

**THE ROLE OF STATE-OWNED AND REGIONAL DEVELOPMENT
BANKS IN PROMOTING SUSTAINABLE DEVELOPMENT: EVIDENCE
FROM INDONESIA'S INDUSTRIAL AND NON-INDUSTRIAL
FINANCING SECTORS**

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ABSTRACT

Sustainable finance has become an important instrument for supporting environmental sustainability and achieving sustainable development goals. In Indonesia, State-Owned Banks (SOBs) and Regional Development Banks (RDBs) play strategic roles in channeling financing to various economic sectors. This study examines and compares the contribution of financing provided by SOBs and RDBs to sustainable development performance, as represented by the SRI-KEHATI Index. Monthly time-series data were analyzed using the Vector Error Correction Model (VECM) and Impulse Response Function (IRF). The results indicate that financing from both banking groups significantly affects sustainable development performance, although the magnitude of the contribution remains relatively limited. SOB financing contributes more strongly to industrial-sector activities, accounting for approximately 13% of sustainable development variation, compared with 11% for RDB financing. In contrast, RDB financing shows a relatively greater contribution to non-industrial sectors, accounting for approximately 6%, compared with 3% for SOB financing. The IRF results further reveal differences in the responses of sustainable development performance to financing shocks across banking groups and sectors. Overall, the findings suggest that neither banking group is universally superior in promoting sustainable development. Instead, SOBs and RDBs perform complementary roles, with SOBs supporting large-scale industrial financing and RDBs contributing more effectively to regional and community-oriented sectors. Strengthening sustainable financing policies and expanding environmentally responsible investments are expected to enhance sustainable development outcomes in Indonesia.

Keywords: *IRF, Regional Development Banks, Sustainable Development, Sustainable Finance, State-Owned Banks, VECM*

A. INTRODUCTION

Sustainable development has become a central objective of economic policy worldwide due to increasing concerns regarding climate change, environmental degradation, resource scarcity, and social inequality. The achievement of the Sustainable Development Goals (SDGs) requires substantial financial resources and effective allocation mechanisms capable of supporting environmentally and socially responsible economic activities. Consequently, sustainable finance has emerged as a strategic instrument for mobilizing capital toward sustainable development objectives and facilitating the transition to a more resilient and inclusive economy. Recent studies suggest that sustainable finance contributes to economic resilience, financial stability, and long-term sustainability through its influence on investment decisions, capital allocation, and corporate behavior (OECD, 2023; D'Orazio et al., 2023).

The growing importance of sustainable finance has transformed the role of financial institutions, particularly banks, from traditional financial intermediaries into strategic actors in sustainable development. Sustainable banking integrates environmental, social, and governance (ESG) considerations into lending, investment, and risk management decisions. Through sustainable lending practices, banks can influence corporate behavior, encourage environmentally responsible investments, and facilitate long-term economic development. Previous studies have demonstrated that ESG-oriented financing and sustainable lending contribute to both financial performance and sustainability outcomes (Manurung et al., 2024; Bouattour et al., 2024).

In emerging economies, including Indonesia, the role of the banking sector is particularly important because banks remain the dominant source of financing for business activities and economic development. Indonesia has increasingly promoted sustainable finance through various regulatory initiatives, including the Sustainable Finance Roadmap issued by the Financial Services Authority (OJK) and the implementation of sustainable finance principles within financial institutions. Moreover, the growing demand for environmentally responsible investments has encouraged banks to strengthen their participation in sustainable development programs. Nevertheless, challenges remain regarding financing effectiveness, environmental risk assessment, and the ability of financial institutions to generate measurable sustainability outcomes (OECD, 2024; D'Orazio et al., 2023).

Recent literature highlights that sustainable finance not only supports environmental protection but also enhances financial system resilience and promotes inclusive economic growth. Furthermore, financial institutions are increasingly expected to incorporate ESG principles into lending decisions to address climate-related risks and support the transition toward low-carbon economies. Consequently, the effectiveness of sustainable financing has become an important research topic in both developed and developing countries (Caldecott et al., 2024; Garg & Kumar, 2024).

Despite the growing literature on sustainable finance, empirical evidence regarding the contribution of different banking institutions to sustainable development remains limited, particularly in developing countries. Previous studies

have primarily focused on green finance, ESG performance, sustainable lending practices, and financial stability. However, relatively little attention has been devoted to comparing the contributions of different categories of banks in promoting sustainable development through financing activities. In addition, existing studies provide limited evidence regarding how financing shocks originating from different banking groups influence sustainable development performance over time (Murta & Gama, 2024; D’Orazio et al., 2023).

