



ESG-Driven Green Finance in Selected ASEAN Banks: Implications for Regional Sustainability Planning

Muhammad Dandy Resafahlevi Nasution¹, Sulaeman Rahman Nidar^{2*}, Erman Sumirat²,
Kurniawan Saefullah², Aрга Abdi Rafiud Darajat Lubis³

¹ Management Science, Faculty of Economics and Business, Universitas Padjadjaran, Bandung 40132, Indonesia

² Faculty of Economics and Business, Universitas Padjadjaran, Bandung 40132, Indonesia

³ Rural Development Planning, Post Graduate School, Universitas Sumatera Utara, Medan 20155, Indonesia

Corresponding Author Email: sulaeman.rahman@unpad.ac.id

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ABSTRACT

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This study examines how sustainable finance is being scaled and institutionalised within three selected Association of Southeast Asian Nations (ASEAN) bank cases and considers the implications of these patterns for regional sustainability planning. A structured documentary comparative design is applied to Bank Central Asia (BCA) and Bank Mandiri in Indonesia, and DBS Bank Ltd (DBS) in Singapore, over the 2022–2024 period. To improve comparability across cases, the analysis uses a harmonised sustainable finance exposure (SFE) framework comprising portfolio scale, macroeconomic intensity, portfolio growth, and internal portfolio share. The results show that all three banks expanded sustainable finance during the study period. BCA's sustainable financing portfolio increased from Rp183.971 trillion in 2022 to Rp228.566 trillion in 2024, while Bank Mandiri's sustainable portfolio rose from Rp228.764 trillion to Rp292.507 trillion. DBS reported sustainable financing commitments of SGD 61 billion in 2022 and SGD89 billion in 2024. Sustainable finance is already embedded in the Indonesian cases, accounting for 24.8% of BCA's financing portfolio and 22.32% of Bank Mandiri's in 2024. DBS nevertheless operates at a different order of scale, with a much larger regional franchise and stronger integration of transition finance, advisory functions, and capital-market intermediation. Because DBS reports sustainable financing through a cross-border regional franchise, its macro-scaling ratios are interpreted primarily as indicators of home-economy-relative franchise scale rather than as purely Singapore-domestic deployment measures. The study argues that differences across the three cases are shaped less by the presence or absence of sustainability commitment than by territorial scope, governance depth, financing architecture, and market reach.

1. INTRODUCTION

Environmental, social, and governance (ESG) principles have become increasingly central to the mobilisation of finance for sustainable development, particularly in emerging Asian economies where rapid growth is accompanied by ecological pressure, social inequality, and infrastructure demand [1, 2]. Within this broader transition, green and sustainable finance are increasingly treated as strategic instruments for directing capital towards lower-carbon and more resilient development pathways [3, 4].

A substantial body of research has examined the relationship between ESG practices and institutional performance. Much of this literature shows that stronger ESG adoption can be associated with better financial resilience, lower risk, and improved organisational quality, although the magnitude of these effects varies across sectors and governance environments [5]. Studies from Southeast Asia further show that ESG is increasingly associated with firm

value and organisational performance, although the strength of this relationship may vary across institutional and digital contexts [6]. In the Indonesian context, the effectiveness of ESG implementation also depends on the role of regulators in shaping compliance incentives and non-financial organisational outcomes [7]. Even so, much of the existing literature still concentrates on firm-level performance, efficiency, or organisational sustainability outcomes, with relatively limited attention to the territorial and planning implications of sustainable finance [8].

Green finance has likewise been widely recognised as an important lever for supporting green growth, climate mitigation, and environmental sustainability [9]. In both Asian and wider international settings, it has been linked to the financing of low-carbon technologies, resource-efficient production, and resilience-oriented investment [10]. Yet, despite the rapid growth of the field, sustainable finance is still discussed more often in terms of environmental effects, banking performance, or green-growth relationships than in

terms of macroeconomic scaling against broader aggregates such as GDP or household consumption [11]. As a result, the literature still offers only a partial view of whether bank-level sustainable finance is large enough to matter in developmental terms.

This issue is especially relevant in Association of Southeast Asian Nations (ASEAN), where regional investment restructuring and supply-chain development are increasing pressure on financial institutions to align more closely with long-term sustainability agendas [12, 13]. Other studies suggest that ESG outcomes depend not only on formal commitment, but also on the implementation process through which sustainability principles are embedded into organisational governance and operational routines [14]. Nevertheless, sustainability in banking is still more commonly assessed through internal strategic, financial, and organisational dimensions than through its broader developmental role in shaping regional trajectories [15].

