

The Practical Significance of ESG in Economically Underdeveloped Areas: A Case Study of Lincang City in China and Nairobi City in Kenya

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Abstract

This study explores the practical significance of Environmental, Social, and Governance (ESG) frameworks in economically underdeveloped regions through case studies of Lincang City in China and Nairobi City in Kenya. While global ESG adoption continues to expand, its localized impacts in lower-income contexts remain understudied. Drawing upon Institutional, Resource Dependency, and Stakeholder theories, this mixed-method research combines qualitative corporate case analyses with regional quantitative indicators from 2020 to 2024. Findings indicate diverse ESG trajectories: Lincang's ESG strategy supports structural transition toward services and ecological agriculture, whereas Nairobi focuses on consolidating sustainable finance and social inclusion within its established service economy. Corporate-level analysis highlights varying ESG effects on profitability and strategic orientation, contrasting short-term compliance-driven financial benefits with long-term social-investment returns. Significant implementation barriers identified include fragmented regulations, insufficient financing channels, and limited stakeholder awareness. The study underscores the necessity of customized ESG approaches aligned with local institutional contexts and economic structures, providing targeted policy recommendations to enhance sustainable development in similar regions.

Keywords: ESG; Regional Economic Development; Corporate Performance; Sustainable Development; Case Study; Lincang City; Nairobi City

1. Introduction

1.1 Background and Global Importance of ESG

Environmental, Social, and Governance (ESG) frameworks now play a central role in business resilience and sustainable investment, integrating environmental care, social responsibility, and effective governance into a unified value-driven strategy.

The roots of ESG trace back to the corporate social responsibility (CSR) movements in the 1960s and 1970s in the West, which urged companies to move beyond profit motives in response to rising concerns about environmental degradation and social injustice ^[1]. Over time, these movements evolved into modern ESG standards that emphasize structured accountability and long-term societal value.

Global crises—climate change, COVID-19, and systemic inequality—have highlighted the need for corporate resilience, driving regulators and investors to elevate ESG priorities ^[2]. Responding to this momentum, institutions like the United Nations and OECD have developed policy frameworks and reporting standards to integrate ESG into corporate and national strategies ^[3].

ESG adoption is no longer confined to high-income nations. Emerging economies, including Kenya, are embedding ESG into development agendas, promoting green growth and long-term prosperity ^[4]. In China, cities like Lincang are aligning sustainable development with local economic planning and ecological goals.

In summary, ESG has become a global imperative shaping decisions across governments and corporations. Its relevance spans both developed and developing contexts, underpinning efforts to foster sustainable, equitable, and resilient economic growth.

2. Literature Review

2.1 Global ESG Practices

Environmental, Social, and Governance (ESG) frameworks have become central to global business and investment, reflecting a growing focus on sustainability. Initially emerging from Corporate Social Responsibility (CSR), ESG now offers structured methods for measuring corporate and national sustainability performance^[1]. Central to this framework are the guidelines provided by the Global Reporting Initiative (GRI) and the United Nations Sustainable Development Goals (SDGs), which offer standardized metrics for assessing ESG impacts^[5].

The GRI standards enhance transparency and comparability of sustainability reports, guiding companies worldwide in consistently communicating ESG efforts^[5]. Similarly, the UN SDGs serve as a global benchmark addressing issues like climate change, poverty, and inequality, aligning corporate strategies with sustainable development priorities^[2].

ESG integration has significantly advanced in developed economies, driven by strict regulations, investor expectations, and societal pressures. European nations notably lead ESG integration, with about 52.6% of managed assets incorporating ESG criteria^[6]. This is further supported by comprehensive frameworks such as the EU's Taxonomy for Sustainable Finance, directing investments toward sustainability^[7].

This study employs the OECD Green Growth Indicators to objectively assess urban ESG performance, highlighting resource efficiency, environmental innovation, and economic stability as key components of sustainable development^[3].

2.2 ESG in Developing Economies

ESG adoption in developing regions faces distinctive challenges, including limited financial resources, governance constraints, and insufficient data, hindering effective ESG integration^[8]. Data gaps especially limit emerging markets' representation in global ESG indices, affecting capital inflows despite urgent environmental and social needs^[8]. For instance, sustainable financial instruments such as green bonds remain relatively underutilized in developing countries compared to their overall economic size.

Nevertheless, countries like China and Kenya have made notable progress through localized ESG frameworks. Lincang City, China, has successfully promoted green agricultural practices aligned with national sustainable development initiatives^[9]. Similarly, Kenya's Green Bond Programme highlights the country's commitment to environmental sustainability despite economic challenges^[2].

