Impact of ESG Performance in Mitigating Non-Performing Loans in Kenya's Commercial Banks

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ARTICLE INFO	ABSTRACT
	Purpose : The study examines the impact of ESG performance in mitigating non-performing loans of Kenyan commercial. Given the growing risks in Kenya associated with climate change and economic volatility in the financial sector, it is critical to understand how ESG performance can mitigate non-performing loans. **Method :** The study uses a dynamic panel system generalized method of moments model to analyse 33 commercial banks over the period 2013–2024. The non-performing loan (NPL) ratio is the dependent variable, while ESG performance is assessed across three key pillars: environmental, social and governance. Control variables include bank size, capital adequacy ratio and inflation rate. **Findings :** The study finds that there is a significant negative association between high ESG performance and non-performing loan ratios suggesting that enhanced ESG performance contributes to reducing non-performing loans. **Novelty :** The study adds to the knowledge of existing research on how ESG factor; environmental, social, and governance mitigates non-performing loans in Kenyan commercial banks thereby, enhancing scholarly discourse and offering insights for banking institutions and policymakers in their pursuit of sustainable financial practices.

INTRODUCTION

Climate change is increasingly recognized as a significant global risk, posing long-term threats to economic stability and the financial sector. The alarming trends, such as the occurrence of natural disasters, temperature fluctuations, and extreme weather patterns, demand urgent attention from financial institutions to understand, quantify, and manage these risks (World Economic Forum, 2022). Banks are under increasing pressure to incorporate climate-related considerations into their credit assessments due to their exposure to both direct and indirect effects stemming from climate change on the economy and financial systems (Grippa, 2021). Financial sector authorities, like central banks and regulators, are increasingly focusing on understanding and measuring the potential impacts of climate change on the banking system, aiming to green the financial system by integrating climate risks into their supervisory practices and encouraging banks to invest in sustainable projects, thereby mitigating climate-related financial risks (Elderson & Heemskerk, 2020).

In Kenya, the economy is acutely susceptible to climate disasters, including droughts and floods. The losses due to such disasters are estimated to account for approximately 3% of the country's GDP annually (International Climatic Initiative, 2021). This substantial impact underscores the critical intersection between climate change and economic stability in Kenya. Figure 1 illustrates a significant rising trend in Kenya's mean temperatures from 1979 to 2023, highlighting the escalating challenges posed by climate change in the region.

In the late 1970s, average maximum temperatures in Kenya were approximately 29.0°C. However, by the early 2020s, these temperatures had increased to over 30.5°C. The temperature has risen by around 1.5°C throughout this time indicating that climate change occurrence in A rising mean temperature, also known as global warming, primarily causes changes in weather patterns, including more extreme weather events like heatwaves, droughts, heavy rainfall, and intensified storms, as well as rising sea levels (Lindsey and Dahlman, 2024). Droughts and floods have already caused damages and disruptions to infrastructure in Kenya, resulting in substantial economic costs in the country; about 67 percent of climate disasters in Kenya between 1964 and 2023, with most being drought-rela-
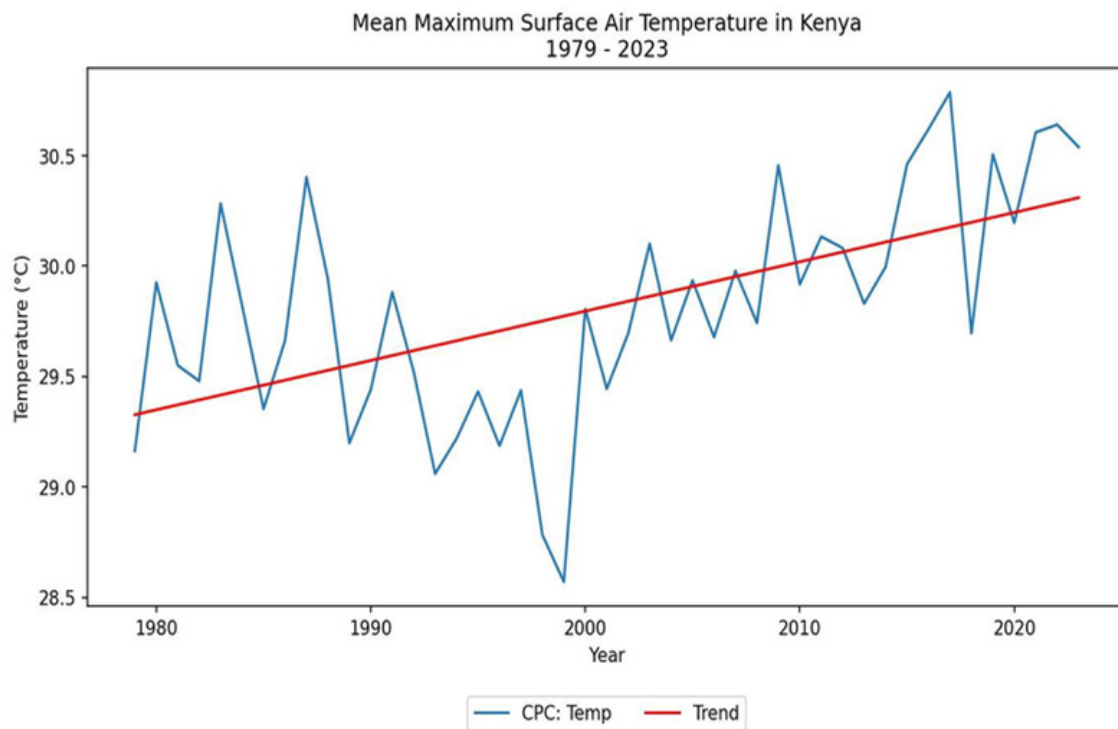
Figure 1. Average Maximum Surface Air Temperature in Kenya 1979-2023
Source: Kenya Meteorological Department (2023)

ted (International Monetary Fund, 2024). When losses from these climate disasters exceed the allocated budget, potential fiscal risks arise thereby increasing role of environmental and climate criteria in credit assessment procedures and investment portfolio construction processes is necessitated by banks. This is because the values declared by the banks, and these must correspond to the values of the banks' stakeholders: shareholders, customers, and employees.