At the same time, digital transformation is reshaping the sustainability-finance nexus. Research from Asia suggests that digital finance and FinTech can improve sustainability performance by increasing operational efficiency, widening access to financial services, and enhancing environmental risk assessment [16]. Digital inclusive finance has also been found to improve ESG performance through channels such as green innovation and broader access to financial infrastructure [17]. Systematic reviews of sustainable digital finance further suggest that future banking models will increasingly converge around digitalisation, ESG integration, and sustainability-oriented financial products, although more region-specific evidence is still needed in the ASEAN context [18].

This gap is reflected in the existing ASEAN banking literature. Cross-country studies increasingly examine ESG and banking efficiency, while broader reviews of ESG in Asian firms show that planning, spatial development, and

regional sustainability dimensions remain underdeveloped [19, 20]. The weakness is even more visible when financial institutions are considered from a territorial development perspective. Work on inclusive regional development in Indonesia, for example, shows the importance of aligning institutional actors with local development agendas, yet banks are rarely analysed as meso-level organisations whose financing decisions may shape regional sustainability outcomes [21].

Recent studies on ESG adoption enablers, sustainable lending, and value-chain-oriented finance reinforce this point. Institutional logics, regulatory regimes, and governance architectures strongly influence how sustainability commitments are translated into actual financing patterns [22]. Research on state-owned banks in Indonesia also shows that sustainability-oriented lending can be strengthened when it is aligned with broader development value chains rather than treated as a stand-alone financing category [23]. These insights suggest that the developmental significance of sustainable finance depends not only on its nominal volume but also on the way it is governed, categorised, and connected to wider planning priorities.

Against this background, the present study positions sustainable finance in ASEAN banking as both a financial and a regional planning issue. Figure 1 summarises the conceptual orientation of the study by linking sustainability drivers, institutional pathways, comparative indicators, and planning implications across the three focal banks. Comparative work on Indonesian and Singaporean banking also indicates that green banking implementation differs across institutional and regulatory settings [24]. This framing shifts the analysis from a narrow firm-performance perspective towards a more meso-level understanding of how banks may contribute to sustainability transitions at different territorial scales.

