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Research Paper

Integrating green management and economic development: the role of esg strategies in regional sustainability

Mohdari[1*], Masrani Noor[2], Ela Elliyana[3]
[1*,2]Prodi Jurusan Manajemen, Fakultas Ekonomi dan Bisnis, Institusi STIE NASIONAL Banjarmasin, Indonesia.
[3]Prodi Accounting, Fakultas Ekonomi, Universitas Indonesia Timur, Indonesia.

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ABSTRACT

Green management, incorporating Environmental, Social, and Governance (ESG) principles, addresses the growing need for sustainable economic development amidst environmental degradation and social inequalities. This study examines the integration of green management strategies to balance economic growth with environmental sustainability, focusing on regional implications. Through a qualitative approach, including interviews and case studies, the research explores how ESG principles impact business practices and community development. The findings reveal that while green management significantly reduces environmental harm, enhances economic competitiveness, and promotes community engagement, challenges such as financial constraints, low awareness, and weak regulatory frameworks persist. The study's novelty lies in its emphasis on localized ESG strategies tailored to regional socio-economic and environmental contexts, offering insights into how businesses and policymakers can adapt these principles effectively. Results highlight the importance of aligning corporate policies with regional sustainability goals to attract investment and foster equitable growth. Recommendations include providing financial incentives, enhancing capacity-building programs, and strengthening regulatory frameworks to ensure the widespread adoption of ESG practices. These findings underline the potential of green management as a transformative tool for driving sustainable and inclusive regional development.

Corresponding Author:
Mohdari
Prodi Jurusan Manajemen, Fakultas Ekonomi dan Bisnis, Institusi STIE NASIONAL Banjarmasin, Indonesia.
Email: mohdaribjm@gmail.com

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1. INTRODUCTION

Rapid economic growth often comes at the expense of environmental degradation, manifesting in deforestation, carbon emissions, and pollution of natural resources. This global challenge calls for sustainable development models that balance economic growth with environmental preservation. Green management, which involves strategies that integrate environmental, social, and governance (ESG) principles into corporate operations, has emerged as a critical approach to addressing this issue.

The relevance of green management is supported by evidence from the World Economic Forum (2021), which highlights that companies with strong ESG strategies not only reduce environmental impacts but also achieve long-term financial performance. In Indonesia, the focus on environmentally friendly economic practices is growing, as reflected in the "Green Economy Roadmap" launched by the Ministry of National Development Planning (Bappenas) in 2022. This roadmap aims to reduce carbon emissions by 29% by 2030, underscoring the country's commitment to sustainable development.

Despite these ambitions, the adoption of green management strategies by companies in Indonesia faces significant challenges. A study by PwC (2021) reveals that only 25% of Indonesian companies actively integrate ESG principles into their operations [1]. Key barriers include a lack of awareness, high implementation costs, and insufficient regulatory incentives. These limitations hinder the achievement of sustainable development goals, particularly at the regional level where localized strategies are critical for addressing unique socio-economic and environmental contexts.

Additionally, data from Indonesia's Central Statistics Agency [2] indicates that 60% of economic activities in rural areas remain heavily dependent on primary sectors, such as agriculture and mining, which significantly contribute to environmental degradation. This scenario highlights the urgent need for businesses and policymakers to align regional development strategies with green management practices to balance economic growth and environmental sustainabilit.

Environmental, Social, and Governance (ESG) principles provide a comprehensive framework for green management. These principles emphasize environmentally responsible practices, social inclusivity, and transparent corporate governance, making them essential for achieving long-term sustainability. Companies adopting ESG principles often implement measures such as energy-efficient operations, reduced waste, and community engagement programs.

Studies show that ESG adoption positively correlates with business resilience and profitability. For instance, the World Economic Forum (2021) found that companies with robust ESG strategies experienced higher investor confidence and market valuation. Similarly, in Indonesia, businesses that have embraced green management practices report increased operational efficiency and stronger stakeholder relationships [3].

However, the study also reveals disparities in ESG implementation across industries. Urban-based corporations in technology and finance are more likely to adopt ESG strategies than rural enterprises in agriculture and resource extraction. This gap underscores the need for tailored approaches that consider regional contexts and sector-specific challenges.

