, relationships, and research gaps.

Profile of the reviewed literature

The final corpus comprises 31 studies (Table 3): 23 core bank-level studies (Panel A) and eight adjacent non-bank studies (Panel B). Publication activity is recent and accelerating (Figure 3). Twenty-one of the 31 studies (68%) appeared in 2024-2026, and none of the retained studies dates from 2016-2018 or 2020, even though the search window opens in 2016.

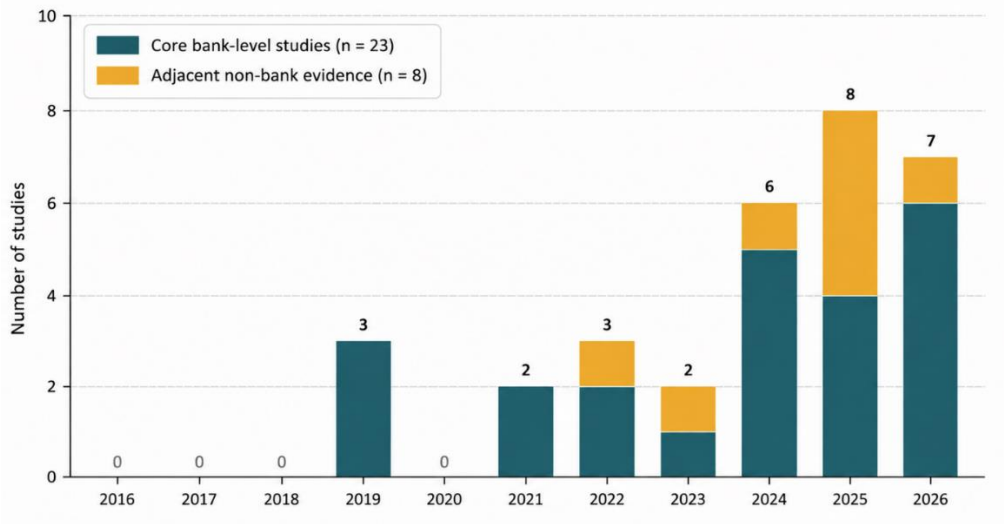


Figure 3. Publication trend of selected articles (2016-2026).

Geographically, China (seven studies) and Indonesia (six) are the most represented contexts, followed by Europe (four). Twelve studies concern Southeast Asian countries (Indonesia 6, Malaysia 2, Vietnam 2, ASEAN-wide 2), of which eight are bank-level; a further study (Ullah et al., 2026) includes Indonesian banks in a five-country Asian sample. All five bank-level studies of green-credit effects on risk and performance rely on Chinese banks, and the only Southeast Asian bank-level study of green financing (Iskandar et al., 2026) examines ESG performance rather than profitability or risk.

Methodologically, 21 studies use quantitative panel or event-based designs. Only nine of these (43%) use quasi-experimental, GMM or instrumental-variable strategies to address endogeneity; the remainder rely on fixed-effects, pooled or Tobit estimators. Five studies are doctrinal or policy analyses, all concerning Indonesia or Bangladesh. Theoretically, stakeholder theory is the most frequent lens (ten studies), followed by institutional theory and the resource-based view (five each) and signalling theory (four). Agency or overinvestment arguments appear in four studies and legitimacy theory in two. Thirteen studies (42%) state no formal theory or rely on a normative or policy framework such as maqasid al-shari'ah or the Sustainable Development Goals.

Thematically (Table 4; Figure 4), the largest group concerns ESG performance and bank outcomes (T2, eight studies), followed by green finance instruments and bank risk (T1, seven) and regulation and institutions (T5, six); disclosure quality (T3) and the green finance ESG interplay (T4) have five studies

each. Thirteen of the 16 studies in T3-T5 (81%) date from 2024 onward, indicating that the themes closest to the research questions are also the youngest.

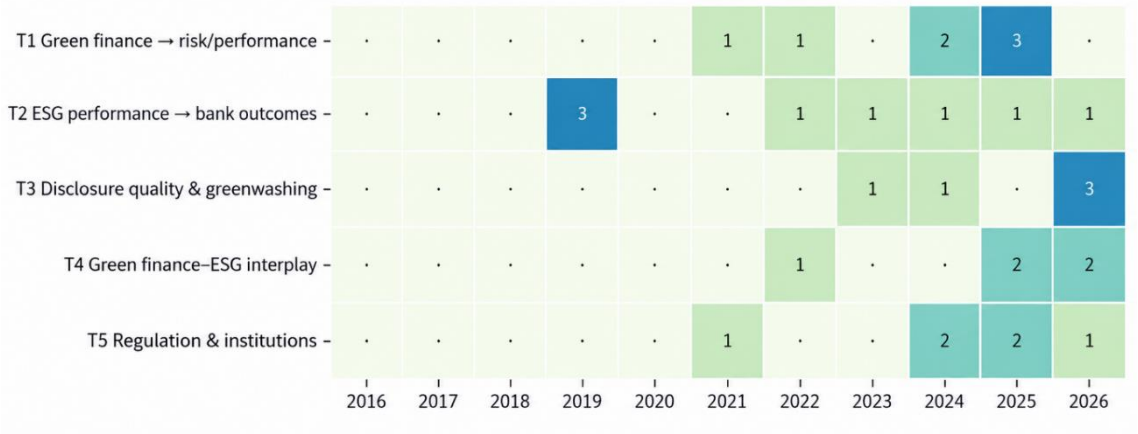


Figure 4. Thematic evolution map: number of included studies by primary theme and publication year.

Table 3. Characteristics of selected studies (31 articles)

No.	Study	Context and sample	Design	Theme	Principal finding
Panel A. Core bank-level studies (n = 23)					
1	Buallay (2019)	235 EU banks, 2007-2016 (2,350 obs.)	Static panel	T2	ESG raises performance overall; pillars differ (E positive on ROA and Tobin's Q; S negative; G negative on ROA/ROE).
2	Miralles-Quirós, Miralles-Quirós, and Hernández (2019)	166 banks, 31 countries, 2010-2015	Static panel	T2	Environmental and governance performance raise Tobin's Q; in emerging markets the social pillar is negative.
3	Shakil et al., (2019)	93 emerging-market banks, 2015-2018	Dynamic panel/IV	T2	Environmental and social performance improve bank financial performance; governance performance does not.
4	Akomea-frimpong et al., (2021)	46 studies on green finance in banking	Systematic review	T1	Identifies green securities, investments, climate/carbon finance, green insurance, green credit and green infrastructure bonds as bank green-finance products.