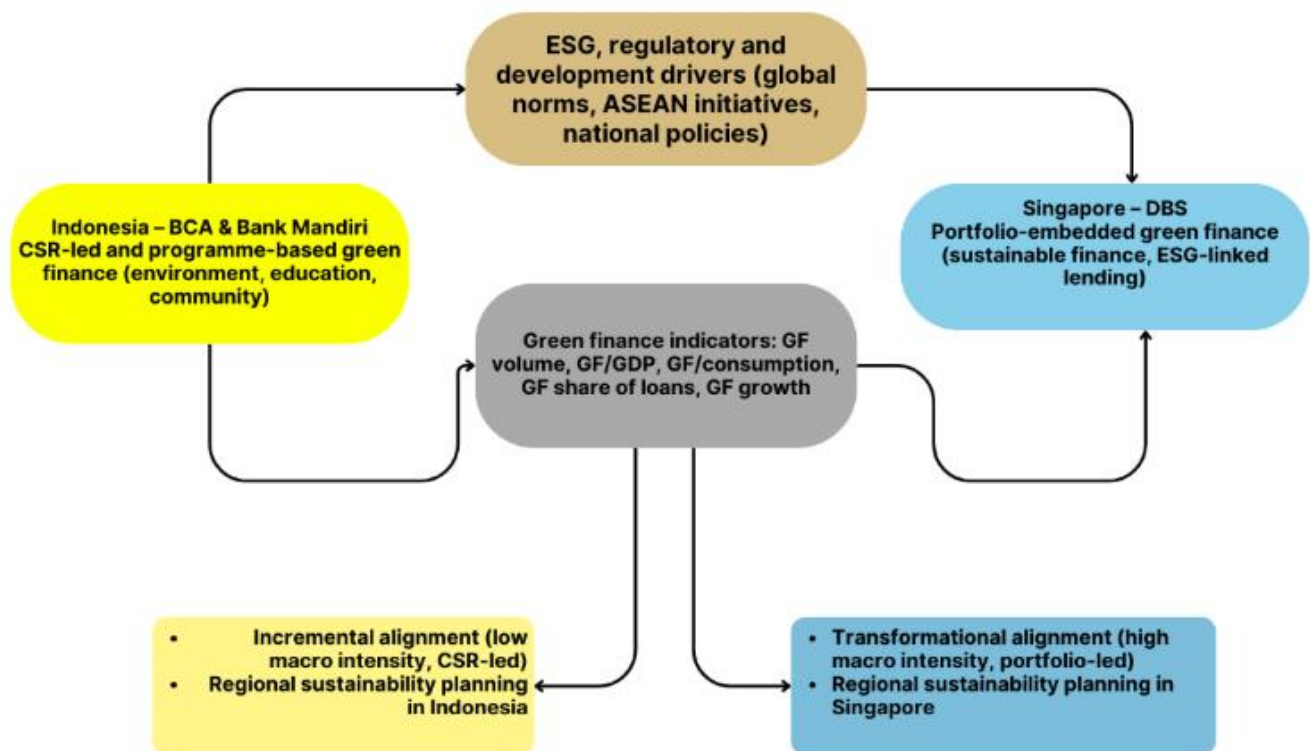


Figure 1. Conceptual framework linking ESG-driven green finance and regional sustainability planning in Indonesia (BCA, Bank Mandiri) and Singapore (DBS)

Bank Central Asia (BCA), Bank Mandiri, and DBS Bank Ltd (DBS) are analytically useful cases because they publish recurring sustainability disclosures and provide sufficiently identifiable sustainable finance measures for structured comparison [25-30]. At the same time, empirical evidence remains limited on how the scale of bank-level sustainable finance relates to national economic size and to the broader demands of regional sustainability planning [31-34].

This study addresses that gap through a comparative analysis of BCA, Bank Mandiri, and DBS over the 2022–2024 period. Rather than treating sustainable finance merely as a disclosure category, it examines how far bank-level portfolios and commitments have been scaled relative to the size of the host economy and to the banks' own financing structures. In doing so, the study asks three interrelated questions:

- 1) To what extent do the selected bank cases scale sustainable finance to a level that is meaningful relative to national GDP?
- 2) How do these patterns differ across domestically anchored and regionally embedded banking models?
- 3) What do these differences imply for regional sustainability planning in comparable ASEAN banking contexts?

By linking bank-level sustainable finance to macroeconomic scale and institutional form, the study contributes to a more grounded interpretation of ESG-driven finance in the ASEAN region.

2. METHODOLOGY

2.1 Research design

This study employs a structured documentary comparative design to examine how ESG-driven sustainable finance is scaled and embedded within three selected ASEAN bank cases, and how such scaling may be interpreted in relation to regional sustainability planning. The design combines a quantitative descriptive component and a qualitative interpretive component. The quantitative component uses ratio analysis and year-on-year growth analysis to construct a comparable sustainable finance profile for each bank. The qualitative component interprets these results in light of each bank's sustainability governance, disclosure architecture, and risk-management practices. Because the study is based on three purposively selected banks and is intended for benchmarking rather than causal inference, inferential statistics are not applied. Instead, the analysis relies on transparent descriptive metrics, structured cross-case comparison, and documentary triangulation.

2.2 Case selection, data sources, and analytical window

The empirical cases are PT BCA, PT Bank Mandiri (Persero) Tbk, and DBS Group Holdings Ltd. These banks were selected purposively because they are systemically important institutions, publish recurring sustainability-related disclosures, and report sufficiently identifiable sustainable finance measures that allow structured comparison. They also represent analytically distinct institutional settings: BCA as a large Indonesian private bank, Bank Mandiri as a large Indonesian state-linked bank with an expanding sustainable finance architecture, and DBS as a Singapore-headquartered

regional bank with a presence in 19 markets across Asia.

The analysis draws on annual reports, sustainability reports, and governance-related disclosures issued by the three banks, supplemented by official macroeconomic statistics for nominal GDP and household final consumption expenditure in Indonesia and Singapore. The core analytical window is limited to 2022–2024 because this period provides the most consistent disclosure of stock-based or commitment-based sustainable finance measures across all three cases. Within this window, BCA reported sustainable financing portfolios of Rp183.971 trillion, Rp203.086 trillion, and Rp228.566 trillion; Bank Mandiri reported sustainable portfolios of Rp228.764 trillion, Rp264.080 trillion, and Rp292.507 trillion; and DBS reported sustainable financing commitments of SGD 61 billion, around SGD70 billion, and SGD89 billion. Earlier reports were reviewed for context, but were not used as the core comparative base because definitions and disclosure structures were less aligned.