Currently the biggest problem facing Kenya's commercial banks is rising of non-performing loans. Kenya's banking sector has seen rising non performing loan ratios, coinciding with increasing climate variability. The Figure 2 shows the rising trend of total non-performing loans of Kenyan commercial banks in the last 14 years. Total non-performing loans increases from 60,000 million USD in 2010 to 580,000usd in 2023.

Concurrently, Kenya faces increasing physical climate risks, including temperature anomalies, rainfall variability, severe flooding and prolonged droughts for the past 14 years as stated by (Kenya Meteorological Department, 2023). Therefore, climate risk is a burden that is of concern to the Kenyan commercial banks because extreme weather conditions have led to economic loss often results in disruption of cash flows and damage to collateral and ultimately led to an increase in non-performing loans. In the Kenyan economy, the financial sector is dominated by banking institutions (Robert, et al. 2022). High levels of non-performing loans decrease lending as well as negative economic advancement in society (Ng'etich & Wanjau, 2017).
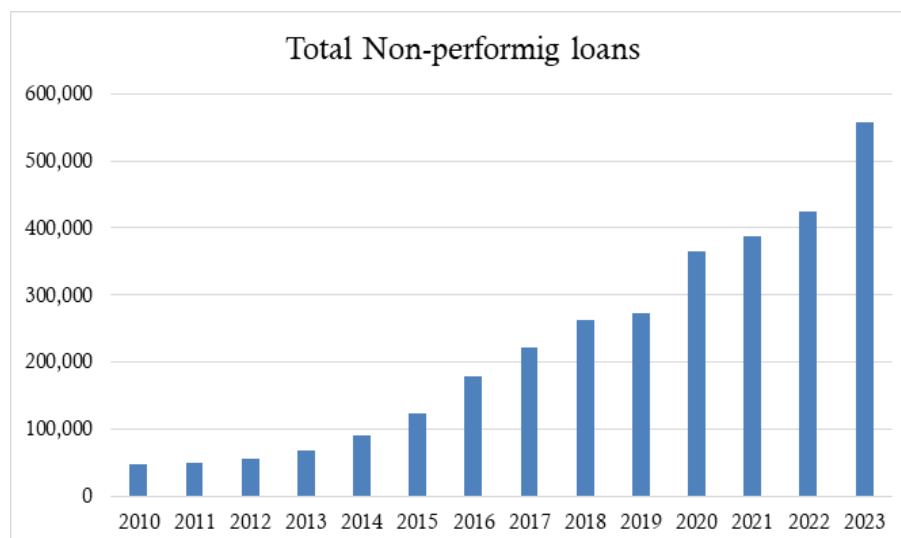

Figure 2. Rising Trend of Total Non-Performing Loans
Source: Central Bank of Kenya (2023)

To manage non-performing loans in Kenyan Commercial banks, it is important to understand how ESG performance can mitigate non-performing loans, as it helps manage climate risks. In ESG, climate risks are considered environmental factors, falling under the E category; meaning they relate to the impact bank has on the environment. The increasing importance of climate risk demands effective ESG auditing to ensure regulatory compliance, and enhance long-term financial sustainability. Although many studies have demonstrated the benefits of implementing ESG principles, there remains a significant research gap regarding how each ESG factor, environmental, social, and governance specifically mitigates non-performing loans in banks. Existing literature has analysed ESG performance, without disaggregating its individual components to assess their distinct influence on credit risk. Prior studies have largely focused on ESG's impact on bank performance indicators such as stock value society (Di Tommaso & Thornton, 2020; Azmi et al., 2021; Demir & Danisman, 2021) financial stability (Chiaramonte et al., 2022; Toth et al., 2021), financial distress (Citterio & King, 2022), efficiency (Alam et al., 2021; Ji et al., 2023), and profitability (Zhou et al., 2021; Yuen et al., 2022). Other studies have examined ESG's influence on lending behavior (Basu et al., 2022; Danisman & Tarazi, 2022) and the role of governance structures in ESG ratings (Gurol & Lagasio, 2022).

Despite these insights, most existing research is concentrated in developed economies, leaving a gap in understanding how ESG factors influence NPL mitigation in developing regions. Studies on ESG in Africa and the Middle East remain limited. Yahaya (2018) examined environmental reporting and financial performance in Nigeria, while Buallay (2019) investigated the relationship between sustainability reporting and firm performance in Bahrain's banking sector. However, these studies provide little insight into ESG's role in credit risk management. In Kenya, existing research has primarily focused on broader climate risks, such as the influence of climate transition risks on interest spreads Maru & Makambi, (2024), the impact of climate risk indicators on bank stability Odongo et al. (2023), and the greening of Kenya's banking sector (Talam & Maru, 2023). Additionally, Kimundi & Wambui (2023) assessed the vulnerability of Kenya's banking sector to climate change but did not explicitly address how ESG performance mitigates non-performing loans.

To bridge this gap, this study seeks to explore the impact of ESG performance in mitigating non-performing loans by addressing the following research question: How do ESG factors (environmental, social, and governance) influence non-performing loans mitigation in Kenyan commercial banks? Moreover, this study makes several contributions to the banking and ESG literature. First, it enhances the understanding of how sustainable banking practices can serve as a strategic tool for credit risk management. Second, it provides empirical insights that policymakers can use to develop ESG-aligned regulatory frameworks aimed at enhancing financial resilience. Finally, the findings offer practical recommendations for Kenya banking institutions to refine their ESG strategies, optimize loan portfolio performance, and reduce the rising non-performing loans.

Due to the growing interest of the financial sector in the practice of ESG, research perspectives on the impact of ESG performance have gradually shifted to financial institutions, particularly commercial banks. This study uses two types of theories to explain the effect of ESG performance in mitigating non-performing loans: stakeholders' theory and ESG investment theory. Stakeholder theory, founded by Freeman (1984), implies that ESG performance is critical for mitigating non-performing loans by ensuring that banks consider the interests of multiple stakeholders, including investors, customers, employees, regulators, and society at large (Alsayegh, et al., 2020). Building upon stakeholder theory, ESG Investment Theory, widely attributed to Elkington (2013), who introduced the concept of the triple bottom line in his 1998 book Cannibals with Forks, further elucidates the importance of incorporating environmental, social, and governance factors into financial decision-making.