No.	Study	Context and sample	Design	Theme	Principal finding
5	Khairunnessa, Vazquez-brust, and Yakovleva (2021)	Bangladesh central bank, commercial banks and NBFIs (policy review)	Doctrinal/policy	T5	Central bank policy drives greening of the financial system; debt capital markets are the weakest component.
6	Chiaramonte et al., (2022)	84 banks, 21 European countries, 2005-2017	Quasi-experimental	T2	ESG scores reduce bank fragility in crises; longer disclosure duration enlarges benefits; effects vary by bank characteristics.
7	Zhou et al., (2022)	41 Chinese banks, 2007-2018	Static panel	T1	Green Credit Policy lowers credit risk in large state-owned banks but raises it in city/regional banks (information and expertise gaps).
8	Ielasi et al., (2023)	111 of 114 ECB-supervised significant banks (Europe); public data, 2021	Composite index	T3	Bank-specific ESG score (BESGI) shows room to improve, especially social and indirect (financing/investment) impacts; generic ESG scores miss bank-specific channels.
9	Do et al., (2024)	30 ASEAN banks, 2015-2022 (216 obs.)	Dynamic panel/IV	T2	ESG has a negative effect on bank stability, consistent with the overinvestment view; E, S and G not assessed separately.
10	Feng et al., (2024)	36 Chinese commercial banks, 2007-2022	Quasi-experimental	T1	Green credit lowers risk-taking in the short run (stronger in small, low-profit banks), but the effect fades and reverses in the long run.

No.	Study	Context and sample	Design	Theme	Principal finding
11	Kartiko, Indradewi, and Sugianto (2024)	Normative legal analysis of POJK 51/2017	Doctrinal/policy	T5	Regulation lacks effective sanctions, leaving green banking largely voluntary; stronger sanctions and supervision needed.
12	Yuspin et al., (2026)	Juridical-normative analysis of green banking regulation	Doctrinal/policy	T5	Green banking is under way, but regulation is unclear, unsanctioned, and reports need not be integrated with financial statements.
13	Z. Zhou et al., (2024)	15 Chinese commercial banks, 2009-2021	Static panel	T1	Green-loan balance reduces net profit for all banks; insolvency risk falls in large banks but rises in small and medium banks.
14	Tommaso, Pacelli, and Povia (2025)	308 syndicated green loans, 47 international banks, 2016-2023	Quasi-experimental	T1	Green-loan issuance yields a reputational 'green effect' across regions; effects vary with deal and country features.
15	Huang, Zhu, and Wu (2025)	77 Chinese commercial banks, 2012-2022	Static panel	T1	Green credit reduces risk-taking through interest income and profit structure; loose monetary policy amplifies green credit expansion.
16	Wu and Zhang (2025)	22 Chinese banks disclosing green credit balances, 2009-2023	Static panel	T1	Green credit is negatively related to risk-taking; the deposit-to-loan ratio is a significant mediator.
17	Yuspin et al., (2025)	Regulation and Islamic bank practice (BSI, Bank Muamalat)	Doctrinal/policy	T5	No statute regulates green banking explicitly; six Green Coin Rating indicators proposed as practice benchmarks.

No.	Study	Context and sample	Design	Theme	Principal finding
18	Kartiko and Firmansyah (2026)	43 Indonesian banks, 578 observations	Static panel	T3	Green banking disclosure has a significant negative effect on performance and firm value; bank size and age moderate the relationship.
19	Fakhfakh (2026)	251 banks, 56 countries, 2009-2024	Dynamic panel/IV	T2	ESG generally raises stability (Z-score) but the effect weakens as green-product share rises; Rule of Law substitutes for ESG in developed and complements it in developing countries.
20	Iskandar et al. (2026)	6 Indonesian Islamic banks, weekly data 2020-2025 (1,878 obs.)	Volatility/efficiency model	T4	Green financing positively affects ESG performance; ESG volatility is persistent; short-run return fluctuations are insignificant.
21	Kabib et al., (2026)	Southeast Asian banks publishing annual reports, 2016-2022	Static panel	T3	Banks with more environmentally aware directors disclose more on green banking.
22	Ullah et al. (2026)	10 commercial banks in Bangladesh, China, India, Indonesia, Pakistan, 2015-2024	Static panel	T5	ESG performance is positively associated with regulation; digital transformation strengthens internal capabilities without an independent direct effect.
23	Yuspin et al. (2026)	Sustainability reports of 5 Indonesian Islamic banks, 2020-2024	Doctrinal/policy	T3	Three disclosure-maturity levels (substantive, semi-substantive, administrative); narrative-heavy reports raise greenwashing and compliance risk.
Panel B. Adjacent non-bank evidence (n = 8)					

No.	Study	Context and sample	Design	Theme	Principal finding
24	Ali, Salman, and Parveen (2022)	141 Bursa Malaysia industrial firms, 2009-2020	Dynamic panel/IV	T4	ESG disclosure mediates the link between environmental performance and financial performance.
25	Lee et al. (2023)	59 FTSE4Good Bursa Malaysia firms, 2014-2021	Static panel	T2	ESG raises Tobin's Q; only the social pillar is individually significant.
26	Dao & Mai (2024)	20 HOSE firms in the VNSI index	Volatility/efficiency model	T3	Provides GRI-based ESG disclosure scores and network-DEA efficiency rankings; keyword-based scoring is a stated limitation.
27	Ahmed and Khalaf (2025)	1,144 firms, 27 EU countries, 2013-2023	Static panel	T2	ESG performance raises firm value; cash holdings raise value and moderate the link.
28	Cui and Wu (2025)	2,847 firms, 45 countries, 2018-2024	Static panel	T4	High ESG-disclosure firms show 12.3% higher valuation under green financing; disclosure mediates 34.7% of the effect; industry heterogeneity.
29	Habib et al., (2025)	Chinese firms, 2014-2022	Dynamic panel/IV	T4	Green finance is positively related to ESG disclosure; funding-cost advantage moderates the green finance–disclosure–performance chain.
30	Hoang, Pham, and Tran (2025)	245 agricultural SMEs, Vietnam (PLS-SEM)	Survey/SEM	T5	Innovative products, digital finance and supportive regulation (subsidies, green credit lines) ease green-credit access.