2.3 Data extraction and harmonisation

A structured extraction protocol was used to improve comparability across cases. For each bank-year, the analysis identified the most directly disclosed stock-based or commitment-based measure of sustainable finance reported by the bank itself. Only portfolio-based or commitment-based measures were retained in the core analysis. Philanthropic expenditure, Corporate Social Responsibility (CSR) grants, and thematic social spending were excluded from the main numerator because they are not equivalent to financing exposure and would weaken inter-bank comparability. Where annual reports and sustainability reports contained overlapping figures, the more explicit portfolio disclosure was prioritised and then cross-checked against the companion report.

To improve definitional consistency, the study replaces the broader label “green finance allocation” with a harmonised construct termed sustainable finance exposure (SFE) (Table 1). For BCA, SFE refers to the disclosed sustainable financing portfolio. For Bank Mandiri, SFE refers to the disclosed sustainable portfolio or total sustainable financing under the bank's sustainable finance reporting framework. For DBS, SFE refers to sustainable financing commitments net of repayments. This harmonisation does not remove all differences in reporting architecture, but it provides a more defensible basis for comparison than combining financing exposure with programmatic or philanthropic expenditure.

2.4 Construction of the five sustainable finance indicators

The comparative framework uses five indicators (Table 2). The first is SFE volume, which captures the absolute nominal value of SFE disclosed by each bank. The second is SFE/GDP, which relates SFE to nominal national GDP and serves as a macro-scaling indicator. The third is SFE/CONS, which relates SFE to household final consumption expenditure and provides a complementary consumption-based macro benchmark. The fourth is gSFE, which measures the year-on-year growth of SFE and captures the dynamic pace of scaling. The fifth is SFE_SHARE, which measures the proportion of SFE within the bank's total financing or loan portfolio and is intended to capture the degree of internal mainstreaming.

Table 1. Harmonised sustainable finance measures used in the analysis

Bank	Core Numerator Used in This Study	2022	2023	2024	Internal Portfolio Denominator Available?
BCA	Sustainable financing portfolio	Rp183.971 tn	Rp203.086 tn	Rp228.566 tn	Yes
Bank Mandiri	Sustainable portfolio / total sustainable financing	Rp228.764 tn	Rp264.080 tn	Rp292.507 tn	Yes
DBS	Sustainable financing commitments, net of repayments	SGD61 bn	~SGD70 bn	SGD89 bn	No direct like-for-like denominator

Source: BCA sustainable financing portfolio disclosures (2022–2024). Bank Mandiri sustainable portfolio disclosures. DBS sustainable financing commitments.

Table 2. Construction of the five sustainable finance indicators

Indicator	Formula	Analytical Purpose	Comparability Rule
SFE volume	Disclosed sustainable finance stock/commitment	Measures absolute bank-level scale	Use only stock-based or commitment-based finance measures
SFE/GDP	$(\text{SFE} / \text{GDP}) \times 100$	Measures macro-level intensity relative to national output	GDP must match the same country-year and nominal currency basis
SFE/CONS	$(\text{SFE} / \text{household consumption}) \times 100$	Measures macro-level intensity relative to domestic consumption	Consumption denominator must match the same country-year
gSFE	$[(\text{SFE}_t - \text{SFE}_{t-1}) / \text{SFE}_{t-1}] \times 100$	Measures dynamic expansion	Apply only across comparable consecutive disclosures
SFE_SHARE	$(\text{SFE} / \text{total loans or financing}) \times 100$	Measures internal portfolio mainstreaming	Use only when directly matched loan/financing denominators are disclosed

For BCA and Bank Mandiri, the internal portfolio intensity indicator can be calculated because directly matched financing denominators are disclosed. BCA's sustainable financing portfolio represented 25.5% of financing in 2022, 24.9% in 2023, and 24.8% in 2024. Bank Mandiri's sustainable portfolio represented 24.53% in 2022, 24.32% in 2023, and 22.32% in 2024. For DBS, the annual reports disclose sustainable financing commitments but do not provide a directly equivalent total-loan denominator in the same reporting architecture. Accordingly, SFE_SHARE is not imposed for DBS in the core analysis. This omission is methodologically preferable to introducing an artificial denominator that would reduce comparability.

2.5 Validation, comparability, and analytical limits

To strengthen transparency, the study applies three validation steps. First, all extracted figures were cross-checked across annual and sustainability disclosures within the same bank-year. Second, where restated values were available, the restated figures were used to maintain consistency across the comparative window. Third, the study considered whether the sustainability disclosures had been independently assured and whether the reports explicitly described their internal review procedures. BCA states that its data were reviewed and validated by relevant work units and externally assured under AA1000AS v3 at a moderate level. Bank Mandiri's 2024 report was prepared with reference to major sustainability reporting frameworks and assured under AA1000AS v3 and ISAE 3000, including document review, interviews, and tracing of data to the initial aggregated source. DBS' disclosures are embedded within a formal governance structure that includes Board Sustainability Committee oversight and reporting aligned with SGX, MAS, TCFD, GRI, and SASB-related frameworks.