Elkington (2013) emphasized the importance of evaluating a company's performance not only in financial terms but also considering its environmental and social impact. This idea laid the foundation for ESG investing, which advocates for the integration of these three factors into business and financial decision-making. ESG investment theory posits that by considering ESG criteria, financial institutions like banks, can reduce exposure to long-term risks such as environmental liabilities, social unrest, or governance failures offering banks a way to manage risk and enhance stakeholder relations (Cantero-Saiz, 2024). This proactive strategy promotes environmental sustainability while simultaneously reducing the risk of non-performing loans (Zhou et al. 2022). Chen & Xie (2022) further highlight that banks play a unique role in society, with goals that go beyond maximizing profits to include shareholder welfare. Their study reveals that banks charge much higher loan interest rates to businesses with greater levels of chemical pollution, which raises the cost of borrowing money overall, shortens loan terms, and necessitates more substantial collateral. These adverse effects are particularly apparent when working with borrowers that have higher risk profiles thereby affecting their loan portfolio. This is expanded by Wang's, (2023) study which found that ESG disclosure for banks increased borrowers' social and environmental performance. By adding more environmental action clauses to loan agreements and terminating links with borrowers who had a bad environmental history, banks improved their engagement and selection efforts.

Furthermore, Flammer & Kacperczyk, (2019) discovered that higher ESG ratings are associated with lower default risks, implying that banks with strong ESG performance efficiently reduce non-performing loans. Di Tommaso & Thornton (2020) observed that by considering the environment while making loans, banks may avoid adverse selection and moral hazard concerns, decreasing their risk level and non-performing loan ratio. According to Neitzert and Petras (2022), banks with greater ESG performance move more of their lending business to green

economy initiatives funded by government agencies, hence improving investment safety and minimizing risk exposure. This is backed by the arguments of Galletta & Maazzu (2023), who evaluated the association between ESG composite scores and bank operational risk using a worldwide sample of banks operating in 35 countries from 2011 to 2020, and discovered that higher ESG scores lower bank operational risk. Banks may improve their overall stability and mitigate non-performing loan levels by lowering operational risks, which reinforces the beneficial impact of high environmental performance. Therefore, based on the literature discussed, we draw our hypothesis:

H$_1$: Higher environmental performance is significantly and negatively associated with non-performing loans in Kenyan commercial banks

From the perspective of stakeholder theory, banks with high ESG performance show more concern about their stakeholders and willingly follow social norms (Flammer & Kacperczyk, 2019). This approach helps reduce information asymmetry with stakeholders, garner social respect, and consequently boost financial performance. Socially responsible banking practices, encompassing fair lending, community development, and access to financial services, can significantly improve customer relationships and reduce loan default rates. Kenyan banks that engage in fair lending practices, support community development, and ensure access to financial services can improve relationships with customers. In line with the arguments of Ahmed et al. (2018), who aimed to identify the reasons for considering ESG criteria in the bank lending process, using data from 30 private commercial banks in Bangladesh and a fixed-effect model, it was discovered that banks integrating ESG criteria in lending decisions achieve better financial performance reducing knowledge asymmetry with stakeholders hence improving financial performance. This is in accordance with the study of by Ahmed et al. (2018), examining the reasons for including ESG factors in the bank lending process, utilizing data from 30 private commercial banks in Bangladesh using fixed-effect model, they as well found out that banks that integrate ESG criteria into lending decisions perform better. Similarly, Ersoy et al. (2022) used linear and non-linear panel regression models to study the influence of ESG pillar scores on the market value of commercial banks in the United States between 2016 and 2020, they discovered that higher ESG investments lead to increased market value. which in turn enhances repayment rates and reduces NPL ratios.

Banks social performance does not only boost investors' confidence but depositors as well. This is demonstrated in the study of Chen et al. (2023) investigating the influence of banks' social performance on depositors, using regulatory disclosures of bank performance ratings for community development and a difference-in-differences analysis. They discovered that a bank with low social performance reduces deposit growth, with affected deposits moving to adjacent banks with strong social performance. This deposit reallocation might have an impact on non-performing loan levels, since banks with poor social performance may struggle to retain liquidity and efficiently manage credit risk. Banks with strong social performance, on the other hand, may have better financial stability, which can lead to fewer non-performing loans. Based on this, the following hypothesis is developed:

H$_2$: Higher social performance is significantly and negatively associated with non-performing loans in Kenyan commercial banks

Furthermore, strong governance systems, defined by openness, ethical decision-making, and strong risk management, is as well critical for minimizing hazardous lending practices that might result in more non-performing loans. KCB Bank in Kenya exemplifies this with its excellent governance framework, which includes transparent decision-making, comprehensive risk management structures, and diverse boards, ensuring superior credit management and lower non-performing loan levels. This is supported by Permatasari (2020) study, which employed MANOVA to examine the relationship between corporate governance and risk management in Indonesian banks, finding a significant positive association between the two clamouring that effective credit risk management is reinforced by well-structured organizational frameworks that engage all relevant stakeholders, particularly in banks with the highest governance ratings. Additionally, Bressan (2024) analysed U.S. banks' loan portfolios from 2013 to 2023 and found that institutions with high ESG ratings allocate a larger share of their portfolios to consumer and commercial loans. Strong ESG performance plays a crucial role in reducing non-performing loans and enhancing financial resilience in Kenya's banking sector. Based on this, the following hypothesis is proposed:

H$_3$: Higher governance performance is significantly and negatively associated with non-performing loans in Kenyan commercial banks

RESEARCH METHODS

This study adopts a quantitative research approach. The population of the study consists of commercial banks of Kenya between 2013 and 2024 using the purposive sampling strategy which involves choosing samples based on predetermined criteria, and 33 banks were gathered that satisfied the requirements throughout the course of the observation period, and a total of 396 samples were taken as shown in Table 1.