No.	Study	Context and sample	Design	Theme	Principal finding
31	Xue and Geng (2026)	Chinese A-share firms, 2012–2020	Dynamic panel/IV	T4	Higher ESG ratings raise green-credit volume but lower its share (crowding out); transparency and lower risk are mechanisms; greenwashing weakens real effects.

Description. Themes: T1 green finance instruments and bank risk/performance; T2 ESG performance and bank outcomes; T3 disclosure quality, measurement and greenwashing; T4 green finance ESG interplay; T5 regulatory and institutional architecture.

Table 4. Research theme mapping

Theme	Studies (n)	Dominant evidence	Status	Principal gap
T1 Green finance instruments and bank risk/performance	Feng et al. 2024; Zhou et al. 2024; Huang et al. 2025; Wu & Zhang 2025; Zhou et al. 2022; Di Tommaso et al. 2025; Akomea-Frimpong et al. 2022 (7)	Green credit tends to lower risk-taking or credit risk, especially in large banks; profit effect ambiguous or negative; effects depend on horizon and bank type	Mixed; consensus only on heterogeneity	All bank-level green-credit studies use Chinese banks; green bonds and investment absent; no ROA/ROE test conditioned on disclosure
T2 ESG performance and bank outcomes	Buallay 2019; Shakil et al. 2019; Miralles-Quirós et al. 2019; Chiaramonte et al. 2022; Do et al. 2024; Fakhfakh 2026; Ahmed & Abu Khalaf 2025; Lee et al. 2023 (8)	ESG generally improves performance or stability but results are pillar- and context-specific; negative for stability in ASEAN banks	Mixed	Pillars often not separated; one ASEAN bank study; disclosure and performance conflated

Theme	Studies (n)	Dominant evidence	Status	Principal gap
T3 Disclosure: measurement, quality, greenwashing	Ielasi et al. 2023; Dwi Kartiko & Firmansyah 2026; Kabib et al. 2026; Yuspin et al. 2026; Dao & Mai 2024 (5)	Disclosure depth varies widely; board environmental awareness predicts disclosure; disclosure index negatively related to performance in Indonesia; reports narrative-heavy	Descriptive, emerging	No accepted quality standard; no link to green finance outcomes
T4 Green finance–ESG interplay	Habib et al. 2025; Cui & Wu 2025; Ali et al. 2022; Xue & Geng 2026; Iskandar et al. 2026 (5)	Green finance and ESG disclosure are positively related; disclosure mediates value effects; ESG ratings guide green credit but greenwashing weakens real effects	Emerging; mostly non-bank	No bank-level test on ROA/ROE; mediation versus moderation unresolved
T5 Regulatory and institutional architecture	Kartiko et al. 2024; Yuspin et al. 2024, 2025; Khairunnessa et al. 2021; Ullah et al. 2026; Hoang et al. 2025 (6)	Frameworks exist but sanctions and quantitative standards are weak (Indonesia); regulation positively associated with ESG performance; central bank leadership matters	Descriptive legal analysis	No quantitative test of regulation as a moderator of asset quality or stability

The reviewed studies also state their own limitations and research gaps, which constrain how far the findings on each research question can be generalised. Several are confined to a single country or region. The five bank-level green-credit studies all use Chinese banks (X. Y. Zhou et al., 2022; Z. Zhou et al., 2024; Feng et al., 2024; Huang, Zhu, and Wu 2025; Wu and Zhang 2025) , Ahmed and Khalaf (2025) use firms in 27 European Union countries, and Ali, Salman, and Parveen (2022) use firms listed on Bursa Malaysia. Short horizons and narrow samples are a second recurring constraint. Di Tommaso et al. (2025) focus on short-term market reactions in a small United Kingdom sample and include no control group of non-green loans, while Feng et al. (2024) show that the risk-reducing effect of green credit fades and reverses over time. Several authors also question their own measures. Xue and Geng (2026) rely on voluntary ESG data, which may bias the sample; Dwi Kartiko and Firmansyah (2026) build their disclosure index from annual and sustainability reports and recommend direct assessment or surveys; and Ielasi et al. (2023) can use only three years of bank-specific data. Finally, several studies point to moderators and mechanisms that have not yet been tested, including cash holdings (Ahmed & Abu Khalaf, 2025), the deposit-to-loan ratio (Wu & Zhang, 2025) and the funding-cost advantage of the firm (Habib et al., 2025). The field has therefore tested direct effects more often than the conditions under which those effects hold.

RQ1: Definition and operationalisation of green finance instruments

Green credit dominates and is measured in non-equivalent ways

Green credit is the instrument on which the bank-level literature concentrates, and it is operationalised in at least six ways. First, as the reported balance of green loans (Zhou et al., 2024; Wu & Zhang, 2025, whose sample is restricted to banks that disclose the balance). Second, as exposure to a policy shock, analysed through difference-in-differences and Granger-type tests (Feng et al., 2024) or through Green Credit Policy indicators (Zhou et al., 2022). Third, as green-credit volume and share at the borrower level, linked to firms' ESG ratings (Xue & Geng, 2026). Fourth, as the share of green products in a bank's offering (Fakhfakh, 2026). Fifth, as green financing in a GARCH-based analysis of ESG performance in Islamic banks (Iskandar et al., 2026). Sixth, as syndicated green-loan issuance events, with abnormal returns and CDS spreads as outcomes (Di Tommaso et al., 2025).