International frameworks such as the GRI and the Task Force on Climate-Related Financial Disclosures (TCFD) are essential in helping developing economies enhance ESG reporting and practices, aligning local efforts with global standards and attracting international investment^[5].

2.3 Research on Lincang and Nairobi

ESG initiatives in economically underdeveloped regions like Lincang (China) and Nairobi (Kenya) have drawn increasing research interest. According to the World Bank (2023), regions with per capita GNI below \$4,465 are categorized as lower- or lower-middle-income economies. Lincang's GDP per capita (~\$6,400) and Nairobi's (\$2,000– 3,000) clearly position both cities as middle- to low-income regions^{[2][4][9][10][11][12]}.

Despite economic constraints, both cities have adopted ESG strategies addressing local socio-economic and environmental issues, underscoring sustainable development's growing significance in regional governance.

ESG in Lincang, China

Lincang, designated as a National Sustainable Development Agenda Innovation Demonstration Zone in 2019, is central to China's ESG implementation. The city emphasizes sustainable agriculture, environmental conservation, and improved local livelihoods, aligning ESG goals with national sustainability strategies^[12]. Research highlights organic tea cultivation and forest conservation as pivotal to balancing local economic growth with environmental sustainability, setting a benchmark for similar regions.

ESG in Nairobi, Kenya

Nairobi has become an ESG leader in Africa through initiatives like the Green Bond Programme launched in 2019. As East Africa's first issuer of green bonds, Nairobi funds renewable energy, sustainable agriculture, and green infrastructure, directly aligning with the UN's Sustainable Development Goals^[4]. Despite successful projects, significant

barriers persist—limited regulatory frameworks, inadequate investor awareness, and high ESG implementation costs^[8]. Nairobi thus exemplifies how innovative financing can drive sustainability in resource-constrained contexts.

3. Research Gap and Problem Statement

Despite notable ESG initiatives in Lincang and Nairobi, existing literature rarely addresses the detailed, long-term impact of ESG practices on regional development, especially regarding improvements in living standards, employment, and environmental quality. Current research primarily provides general ESG frameworks in developing countries, leaving gaps about specific ESG implementations in economically underdeveloped areas. Given these regions' unique resource and governance constraints, this study examines the practical outcomes, successes, and challenges of ESG in Lincang and Nairobi, filling this critical research gap.

4. Research Objectives and Questions

The main objective of this research is to explore ESG frameworks' practical significance in economically underdeveloped areas, using Lincang City, China, and Nairobi City, Kenya, as case studies. While ESG has been widely studied in developed economies, its effectiveness and adaptation to unique challenges in underdeveloped regions remain underexplored.

The specific research objectives are as follows:

- (1) To analyze how ESG frameworks have been integrated into local development strategies in Lincang and Nairobi.
- (2) To identify the key environmental, social, and governance challenges and opportunities influencing ESG effectiveness in these areas.
- (3) To evaluate ESG's impact on economic performance, social equity, and environmental sustainability in both regions.
- (4) To propose tailored policy recommendations for enhancing ESG effectiveness in economically underdeveloped contexts.

The research questions guiding this study are:

- (1) How have Lincang and Nairobi integrated ESG principles into their local development strategies, and what drives these initiatives?
- (2) What key challenges and opportunities influence ESG adoption in economically underdeveloped regions?
- (3) How have ESG practices affected economic growth, social equity, and environmental sustainability locally?
- (4) What policy adaptations can improve ESG implementation effectiveness in underdeveloped areas?

By addressing these questions, this research will provide a comprehensive understanding of how ESG can be a transformative tool for sustainable development in underdeveloped regions, and how global ESG frameworks can be localized to meet the needs of these vulnerable areas.

5. Theoretical Framework

Understanding ESG implementation in economically underdeveloped regions requires examining interconnected economic, social, and governance factors. This study employs Institutional Theory, Resource Dependency Theory, and Stakeholder Theory to explore ESG practices in Lincang and Nairobi.

5.1 Institutional Theory

Institutional theory examines how regulatory, normative, and cultural structures influence organizational behaviors^[13]. In underdeveloped areas like Lincang and Nairobi, fragmented regulations and limited enforcement often hinder ESG effectiveness, causing companies to prioritize regulatory compliance or legitimacy over strategic sustainability commitments^[14].

5.2 Resource Dependency Theory

Resource Dependency Theory highlights how organizations depend on external resources for survival and decision-making, particularly in resource-scarce environments^[15]. Firms in regions like Lincang and Nairobi often rely heavily on external funding, technical assistance, and international partnerships for ESG implementation^[16]. Such reliance may limit ESG strategies to externally funded initiatives, restricting holistic, locally sustainable ESG practices.