The five-indicator framework is proposed as a transferable benchmarking tool, not as a universal accounting standard. It can be applied to other banks provided that three conditions are met: the numerator must reflect stock-based or commitment-based SFE; the denominator must be clearly

defined and temporally aligned; and the territorial scope of the disclosed portfolio must be stated transparently. The framework is descriptive rather than causal and should be interpreted cautiously when regional or cross-border portfolios dominate the numerator, as in the case of DBS. In that case, macro-scaling ratios should be read as heuristics of financial scale relative to the host economy rather than precise measures of purely domestic developmental impact.

To enhance traceability, all headline figures reported in the Results section were mapped to their original bank disclosures in an appendix-style data provenance matrix, allowing direct verification of the numerator, denominator, and reporting basis used for each case.

3. RESULTS AND DISCUSSION

3.1 Data transparency, harmonisation, and comparability

The empirical comparison is built on a single harmonised numerator, namely SFE, defined as the stock-based or commitment-based sustainable finance measure explicitly disclosed by each bank. This definition avoids conflating financing exposure with philanthropic expenditure, CSR disbursement, or thematic social spending, which are conceptually different and methodologically less suitable for cross-bank comparison. Within this framework, BCA is represented by its disclosed sustainable financing portfolio [27], Bank Mandiri by its disclosed sustainable portfolio [28, 35], and DBS by its sustainable financing commitments, net of repayments [29, 30].

The reporting basis of the three cases is sufficiently traceable for comparative use. BCA reports that its sustainability data are drawn from internal documents and reliable sources, reviewed and validated by the relevant working units, approved by the Board of Directors and the Board of Commissioners, and externally assured under AA1000AS v3 Type II at a moderate level [27]. Bank Mandiri reports external assurance under AA1000AS v3 and ISAE 3000 (Revised), supported by document review, interviews

with data owners, and tracing of reviewed data back to the original aggregated source [28]. DBS prepares its annual and sustainability-related reporting with reference to MAS regulations, SGX listing rules, TCFD, GRI, and SASB-related frameworks [29]. For macroeconomic scaling, the analysis uses official national statistics: Indonesia’s GDP at current market prices reached IDR 22,139.0 trillion in 2024 [36]. While Singapore’s GDP at current market prices was SGD 731.4 billion [37].

3.2 Comparative sustainable finance profile

Once the numerator is harmonised, the three banks reveal a more differentiated and methodologically coherent pattern. BCA’s sustainable financing portfolio increased from Rp183.971 trillion in 2022 to Rp203.086 trillion in 2023 and Rp228.566 trillion in 2024 [27]. Bank Mandiri’s sustainable portfolio rose from Rp228.764 trillion in 2022 to Rp264.080 trillion in 2023 and Rp292.507 trillion in 2024 [28, 35]. DBS reported sustainable financing commitments of SGD 61 billion in 2022, approximately SGD 70 billion in 2023, and SGD 89 billion in 2024 [29, 30]. In growth terms, BCA expanded by 10.4% in 2023 and 12.5% in 2024; Bank Mandiri by 15.4% and 10.8%; and DBS by 14.8% and 27.1%. The general trajectory across the three cases is therefore one of continued expansion, although the pace of growth became markedly sharper in DBS in the most recent year (Figure 2).

The figures reported in Table 3 were extracted directly from the banks’ annual or sustainability reports using the harmonised SFE framework described in Section 2. Only stock-based or commitment-based sustainable finance measures disclosed by the banks themselves were retained in the core comparison. For BCA, the 2022 and 2023 values are based on the restated sustainable financing series reported in the 2024 Sustainability Report [27]. For Bank Mandiri, the 2024 sustainable financing total and the green–social portfolio split are drawn from the 2024 Sustainability Report, while the 2022 benchmark is cross-checked against the 2022 Sustainability Report [28, 35]. For DBS, the 2024 sustainable financing commitments and the description of the bank’s regional sustainability platform are drawn from the 2024 Annual Report, while the 2022 baseline is supported by the

2022 Annual Report [29, 30].

Bank Mandiri values are based on the 2024 Sustainability Report, which reports sustainable financing of approximately Rp293 trillion in 2024, including a Rp148.81 trillion green portfolio and a Rp143.69 trillion social portfolio, with sustainable financing accounting for 22.32% of bank-only loans; the 2022 benchmark is cross-checked against the 2022 Sustainability Report, which reports a sustainable portfolio of Rp228.764 trillion or 24.53% of the bank-only loan portfolio [28, 35]. DBS values are based on the 2024 Annual Report, which reports SGD89 billion in sustainable financing commitments, net of repayments, and describes DBS as a regional bank operating across 19 markets; the 2022 baseline is cross-checked against the 2022 Annual Report [29, 30]. GDP denominators are taken from official national statistics [36, 37].