These measures are not interchangeable. A stock (balance), a flow-based policy exposure, a composition share and an announcement event capture different mechanisms and horizons, which helps explain why findings diverge. The outcomes are equally varied: net profit, Tobin's Q, risk-taking, credit risk, insolvency risk, Z-score, distance to default and CDS spreads all appear as dependent variables.

Green bonds and green investment are thinly operationalised

Evidence on green bonds and green investment at bank level is far thinner. Akomea-Frimpong et al. (2021) catalogue green securities, green investments, climate and carbon finance, green insurance and green infrastructure bonds as bank products, but as a conceptual mapping rather than an estimated effect. Di Tommaso et al. (2025) examine deal and country characteristics within a green-loan sample. Cui and Wu (2025) construct a Green Finance Performance Index, but for non-financial firms. No included study estimates the effect of green-bond issuance, underwriting or investment portfolios on bank profitability, asset quality or stability, and none compares instruments within a single bank sample. For RQ1 the central finding is therefore that "green finance" in the bank-level literature has largely meant green credit. Evidence status: direct for green credit, absent for green bonds and green investment.

Disclosure and performance constructs

A parallel problem affects ESG constructs. Disclosure-based measures include a green banking disclosure index built from annual and sustainability reports (Dwi Kartiko & Firmansyah, 2026), green banking disclosure scores (Kabib et al., 2026), maturity levels of sustainability reports (Yuspin et al., 2026), GRI-based keyword scoring (Phung et al., 2023) and the ESG disclosure measures used in firm-level work (Ali et al., 2022; Habib et al., 2025; Cui & Wu, 2025). Performance- or score-based measures dominate studies of stability and value (Buallay, 2019; Shakil et al., 2019; Miralles-Quirós et al., 2019; Chiaramonte et al., 2022; Do et al., 2024; Fakhfakh, 2026). Ielasi et al. (2023) argue that generic ESG scores are not bank-specific, under-capture direct and indirect impacts and do not penalise heterogeneity across dimensions, and they respond with a bank-specific composite indicator.

Green finance, bank risk and profitability

The evidence on risk is more consistent than the evidence on profit, but it is conditional. Green credit is associated with lower risk-taking in studies of Chinese commercial banks (Huang et al., 2025; Wu & Zhang, 2025), and Huang et al. identify interest income and profit structure as the transmission channel, while Wu and Zhang identify the deposit-to-loan ratio. Feng et al. (2024) add a time dimension: green credit

lowers risk-taking in the short run, particularly in small and low-profit banks, but the effect fades and reverses over the long run, and bank credit risk does not in turn shape green-credit implementation. Di Tommaso et al. (2025) find that issuing green loans generates a reputational benefit for banks across regions, measured through market reactions and CDS spreads.

On profitability, the picture is less favourable. Zhou et al. (2024) report that green-loan balances reduce net profit for all banks in their sample, while insolvency risk falls in large banks and rises in small and medium-sized banks. Zhou et al. (2022) reach a structurally similar conclusion for credit risk: Green Credit Policy lowers it in large state-owned banks and raises it in city and regional banks, which the authors attribute to information asymmetry and expertise.

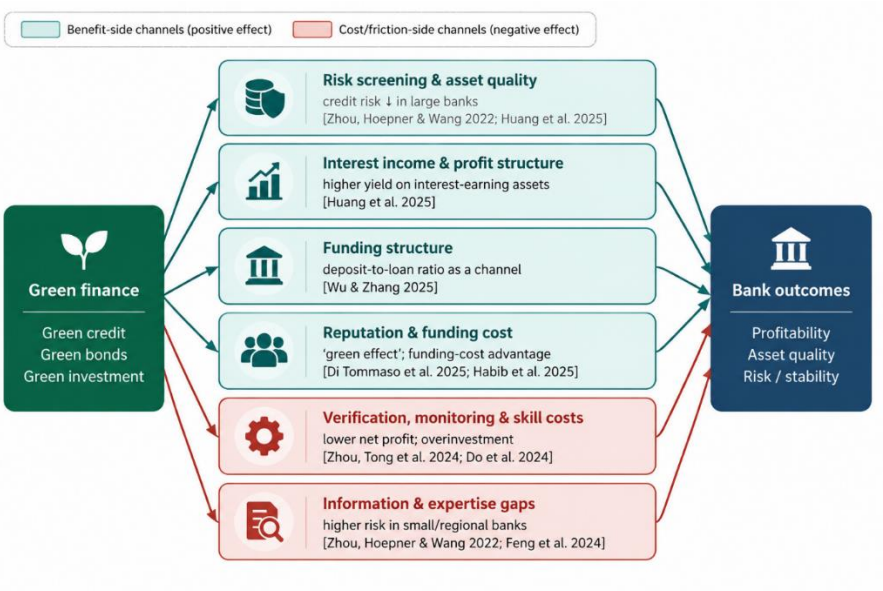


Figure 5. Green finance–bank performance mechanism model synthesised from the reviewed studies.

Figure 5 organises these findings into benefit-side and cost-side channels. Risk screening, higher interest income, funding-structure effects and reputational or funding-cost advantages explain the reductions in risk and, in some cases, gains in profitability reported by Huang et al. (2025), Wu and Zhang (2025), Di Tommaso et al. (2025) and Habib et al. (2025). Verification and monitoring costs, overinvestment and information or expertise gaps explain lower profit and higher risk in other settings (Zhou et al., 2022; Zhou et al., 2024; Do et al., 2024; Feng et al., 2024). Monetary conditions add a further contingency: Huang et al. (2025) find that loose monetary policy promotes green-credit expansion and tight policy has the opposite effect.

Southeast Asian bank-level evidence is sparse and does not directly address profitability or risk from green finance. Iskandar et al. (2026) find that green financing positively affects ESG performance in six Indonesian Islamic banks, and Dwi Kartiko and Firmansyah (2026) find that green banking disclosure is negatively related to firm value in 43 Indonesian banks, while its association with return on assets is not significant outside the pandemic period, and bank size and age moderate the relationship.