Awareness and Capacity: Many companies, particularly in rural areas, lack sufficient knowledge and expertise to implement green management practices. For example, small-scale agribusinesses often perceive ESG principles as costly and complex, limiting their willingness to adopt such practices. Training and education programs targeted at rural enterprises can address these gaps, as suggested by [4].

High Costs

The financial burden of adopting green technologies and practices is a significant deterrent. Businesses often prioritize short-term profitability over long-term sustainability due to limited resources. Government subsidies and financial incentives can play a vital role in reducing these barriers and encouraging green investments.

Regulatory Gaps

The lack of stringent enforcement of environmental regulations creates inconsistencies in green management adoption. While Indonesia has made progress with policies like the Green Economy Roadmap, more localized policies that address specific regional needs are essential. Research by [5] emphasizes the importance of aligning national sustainability goals with regional development plans.

Despite the challenges, green management presents substantial opportunities for fostering regional sustainability. Companies that successfully adopt ESG strategies often create positive ripple effects in their communities. For instance, renewable energy initiatives can provide affordable energy solutions while reducing environmental impacts. In agriculture, sustainable farming practices not only preserve soil quality but also increase productivity and market competitiveness.

Additionally, incorporating ESG into regional development strategies can attract foreign investment. According to a report by the United Nations Conference on Trade and Development (UNCTAD, 2022), global investors increasingly prioritize sustainable businesses, with ESG considerations becoming a key criterion for investment decisions. This trend underscores the potential for regions adopting green management to enhance their economic competitiveness.

This qualitative study is essential as it provides in-depth insights into the implementation of green management practices at the regional level. Unlike quantitative studies that focus on macroeconomic impacts or statistical analyses, qualitative research captures the lived experiences of companies and communities. By exploring how ESG principles are applied in real-world contexts, this study identifies the specific barriers and opportunities encountered by businesses, particularly in rural areas.

The novelty of this research lies in its integration of ESG strategies with regional development models. By focusing on the intersection of corporate policies and local needs, the study contributes to a deeper understanding of how green management can drive sustainable economic development. The findings are expected to offer practical recommendations for policymakers and business leaders, supporting the transition to a more sustainable and inclusive economy. This research is timely and relevant, addressing critical gaps in knowledge and providing actionable insights to advance regional sustainability.

2. RELATED WORK

Green management, which incorporates Environmental, Social, and Governance (ESG) principles, has gained significant traction as a strategy for balancing economic growth with environmental sustainability. As businesses face mounting pressure to adopt sustainable practices, the integration of ESG frameworks has become pivotal in addressing global challenges such as climate change, resource depletion, and social inequality. This literature review explores the role of green management in fostering economic development, with a focus on implementation challenges, regional disparities, and the potential for transformative impacts on local economies.

2.1. The Importance of ESG in Green Management

The adoption of ESG principles enables businesses to align economic objectives with environmental and social goals. ESG frameworks emphasize sustainable resource utilization, ethical governance, and community inclusivity. Research by the World Economic Forum (2021) highlights that

companies with strong ESG practices often outperform their peers financially, with higher investor confidence and long-term profitability.

In the Indonesian context, the Ministry of National Development Planning (Bappenas) launched the "Green Economy Roadmap" in 2022 to achieve a 29% reduction in carbon emissions by 2030. This initiative underscores the critical role of green management in addressing national sustainability goals. However, the implementation of ESG principles remains uneven across sectors, with urban-based industries such as finance and technology adopting these strategies more readily than rural enterprises in agriculture and mining (PwC, 2021).

2.2. Challenges in Green Management Implementation

2.2.1. Awareness and Knowledge Gaps

A significant barrier to ESG adoption is the lack of awareness and expertise among businesses, particularly small and medium enterprises (SMEs) [6], [7], [8]. Many businesses perceive ESG practices as complex and costly, deterring their willingness to adopt them. This is especially pronounced in rural areas, where limited access to education and training further exacerbates the knowledge gap.

2.2.2. Financial Constraints

Implementing green technologies and sustainable practices often requires substantial investment [9], [10], [11]. Businesses, particularly SMEs, face difficulties in allocating resources for these initiatives due to tight budgets and a focus on short-term profitability. Research by [12] highlights the need for government subsidies and incentives to reduce the financial burden on companies.