This issue is particularly relevant in Indonesia because State-Owned Banks (SOBs) and Regional Development Banks (RDBs) possess distinct institutional characteristics, financing capacities, and development mandates. State-Owned Banks generally have larger asset bases, broader market coverage, and greater capacity to finance large-scale industrial and infrastructure projects. In contrast, Regional Development Banks play a critical role in supporting regional economic development, local enterprises, and community-based financing activities. These institutional differences may generate varying contributions to sustainable development outcomes across industrial and non-industrial sectors (OECD, 2024; Manurung et al., 2024).

Therefore, this study aims to examine and compare the contribution of financing provided by State-Owned Banks and Regional Development Banks to sustainable development performance in Indonesia. Using the SRI-KEHATI Index as a proxy for sustainable development and employing the Vector Error Correction Model (VECM) and Impulse Response Function (IRF), this study investigates both the long-run and short-run dynamics between banking financing and sustainable development. The study contributes to the sustainable finance literature by providing comparative evidence regarding the roles of different banking institutions in supporting sustainable development and by offering policy implications for strengthening sustainable finance frameworks in Indonesia (Caldecott et al., 2024; Murta & Gama, 2024)..

Lastly, because the Indonesian government and the central bank supervise all activities and operations of all types of banks including Regional Banks, in general the role of Regional Banks in creating sustainable financing for small and medium businesses will be very necessary to develop developing countries. countries like Indonesia.

To examine further, this research visualizes the comparison of price movements of the SRI-Kehati index with the amount of financing from government banks and regional government banks. Figure 1 below explains that the index value has the most dynamic movement, followed by the amount of government bank financing and the amount of regional government bank financing. In more detail, government bank financing and regional government banks appear to have a co-movement with the index value, and all variables experience continuous overall improvement. Therefore, the contribution of financing to the sustainable development index may be questioned.

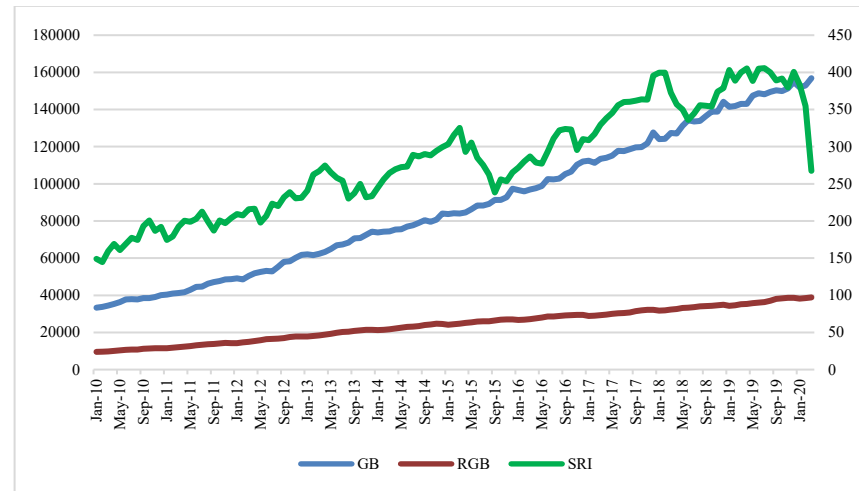


Figure 1.

Average amount of GB & RGB financing (Billion-Rp) with index closing price SRI-KEHATI (Hundreds-Rp)

Following up on the background of the problem previously explained, this research will use the Vector Error Correction Model method which is integrated with the Impulse Response Function method, hereinafter called VECM and IRF. It is hoped that the use of this integrated method can provide a more detailed explanation and cover broader aspects. After the introduction, this research will discuss the literature review in the second part. While the third section discusses the methodology, section 4 discusses the research calculation process. Finally, section 5 will discuss conclusions and findings to provide recommendations.

B. LITERATURE STUDY

Sustainable Development and Sustainable Finance

Sustainable development refers to a development approach that seeks to balance economic growth, environmental protection, and social welfare to meet present needs without compromising the ability of future generations to meet their own needs. In recent years, sustainable finance has emerged as a critical mechanism for achieving sustainable development goals by directing financial resources toward environmentally and socially responsible investments. The growing urgency of climate change, environmental degradation, and social inequality has increased the importance of integrating sustainability considerations into financial decision-making processes (Fu et al., 2023; Akhtar & Rashid, 2024).

Sustainable finance extends beyond traditional financial objectives by incorporating Environmental, Social, and Governance (ESG) considerations into investment, financing, and risk management activities. Unlike conventional finance, sustainable finance aims to generate long-term economic value while simultaneously addressing environmental and social challenges. Recent studies indicate that sustainable finance contributes to economic resilience, climate transition, and sustainable economic growth by promoting responsible investment practices and efficient capital allocation (D'Orazio et al., 2023).