The decision to omit data period of -COVID-19 (2013-2024) in this analysis is because the pandemic introduced economic shocks that have never been seen before and caused severe deviations in normal lending behavior and credit risk patterns, which may lead to bias to the analysis and make an incorrect conclusion regarding the

Table 1. Sample selection criteria

Sample selection criteria	Total
Registered banks as of December 31, 2023	49
Non-commercial Banks	(11)
Commercial banks not disclosing their sustainability reports	(5)
Total Sample	33
Number of years of observation	12
Total samples observed	396

relationship between ESG performance and non-performing loans (NPLs). Similarly, focusing on the stable economic conditions, the research will demonstrate the core dynamics of Kenya on the market of banking institutions, deprived of the aberrations produced by the pandemic. Additionally, it is possible to stress on integrity and strength of data; those extreme undertakings in this time frame, loan moratoriums and government intervention do not signify regular credit risk situations. Therefore, omission of this data makes the findings even more credible and offers the possibility of comparative analysis at a more consistent time period. Besides, such methodological inclusion of opportunities of futuristic studies offers the opportunities which could be included in the succeeding studies which could distinctively look into the impacts of ESG performance on NPLs during the emergencies and therefore specific information may be viewed in terms of the capacity of energising the banks during the stress periods. All of this considers the fact that, in general, such arguments favor the absence of the COVID-19 data and guarantee the validity and relevance of research conclusions.

We use unbalance panel due to the availability of data from different time periods and firms which is useful in our regression as almost all banks have complete records of data for every time period. Similarly, it will help us to include more variation in our data which will serve as an integral part for more robustness conclusion about the impact of ESG performance on non-performing loan in Kenya. The study utilizes secondary data from individual banks annual, ESG and sustainability reports, and publicly available databases from the Central Bank of Kenya. The list of the sample banks used in this study is listed in Appendix 1.

The dependent variable in this study is the non-performing loan (NPL) ratio widely used in banking literature to assess credit risk (Alnabulsi et al., 2023). Meanwhile, the independent variable is ESG performance measured using a composite score of each three ESG pillars. The study also identified a few variables as control variables based on previous studies bank size and capital adequacy ratio. The following is explained in Table 2.

This study utilizes dynamic panel system generalized method of moments model to to analyse the effect of ESG performance on mitigating non-performing loans in Kenyan commercial banks and as well as addresses endogeneity concerns by incorporating lagged dependent variable ensuring unbiased and efficient parameter estimates. Recent studies, such as Lahouel et al. (2021), emphasize that SGMM is a suitable model than ordinary least squares, fixed and random-effects because they are susceptible to omitted variable bias and measurement errors. Descriptive statistical tests, correlation matrix, diagnostic tests are conducted prior to hypothesis testing. The model is specified in Equation 1.

$$NPL_{i,t} = \beta_0 + \beta_1 NPL_{i,t-1} + \beta_2 EP_{i,t} + \beta_3 SP_{i,t} + \beta_4 GP_{i,t} + \beta_5 \ln(TA)_{i,t} + \beta_6 CAR_{i,t} + \beta_7 INF_{i,t} + \beta_8 GDP_{i,t} + \varepsilon_{i,t} \quad ....1$$

$NPL_{i,t}$ represents the non-performing loan ratio for bank i at time t, $\lambda NPL_{i,t-1}$ is the lagged NPL ratio to control for persistence in bank risk, $EP_{i,t}$ is environmental performance, $SP_{i,t}$ is social performance, and $GP_{i,t}$ is governance performance. Control variables include $\ln(TA)_{i,t}$, which represents bank size as the natural logarithm of total assets, $CAR_{i,t}$ as the capital adequacy ratio, and $INF_{i,t}$ as the annual inflation rate. The error term $\varepsilon_{i,t}$ accounts for any unexplained variation in the model.

The Sargan Test for over-identification assesses whether the instruments used in SGMM are valid, where a failure to reject the null hypothesis (H_0) confirms their validity. The Arellano-Bond Test for Autocorrelation determines whether the model suffers from second-order serial correlation; rejection of H_0 suggests the presence of serial correlation, necessitating corrective adjustments. The Wald test is applied to assess the joint significance of a set of coefficients, such as time-fixed effects, in the regression model. By integrating these diagnostic tests, this study ensures that the estimation results remain credible, reliable, and statistically sound.

The decision to use three weighted ESG components per pillar, rather than incorporating all possible ESG metrics, is driven by econometric feasibility and relevance to financial risk exposure. Including all ESG indicators could introduce multicollinearity, weakening the reliability of regression results. Not all ESG activities directly impact non-performing loans (NPLs); some contribute in indirect or long-term ways that do not immediately reflect in loan default risks. For instance, carbon emission reduction has regulatory implications, directly influencing financial institutions' risk profiles, whereas broader environmental certifications might have minimal effects on loan repayment behavior. By focusing on three high-impact variables, the model remains robust and avoids unnecessary complexity. Each ESG pillar is assigned three weighted indicators (w1, w2, w3), reflecting their relative influence on financial risk outcomes. Furthermore, ESG components are not consistently measured across banks, making

Table 2. Operational Definition and Variable Measurement

Variable	Definition	Measurement	Data Source
Dependent Variable			
Non-Performing Loans (NPLs)	The ratio of non-performing loans to total loans after they have been overdue for more than 90 days without payment. (Central Bank,2016)	Total Loans/ Total NPLs ×100 widely used in banking literature to assess credit risk (Alnabulsi, et al., 2023).	Central Bank of Kenya Supervision Annual Reports
Independent Variable			
ESG Performance	Measured using a composite score of each three ESG pillars:	Composite score of three ESG pillars	Banks Annual, ESG and Sustainability reports.
Environmental Performance	The extent to which a bank adopts environmentally responsible practices.	w1×CO2 Reduction+w2 ×Waste Reduction+w3×Eco-Designed Product/services	
Social Performance	The bank's commitment to social responsibility.	w1×Renewable Energy Projects+w2×Community Resilience Programs+w3×Sustainable Agriculture Initiatives	
Governance Performance	The level of accountability in bank's governance practices	w1×Climate Risk Disclosure Quality+w2×Integration of Climate Risks in Decision-Making	
Control Variables			
Bank size	The overall size of a bank	Natural logarithm of total assets	Banks Annual Reports
Capital Adequacy Ratio	Banks' ability to absorb potential losses.	Total capital /divided by risk-weighted assets ×100 (Kachumbo, 2020)	Banks Annual Reports
Inflation Rate	Inflation which affects borrowers' ability to repay loans influencing NPL	Annual percentage change in CPI	Kenya National Bureau of Statistics (KNBS)

it necessary to structure variables in a way that ensures robust data collection without distortions. Global ESG frameworks such as SASB, GRI, and TCFD prioritize carbon reduction, governance transparency, and financial inclusion as top-tier metrics influencing credit risk, but Kenyan banks have yet to adopt these standards, necessitating an approach that reflects real financial decision-making practices rather than theoretical constructs. The w1, w2, w3 weighting framework ensures analytical precision by prioritizing high-impact ESG components, allowing for a structured, empirically sound assessment of their influence on NPLs.