ESG performance, ESG disclosure and bank outcomes

The reviewed studies do not support a uniformly positive ESG effect. Positive associations appear in European banks (Buallay, 2019; Chiaramonte et al., 2022), emerging-market banks (Shakil et al., 2019) and a 56-country sample (Fakhfakh, 2026). Chiaramonte et al. (2022) show that ESG scores reduce bank

fragility in crises and that longer disclosure duration enlarges the benefit. Negative results appear for stability in ASEAN banks (Do et al., 2024), which the authors interpret as support for the overinvestment view, and for firm value in Indonesian banks with higher green banking disclosure (Dwi Kartiko & Firmansyah, 2026).

Pillar-level results are unstable across samples. Buallay (2019) finds that the environmental pillar raises ROA and Tobin's Q, the social pillar is negative in all three models, and the governance pillar is negative for ROA and ROE but positive for Tobin's Q. Shakil et al. (2019) find that environmental and social performance improve bank financial performance while governance performance does not. Miralles-Quirós et al. (2019) find that environmental and governance performance raise Tobin's Q, and that in emerging markets the social pillar is negative. The social pillar is thus positive in one emerging-market sample and negative in another, and among Malaysian non-bank firms it is the only individually significant pillar (Lee et al., 2023). Fakhfakh (2026) adds that the ESG–stability link weakens as the share of green products rises, a substitution effect, and that Rule of Law substitutes for ESG in developed countries but complements it in developing ones.

Distinguishing disclosure from performance clarifies several of these results. Chiaramonte et al. (2022) exploit a disclosure regime, the EU Non-Financial Reporting Directive, and disclosure duration; Ielasi et al. (2023) show that score-based ESG measures miss bank-specific channels; Yuspin et al. (2026) show that disclosure can be substantive, semi-substantive or merely administrative. The negative disclosure–performance result in Indonesia (Dwi Kartiko & Firmansyah, 2026) is measured with an index constructed from annual and sustainability reports, and the authors themselves recommend direct assessment or surveys, so it may reflect disclosure intensity rather than credible substance.

RQ2: ESG disclosure quality as a moderator of the green finance–profitability link

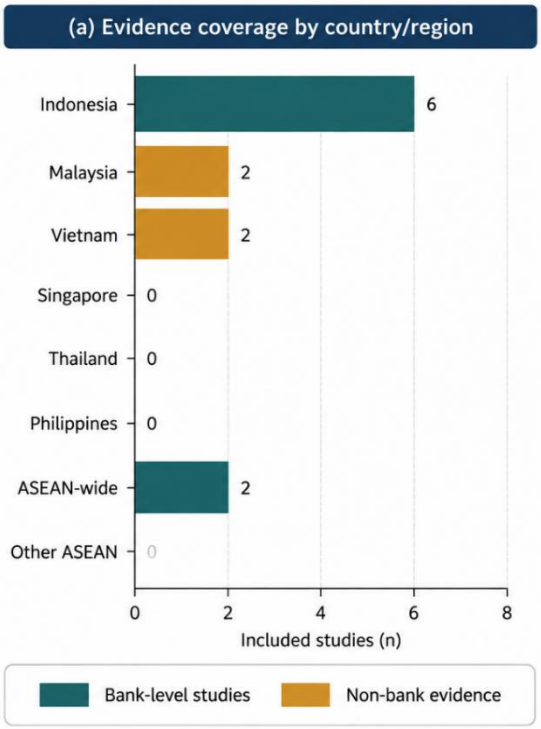
Evidence relevant to RQ2 can be arranged on three levels. At the first level, a direct bank-level test of whether disclosure quality conditions the effect of green finance on ROA or ROE, no included study provides one. At the second level, bank-level moderation of a related relationship by disclosure, the only evidence is Gupta and Kashiramka (2024), cited in the Introduction, in which ESG disclosure positively moderates the link between liquidity creation and stability in Asia-Pacific banks. At the third level, firm-level evidence on how green finance and ESG information interact, the corpus offers four studies (Panel B), summarised below. The overall evidence status for RQ2 is therefore indirect.

Habib et al. (2025) find that green finance is positively related to ESG disclosure among Chinese firms, and that a funding-cost advantage moderates the chain linking green finance, disclosure and performance. Cui and Wu (2025), using 2,847 firms in 45 countries, report that firms with high ESG disclosure have a 12.3% higher market valuation when using green financing, that disclosure mediates 34.7% of the green financing value relationship, and that effects differ by industry, being strong in renewable energy and technology but negative in real estate. Ali et al. (2022) show, for Malaysian industrial firms, that ESG disclosure mediates the link between environmental performance and financial performance. Xue and Geng (2026) find that higher ESG ratings are associated with more green credit but a lower green-credit share, a crowding-out pattern, with transparency and lower risk as mechanisms and with energy savings materialising only in firms with low greenwashing.

RQ3: Regulatory architecture in Southeast Asia and the effectiveness of green finance

The regulatory landscape

ASEAN members have issued bank-relevant sustainable-finance instruments of very different form (Figure 6). Indonesia's POJK 51/2017 requires financial institutions to apply sustainable-finance principles, submit annual RAKB and publish sustainability reports (Otoritas Jasa Keuangan, 2017), and OJK's Indonesia Taxonomy for Sustainable Finance has reached its third version (Otoritas Jasa Keuangan, 2026). Indonesia has also issued national sustainability disclosure standards aligned with IFRS S1 and S2, scheduled to take effect on 1 January 2027, and OJK opened a public consultation in February 2026 on amending POJK 51/2017. Singapore's Monetary Authority issued Guidelines on Environmental Risk Management for banks in December 2020, setting supervisory expectations on governance, risk management and disclosure for credit extension, underwriting and other activities exposed to environmental risk (Monetary Authority of Singapore, 2020). Malaysia's central bank published the Climate Change and Principle-based Taxonomy in April 2021, a set of five guiding principles that financial institutions apply to classify activities (Bank Negara Malaysia, 2021). The Philippines has issued a sequence of circulars: a Sustainable Finance Framework (2020), an Environmental and Social Risk Management Framework (2021), guidelines on sustainability in banks' investment activities (2022) and taxonomy guidelines (2024) (Bangko Sentral ng Pilipinas, 2020, 2021, 2022, 2024). Thailand launched Phase 1 of its taxonomy, covering energy and transport, on 30 June 2023 (Bank of Thailand & Securities and Exchange Commission 2023). Vietnam's Decision 21/2025/QD-TTg, effective 22 August 2025, established its first legally binding green taxonomy and defines eligibility for green credit and green bonds (Prime Minister of Vietnam 2025). At regional level, the ASEAN Taxonomy Version 4 provides a common reference framework (Asean Taxonomy For Sustainable Finance, 2025).