Furthermore, the sustainable finance framework supports the achievement of the Sustainable Development Goals (SDGs) through the mobilization of private and public capital toward sustainability-oriented projects. Financial institutions are increasingly expected to evaluate not only financial returns but also environmental and social impacts when making financing decisions. Consequently, sustainable finance has become a strategic policy instrument for governments, regulators, and financial institutions worldwide (OECD, 2023; OECD, 2024).

Sustainable Banking and Sustainable Lending

The banking sector plays a crucial role in promoting sustainable development because banks serve as the primary intermediaries between capital providers and economic actors. Sustainable banking refers to the integration of sustainability principles into banking operations, lending decisions, investment activities, and risk management frameworks. Through sustainable banking practices, financial institutions can influence corporate behavior and encourage investments that generate positive environmental and social outcomes (Fu et al., 2023; Barcenas Ascanio et al., 2024).

Sustainable lending has become one of the most important instruments through which banks contribute to sustainable development. Sustainable lending involves the incorporation of ESG considerations into credit assessment, loan approval, and monitoring processes. Recent systematic reviews suggest that ESG performance and value-chain sustainability are among the most significant determinants of sustainable lending practices within commercial banks. Banks increasingly evaluate environmental risks, governance quality, and social impacts before allocating credit to borrowers (Manurung et al., 2024).

Moreover, sustainable lending contributes to financial stability by reducing exposure to environmental and social risks that may negatively affect borrowers' long-term performance. Banks that integrate ESG considerations into lending decisions are generally better positioned to identify emerging risks and support sustainable economic activities. Consequently, sustainable lending has evolved from a corporate social responsibility initiative into a strategic component of modern banking operations (Bressan, 2024; Bouattour et al., 2024).

The Role of Banks in Supporting Sustainable Development

Financial institutions have increasingly been recognized as strategic actors in achieving sustainable development objectives. Banks influence sustainable development through financing decisions that determine the allocation of capital across economic sectors. By supporting environmentally responsible projects, renewable energy investments, sustainable infrastructure, and socially inclusive businesses, banks can facilitate the transition toward a more sustainable economy (Akhtar & Rashid, 2024; Fu et al., 2023).

Recent literature suggests that sustainable finance should not be viewed solely as an environmental initiative but rather as a comprehensive transformation of financial systems. The effectiveness of sustainable finance depends on the interaction between financial institutions, regulatory frameworks, governance quality, and market incentives. Therefore, banks play an essential role in aligning

financial markets with sustainable development objectives while simultaneously maintaining financial performance and stability (D'Orazio et al., 2023; OECD, 2024).

In developing countries, the role of banks becomes even more critical because capital markets are often less developed, making bank financing the primary source of funding for economic activities. Consequently, the effectiveness of banking institutions in supporting sustainable development depends largely on their financing strategies, institutional capacities, and commitment to sustainability principles (Akhtar & Rashid, 2024).

State-Owned Banks, Regional Development Banks, and Sustainable Development

State-Owned Banks (SOBs) and Regional Development Banks (RDBs) represent important financial institutions within Indonesia's banking system. Although both institutions contribute to economic development through financing activities, they possess different institutional characteristics, mandates, and operational objectives. State-Owned Banks generally have larger asset bases, broader geographical coverage, and greater capacity to finance large-scale industrial and infrastructure projects. Conversely, Regional Development Banks focus primarily on regional economic development and local community empowerment (Manurung et al., 2024).

These institutional differences may lead to varying contributions to sustainable development. State-Owned Banks are expected to play a greater role in financing capital-intensive projects that support industrial development and national economic growth. In contrast, Regional Development Banks may contribute more significantly to local economic development, financial inclusion, and community-based sustainable initiatives. However, empirical evidence comparing the contribution of these two banking groups to sustainable development remains limited, particularly in emerging economies such as Indonesia.

Therefore, examining the comparative contribution of State-Owned Banks and Regional Development Banks to sustainable development performance represents an important research agenda. Understanding these differences may provide valuable insights for policymakers and financial regulators seeking to strengthen sustainable finance frameworks and improve the effectiveness of banking sector participation in achieving sustainable development objectives.

Research Gap and Hypothesis Development

Although sustainable finance literature has expanded significantly in recent years, most previous studies focus on ESG performance, green finance, sustainable lending, and financial stability. Limited attention has been given to comparing the contributions of different banking groups to sustainable development performance, particularly within developing countries. Moreover, existing studies rarely investigate the dynamic responses of sustainable development indicators to financing shocks originating from different banking institutions (Akhtar & Rashid, 2024; D'Orazio et al., 2023).