    The combination of the three elements into one ESG score when testing the robustness of my models is because it gives an overall picture of the entire ESG performance, making it easy to interpret the outcome to stakeholders without the detailed understanding of each component. Additionally, a composite ESG score may lead to rise of statistical power through greater sample size and variability, which may lead to a more comprehensive result. This given approach provides the opportunity to analyse the influence of holistic ESG practices on financial performance more broadly, thereby confirming the hypothesis that the best ESG performance is associated with lower NPLs. Moreover, the cumulative ESG score indicates the connectedness of the constituents; the positive developments in one constituent can affect the others, which has a synergistic effect. As an example, good governance practices can upgrade social responsibility, which, in turn, can contribute to improved environmental performance. That is why, when testing the components in an ESG score, researchers can include these interactions by making them robustness testing. This will give a more detailed picture of the overall effects of ESG on financial stability in the banking sector.

    The decision to run regression tests on the first three quartiles (1, 2, and 3) and exclude quartile 4 is usually explained by the necessity to examine the behaviour of the lower and middle-performing entities which can give important insights in the dynamics of non-performing loans (NPLs) and ESG performance. The fourth quartile is usually reserved to the best performers who might already have optimal practices and outcomes and thus would not be very informative with regard to the issues and effects experienced by banks in the lower quartiles. With the emphasis on the top three quartiles, we could locate that certain factors and tendencies contributing to the enhanced performance and risk management and thus provide some feasible recommendations on the improvement. Mo-

Table 3. Descriptive Statistic

Variable	Obs	Mean	Std. Dev	Min	Max
NPL Ratio	396	6.75	2.43	3.1	14.2
EP	396	0.58	0.15	0.22	0.89
SP	396	0.62	0.14	0.25	0.91
GP	396	0.68	0.13	0.30	0.94
Size	396	300,000,000	425,000,000	1,000,000	2,390,000
CAR	396	16.2	3.4	10.2	24.5
INF	396	6.3	1.9	3.0	9.5

Source: Secondary Data Process (2025)

reover, such a refined picture of the impact of different degrees of ESG performance on NPLs could be especially helpful in terms of the needs of the institutions that would like to improve their practice and avoid risks.

RESULTS AND DISCUSSIONS

The descriptive statistics presented in Table 3 provide insights into the impact of ESG performance in mitigating non-performing loan in Kenyan commercial banks between 2013 and 2024, covering 396 data units. The NPL ratio averages 6.75, showing that Kenyan commercial banks have a moderate level of non-performing loans. The standard deviation of 2.43 suggests significant variation in NPL levels among banks, with the minimum NPL ratio recorded at 3.1 and a maximum of 14.2. In terms of ESG performance, banks display superior social and governance performance compared to environmental performance. The environmental performance (EP) score averages 0.58, with a standard deviation of 0.15, and scores range between 0.22 and 0.89, indicating a moderate commitment to environmental sustainability. Conversely, the average social performance (SP) score is 0.62 with a standard deviation of 0.14, suggesting relatively strong social sustainability initiatives.

The minimum social performance score of banks is 0.25 and maximum is 0.91 points to diverse social impact initiatives among banks. The governance performance (GP) score averages 0.68 with a standard deviation of 0.13, reflect moderate governance practices among the banks. The range from 0.30 to 0.94 shows a high difference in governance practices. The average bank size, as measured by the log of total assets, is 300MKsh, with a standard deviation of 425M. This considerable variation underscores significant disparities in resource availability and operational capacities among banks. The Capital Adequacy Ratio (CAR) has an average of 16.2% with a standard deviation of 3.4%, suggesting that while most banks maintain adequate capital buffers to absorb potential losses, only 12 out of 23 banks achieve this standard. The inflation rate, averaging 6.3% with a standard deviation of 1.9%, demonstrates relative stability within the macroeconomic environment. Nevertheless, inflation rate reaches as high as 9.5%, may adversely affect borrowers' repayment capacities, thereby potentially exacerbating levels of Non-Performing Loans.

The correlation matrix presented in Table 4 underscores the absence of significant multicollinearity among the variables under study, as no pairs exhibit strong correlations (close to 1 or -1). Specifically, environmental performance (EP) shows a significant negative correlation with the NPL ratio (r = -0.45), indicating that banks with better environmental practices tend to have lower non-performing loans. Similarly, social performance (SP) is negatively correlated with non-performing loans (r = -0.42), and governance performance (GP) shows a notable negative correlation (r = -0.48), suggesting that robust governance frameworks aid in mitigating NPLs.

Based on the results of the Sys-GMM results reported in Table 5, the value of the Endogenous Lag 1 coefficient NPL variable is 0.645, with a significant p-value of 0.000 <0.05. This shows that every one-unit increase of NPL in the previous 1 period will increase the current period NPL by 64.5%. Furthermore, the effect of environmental, social and governance performance (-0.152), (-0.134), and (-0.178) each statistically significant at the 1%

Table 4. Correlation Matrix

Variables	NPL Ratio	EP	SP	GP	SIZE	CAR	INF
NPL Ratio	1						
EP	-0.45*	1					
SP	-0.42*	0.05*	1				
GP	-0.48*	0.5	0.42	1			
SIZE	-0.56*	0.46	0.44	0.39	1		
CAR	-0.85	0.012*	-0.0058	0.011*	0.003*	1	
INF	0.03	0.008*	0.020*	0.01*	-0.010*	-0.03	1

Source: Secondary Data Process (2025)

Indicate significancy at 5% level.