5.3 Stakeholder Theory

Stakeholder theory emphasizes balancing interests of diverse groups—including communities, investors, and governments—in organizational decisions^[17]. In underdeveloped regions, stakeholder dynamics are complex due to competing social demands and resource limitations^{[18] [19]}. Nairobi's civil society and community involvement significantly shape ESG strategies^[19], while effective stakeholder engagement in Lincang aligns corporate ESG goals with local development, enhancing trust and sustainability^[17].

Together, these theoretical lenses offer insights into navigating ESG implementation complexities, revealing how institutional constraints, resource dependencies, and stakeholder interactions influence outcomes in underdeveloped contexts.

5.4 5.4 Hypotheses and Expected Outcomes

Based on this theoretical framework and literature review, two hypotheses guide this study:

H1: ESG practices in underdeveloped regions positively impact local corporate performance.

In this study, corporate performance will be evaluated using both financial indicators—such as return on assets (ROA), return on equity (ROE), and annual revenue growth—and non-financial measures, including ESG ratings, operational efficiency metrics, and brand reputation scores. ESG initiatives, even in resource-constrained environments, can enhance these outcomes through improved operational efficiencies, strengthened community relations, and enhanced stakeholder trust^[20].

H2: ESG practices positively influence regional development, enhancing social equity and environmental sustainability.

Here, regional development will be measured using macroeconomic indicators (GDP growth rate, per capita income), social indicators (employment rate, education attainment levels, public health coverage), and environmental indicators (carbon emission intensity, renewable energy share, waste management efficiency). Properly implemented ESG practices can extend beyond corporate benefits, fostering environmental improvements and social progress at the regional level^[21].

Testing these hypotheses will contribute empirical evidence to theoretical understanding and inform practical ESG policy development in economically underdeveloped areas.

6. Methodology

6.1 Research Design

This study adopts a mixed-method approach to comprehensively analyze ESG practices and impacts in economically underdeveloped regions, specifically Lincang City, China, and Nairobi City, Kenya. The mixed-method framework facilitates a robust examination by combining detailed qualitative insights and empirical quantitative evaluations^[22].

Qualitative Approach: In-depth Case Studies

Two in-depth enterprise case studies—Yunnan Lincang Xinyuan Germanium Industry Co., Ltd. (Lincang) and Safaricom Plc (Nairobi)—were selected due to their ESG engagement, regional prominence, and data availability. Case studies effectively capture contextual ESG dynamics, motivations, and outcomes^[23]. Data sources include corporate ESG and sustainability reports, official disclosures, local policy documents, and reputable third-party evaluations. Qualitative analysis uses thematic coding to identify recurring patterns relevant to ESG implementation^[24].

Quantitative Approach: Macro-regional Data Analysis

Macro-level ESG indicators and socioeconomic data—including GDP growth rates, sectoral output, and per capita income—are analyzed to contextualize ESG's broader regional implications. Limited indicators on social and governance dimensions (employment, public finance references) are used as available. Data are obtained from official regional sources, including Kenya Economic Reports^[4] and Lincang municipal reports. Visualization methods facilitate comparative analysis of ESG impacts.

Triangulation and Integration

Combining qualitative case findings and quantitative macro-level data enhances methodological rigor, producing comprehensive insights into ESG's influence on corporate and regional outcomes in underdeveloped contexts.

6.2 Data Collection

The systematic data collection integrates qualitative and quantitative materials around two case enterprises—Safaricom Plc (Nairobi) and Xinyuan Germanium (Lincang)—alongside macro-regional ESG indicators.

Qualitative Data

For Safaricom, qualitative data derive from sustainability and financial reports, NSE annual reports (2020–2023), and reputable third-party news sources covering ESG initiatives ^{[25][26][27]}. For Xinyuan Germanium, company annual reports (2020–2024), supplemented by regional policy documents from Yunnan Province and Lincang City, were reviewed.

Quantitative Data

Financial and market performance data for Safaricom come from company and NSE reports^{[25][28]}. Kenya's macroeconomic indicators are sourced from Kenya Economic Reports^[4]. Xinyuan Germanium's financial data originate from its annual disclosures, while macroeconomic and environmental metrics for Lincang are sourced from the Lincang Municipal Statistical Yearbook^{[12][29]}.