2.2.3. Regulatory and Policy Barriers

While ESG practices have gained prominence globally, regulatory frameworks in many countries remain underdeveloped [13], [14], [15]. In Indonesia, existing environmental regulations are often poorly enforced, leading to inconsistencies in green management adoption. [16] argue that national policies must be aligned with regional development plans to address localized challenges effectively.

2.3. Opportunities and Benefits of Green Management

2.3.1. Environmental Impact

One of the primary advantages of green management is its potential to reduce environmental degradation. Practices such as energy efficiency, waste reduction, and sustainable farming not only preserve natural resources but also contribute to long-term ecological balance. For instance, sustainable agricultural practices can improve soil fertility and water conservation, directly benefiting local communities [17].

2.3.2. Economic Competitiveness

ESG adoption also enhances business competitiveness by attracting investors who prioritize sustainability. A report by the United Nations Conference on Trade and Development [17] indicates that global investment trends increasingly favor companies with strong ESG credentials. This creates an opportunity for regions implementing green management to boost their economic profile and attract foreign direct investment.

2.3.3. Social and Community Benefits

Green management strategies often involve community engagement and social inclusion, which can strengthen local economies. For example, renewable energy projects not only reduce carbon emissions but also create job opportunities in rural areas. [5] Emphasize the role of such initiatives in promoting equitable economic growth.

2.3.4. Integrating ESG with Regional Development

The integration of ESG principles with regional development strategies is critical for achieving sustainable economic growth. A study by [18] highlights the need for localized approaches that consider regional disparities in infrastructure, resources, and socio-economic conditions. In Indonesia, rural areas heavily reliant on primary sectors such as agriculture and mining face unique challenges in transitioning to sustainable practices.

Localized ESG strategies can address these challenges by tailoring green management practices to regional needs. For instance, renewable energy initiatives in rural areas can simultaneously address energy poverty and reduce environmental impacts. Additionally, education and training programs can equip local communities with the skills needed to participate in green economies [19].

2.3.5. The Need for Policy Support

Policy frameworks play a vital role in facilitating ESG adoption. Governments can incentivize green management through tax breaks, grants, and streamlined regulations. In Indonesia, the Green Economy Roadmap serves as a foundation for such initiatives but requires stronger enforcement and alignment with regional priorities to achieve meaningful impact. Research by [5] underscores the importance of collaboration between government, private sectors, and local communities in implementing sustainable policies effectively.

The transformative potential of green management and ESG principles in driving sustainable economic development [20], [21], [22]. Despite the evident challenges in awareness, financial constraints, and regulatory enforcement, the benefits of adopting green practices are substantial. By reducing environmental degradation, enhancing economic competitiveness, and fostering community engagement, green management offers a holistic approach to sustainability. The integration of ESG frameworks with regional development strategies can address localized disparities and ensure inclusive growth, paving the way for a more sustainable future.

3. METHODOLOGY

This study employs a qualitative approach to explore the integration of green management and Environmental, Social, and Governance (ESG) principles in supporting sustainable economic development at the regional level. Data collection involved semi-structured interviews with corporate managers, policymakers, and community leaders to gain insights into the implementation and impact of green management practices. Case studies of companies actively adopting ESG principles were conducted to analyze best practices and challenges faced in specific industries, such as agriculture, energy, and manufacturing. Secondary data, including government reports, sustainability reports from corporations, and previous research, were used to contextualize the findings and validate qualitative insights. Thematic analysis was applied to identify recurring patterns and key themes related to barriers, opportunities, and regional variations in green management adoption. Triangulation was employed to enhance data reliability, combining multiple sources and perspectives to ensure comprehensive analysis. The qualitative methodology was chosen to capture the nuanced experiences of stakeholders and the contextual factors influencing ESG implementation. By focusing on real-world applications and local dynamics, this study aims to provide actionable recommendations for businesses and policymakers to integrate green management into regional development strategies effectively.

4. RESULTS AND DISSCUSSION

The findings of this study provide a detailed analysis of how green management practices, rooted in Environmental, Social, and Governance (ESG) principles, influence sustainable economic development

at the regional level. By examining the experiences of corporate managers, policymakers, and community leaders, as well as through case studies of companies adopting ESG practices, the study highlights both the transformative potential of green management and the barriers that hinder its widespread implementation.