This study addresses these gaps by comparing the contribution of financing provided by State-Owned Banks and Regional Development Banks to sustainable development performance in Indonesia. Using the SRI-KEHATI Index as a proxy for sustainable development and applying VECM and IRF approaches, this study contributes to the literature by providing evidence regarding both the long-run and short-run relationships between banking financing and sustainable development outcomes.

C. RESEARCH METHOD

This research uses the Vector Error Correction Model method which is integrated with the Impulse Response Function method, hereinafter referred to as VECM and IRF. It is hoped that the use of this integrated method can provide a more detailed explanation and cover broader aspects.

Financial research has a number of analytical tools, but in terms of processing they must be in accordance with the behavior of the data which must be identified first. One of the conditions that must be considered when using the VECM method is the existence of a unit-root of stochastic conditions. To determine the existence of these conditions, this research uses the Augmented Dickey-Fuller (ADF) method based on the classic work of Dickey & Fuller (1981). This method can be done by referring to the empirical formula as follows:

$$\Delta Z_t = \alpha_1 + \alpha_2 t + \alpha_3 Z_{t-1} + \sum_{i=1}^p \beta_i \Delta Z_{t-1} + \varepsilon_t$$

Equation (1) above has a unit root result which is symbolized by Z_t . Because this research's financial data uses a time series, the t component in the equation above functions as a unit of time. Thus, the hypotheses generated from this equation are $H_0 : \alpha_3 = 0$ and $H_0 : \alpha_3 \neq 0$. In addition to using the ADF initial test method, this research uses Johansen cointegration assessment to see whether the analyzed data contains non-stationary behavior (Österholm & Hjalmarsson, 2007).

D. RESULTS AND DISCUSSION

The empirical findings indicate that financing activities conducted by State-Owned Banks (SOBs) and Regional Development Banks (RDBs) contribute to sustainable development performance as represented by the SRI-KEHATI Index. The VECM estimation results demonstrate statistically significant relationships between financing activities and sustainable development performance. However, the explanatory power of the models remains relatively modest, indicating that sustainable development is influenced by multiple economic, environmental, institutional, and regulatory factors beyond banking financing alone.

The comparative analysis reveals important differences between the two banking groups. State-Owned Banks exhibit a stronger contribution to industrial-sector financing, accounting for approximately 13% of sustainable development variation compared with approximately 11% for Regional Development Banks. This outcome may be attributed to the larger asset base, stronger capital capacity, and broader financing capabilities of State-Owned Banks, enabling them to support large-scale industrial projects in manufacturing, infrastructure, construction, and energy sectors.

Conversely, Regional Development Banks demonstrate relatively stronger contributions to non-industrial sectors, accounting for approximately 6% of sustainable development variation compared with approximately 3% for State-Owned Banks. This finding reflects the closer relationship between Regional Development Banks and local economic activities, including housing development, community-based businesses, and regional economic empowerment programs. Their regional orientation enables them to reach economic actors that may not be fully served by larger banking institutions.

Although financing from both banking groups significantly influences sustainable development performance, the contribution remains relatively low. Several explanations may account for this result. First, sustainable development is inherently multidimensional, involving environmental, social, and governance dimensions that cannot be explained solely by financing activities. Second, not all financing allocations are specifically directed toward sustainability-oriented projects. Third, the benefits of sustainable financing often require a longer period before generating measurable environmental and social outcomes.

The IRF results further reveal heterogeneous responses of the SRI-KEHATI Index to financing shocks originating from State-Owned Banks and Regional Development Banks. Financing shocks from State-Owned Banks tend to generate stronger responses within industrial sectors, whereas Regional Development Banks display relatively more stable responses in non-industrial sectors. These findings suggest that the effectiveness of sustainable financing depends not only on financing volume but also on sectoral allocation, institutional characteristics, and financing objectives.

These findings support the growing literature on sustainable finance, which argues that financial institutions play a strategic role in promoting sustainable development through capital allocation and investment decisions. Nevertheless, the effectiveness of sustainable finance depends on the quality of regulatory frameworks, sustainability governance, environmental risk assessment, and long-term financing commitments. Recent studies similarly emphasize that sustainable finance should be viewed as a broader transformation of financial systems rather than merely an expansion of financing volumes.