6.3 Sampling

The two enterprises were purposefully selected for their ESG practices, local economic significance, and data accessibility. Safaricom represents Nairobi's technology and telecommunications sector, playing a leading role in digital financial inclusion, green bond issuance, and socio-economic impact in Kenya. Xinyuan Germanium exemplifies the rare-metal and resource-processing industry's transformation towards sustainable production, reflecting China's policy-driven green manufacturing agenda. Together, these cases capture distinct ESG pathways in a service-led urban economy and a resource-based industrial context, providing comparative insights across contrasting economic structures. However, the choice to focus on only two enterprises limits the breadth of industry coverage and may reduce the generalizability of findings. Future research could include a broader range of firms to strengthen cross-sectoral comparison. Relevant macro-level indicators were prioritized according to their connection to ESG practices and regional contexts, with data spanning 2020–2024 to ensure timeliness and comprehensiveness.

6.4 Data Credibility and Validation

Data reliability was ensured through cross-validation from multiple credible sources. Corporate financial and ESG disclosures were corroborated with external media and third-party reports. Macroeconomic data were similarly verified against government publications and international databases where possible, strengthening empirical rigor and credibility.

7. Findings and Discussion

7.1 Regional Economic Trends: Lincang and Nairobi

This section presents a comparative analysis of regional economic development trends in Lincang City, China, and Nairobi City, Kenya, focusing on the period from 2020 to 2024. This analysis aims to explore whether ESG-oriented development strategies have coincided with economic growth and structural transformation in underdeveloped regions, in line with Research Question 3.

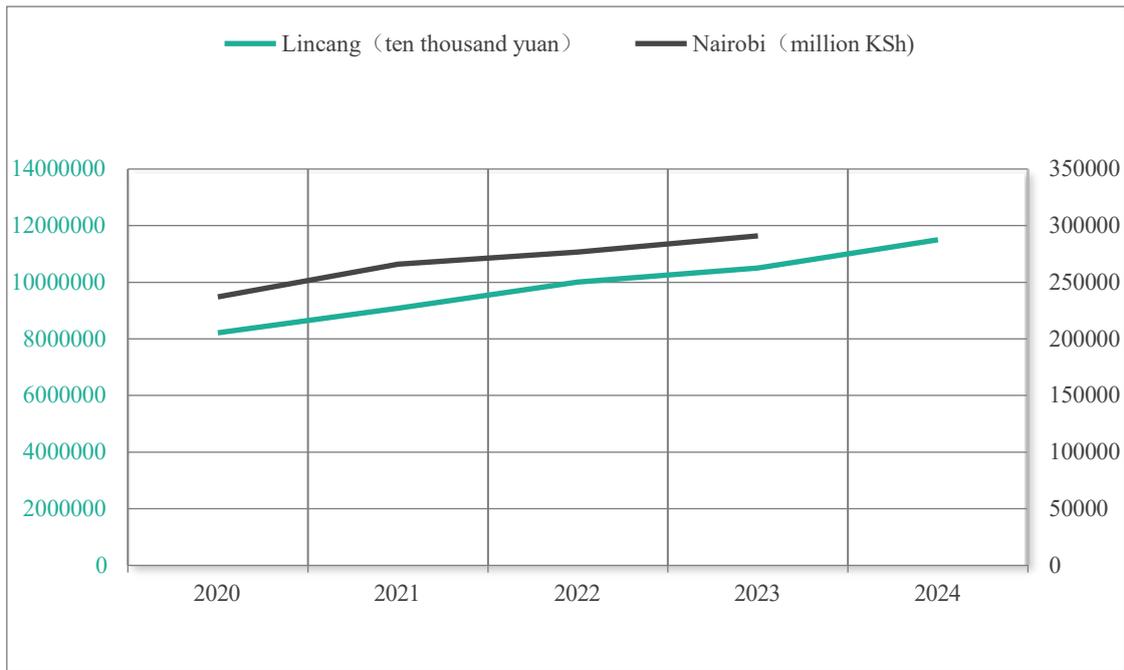


Figure 1 GDP Trends of Lincang and Nairobi



Figure 2 Industrial Output Trends In Lincang (ten thousand yuan)