(b) Key bank-relevant sustainable-finance instruments

Country/region	Key instruments and policies (year)
Indonesia	• POJK 51/2017 (RAKB, sustainability report) TKBI v3 (2026)
Malaysia	• BNM Climate Change & Principle-based Taxonomy (2021)
Vietnam	• Green Taxonomy, Decision 21/2025/QĐ-TTg (effective Aug 2025)
Singapore	• MAS Environmental Risk Mgmt Guidelines for Banks (2020)
Thailand	• Thailand Taxonomy Phase 1 (2023); BOT sustainable-banking policy
Philippines	• BSP Circulars 1085 (2020), 1128 (2021), 1149 (2022), 1187 (2024)
ASEAN-wide	• ASEAN Taxonomy for Sustainable Finance, Version 4 (Nov 2025)
Other ASEAN	*Not covered in this review*

Figure 6. Southeast Asian sustainable banking landscape: coverage of included studies by country and key bank-relevant sustainable-finance instruments.

Note. Ullah et al. (2026), covering banks in five Asian countries including Indonesia, and Akomea-Frimpong et al. (2021) are not assigned to a single ASEAN country. Regulatory items are compiled from official releases and professional summaries; see References.

These instruments differ in legal form and bindingness: a principle-based taxonomy that guides classification (Malaysia), supervisory guidelines (Singapore), circulars with transition periods (Philippines), a regulation with reporting obligations (Indonesia) and a prime-ministerial decision that confers statutory eligibility (Vietnam). The ASEAN taxonomy promotes interoperability, but classification is not enforcement. Evidence coverage is also uneven: the corpus contains studies on Indonesia (six), Malaysia (two), Vietnam (two) and ASEAN-wide samples (two), but none on Singapore, Thailand or the Philippines, although each has issued bank-specific guidance.

What the reviewed studies say about regulatory effectiveness

The Indonesian doctrinal studies converge on a diagnosis of weak enforcement. Kartiko et al., (2024) conclude that POJK 51/2017 lacks effective sanctions for banks that harm the environment, leaving green banking largely voluntary. Yuspin et al., (2024) add that regulation is unclear, that reporting failures are not sanctioned and that green banking reports need not be integrated with financial statements. Yuspin et al., (2025) find that no statute regulates green banking explicitly. Yuspin et al., (2026), analysing the sustainability reports of five Indonesian Islamic banks for 2020-2024, find narrative-heavy reports with limited quantitative indicators and no mandatory quantitative ESG benchmarks, which encourages formal compliance and raises regulatory, reputational and greenwashing risk.

Quantitative and cross-country studies suggest that regulation matters but is not a single lever. Ullah et al. (2026), studying ten banks in Bangladesh, China, India, Indonesia and Pakistan, find that ESG performance is positively associated with regulation and that digital transformation strengthens internal capabilities without an independent direct effect. Fakhfakh (2026) finds that Rule of Law acts as a substitute for ESG in developed countries and as a complement in developing ones. Khairunnessa et al., (2021) show that the Bangladesh central bank has been a major driver of greening the financial system. Kabib et al., (2026) show that, among Southeast Asian banks, boards with more environmentally aware directors disclose more on green banking, which suggests that internal governance can partly compensate where external regulation is weak. Hoang et al., (2025) find that regulatory support, such as subsidies and green credit lines, builds confidence among Vietnamese agricultural SMEs. Do et al., (2024) find a negative ESGstability effect in ASEAN banks, consistent with costly compliance-driven overinvestment, although the study does not test regulation directly.

For RQ3 the evidence is therefore absent at the level of a direct test. No included study relates regulatory strength, in any ASEAN country, to green finance and then to asset quality or stability, and no study measures asset quality as a function of taxonomy adoption, disclosure mandates or sanction credibility. The available evidence is descriptive and legal, cross-country, or firm-level.

This section interprets the findings of the review, compares them with the reviewed literature, and sets out the framework and propositions that follow from them.