Referring to the division of the process, the variable notation and description are described in table 1 below:

Table 1.
Variable Notation

Part	Variable	Notation
Sustainable Index	Δsr	SRI-Kehati Index Value
Industrial Sector	$\Delta a1$	Agricultural Sector Financing
	$\Delta a2$	Mining Sector Financing
	$\Delta a3$	Manufacturing Sector Financing
	$\Delta a4$	Energy Sector Financing
	$\Delta a5$	Construction Sector Financing
Non-Indurstial Sector Financing	$\Delta b1$	Hosuing Financing

Part	Variable	Notation
Sustainable Index	Δsr	SRI-Kehati Index Value
	$\Delta b2$	Plat/Apartment Financing
	$\Delta b3$	Shophouse Financing
	$\Delta b4$	Vehicle Financing
	$\Delta b5$	Other Government Financing

Table 1 above provides an explanation that this research has two separate empirical processes. The Sustainable Development variables above will be used as influenced variables for these two empirical processes. After all the variables used in this research have been described, the next step is to describe descriptive statistics. Apart from displaying the movement behavior of variable values, descriptive statistics will also provide initial information regarding the behavior of the data that will later be processed. Further discussing the results of the statistical description, table 2 below reveals that overall, the value of each variable has increased. However, due to the influencing and influencing variables having different behavior and types of data, the increase in value that occurs is also not the same.

Table 2.
Statistical Description

Variable	Mean	Std.Dev	Minimum	Maximum
Δsr	275,338	77,126	131,923	405,66
$\Delta a1$	127,983	64,332	38,944	245,115
$\Delta a2$	36,724	10,178	12,223	55,517
$\Delta a3$	186,768	71,258	90,635	305,422
$\Delta a4$	53,839	31,924	8,737	119,622
$\Delta a5$	67,126	42,637	16,922	160,319
$\Delta b1$	155,937	75,922	44,075	291,656
$\Delta b2$	47,176	140,114	1,225	828,02
$\Delta b3$	80,944	207,699	1,12	938,03
$\Delta b4$	22,792	9,125	5,615	42,211
$\Delta b5$	202,893	75,796	99,668	344,413

After the statistical description is explained, next is correlation analysis. Even though correlation analysis has not yet entered the initial testing and core testing stages, this testing is a significant aspect in understanding data connectivity behavior (Nandiwardhana 2020). By knowing the degree of connection between variables, researchers will be more confident in the data used for testing in the next step. Table 3 of the correlation results below reveals that the relationships that occur between generally used variables are very significant. Even though there are some negative correlation results, the remaining values obtained are above 50%. Connectivity values reaching 90% are also found in many spots. Referring to the correlation results, the data used in this research can be used in the next process, namely the initial assessment.

Table 3.
Government Bank Correlation

I/N	Δsr	$\Delta a1$	$\Delta a2$	$\Delta a3$	$\Delta a4$	$\Delta a5$	$\Delta b1$	$\Delta b2$	$\Delta b3$	$\Delta b4$	$\Delta b5$
Δsr	1,0000										
$\Delta a1$	0,6775	1,0000									
$\Delta a2$	0,9915	0,7878	1,0000								
$\Delta a3$	0,9753	0,6184	0,9517	1,0000							
$\Delta a4$	0,9729	0,5803	0,9485	0,9672	1,0000						
$\Delta a5$	0,9929	0,6836	0,9799	0,9739	0,9801	1 0000					
$\Delta b1$	(0,3903)	(0,5576)	(0,3841)	(0,3993)	(0,3188)	(0,3976)	1,0000				
$\Delta b2$	(0,4645)	(0,6664)	(0,4756)	(0,4765)	(0,3887)	(0,4832)	0,7398	1,0000			
$\Delta b3$	0,9727	0,6941	0,9697	0,9384	0,9459	0,9782	(0,3705)	(0,4955)	1,0000		
$\Delta b4$	0,9732	0,5564	0,9634	0,9657	0,9826	0,9684	(0,3707)	(0,3707)	0,9517	1,0000	
$\Delta b5$	0,9747	0,7132	0,9344	0,9288	0,9056	0,9478	(0,4439)	(0,4439)	0,9127	0,9076	1,0000

After the descriptive statistical analysis and correlation analysis have been implemented, as well as interpreting the results of the correlation analysis, this research will then implement the first initial analysis, namely the ADF-PP Assessment. The two initial analyzes were implemented and combined in this study to show and ensure that the data used indicated unit root. Apart from this research implementing unit-root as a condition for using VECM, unit-root is also used to identify that data actually has behavior that is difficult to project. Table 4 below shows that both Industrial and Non-industrial phases have unit-root behavior. This can be seen in the ADF and PP values, the majority of which have values that are greater than the values in the critical segment. Thus, the entire data used in this study has unit-root indications. Although this initial analysis is not sufficient to be used as a condition for using VECM, the unit root indication can at least be used as a reference that the appropriate empirical test used in this research is VECM.