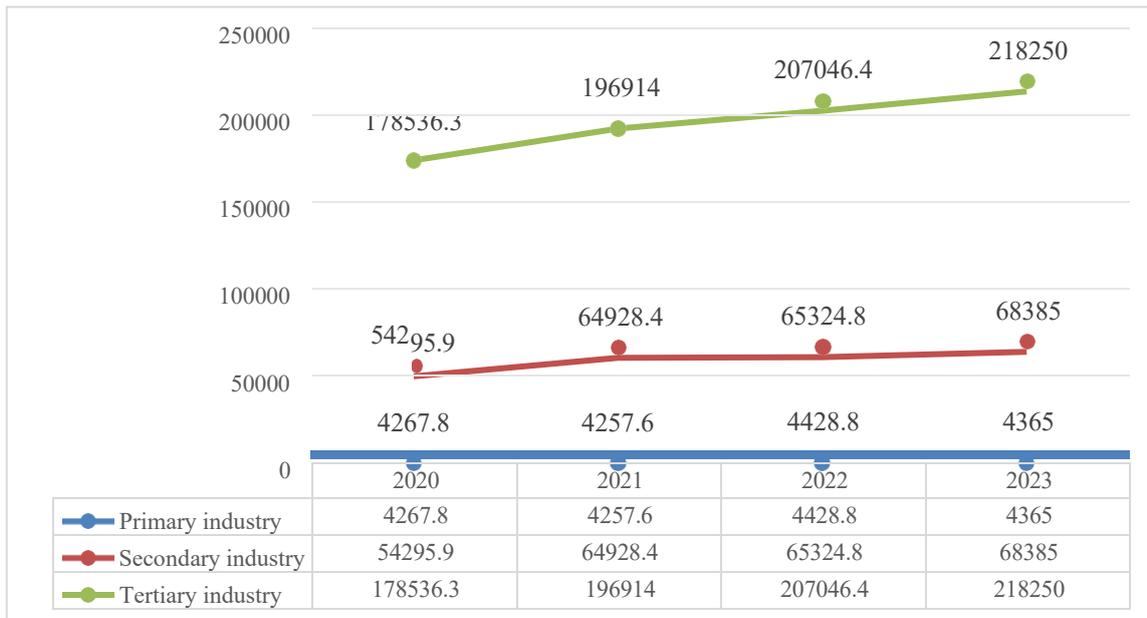


Figure 3 Industrial Output Trends In Nairobi (million KSh)

Figures 1 to 3 compare economic growth and structural changes in Lincang and Nairobi from 2020 to 2024. Nairobi consistently has higher GDP due to its capital-city status, but its growth was modest (2371–2910 billion KSh, 2020–2023). Lincang’s GDP increased notably from 82.2 to over 115 billion RMB (2020–2024), reflecting strong growth possibly supported by ESG initiatives like green agriculture^[9].

Lincang’s industrial structure (Figure 2) shows sustained growth in agriculture, a resilient industrial sector, and rapid expansion in services—particularly eco-tourism, education, and logistics—suggesting ESG policy alignment^[9]. Nairobi (Figure 3) maintains a stable, service-dominated economy (~74% tertiary), indicating ESG supports existing sectors rather than driving structural transformation^[4].

Overall, ESG appears to support economic modernization in Lincang, while reinforcing social equity and sustainability within Nairobi’s mature urban economy.

7.2 Industrial Structure Comparison: Lincang and Nairobi

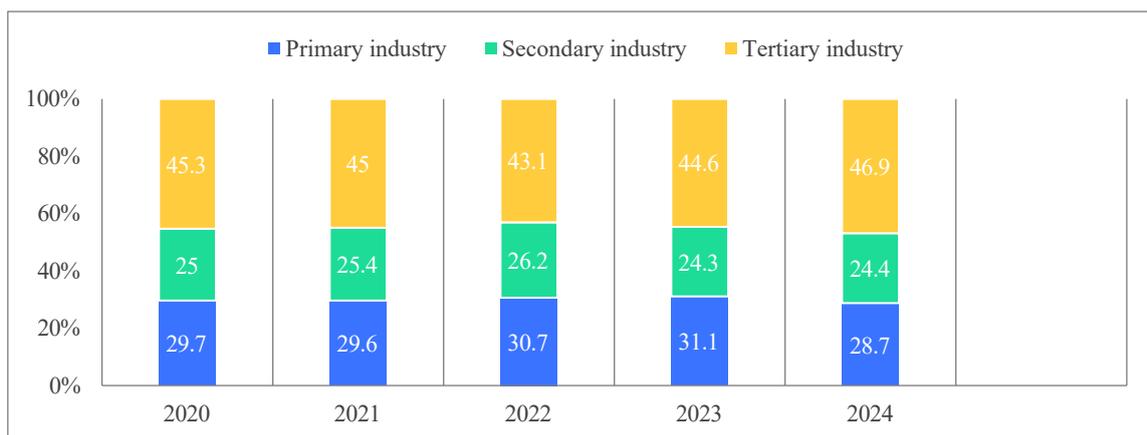


Figure 4 Industrial Structure of Lincang (2020-2024)