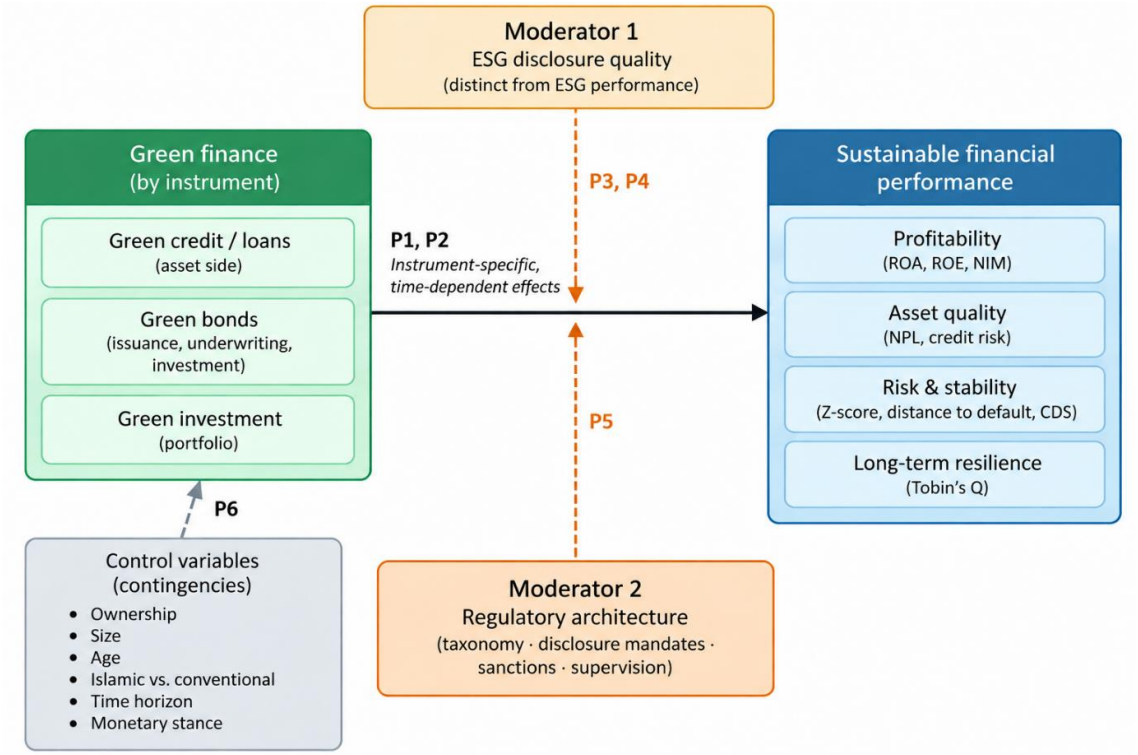


Figure 7. Research framework guiding the synthesis: green finance by instrument, sustainable financial performance, two moderators (ESG disclosure quality; regulatory architecture) and bank-level contingencies. P1-P6 refer to the propositions in the propositions subsection.

Green finance as an instrument-specific construct

Without a common measurement vocabulary, apparent contradictions between studies may partly reflect the fact that they estimate different quantities. The claim in the Introduction that instruments work through different balance-sheet mechanisms remains a theoretical argument that current evidence cannot yet confirm or reject. The corpus thus supports the Introduction's concern that disclosure and performance are often measured, and interpreted, interchangeably.

The geographic concentration documented here is not unique to the bank-level evidence. Akomea-Frimpong et al. (2021), in a review of forty-six studies on green finance in banking, also found that most studies were conducted in Asia and Europe, with little or no research on Oceania, South America and Africa. The concentration of bank-level green-credit evidence in China therefore reflects a broader imbalance in the field, and the mechanisms reported for Chinese banks, such as the information and expertise gap between state-owned and regional banks, cannot be assumed to operate in the same way in Southeast Asia.

Risk, profitability and the conditionality of green finance

Two studies with different samples and author teams therefore point to the same asymmetry: the risk benefits of green credit accrue mainly to large, state-linked banks, whereas smaller banks bear the informational and technical costs. The mixed empirical record is consistent with the profitability risk trade-off reported by Del Gaudio et al. (2022) and with the argument that a short-run fall in accounting profit does not necessarily signal weaker long-run sustainability. Read together, these results suggest that in the ASEAN setting, as in China, green activities may carry short-run costs before any benefit appears, although

the causal designs needed to establish this are missing. These patterns motivate P1, P2 and P6 (see the propositions subsection of the Discussion).

ESG performance, disclosure credibility and moderation

Aggregate ESG scores are likely to net out opposing forces, which is a plausible reason why ESG effects appear positive, negative or non-linear depending on the study. A high disclosure score therefore need not indicate high-quality information or real performance. This reading, which the corpus supports but cannot prove, underlies P3 and P4.

Two conceptual points follow. First, mediation and moderation are different claims. In the mediation account, green finance changes disclosure and disclosure then affects performance (Cui & Wu, 2025; Ali et al., 2022; Habib et al., 2025). In the moderation account, the payoff from green finance depends on how credible and informative the bank's disclosure already is. Both may operate, but they call for different designs, and the corpus contains almost no interaction-term test in banks. Second, credibility matters more than volume. Xue and Geng (2026) and Yuspin et al. (2026) both point to greenwashing and administrative disclosure as conditions under which transparency signals lose value. Habib et al. (2025) themselves note that it is unclear whether firms declare a green finance ESG link merely to satisfy regulation and reputation. The industry heterogeneity in Cui and Wu (2025) has a bank-specific implication: a bank's loan-book composition may determine whether green finance and disclosure reinforce one another. These arguments underlie P3 and P4.

A measurement implication also follows. Disclosure quality should be operationalised separately from ESG ratings, for example through maturity levels (substantive, semi-substantive, administrative; Yuspin et al., 2026), the share of quantitative indicators, external assurance and alignment with a recognised taxonomy, and it should be interacted with instrument-specific green finance measures rather than with aggregate ESG scores.

Regulation as a boundary condition

The pattern can be summarised as regulation that is mandatory in form but discretionary in substance: the duty to report exists, but neither the content standard nor the sanction is sufficiently specific to make reports comparable or credible. Taken together, it supports a conditional expectation: green finance is most likely to improve asset quality and stability where a clear taxonomy, mandatory quantitative disclosure, credible sanctions and adequate supervisory capacity coexist; where regulation is nominal, green finance is more likely to appear as a compliance cost with limited risk benefit and greater greenwashing exposure. This expectation is stated as P5, with the Rule-of-Law finding of Fakhfakh (2026) as a reminder that the direction of the regulatory interaction may differ between developed and developing settings.

Integrative framework and propositions

Synthesising the results in Section 3 yields the framework in Figure 7 and six propositions. They are derived from the pattern of evidence and from the gaps identified; they are hypotheses for future testing rather than findings of this review.

P1. Instrument specificity. The effect of green finance on bank risk and return depends on the instrument: green credit acts mainly through credit-risk screening, interest-income and funding-structure channels, whereas green bonds and green investment act through fee income, portfolio valuation and reputation channels.

P2. Horizon dependence. The effect of green finance on risk-taking and profitability changes over time: short-run risk reduction and profit drag may weaken or reverse in the long run, conditional on the bank's capacity to build green expertise.

P3. Disclosure moderation. Higher ESG disclosure quality strengthens the positive relationship between green finance and bank profitability (ROA, ROE) and asset quality by reducing information asymmetry and raising the credibility of green portfolios.

P4. Credibility threshold. The moderating effect of disclosure applies only to substantive disclosure; administrative or narrative-only disclosure does not moderate, or weakens, the relationship because it signals greenwashing risk.

P5. Regulatory contingency. The effect of green finance on asset quality and stability is stronger where the regulatory architecture combines a clear taxonomy, mandatory quantitative disclosure, credible sanctions and supervisory capacity; its direction may differ between developed and developing institutional settings.