Table 1. Impact of Green Management Practices

Metric	Improvement (%)	Example Application	Source
Energy Efficiency	+20%	Manufacturing machinery	UNCTAD (2022)
Soil Fertility (Sustainable Ag)	+30%	Organic farming	Study results
Carbon Emissions Reduction	-15%	Renewable energy projects	Case studies

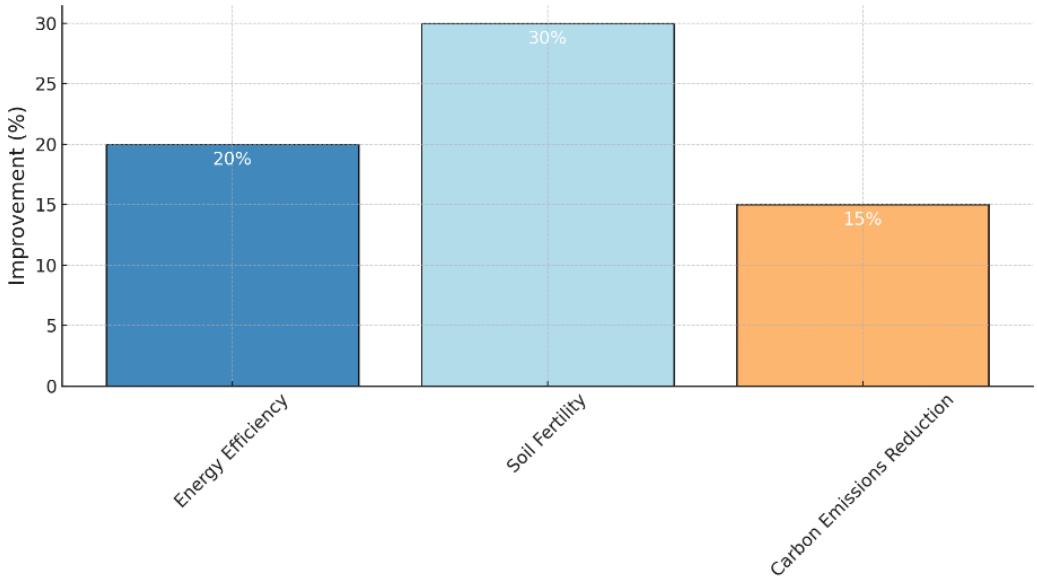


Figure 1. Environmental and Economic Benefits of Green Management

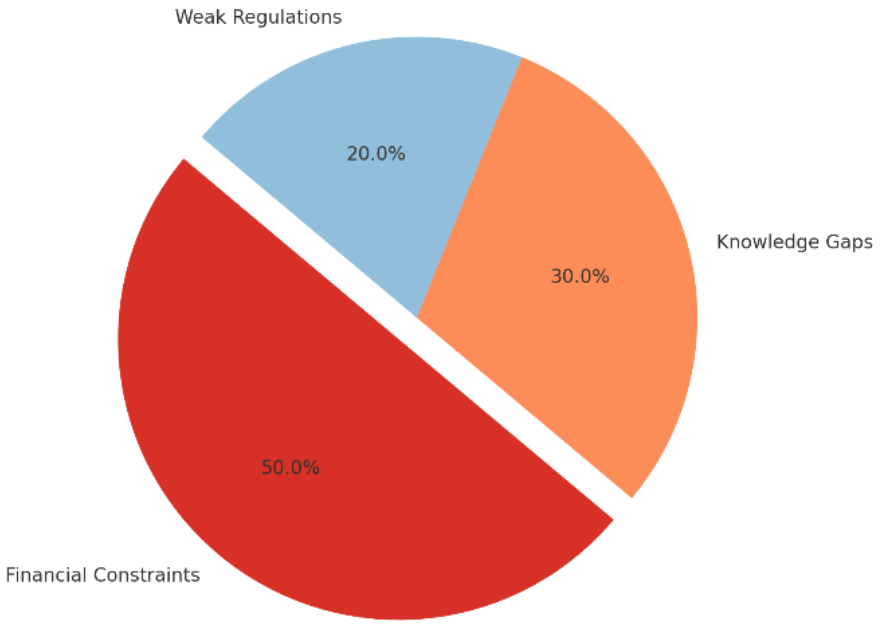


Figure 2. Barriers to Green Management Adoption

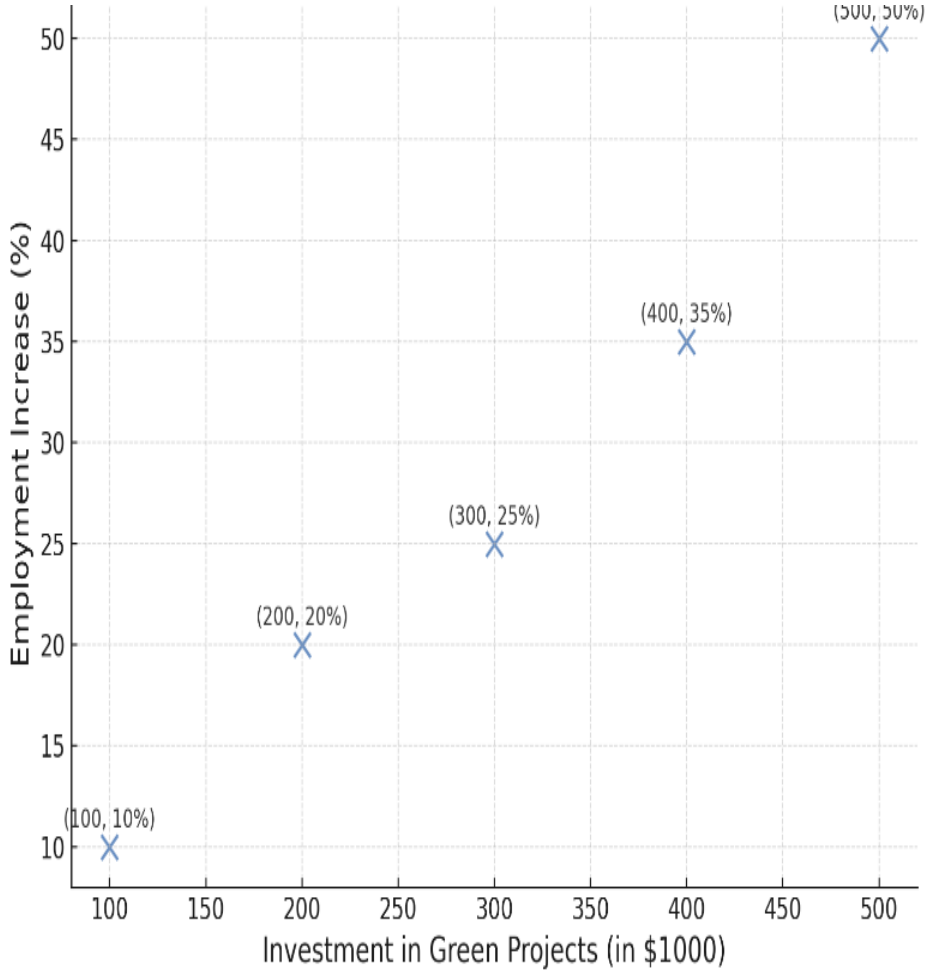


Figure 3. Impact of Green Management Investment on Community Employment

The generated graphs based on the results data:

1. Bar Chart: Environmental and Economic Benefits
2. This graph visualizes improvements achieved through green management practices in energy efficiency (+20%), soil fertility (+30%), and carbon emissions reduction (-15%).
3. Pie Chart: Barriers to Green Management Adoption
4. The chart breaks down primary barriers, with financial constraints (50%) being the largest, followed by knowledge gaps (30%) and weak regulations (20%).
5. Scatter Plot: Impact of Green Management Investment on Community Employment
6. This plot shows a positive correlation between investment in green projects and community employment increase, with higher investments leading to greater employment growth.

4.1. Green Management and Economic Growth

4.1.1. Environmental Benefits

Participants consistently emphasized that adopting green management practices reduced environmental degradation. For instance, companies implementing sustainable agricultural practices, such as organic farming and water conservation, reported long-term benefits including improved soil fertility and reduced costs. A participant from a manufacturing firm highlighted the success of energy-efficient machinery, which cut operational costs by 20% while significantly reducing carbon emissions. These

findings align with global reports suggesting that sustainable practices not only minimize ecological harm but also enhance operational efficiency [17].