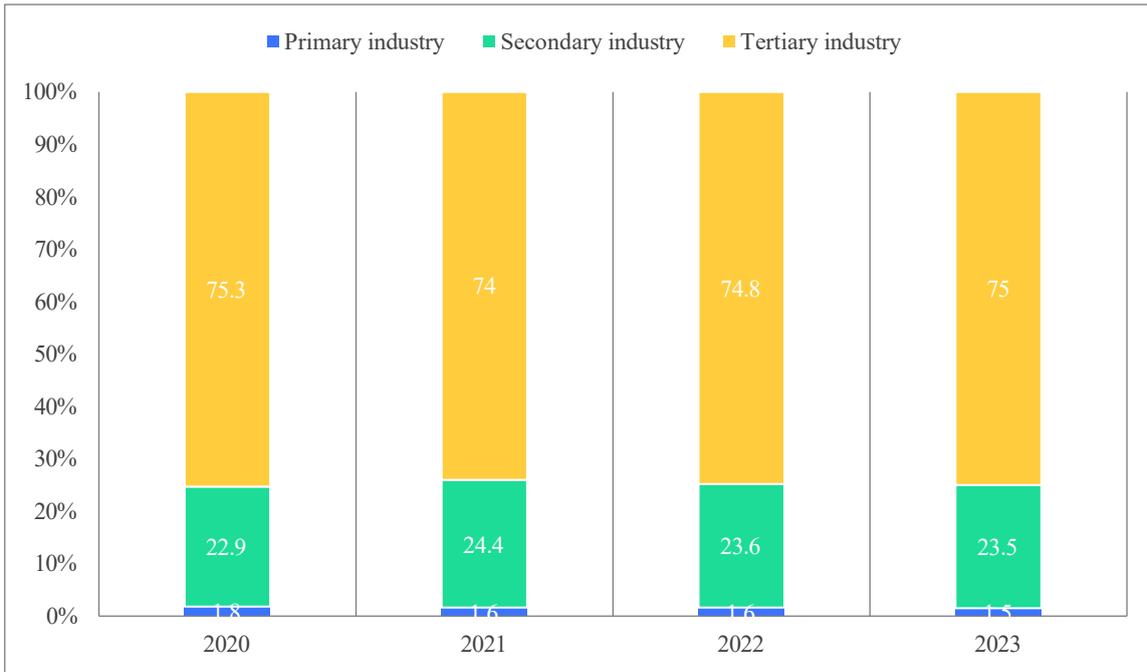


Figure 5 Industrial Structure of Nairobi (2020-2023)

Figures 4 and 5 illustrate industry structures. Lincang (Figure 4) maintained a stable primary sector (~28–31%) and a consistent secondary sector (~25%). Its tertiary sector gradually increased (45.3% to 46.9%, 2020–2024), aligning with ESG-driven service-sector growth and quality-of-life enhancements^{[9][30]}.

Nairobi (Figure 5) showed consistent dominance in services (74–75%), negligible primary sector (1.5%), and stable secondary sector (~23%), reflecting its post-industrial, service-based economy^[4]. Thus, ESG strategies here emphasize inclusion and sustainable practices rather than structural economic shifts.

The contrast underscores ESG’s contextual adaptability: facilitating service-driven economic transition in Lincang and enhancing existing economic strengths in Nairobi^[2].

7.3 Corporate Financial Performance and ESG Dynamics: Safaricom and Yunnan Germanium

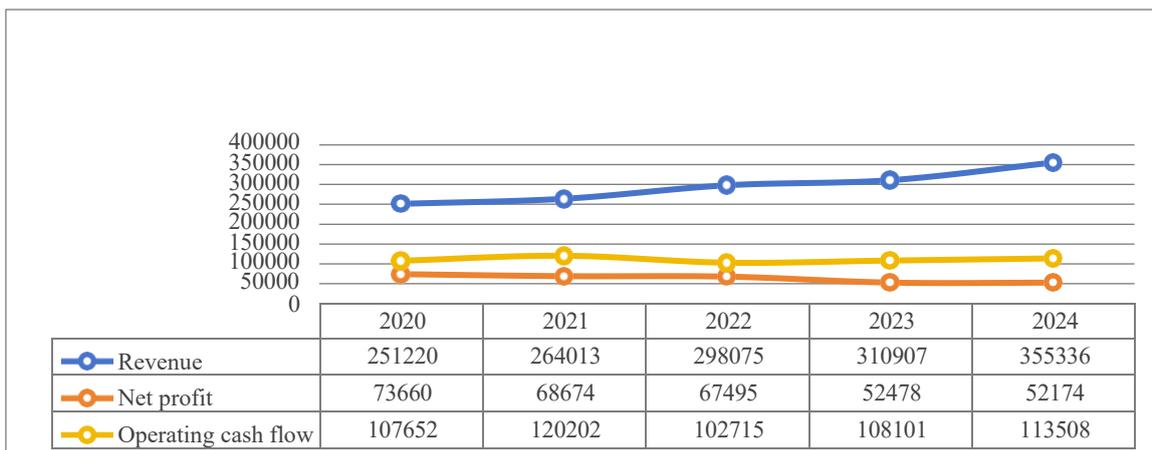


Figure 6. Safaricom Financial Indicators (2020-2024) (million KSh)