P6. Bank contingencies. Ownership, size, age and business model (state-owned versus regional; conventional versus Islamic) condition the relationship, so that benefits accrue disproportionately to large, state-linked banks with greater information and technical capacity.

Theoretical implications

The corpus reveals theoretical fragmentation. Stakeholder theory is the modal lens (ten studies) and predicts that ESG and green finance mitigate risk and build trust; agency and overinvestment arguments predict the opposite when costs exceed benefits. Chiaramonte et al. (2022) and Do et al. (2024) explicitly pit these views against each other and reach opposite conclusions in different settings. The findings of this review suggest that the two views are best treated as boundary-conditioned rather than as rivals: stakeholder benefits appear when information, capability and regulation allow green activity to reduce risk credibly, and overinvestment costs appear when they do not. This is what P2 to P6 encode.

Institutional and legitimacy perspectives are particularly relevant for Southeast Asia. Where disclosure is mandatory in form but weakly specified, legitimacy-seeking may produce administrative rather than substantive reporting (Yuspin et al., 2026), which offers a theoretical explanation for negative or null disclosure performance associations. Signalling theory, used in four studies, implies that a signal only has value if it is costly to imitate; this is the logic behind the credibility threshold in P4. For Islamic banks, the maqasid al-shari'ah framework used by Iskandar et al. (2026) offers a normative basis for green financing that is not captured by conventional ESG frameworks and may warrant separate theorising. Finally, the fact that 13 of the 31 studies rest on no formal theory indicates that the field is still more empirical than theory-driven, which is a further argument for the contingent framework proposed here.

Limitations

Several limitations qualify the conclusions. First, the search relied on a single database, Scopus, and on four search strings; relevant work indexed elsewhere or using different terminology may have been missed. Second, the Southeast Asian evidence base is small and concentrated in Indonesia, and the Chinese evidence on green credit may not transfer to ASEAN banks. Third, heterogeneity in constructs and estimators precluded meta-analysis, so conclusions rest on direction-of-effect comparisons. Fourth, one record that met the topical criteria (Azmi et al., 2021) could not be verified at full-text level and was excluded from the synthesis. Fifth, the descriptive appraisal is not a formal risk-of-bias assessment. Sixth,

the propositions are derived from evidence gaps and have not been tested empirically. Finally, the regulatory landscape is evolving quickly; instruments described here reflect the position as of September 2026.

Future research agenda

Table 5 sets out a prioritised research agenda tied to the gaps identified in the Results. The highest priorities are instrument-level decomposition of green finance, direct interaction tests of disclosure quality on ROA, ROE and asset quality, and multi-country ASEAN panels that treat regulatory architecture as a moderator.

Table 5. Future research agenda

No.	Gap identified	Research question	Suggested design and data	Setting
1	Green finance treated as green credit only (P1)	Do green credit, green bonds and green investment affect ROA, ROE, NPL and stability differently within the same banks?	Hand-collected instrument-level data from sustainability reports and RAKB; simultaneous estimation with System GMM or fixed-effects with instrument-specific regressors	Indonesia, Malaysia, Philippines
2	No direct test of disclosure quality as moderator (RQ2; P3)	Does ESG disclosure quality strengthen the effect of green finance on ROA, ROE and asset quality?	Interaction models using a disclosure-maturity index distinct from ESG ratings; IV or GMM to address endogeneity	ASEAN listed banks
3	Substantive versus administrative disclosure (P4)	Is the moderating effect confined to substantive, quantitative and assured disclosure?	Text analysis of sustainability reports; coding of quantitative content, assurance and taxonomy alignment; threshold or non-linear specifications	Indonesia (incl. Islamic banks)
4	Regulation used as control, not moderator (RQ3; P5)	How do taxonomy adoption, mandatory disclosure, sanction credibility and supervisory capacity condition the effect of green finance on asset quality?	Regulatory-strength index by country-year; staggered difference-in-differences around national taxonomies and circulars	ASEAN-6 panel
5	Short-run versus long-run effects (P2)	Do the risk benefits and profit costs of green finance reverse over time?	Longer panels; dynamic and local-projection models; event windows around regulatory milestones	Indonesia, Vietnam, Malaysia

No.	Gap identified	Research question	Suggested design and data	Setting
6	Bank heterogeneity (P6)	Do ownership, size, age and business model change the sign of the effect?	Sub-sample and interaction analysis; state-owned versus private and regional banks; conventional versus Islamic	ASEAN banks
7	Islamic banking under-theorised	Does maqasid-based green financing produce different risk–return outcomes from conventional green credit?	Panel-GARCH or panel regression with maqasid-based ESG measures; matched conventional banks	Indonesia, Malaysia
8	Greenwashing and credibility	Do external assurance and independent review reduce greenwashing risk and raise the payoff of disclosure?	Assurance and verification indicators linked to disclosure and performance outcomes	ASEAN banks
9	Evidence gaps in Singapore, Thailand, the Philippines and other members	Do findings from Indonesia and China replicate where bank-specific guidance is well established?	Replication with harmonised measures; comparative country analysis	Singapore, Thailand, Philippines

Conclusion

This systematic literature review of 31 studies reveals that the relationship between green finance, ESG disclosure, and sustainable banking performance is complex and context-dependent. Green credit dominates existing research, while evidence on green bonds and green investment remains limited. Green finance generally contributes to risk reduction, but its effects on profitability vary across bank characteristics, time horizons, and institutional environments. Furthermore, direct empirical evidence supporting ESG disclosure quality as a moderator of the green finance profitability relationship remains insufficient. Differences in sustainable-finance regulations across Southeast Asia also highlight the importance of regulatory clarity, disclosure credibility, and supervisory effectiveness.

This study contributes an integrative conceptual framework and six propositions linking green finance instruments, ESG disclosure quality, regulatory architecture, and sustainable financial performance. Future research should prioritize cross-country empirical studies examining the moderating roles of ESG disclosure quality and regulatory effectiveness, particularly in relation to bank profitability, asset quality, and financial stability in Southeast Asia.

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