The internal portfolio ratios are especially important. BCA’s sustainable financing represented 25.5% of total financing in 2022, 24.9% in 2023, and 24.8% in 2024 [27]. Bank Mandiri’s sustainable portfolio represented 24.53%, 24.32%, and 22.32% in the same years [28, 35]. These proportions indicate that sustainable finance is no longer peripheral in the two Indonesian banks. What distinguishes them from DBS is therefore not the mere presence or absence of sustainable finance, but the scale, composition, and territorial reach through which it is organised.

Portfolio composition reinforces this distinction. In 2024, BCA’s sustainable financing portfolio consisted of 43.2% green financing and 56.8% Micro, Small and Medium Enterprises (MSME) financing, indicating a model that combines environmental lending with broader support for domestic productive sectors [27]. Bank Mandiri’s 2024 sustainable portfolio was supported by a Rp148.81 trillion green portfolio and a Rp143.69 trillion social portfolio, and was accompanied by a wider product set that included green loans, sustainability-linked loans, green mortgages, ESG mutual funds, sustainability bonds, ESG repo, and green bonds [28]. These structures suggest that the Indonesian cases are already substantively integrated, but that their integration remains more closely tied to domestic development finance and nationally bounded transition pathways.

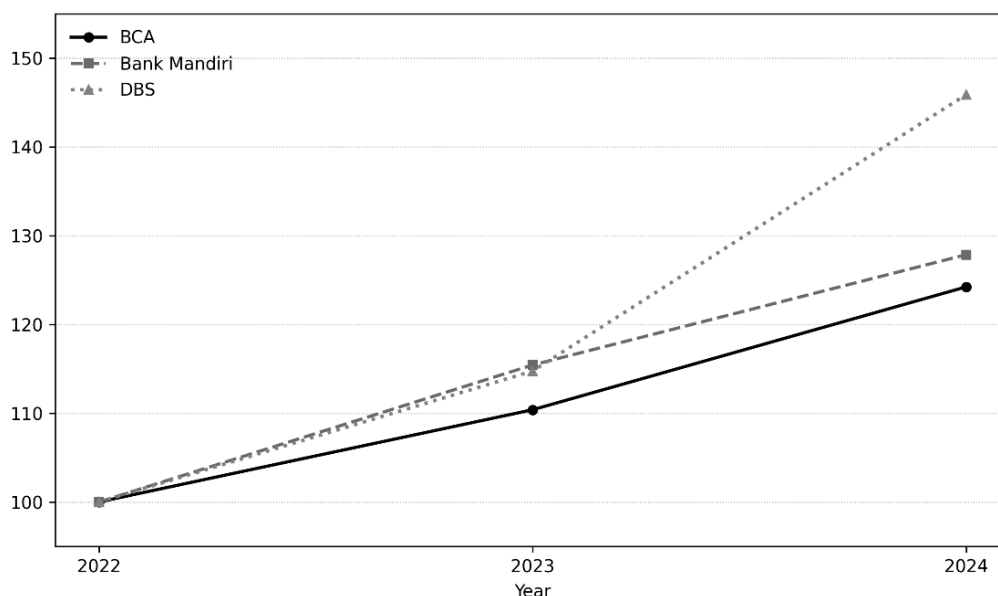


Figure 2. Indexed expansion of sustainable finance exposure (SFE), 2022–2024 (2022 = 100)

Table 3. Comparative sustainable finance profile, 2022–2024, based on disclosed bank-reported portfolios and commitments

Bank	SFE 2022	SFE 2023	SFE 2024	gSFE 2023	gSFE 2024	2024 SFE SHARE	2024 SFE/GDP
BCA	Rp183.971 tn	Rp203.086 tn	Rp228.566 tn	10.4%	12.5%	24.8%	1.03%
Bank Mandiri	Rp228.764 tn	Rp264.080 tn	Rp292.507 tn	15.4%	10.8%	22.32%	1.32%
DBS	SGD61 bn	~SGD70 bn	SGD89 bn	14.8%	27.1%	n.a.	12.17%*

Note: *The 2024 SFE/GDP ratio for DBS should be interpreted cautiously because the numerator reflects a regional and cross-border sustainable finance franchise rather than a purely Singapore-domestic portfolio. n.a. = not available.