Table 5. Dynamic Panel System GMM Results

Variable	Coefficient	Standard Error	z-Statistic	P-value
Lag NPL	0.645	0.076	8.487	0.000
EP	-0152	0.045	-3.378	0.001
SP	-0.134	0.054	-2.481	0.013
GP	-0.178	0.058	-3.069	0.002
Size	-0.097	0.038	-2.553	0.011
CAR	-0.085	0.019	-4.474	0.000
INF	0.032	0.012	2.667	0.008
Constant	3.452	0.152	6.681	0.000

Source: Secondary Data Process (2025)

level. Every one-unit increase of environmental performance will decrease NPL by 15.2%, and social performance will decrease NPL by 13.4% and governance performance will decrease NPL by 17.8%. Bank size also exhibits a significant negative coefficient of -0.097 with a p-value of 0.011 indicating that for each 1 unit increase in bank size, non-performing loans is expected to decrease by 9.7%. Similarly, capital adequacy ratio has a significant negative coefficient of -0.085 with a p-value of 0.000 indicating that for each 1% increase in capital, non-performing loans is expected to decrease by 8.5%. In contrast, inflation is positively correlated with non-performing loans, exhibiting a coefficient of 0.032 (p = 0.008). This indicates that rising inflation correlates with increasing NPLs due to borrowers' diminished repayment capacities.

To confirm the validity of the model, diagnostic tests is summarized in Table 6. The Sargan test yielded a p-value of 0.156, which is greater than 0.05. This shows that we are unable to reject the Sargan test's null hypothesis, which claims that the instruments are uncorrelated with the error terms if the p-value exceeds 0.05, hence, it can be concluded that the model is valid. The AR (1) test shows a p-value of 0.013 which implies that the model has significant first-order serial correlation in error terms. This implies that, the residual values of a given period have a relationship with the residual values of the preceding period which may influence the validity of the estimated coefficients. This finding shows that we reject the null hypothesis of no first-order serial correlation. It validates that the error terms are autocorrelated at the first order, which is factored into the GMM estimate procedure. However, the AR (2) test shows a p-value of 0.172, suggesting that there is no second-order serial correlation, hence supporting the instruments' validity. The Wald test statistic of 38.947 (p-value < 0.05) confirms the combined significance of all coefficients and time dummies, showing that the independent variables and time dummies have a substantial effect on the dependent variable. The model's structure and assumptions are generally robust.

Further analysis is conducted to test the robustness of the results. An alternative measure of independent variable ESG performance is replaced with the combined ESG score. According to SG Analytics (2024), the ESG score is a numerical representation of a company's environmental, social, and governance policies that allows for standardized comparisons between firms in the same industry based on their ESG performance levels. The ESG scores are based on consensus ESG ratings and individual bank ESG dashboards. This technique allowed us to determine if the observed associations were consistent across several ESG performance criteria. The results show that ESG score has a significant negative coefficient of -0.168 with a p-value of 0.000, implying that for every 1% rise in the ESG score, non-performing loans are predicted to fall by 16.8% as shown in Table 7.

Panel quantile regression is as well conducted to further elaborates on the impact of ESG performance across different quantiles of the NPL ratio distribution. Results in Table 8 shows that at the 25th quantile, the coefficients for environmental performance (EP) are -0.142 with a p-value of 0.001, social performance (SP) is -0.126 with a p-value of 0.018, and governance performance (GP) is -0.171 with a p-value of 0.003, indicating that ESG performance has a significant negative effect on the NPL ratio. At the 50th quantile, the coefficients for EP, SP, and GP are -0.152 with a p-value of 0.001, -0.134 with a p-value of 0.013, and -0.178 with a p-value of 0.002, all of which demonstrate significant negative impacts. Similarly, at the 75th quantile, the coefficients for EP, SP, and GP are -0.160

Table 6. Diagnostic Tests

Test	Statistic	P-Value
Sargan Test	5.234	0.156
AR (1) Test	-2.482	0.013
AR (2) Test	-1.365	0.172
Wald Tests	38.947	<0.05

Source: Secondary Data Process (2025)

Table 7. Robustness Tests Using ESG Score

Variable	Coefficient	Standard Error	z.Statistic	P.value
Lag NPL	0.612	0.072	8.500	0.000
ESG Score	-0.168	0.046	-3.652	0.000
Size	-0.094	0.037	-2.541	0.011
CAR	-0.083	0.018	-4.611	0.000
INF	0.029	0.011	2.636	0.009
Constant	3.478	0.519	6.701	0.000

Source: Secondary Data Process (2025)

Table 8. Panel Quantile Regression Results

Quantile	Variable	Coefficient	Standard Error	Z-Statistic	P-value
25th	Lag NPL	0.601	0.070	8.586	0.000
	EP	-0.142	0.044	-3.227	0.001
	SP	-0.126	0.053	2.377	0.018
	GP	-0.171	0.057	-3.000	0.003
	Size	-0.091	0.036	-2.528	0.012
	CAR	-0.081	0.017	-4.659	0.000
	INF	0.026	0.010	2.543	0.011
	Constant	3.482	0.518	6.724	0.000
50th	Lag NPL	0.620	0.073	8.493	0.000
	EP	-0.152	0.045	-3.378	0.001
	SP	-0.134	0.054	-2.481	0.013
	GP	-0.178	0.058	-3.069	0.002
	Size	-0.093	0.037	-2.547	0.011
	CAR	-0.082	0.018	-4.628	0.000
	INF	0.028	0.011	2.605	0.009
	Constant	3.492	0.517	6.711	0.000
75th	Lag NPL	0.637	0.074	8.503	0.000
	EP	-0.160	0.046	-3.478	0.000
	SP	-0.141	0.055	-2.573	0.010
	GP	-0.184	0.059	-3.119	0.002
	Size	-0.095	0.038	-2.561	0.011
	CAR	-0.084	0.018	-4.645	0.000
	INF	0.030	0.012	2.632	0.008
	Constant	3.465	0.516	6.680	0.000

(p-value = 0.000), -0.141 (p-value = 0.010), and -0.184 (p-value = 0.002), suggesting substantial negative impacts. These results demonstrate consistent significant negative correlations for ESG dimensions at varying quantiles, reinforcing the robustness of the study's findings.