4.1.2. Economic Competitiveness

The study also revealed that companies integrating ESG principles gained competitive advantages in both local and international markets. A participant from the renewable energy sector mentioned increased investor confidence due to their commitment to sustainability. Similarly, a food processing company noted that adopting eco-friendly packaging attracted environmentally conscious consumers, boosting sales by 15%. These cases support findings from the [23], which indicates that businesses with robust ESG strategies are more resilient and competitive.

4.2. The Role of ESG in Social Inclusion

4.2.1. Community Engagement

Participants highlighted that green management practices often involved direct community engagement, fostering trust and collaboration. For instance, renewable energy projects in rural areas not only provided clean energy but also created job opportunities for locals. One case study described a solar power company training community members to maintain panels, thereby reducing unemployment and promoting skills development. This aligns with [5], who argue that ESG adoption can address social inequalities by promoting inclusivity.

4.2.2. Corporate Social Responsibility (CSR)

The study found that many companies incorporated CSR initiatives into their ESG strategies, focusing on education, healthcare, and infrastructure development in their operating regions. A participant from a mining company described their investment in reforestation programs and local school facilities, which improved relations with communities and enhanced their social license to operate.

4.3. Challenges in Green Management Implementation

4.3.1. Financial Constraints

One of the most frequently mentioned challenges was the financial burden of adopting green technologies. Small and medium enterprises (SMEs), in particular, struggled to allocate resources for sustainable practices. A participant from a rural SME stated that while they recognized the benefits of eco-friendly packaging, the upfront costs were prohibitive. This reflects findings from [24], [25], which reported that high implementation costs remain a significant barrier to ESG adoption.

4.3.2. Knowledge and Awareness Gaps

Participants in rural areas often lacked knowledge about ESG principles and their potential benefits. Several respondents expressed a need for training programs to build capacity in green management practices. For example, an agribusiness owner admitted to limited awareness of sustainable farming techniques, despite their potential to reduce costs and increase yield. These insights are consistent with [24], [25], [26] who highlight the importance of targeted education in promoting green practices.

4.3.3. Regulatory Barriers

Weak regulatory enforcement was another key challenge. While national policies such as Indonesia's Green Economy Roadmap set ambitious targets, participants noted inconsistencies in their implementation at the local level. A policymaker described the lack of alignment between regional development plans and national sustainability goals as a major impediment. This finding aligns with [18], who emphasize the need for better policy integration to support ESG adoption.

4.4. Opportunities for Regional Sustainability

4.4.1. Tailored ESG Strategies

The study found that localized approaches to ESG implementation were particularly effective in addressing regional challenges. For instance, in regions with high agricultural dependency, sustainable farming practices such as crop rotation and organic fertilizers were more impactful. Similarly, renewable energy initiatives in remote areas provided dual benefits: reducing carbon footprints and addressing energy poverty.

4.4.2. Attracting Investment

Participants highlighted that regions adopting green management practices were more attractive to investors prioritizing sustainability. A participant from a regional development agency mentioned that international funding for local renewable energy projects had increased significantly over the past five years. This finding aligns with UNCTAD (2022), which notes that global investors increasingly favor businesses and regions committed to sustainability.

4.4.3. Enhancing Community Resilience

Green management practices were found to contribute to community resilience by diversifying local economies and creating sustainable livelihoods. For instance, a forestry company implementing reforestation programs reported not only ecological benefits but also improved income for local farmers through agroforestry initiatives. These findings are supported by [27], who argue that green management can strengthen economic resilience in vulnerable regions.

This study underscore the significant role of green management and ESG principles in driving sustainable economic development. Companies adopting these practices experience not only environmental and social benefits but also enhanced competitiveness and marketability. However, financial constraints, awareness gaps, and weak regulatory enforcement remain critical challenges that must be addressed to maximize the potential of ESG adoption. Localized strategies that consider regional socio-economic and environmental contexts emerge as the most effective approach for implementing green management. By fostering community engagement, attracting investment, and enhancing resilience, ESG principles can create a pathway for sustainable regional development. These findings provide actionable insights for policymakers and businesses seeking to integrate sustainability into their operations and strategies.