Table 4.
Penilaian Unit Root ADF-PP

Fase	Var	ADF	CritADF	PP	CritPP
Industrial	Δsr	(2,164)	(3,148)***	(1,865)	(3,148)***
	$\Delta a1$	(3,062)	(3,148)***	(3,118)	(3,148)***
	$\Delta a2$	(2,163)	(3,148)***	(2,727)	(3,148)***
	$\Delta a3$	(3,195)	(3,448)**	(3,48)	(3,447)**
	$\Delta a4$	(2,535)	(3,148)***	(3,003)	(3,148)**
	$\Delta a5$	(1,586)	(3,148)***	(1,233)	(3,148)**
Non-Industrial	Δsr	(2,164)	(3,148)***	(1,864)	(3,148)***
	$\Delta b1$	(2,114)	(3,148)***	(2,209)	(3,148)***
	$\Delta b2$	(3,374)	(3,448)**	(3,657)	(4,032)**
	$\Delta b3$	(2,586)	(3,148)***	(2,792)	(3,156)**
	$\Delta b4$	(3,196)	(3,148)***	(4,057)	(4,045)**

Fase	Var	ADF	CritADF	PP	CritPP
	$\Delta b5$	(3,529)	(3,148)***	(2,906)	(3,148)***

After the initial unit-root assessment of ADF PP, this research then implemented the Johansen cointegration assessment. This test is a test carried out one by one according to the empirical relationship between variables, however, to shorten the output of the process, this research combines several Johansen cointegration outputs into one in order to facilitate analysis. From both table 5 and table 6 below, it can be seen that the data identifies cointegration behavior. Apart from the initial rank the trace value being greater than the critical value, at subsequent ranks the opposite happens, namely the trace value is lower than the critical value. By referring to the results of Johansen's cointegration, this research data can be processed into the next initial assessment, namely assessment. LM and JB

Table 5.
Johansen Cointegration Report Industrial Segments

Rank (r) of null	Eigenvalue	Trace	Critical	Max	Critical
r = 0	-	95,192	94,16	45,129	29,38
r ≤ 1	0,298	50,063	68,53	17,687	33,47
r ≤ 2	0,131	32,377	47,22	13,932	27,17
r ≤ 3	0,113	18,446	29,78	10,273	20,98

Table 6.
Johansen Cointegration Report Non-Industrial Segment

Rank (r) of null	Eigenvalue	Trace	Critical	Max	Critical
r = 0	-	172,300	94,16	86,355	29,38
r ≤ 1	0,494	85,045	68,53	40,747	33,47
r ≤ 2	0,275	44,298	47,22	21,572	27,17
r ≤ 3	0,157	22,736	29,78	12,488	20,98

In general, advanced financial research does not require classical assumption tests. However, the classical assumption test in this research is really needed to ensure that apart from being indicated as unit-root, the data in question is also not normally distributed. As an additional analysis, this study also implemented autocorrelation testing. Table 7 and table 8 below show that the data does not indicate autocorrelation and is not normally distributed. This is proven by the LM probability value which is not significant and the JB assessment probability value which is significant. After the initial assessment and classic assumption tests have been carried out, and the results meet the requirements, the next assessment carried out is the core assessment of the VECM empirical testing.

Table 7.
Lagrange Multiplier (LM) Assessment Results

Phase	Lag	chi ²	Prob
Industrial	1	28,548	0,805
	2	16,443	0,987
Non-Industrial	1	122,442	0,002
	2	138,036	0,101

Table 8.
Jarque Bera (JB) Assessment Results

Phase	Model	chi2	Prob
Industrial	Δsr	129,191	0,001
	$\Delta a1$	22,887	0,001
	$\Delta a2$	6,374	0,042
	$\Delta a3$	3,273	0,193
	$\Delta a4$	39,072	0,002
	$\Delta a5$	9,311	0,008
Non-Industrial	Δsr	173,577	0,001
	$\Delta b1$	137,217	0,002
	$\Delta b2$	935,612	0,001
	$\Delta b3$	933,201	0,001
	$\Delta b4$	145,600	0,003
	$\Delta b5$	350,081	0,001

This research is sustainable financing research which will examine the influence of financing from the industrial sector and non-industrial banking sector on the sustainable development index. Technically, this research will analyze the empirical relationships that occur in the environment which are characterized by the value of the SRI-Kehati sustainable development index. After the data has gone through an initial assessment and classical assumption testing, the next step is empirical testing for industrial financing and non-industrial financing. Regarding the results of the initial assessment and classical assumption testing which leads to data including eligibility for VECM empirical testing, table 9 below provides accurate information.