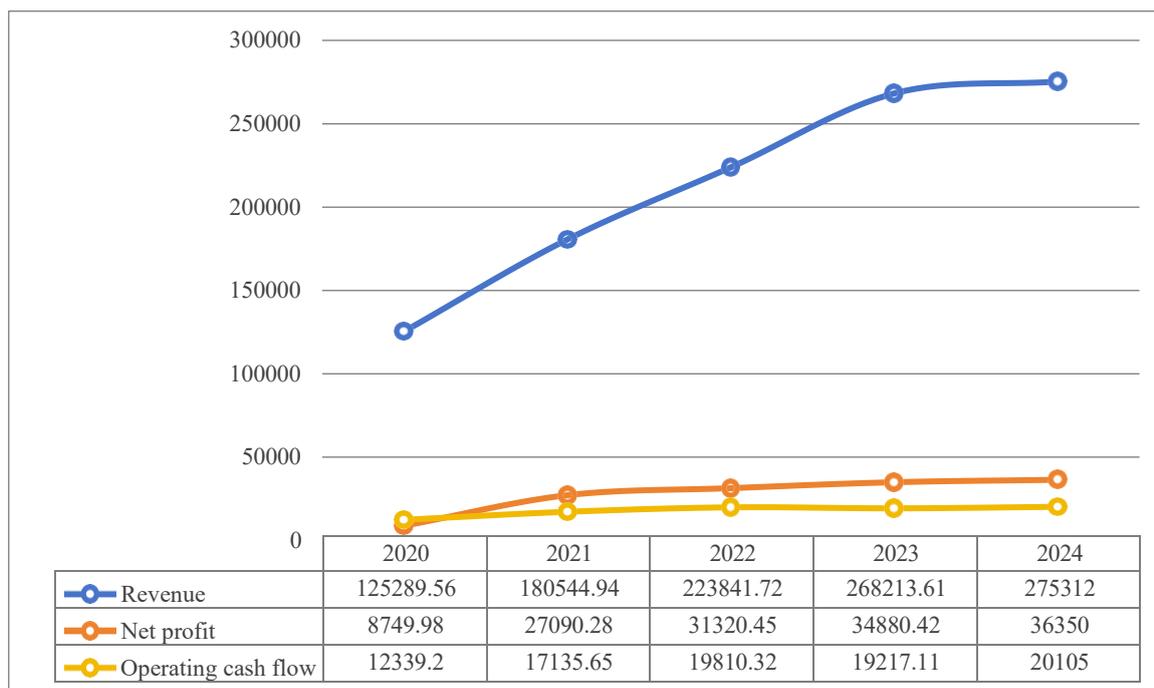


Figure 7. Yunnan Germanium Financial Indicators (2020-2024) (ten thousand yuan)

Figures 6 and 7 compare financial outcomes during ESG implementation (2020–2024). Safaricom's revenue rose significantly (251.2 to 355.3 billion KSh) with strong cash flows, but net profit fell (73.7 to 52.2 billion KSh), potentially due to ESG investments in green bonds, digital inclusion, and infrastructure^{[26][27]}. These actions suggest short-term costs offset by expected long-term brand and regulatory advantages.

Yunnan Germanium showed steady financial growth (Revenue: RMB 1.25–2.75 billion; Net profit: RMB 8.75–363.5 million), alongside increased environmental investments since 2021^[29]. This demonstrates SMEs’ potential for immediate profitability through ESG compliance and favorable policies.

Thus, Safaricom and Yunnan Germanium represent two ESG strategies: long-term social-driven ESG versus short-term compliance-driven ESG, shaped by sector and institutional contexts.

7.4 Regional Dimension: How ESG Intertwines with Development Trajectories

The analysis reveals distinct ESG pathways (Figures 1–5). Lincang's rapid GDP growth (~40%) and tertiary sector expansion suggest ESG as a catalyst for transforming agriculture-based economies into service-oriented growth. Nairobi, maintaining a stable service economy (~74% tertiary), employs ESG to deepen existing urban frameworks via green finance and social equity rather than industrial restructuring.