3.3 Structural explanation of DBS's higher integration

DBS' larger scale is best understood as the outcome of a different institutional position within the regional financial system. DBS operates across 19 markets and is strategically located within the principal Asian growth corridors of Greater China, Southeast Asia, and South Asia [29, 30]. Its sustainable finance platform therefore draws from a much broader transaction pipeline than that of BCA or Bank Mandiri, both of which remain predominantly anchored in Indonesia's domestic financial and regulatory space. This difference in territorial scope immediately enlarges the pool of eligible projects, clients, and financing opportunities available to DBS.

A second difference lies in financing architecture. DBS does not rely solely on conventional loan intermediation. In 2024, alongside SGD89 billion in sustainable financing commitments, it also reported SGD38 billion in sustainable bond issuances as an active bookrunner [29]. Its sustainability strategy is framed around Asia's just transition, and its reporting links financing activity with transition finance, client decarbonisation, ecosystem partnerships, and broader capital-market intermediation [29]. DBS therefore functions not only as a lender, but also as a structurer and arranger of sustainable finance transactions at regional scale. Integration is wider in institutional form as well as larger in nominal value.

Governance maturity further strengthens this position. DBS' sustainability oversight is distributed across the Board Sustainability Committee, the Board Risk Management Committee, and the Audit Committee, while the Group Sustainability Council coordinates implementation across business and support units [29]. In 2024, the Board Sustainability Committee reviewed financed emissions, client transition planning, high-risk transactions, sustainable finance activities, and customer-facing sustainability insights [29]. Sustainability is thus embedded not only in disclosure, but also in board supervision, risk governance, and transaction monitoring. Such governance density supports faster expansion because sustainable finance is treated as a central business and risk domain rather than as a parallel programme.

By contrast, BCA and Bank Mandiri are progressing through forms of integration that remain more closely tied to Indonesia's domestic opportunity structure. BCA's sustainable portfolio remains strongly associated with MSME financing and with green sectors such as sustainable natural resources and land use, while its renewable-energy exposure remains smaller in absolute terms [27]. Bank Mandiri has moved further in formal transition architecture through its Sustainable Finance Framework, Transition Finance Framework, ESG Desk, ESG financing advisory, environmental and social risk management, and climate stress testing [28]. Even so, its sustainable finance model remains substantially rooted in Indonesia's national transition agenda rather than in a multi-market regional franchise. The divergence from DBS therefore reflects differences in market scope, institutional role, and product depth rather than a simple

difference in sustainability commitment.

3.4 Cross-border scale and the interpretation of DBS's macro intensity

The macro-scaling result for DBS requires careful interpretation. Benchmarking SGD89 billion in sustainable financing commitments against Singapore's SGD731.4 billion GDP yields an SFE/GDP ratio of approximately 12.2%, far above the ratios recorded by BCA and Bank Mandiri [29, 37]. Numerically, the contrast is clear. Analytically, however, the ratio must be read in light of the fact that DBS reports its sustainable financing activity as part of a regional franchise rather than as a purely domestic Singapore portfolio [29, 30]. The numerator is therefore geographically wider than the denominator.

This does not invalidate the result, but it does refine its meaning. The ratio is best understood as an indicator of the scale of DBS's sustainable finance franchise relative to the size of its home economy, rather than as a precise estimate of sustainable finance deployed only within Singapore. On that basis, DBS remains a valid benchmark of institutional maturity and regional scaling capacity, but not a strictly like-for-like domestic comparator for the Indonesian banks. The most direct portfolio comparison remains between BCA and Bank Mandiri, while DBS is analytically strongest as a reference point for how governance, market reach, and financing architecture can expand sustainable finance beyond national boundaries.

3.5 Implications for regional sustainability planning

BCA and Bank Mandiri have already integrated sustainable finance into a meaningful share of their financing books, indicating that sustainable finance in Indonesia has moved beyond a symbolic or purely peripheral stage [27, 28, 35]. Their trajectories, however, remain more domestically bounded and more closely linked to MSME support, social portfolio development, and nationally embedded transition priorities. DBS represents a different configuration, one in which sustainable finance is embedded in a regional intermediation model, supported by deeper board-level oversight, broader product sophistication, and stronger cross-border transaction capacity [29, 30].