The VECM estimation results indicate that financing activities provided by state-owned and regional development banks significantly affect the SRI-KEHATI Index, which serves as a proxy for sustainable development performance in Indonesia. Nevertheless, the explanatory power of the model remains relatively modest, as reflected by the low R^2 values. This finding suggests that sustainable development performance is influenced not only by banking financing but also by broader economic, environmental, institutional, and regulatory factors.

The relatively limited contribution of financing variables implies that sustainable financing practices in Indonesia are still at an early stage of

development. Although banks have increasingly incorporated environmental and social considerations into their lending activities, financing allocation may not yet be sufficiently directed toward projects with substantial sustainability impacts. This finding is consistent with the argument of Volz (2015), who emphasized that sustainable finance implementation in Indonesia remains constrained by institutional capacity and limited integration of environmental risk assessment into banking operations.

Furthermore, the significant relationship between financing and the SRI-KEHATI Index supports the view that financial institutions play a strategic role in promoting sustainable development. Similar evidence was reported by Wang and Zhi (2016) and Galaz et al. (2018), who argued that financial intermediation can facilitate environmentally responsible investments and accelerate the transition toward sustainable economic growth. Therefore, although the magnitude of the impact remains relatively small, the empirical evidence confirms that banking financing constitutes an important mechanism for supporting sustainable development objectives in Indonesia.

Table 9.
Vector Error Correction Model (VECM) Results

Panel	rmse	R ²	chi ²	p value
Δsr	11,366	0,152	18,642	0,045
$\Delta a1$	2370,15	0,421	76,675	0,001
$\Delta a2$	3191,52	0,176	22,336	0,012
$\Delta a3$	6153,31	0,245	33,954	0,000
$\Delta a4$	4067,31	0,192	27,298	0,045
$\Delta a5$	1828,13	0,454	87,077	0,001
Δsr	11,892	0,053	5,565	0,775
$\Delta b1$	2995,68	0,444	84,544	0,000
$\Delta b2$	215,253	0,227	31,346	0,004
$\Delta b3$	49,783	0,678	225,145	0,000
$\Delta b4$	658,75	0,288	42,723	0,001
$\Delta b5$	5796,61	0,165	20,884	0,000

Apart from empirical testing, VECM has other features, namely testing long-term and short-term empirical relationships. In the same process, table 10 below reveals that the model proposed in this research has a short-term relationship with sustainable development performance. The existence of a short-term relationship in the table below is indicated by significant results in the p value and coefficient values at levels 1 and two which are positive and negative at the same time. The long-run VECM results reveal that the adjustment mechanism between banking financing and sustainable development performance is relatively weak. This condition indicates that financing activities have a stronger short-term influence than long-term effects on the SRI-KEHATI Index. One possible explanation is that banking institutions continue to prioritize profitability, liquidity management, and credit risk considerations when allocating funds. Consequently, financing decisions

may generate immediate economic effects but require a longer period to produce measurable environmental and social outcomes.

From a sustainable development perspective, environmental improvements and social welfare enhancements generally emerge gradually through cumulative investments in green technology, renewable energy, environmentally friendly infrastructure, and sustainable business practices. Therefore, the absence of a strong long-term relationship does not necessarily imply the ineffectiveness of sustainable financing policies. Instead, it suggests that the current scale and allocation of financing may still be insufficient to generate substantial long-term sustainability impacts.

Table 10.
VECM Long Term Assessment

	Panel	coef	std err	z val	p val	Interval	
Δsr	L1_c1	-0,347	0,073	-4,86	0,001	-0,476	-0,220
	L1_c2	0,001	0,000	2,53	0,003	0,005	0,015

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E. CONCLUSIONS

This study investigates the contribution of State-Owned Banks and Regional Development Banks to sustainable development performance in Indonesia using the SRI-KEHATI Index as a proxy for sustainable development. Employing the Vector Error Correction Model (VECM) and Impulse Response Function (IRF), the study provides evidence regarding the role of banking financing in supporting sustainable development across industrial and non-industrial sectors.

The results demonstrate that financing activities from both banking groups significantly affect sustainable development performance. However, the magnitude of their contribution remains relatively limited, indicating that sustainable development outcomes are influenced by broader environmental, economic, institutional, and regulatory factors.

The comparative analysis shows that State-Owned Banks contribute more strongly to industrial-sector financing, accounting for approximately 13% of sustainable development variation compared with approximately 11% for Regional Development Banks. Conversely, Regional Development Banks contribute more substantially to non-industrial sectors, accounting for approximately 6% compared with approximately 3% for State-Owned Banks. These findings suggest that each banking group possesses distinct comparative advantages in promoting sustainable development.