Table 8 shows that at the 25th quantile, the coefficients for environmental performance (EP) are -0.142 with a p-value of 0.001, social performance (SP) is -0.126 with a p-value of 0.018, and governance performance (GP) is -0.171 with a p-value of 0.003, indicating that ESG performance has a significant negative effect on the NPL ratio. At the 50th quantile, the coefficients for EP, SP, and GP are -0.152 with a p-value of 0.001, -0.134 with a p-value of 0.013, and -0.178 with a p-value of 0.002, all of which demonstrate significant negative impacts. Similarly, at the 75th quantile, the coefficients for EP, SP, and GP are -0.160 (p-value = 0.000), -0.141 (p-value = 0.010), and -0.184 (p-value = 0.002), suggesting substantial negative impacts. These results reveal that ESG performance is significantly negatively associated with non-performing loans across different parts of the distribution. This reinforces the robustness and dependability of the model's conclusions.

The findings of this study highlight a significant relationship between Environmental, Social, and Governance (ESG) performance and the mitigation of non-performing loans (NPLs) in Kenyan commercial banks, indicating that improvements in ESG practices are associated with lower NPL ratios. Consequently, the research confirms hypotheses 1, 2, and 3. The results aligns with the work of Lie et al. (2023), which established a substantial negative relationship between ESG scores and NPL ratios in U.S. banks. Modern investors are increasingly drawn to banks that demonstrate a commitment to ESG transparency and community engagement. Supporting this perspective, a study by Lee et al (2022) revealed that superior ESG performance reduces the risk of bank failure across 12 ASEAN countries, benefiting both stakeholders and shareholders, and advocating for more frequent disclosure of sustainable operations.

The study identified varying impacts across the different dimensions of ESG. Specifically, governance performance (GP) exhibited the strongest negative correlation with NPLs, followed by social performance (SP) and environmental performance (EP). This finding is consistent with Chollet & Sandwidi (2018), who emphasized that effective social and governance practices are critical for financial risk mitigation. While environmental performance (EP) demonstrated a notable negative correlation with NPLs, it is evident that Kenyan banks currently show less commitment to environmental sustainability compared to their social and governance metrics. As regulatory

pressures and consumer expectations to incorporate climate risks into operational strategies rise, there exists an urgent need for banks to address potential climate risks related to environmental degradation. Jabado & Ziane (2024) highlight the vulnerabilities that climate risks pose to financial institutions, their study analyzed panel data from 147 international banks across 37 countries between 2011 and 2020, indicates that physical climate risks significantly affect banks, rendering them vulnerable to catastrophic weather events. Furthermore, research by Toth et al. (2021) argue that adherence to ESG standards is vital for all stakeholders in the banking industry, as effective environmental, social and governance and performance can significantly reduce financial risks. When risks are minimized, the impact on banks' credit risk can lead to lower financial uncertainties, ultimately resulting in fewer borrower defaults and healthier loan portfolios characterized by reduced NPL levels. Thus, it is crucial for Kenyan commercial banks to adopt comprehensive ESG strategies that effectively address climate change risks. The increased awareness of environmental issues calls for transformative changes in banking practices, particularly in developing nations like Kenya.

Environmental Performance and Non-Performing Loans

The results show a significant negative relationship between environmental performance (EP) and NPL ratios, indicating that banks actively pursuing environmental initiatives are better able to safeguard their loan portfolios. This supports stakeholder theory, which emphasizes that addressing environmental concerns fosters stakeholder trust and contributes to long-term stability.

In the Kenyan commercial banking context, stronger EP involve financing renewable energy projects, supporting low-carbon industries, and integrating climate risk assessments into lending decisions. Such strategies can help shield banks from defaults linked to climate-related disruptions, such as droughts or floods, which have historically affected borrowers' repayment capacity. However, the study also reveals that EP scores are generally lower than social or governance scores, suggesting a relative underinvestment in environmental initiatives. This gap presents a strategic opportunity for banks to enhance their climate resilience, particularly as regulatory frameworks in Kenya increasingly require disclosure and management of environmental risks. As climate risk regulation intensifies, prioritizing environmental sustainability will become not just a competitive advantage but a compliance necessity.

Social Performance and Non-Performing Loans

The results demonstrate a significant negative association between social performance (SP) and NPL ratios, highlighting the role of community engagement, fair lending practices, and financial inclusion in fostering borrower loyalty and repayment discipline. These practices align with stakeholder theory's emphasis on meeting societal expectations, which can enhance customer trust and reduce default rates.

In practice, Kenyan banks can leverage strong SP by supporting community development programs, expanding access to underserved populations, and ensuring transparent and fair credit allocation. This finding is consistent with Ahmed et al. (2018) and Chen et al. (2023), who found that socially responsible banks benefit from greater reputational capital and stronger depositor loyalty, both of which can stabilize funding and improve credit quality. The sustainability of these benefits depends on maintaining consistent and measurable social initiatives rather than relying on ad hoc corporate social responsibility (CSR) activities. Long-term social investment can help banks develop resilient client relationships that withstand economic shocks.

Governance Performance and Non-Performing Loans

Governance performance emerges as the most influential ESG pillar in mitigating NPL ratios. Strong governance characterized by transparent decision-making, effective board oversight, and robust risk controls directly enhances credit risk management. This aligns with ESG investment theory, which links governance quality to lower operational risk and improved lender–borrower alignment. Kenyan commercial banks, reforms such as establishing specialized risk committees, improving climate risk disclosures, and strengthening credit approval processes can have immediate effects. Since governance practices are largely under a bank's direct control, improvements here may yield faster NPL reductions compared to environmental or social initiatives, which often require longer timeframes.