This comparison aligns with Stakeholder Theory, highlighting ESG’s need for tailored approaches sensitive to local economies, stakeholder capacities, and sustainability objectives.

7.5 Corporate Dimension: Tensions and Trajectories Between ESG and Financial Performance

Figures 6 and 7 highlight different ESG-financial outcomes. Safaricom’s declining profits despite increasing revenue indicate ESG-related costs (green bonds, digital inclusion), creating short-term financial pressures offset by longer-term strategic benefits^[25]. Conversely, Yunnan Germanium’s simultaneous ESG and financial improvements reflect how policy-driven ESG investments can directly boost profitability^[29].

These contrasting paths—Safaricom’s "long-term, social-value-driven" and Yunnan Germanium’s "short-term compliance-profit"—highlight ESG’s diverse strategic implications. Firms must clarify ESG objectives based on their industry, resource availability, stakeholder interests, and regulatory environment.

7.6 Challenges and Localization Pathways of ESG Implementation

Despite positive impacts, ESG implementation faces significant barriers in Lincang and Nairobi, necessitating localized strategies^{[2][8][9]}.

Institutionally, fragmented governance and weak enforcement hinder effective ESG practices in both cities, creating policy implementation gaps and increased uncertainty^{[4][9]}. Financially, limited resources restrict SMEs' ESG financing options, exemplified by Safaricom's green bond success but broader market limitations, and Yunnan Germanium's dependency on governmental subsidies^{[8][21][25][26][27][29]}.

Socially, Nairobi faces inadequate investor awareness limiting ESG adoption, while Lincang struggles with knowledge dissemination among local communities^{[2][9][18]}.

Thus, tailored local ESG strategies must incorporate specific regional industries, socio-cultural contexts, effective governance coordination, and innovative financing^{[5][8]}, enabling sustained ESG-driven regional growth.

8. Conclusion and Policy Implications

This study investigated the practical significance of ESG frameworks in economically underdeveloped regions, specifically focusing on Lincang City, China, and Nairobi City, Kenya. Using both regional-level quantitative data and detailed corporate case studies, the research addressed key ESG implementation questions relevant to sustainable development in low-income contexts.

8.1 Summary of Findings

At the regional level, ESG strategies positively supported economic growth and industrial transformation. In Lincang, national sustainability directives facilitated structural upgrading through green agriculture and service-sector expansion. In Nairobi, the service-driven economy and innovative ESG financing instruments, notably green bonds, reinforced existing economic strengths. This underscores that ESG frameworks, typically associated with advanced economies, can also meaningfully support structural shifts and sustainable growth in underdeveloped contexts.

At the corporate level, the immediate financial impacts of ESG varied. Safaricom's case indicates that large enterprises initially may face profit pressures during ESG implementation, although they can achieve long-term gains in market position and operational liquidity through enhanced reputation and governmental backing. Conversely, Yunnan Germanium's experience illustrates that SMEs, provided adequate policy and resource support, can more rapidly transform ESG initiatives into direct economic benefits, highlighting a clearer short-term correlation between ESG investments and profitability.

The study also identified significant practical barriers to ESG implementation, including fragmented regulatory systems, limited institutional governance capacities, constrained enterprise financing channels, and insufficient stakeholder awareness and education. These factors underscore the need for tailored, region-specific ESG approaches to enhance outcomes.

8.2 Policy Implications

Based on the findings, the following targeted policy recommendations are proposed:

Strengthen local governance coordination: Local authorities should develop unified regulatory frameworks and clear ESG reporting standards, enhancing transparency and minimizing information asymmetry between businesses and investors.

Expand ESG-related financing opportunities: Governments should collaborate with international institutions to create diversified ESG financing mechanisms, especially targeting SMEs and emerging industries, promoting instruments such as green credit and bonds in less-developed regions.

Enhance ESG education and stakeholder engagement: Increasing ESG awareness and acceptance requires structured education and public campaigns. Strengthening multi-stakeholder collaborations involving communities, businesses, and policymakers can create a solid foundation for ESG adoption.

8.3 Limitations and Future Research Directions

The findings are constrained by certain data limitations, notably Nairobi's unavailable 2024 GDP figures and inconsistent ESG investment data, potentially affecting generalizability. Future research should address these gaps by employing more comprehensive data collection methods, conducting field-based qualitative studies, and developing robust ESG evaluation frameworks to better understand ESG's long-term impacts and mechanisms within economically underdeveloped regions.

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