The IRF analysis further indicates that sustainable development performance responds differently to financing shocks across banking groups and sectors. Such differences reflect variations in financing strategies, institutional objectives, and sectoral orientations between State-Owned Banks and Regional Development Banks.

Overall, this study concludes that neither State-Owned Banks nor Regional Development Banks can be regarded as universally superior in supporting sustainable development. Instead, both banking groups perform complementary

functions. State-Owned Banks play a strategic role in financing large-scale industrial activities requiring substantial capital, whereas Regional Development Banks contribute more effectively to regional economic development and community-based sectors. Therefore, sustainable development policies in Indonesia should encourage stronger collaboration between both banking groups while strengthening sustainable financing frameworks, environmental risk assessment systems, and long-term green investment initiatives.

Policy-wise, the government should continue improving sustainable finance regulations, encourage the integration of environmental risk considerations into lending decisions, and expand incentives for financing projects that generate measurable environmental and social benefits. Such initiatives are expected to increase the effectiveness of sustainable financing in supporting Indonesia's long-term sustainable development objectives.

REFERENCES

- Akhtar, N., & Rashid, A. (2024). Financial development and sustainable development A review of literature. *Sustainable Development*, 32(6), 7114–7139.
- Barcenas Ascanio, E. K., Rodriguez, Cárdenas J., E., Marrugo Salas, L. M., & Cardenas Escobar, A. Z. (2024). *Ethical banking and SDGs: A mixed review of the literature.pdf* (pp. 1–11). LACCEI Proceedings.
- Bouattour, A., Kalai, M., & Helali, K. (2024). performance and bank stability in the digital era : new evidence from a regime-switching approach. *Humanities and Social Sciences Communications*. <https://doi.org/10.1057/s41599-024-03876-8>
- Bressan, S. (2024). *Environmental , Social , and Governance Scores and Loan Composition Inside United States Banks*.
- Caldecott, B., Clark, A., Harnett, E., & Liu, F. (2024). How sustainable finance creates impact : transmission mechanisms to the real economy. In *Review of World Economics* (Issue 0123456789). Springer Berlin Heidelberg. <https://doi.org/10.1007/s10290-024-00541-9>
- D’Orazio, P., Scholtens, B., & de Mariz, F. et al. (2023). Voices Catalyzing the transformation to sustainable finance. *One Earth*, 6(10), 1271–1276.
- Fu, C., Lu, L., & Pirabi, M. (2023). *Advancing green finance : a review of sustainable development*. 3, 1–19.
- Garg, M., & Kumar, P. (2024). Harnessing digital technologies for triple bottom line sustainability in the banking industry : a bibliometric review. *Future Business Journal*, 10(62).
- Manurung, K. A. A., Siregar, H., Fahmi, I., & Hakim, D. B. (2024). Value Chain and ESG Performance as Determinants of Sustainable Lending in Commercial Bank: A Systematic Literature Review. *APTISI Transactions on Technopreneurship*, 6(1), 41–55.
- Murta, F. S., & Gama, P. M. (2024). Sustainability and the domestic credit market : worldwide evidence. *Eurasian Economic Review*, Springer; *Eurasia Business and Economics Society*, 14(4), 40822.
- OECD. (2023). *Financial Consumers and Sustainable Finance: Policy Implications and Approaches*.
- OECD. (2024). *Sustainable Finance and Capital Market Development*.
- Pattinasarany, W. (2018). Indeks Investasi Hijau: Sektor Industri Berbasis Lahan (pp. 2–5). <https://doi.org/10.1017/CBO9781107415324.004>
- Pearson. H. R. T., Brown. S., Murray. L., & Sidman. G. (2017). Greenhouse gas emissions from tropical forest degradation: an underestimated source. *Carbon Balance Manage*, 12, 3. DOI 10.1186/s13021-017-0072-2
- Stojanovic, D., & Ilic, B. (2018). Green Financing in the Function of Risk Management. *Economic and Social Development: Book of Proceedings*, (May), 69–76.
- Volz, U. (2015). Towards a Sustainable Financial System in Indonesia. *UNEP Inquiry Into the Design of a Sustainable Financial System* (pp. 1–49).

- Yayasan KEHATI. (2018). Berdaya Indonesiaku, Yayasan KEHATI 2018 Annual Report. Retrieved From <http://kehati.or.id/laporan-tahunan-kehati/>
- Yuan, F., & Gallagher, K. P. (2018). Greening Development Lending in the Americas: Trends and Determinants. *Ecological Economics*, 154, 189–200. <https://doi.org/10.1016/j.ecolecon.2018.07.009>