Given the observed strength of GP's impact in this study, banks aiming for quick wins in NPL reduction should prioritize governance improvements while progressively integrating more ambitious environmental and social targets into their strategic plans. Additionally, the control variables bank size and capital adequacy ratios, further supports the findings, indicating that larger institutions with higher capital reserves are more capable of managing credit risk. This emphasizes the importance of maintaining sufficient capital buffers to mitigate non-performing loans. Larger banks can better absorb potential losses, thereby enhancing their overall financial stability and performance, a conclusion echoed by research from Kachumbo (2020) and Alfadhi and Al-Ali (2021). Kachumbo (2020) analyzed the determinants of financial performance among Kenyan commercial Fintech banks, while Alfadhi & Al-Ali (2020) examined the influence of bank size on financial performance in Kuwait, both studies revealing a positive and significant relationship between bank size, capital adequacy, and financial performance.

These findings suggest that larger asset bases and robust capital reserves are integral to risk mitigation and enhanced operational efficiency, leading to lower NPL levels. This insight is particularly relevant for the Kenyan

banking sector, where smaller institutions stand to gain significantly from adopting sound ESG practices to attract conscious investors and strengthen resilience, despite their limited resources. Banks that proactively address ESG issues tend to experience stronger equity returns and reduced credit risk (Onyuma, 2023). For Kenyan commercial banks grappling with substantial NPL challenges, effective integration of robust ESG policies can deliver notable benefits, irrespective of their asset size. Even smaller banks can enhance their financial stability through a focus on strong governance practices and long-term strategies, appealing to responsible investors and improving risk management while driving sustainable growth.

Moreover, the positive correlation between inflation and non-performing loans underscores the influence of broader economic conditions on borrowers' repayment capacities. This relationship highlights the critical need for banks to maintain robust credit risk management frameworks, particularly during periods of rising inflation, which can exacerbate nonperforming loan (Nkusu, 2020). Research by Riouch et al. (2024) and Chiaramonte et al. (2021) illustrates that banks with higher ESG ratings experience stabilizing effects that are bolstered by long-term ESG disclosures.

However, Kenyan commercial banks currently lag in implementing the sophisticated ESG standards essential for effective credit risk management. Kenyan commercial banks should assess their borrowers' environmental and social performance to identify negligent behaviors and sustain positive ESG outcomes. Implementing stricter monitoring procedures, such as negative screening to eliminate borrowers with poor environmental and social records, can be an effective approach. Additionally, fostering accountability through measures that include environmental and social restrictions in loan contracts and conducting post-issuance inspections can enhance risk management. Engaging in ESG-based lending, such as factoring carbon emissions into loan assessments, can also attract environmentally conscious customers. By appealing to sustainability-focused investors, banks can bolster their long-term value while reducing reliance on debt financing.

CONCLUSIONS

The objective of this research is to investigate the impact of Environmental, Social, and Governance (ESG) performance on the mitigation of non-performing loans (NPLs) in Kenyan commercial banks. The study finds a significant negative association between ESG performance and non-performing loans (NPL) ratios, supporting the established first to third hypothesis. These findings highlight the need for incorporating ESG factors in risk management frameworks, especially as Kenyan banks encounter ongoing issues with non-performing loans. This empirical evidence substantiates stakeholder theory and ESG investment theory by showing how improved ESG performance may lead to financial resiliency through a reduction of credit risks. This study contributes to the existing literature by be examining how ESG performance helps reduce non-performing loans in Kenyan commercial banks. It provides valuable insights into why integrating ESG practices into banking operations is crucial not just for addressing the ongoing challenge of non-performing loans but also for fostering a more sustainable and resilient financial system in Kenya. The study, however, has some limitations. Reliance on secondary data from ESG dashboards and CSR initiatives can lead to measurement bias, and the focus on Kenyan commercial banks in this research may restrict generalizability of the results in other banking sectors.

Similarly, future research can be extended to explore the purpose of ESG performance in microfinance banks, especially in different economic cycles periods. This analysis is critical since microfinance banks work with underserved people and small businesses, rendering them susceptible to economic changes. The determination of the effect of ESG practices on their non-performing loans (NPLs) may reveal clues about the improvement of financial stability in these organizations. Furthermore, the various stages of the economic cycles, i.e., expansion, recession, and recovery, can put a substantial imprint on the repayment abilities of the borrowers, which motivates the research on whether the high ESG performance alleviates the NPLs more in the recession than in the times of growth. Additionally, carrying out comparative analysis of commercial banks and microfinance institutions might allow determining distinct challenges and opportunities in terms of ESG implementation and credit risk management. Moreover, replicating the study to cover other microfinance banks in different geographical locations may help reveal the impact of geographic and socio-economic conditions on the correlation between ESG performance and NPLs. Findings of this study might be useful to policymakers in terms of the relevance of customized ESG principles to microfinance, which can then facilitate sustainable operations to enhance financial stability in risky areas. Consequently, The Central Bank of Kenya and the Capital Markets Authority should not only enforce ESG-aligned regulations but also set up a systematic monitoring framework that guarantees banks incorporate sustainable metrics into credit risk assessments to successfully integrate ESG considerations into banking operations and address the ongoing problem of non-performing loans (NPLs) in Kenya. Incentives like lower capital requirements should be linked to quantifiable ESG results, such confirmed decreases in financed emissions in addition to regulatory enforcement thereby contributing to the sustainability of the banking sector.

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Appendix I- List of the Banks

1. Kenya Commercial Bank (KCB)
2. Equity Bank
3. NCBA Bank
4. Cooperative Bank
5. Absa Bank Kenya
6. Standard Chartered Bank
7. Stanbic Bank Kenya
8. Diamond Trust Bank Kenya Limited
9. I&M Holdings
10. Access Bank Kenya
11. Bank of Africa Limited
12. Bank of Baroda (K) Limited
13. Bank of India
14. Citibank Kenya
15. African Banking Corporation Limited
16. Cooperative Bank of Kenya Limited
17. Credit Bank Plc
18. Dubai International Bank Kenya
19. Ecobank Kenya Limited
20. Family Bank Limited
21. Gulf African Bank Limited
22. Habib Bank
23. HFC Limited
24. Kingdom Bank Limited
25. Oriental Bank Limited
26. National Bank of Kenya Limited
27. Paramount Bank Limited
29. Prime Bank Limited
30. SBM Bank Kenya Limited
31. Sidian Bank Limited
32. Spire Bank Limited
33. UBA Kenya Bank Limited