From a planning perspective, the central issue is therefore not simply the volume of financing, but the institutional conditions that allow sustainable finance to scale with consistency. These include clearer taxonomy alignment, stronger climate-risk integration, transition-finance capability, advisory and structuring capacity, and a larger pipeline of bankable green and transition assets. Under such conditions, the contrast between the Indonesian banks and DBS is not a contrast between participation and non-participation, but between different stages and forms of sustainable finance institutionalisation within the regional banking system.

4. CONCLUSION AND POLICY IMPLICATIONS

4.1 Conclusion

This study examined how sustainable finance is being scaled and embedded within three selected ASEAN bank cases, namely BCA, Bank Mandiri, and DBS, and considered the implications of these patterns for regional sustainability planning. Using a harmonised SFE framework, the analysis shows that all three banks expanded sustainable finance over the 2022–2024 period. BCA's sustainable financing portfolio increased to Rp228.566 trillion in 2024, while Bank Mandiri's sustainable portfolio reached Rp292.507 trillion. DBS reported SGD89 billion in sustainable financing commitments, net of repayments, in the same year; however, this figure should be interpreted primarily as the scale of a regional franchise relative to its home economy rather than as a purely Singapore-domestic portfolio.

The comparison further shows that sustainable finance is no longer peripheral in the Indonesian cases. BCA's sustainable financing accounted for 24.8% of its total financing portfolio in 2024, while Bank Mandiri's sustainable portfolio accounted for 22.32%. These proportions indicate that sustainable finance has already entered the core financing structure of both banks. At the same time, the form of integration differs across cases. BCA combines green financing with MSME financing and supports this portfolio with sectoral ESG policies, exclusion lists, and climate risk tools. Bank Mandiri's approach is broader in institutional design, combining green and social portfolios with a Sustainable Finance Framework, a Transition Finance Framework, and the expansion of sustainability-linked products. DBS operates at a different order of scale because sustainable finance is embedded in a regional platform that combines lending, transition finance, advisory capacity, and capital-market intermediation.

Sustainable finance in these selected ASEAN bank cases should therefore be assessed not only by nominal portfolio size, but also by governance depth, territorial scope, financing architecture, and the degree to which sustainability is embedded in core business and risk processes. In this respect, the three banks illustrate different stages and forms of institutionalisation. BCA represents stable domestic mainstreaming, Bank Mandiri represents structured expansion with stronger transition architecture, and DBS represents a more mature regional model of sustainable finance integration.

4.2 Policy and practice recommendations

The findings suggest that the next phase of sustainable finance development in ASEAN should focus less on symbolic commitment and more on implementation architecture.

First, regulators should strengthen disclosure standardisation. Banks should be required to report the stock of SFE, its share of the financing book, its sectoral composition, and whether the disclosed portfolio is domestic, regional, or cross-border. This would improve comparability and reduce the risk of mixing financing exposure with philanthropic expenditure.

Second, banks should move from portfolio growth to deeper operational integration. In practice, this means linking sustainable finance to credit processes, risk governance, and management incentives. A practical implementation sequence is to establish an internal ESG governance unit, identify high-risk sectors, apply sector-specific screening, integrate climate

risk into credit review, and then set multi-year sustainable finance targets linked to performance indicators.

Third, governments and planning agencies should strengthen the pipeline of bankable transition projects. Sustainable finance cannot scale efficiently if renewable energy, resilient infrastructure, low-carbon transport, and transition-oriented industrial projects remain fragmented or underprepared. Blended finance, partial guarantees, and co-financing mechanisms can help reduce the risk of early-stage transition assets and broaden the range of projects that commercial banks are willing to support.

Fourth, regional cooperation should focus on capability transfer. The most transferable lesson from DBS is not simply that higher volume is possible, but that scale depends on the interaction of governance, product design, advisory capability, and access to regional deal flow. ASEAN-level cooperation could therefore prioritise common transition-finance principles, shared ESG and climate-risk training, more interoperable taxonomies, and cross-border platforms for sustainable bond issuance and syndicated transactions.

5. RESEARCH LIMITATION

This study relies on secondary disclosures from bank reports and official macroeconomic statistics. Although the analysis applies a harmonised SFE framework, cross-bank comparability remains constrained by differences in reporting scope, portfolio categorisation, and territorial coverage. The sample is limited to three purposively selected banks in two countries, so the findings should be interpreted as comparative case-based insights rather than as representative evidence for the ASEAN banking sector as a whole. In addition, the indicators used in this study are descriptive benchmarking measures and do not estimate causal effects or environmental outcomes. Particular caution is required in interpreting the DBS case because its sustainable financing commitments are reported within a regional franchise rather than a purely domestic Singapore portfolio.

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