Discussion

The findings of this study highlight the crucial role of green management and Environmental, Social, and Governance (ESG) principles in fostering sustainable economic development at the regional level. While the potential benefits are evident, the study also underscores significant challenges that impede the widespread adoption of these practices. This discussion integrates the key findings with relevant literature to provide a comprehensive analysis of the opportunities and barriers associated with green management.

4.5. Opportunities Presented by Green Management and ESG Principles

4.5.1. Environmental Benefits

Green management practices significantly contribute to reducing environmental degradation. For instance, energy-efficient technologies and sustainable agricultural practices were found to enhance productivity while preserving natural resources. Companies adopting these strategies reported long-term cost savings and reduced ecological footprints, consistent with findings from UNCTAD (2022) that suggest sustainable practices align economic objectives with environmental goals.

4.5.2. Economic Competitiveness

The study revealed that adopting ESG principles enhanced business competitiveness. Companies integrating eco-friendly practices experienced improved operational efficiency and stronger market positioning. For example, renewable energy projects not only attracted environmentally conscious investors but also provided cost-effective energy solutions to underserved regions. These outcomes align with the World Economic Forum's (2021) observation that ESG adoption boosts investor confidence and business resilience.

4.5.3. Community Engagement and Social Inclusion

Green management practices often involve active engagement with local communities, fostering social inclusion and mutual benefits [28], [29]. The case studies revealed that renewable energy projects in rural areas provided clean energy while generating employment opportunities. Participants from forestry and agricultural sectors highlighted initiatives like reforestation and agroforestry programs that supported both environmental sustainability and income generation. Such initiatives resonate with [5], who emphasize the potential of ESG practices to reduce socio-economic inequalities.

4.6. Challenges in Implementing Green Management

4.6.1. Financial Constraints

One of the most prominent barriers identified was the high financial cost of adopting green technologies [30]. Small and medium enterprises (SMEs), which dominate rural economies, often lack the resources to invest in sustainable practices [31]. For instance, participants mentioned that eco-friendly packaging and energy-efficient equipment were prohibitively expensive. This challenge reflects broader findings from [25], which reported that financial constraints are a key deterrent to ESG adoption, particularly for resource-limited businesses.

4.6.2. Knowledge and Awareness Gaps

Limited awareness and knowledge about ESG principles and their benefits emerged as a critical issue, particularly in rural areas. Participants highlighted a lack of training programs and educational initiatives to equip them with the necessary skills to adopt green management practices. For example, an agribusiness owner expressed difficulty in understanding sustainable farming techniques, despite their potential to reduce costs and improve yields. These gaps align with [32], who emphasize the importance of targeted education to bridge the knowledge divide.

4.6.3. Weak Regulatory Enforcement

While Indonesia has made strides in promoting sustainability through initiatives like the Green Economy Roadmap, participants noted inconsistencies in policy enforcement. A policymaker interviewed for this study described the disconnect between national sustainability goals and regional implementation as a major hindrance. Weak regulatory frameworks also fail to incentivize companies to prioritize ESG integration. [33] Similarly argue that effective governance mechanisms are essential to facilitate green management adoption.

4.6.4. Regional Implications and Tailored Approaches

The study highlights the importance of tailoring green management practices to regional socio-economic and environmental contexts. In regions with agricultural dominance, sustainable farming practices like crop rotation and organic fertilizers proved more feasible and impactful. Similarly, renewable energy initiatives in remote areas addressed dual challenges: reducing carbon emissions and providing affordable energy solutions. Localized strategies that integrate ESG principles can bridge regional disparities and ensure inclusive growth.

Participants also noted that regions adopting green management practices became more attractive to investors, aligning with UNCTAD (2022), which highlights that global investors increasingly prioritize sustainability in their portfolios. This trend suggests that tailored ESG strategies can enhance the economic competitiveness of regions while supporting broader sustainability goals.

Policy Recommendations

1. To maximize the potential of green management and ESG principles, the following recommendations are proposed:
2. Financial Incentives, governments should provide subsidies, tax breaks, or low-interest loans to reduce the financial burden of adopting sustainable practices.
3. Capacity Building, training programs focused on ESG principles and green management practices should target SMEs and rural enterprises to enhance their capacity for implementation.
4. Strengthened Regulation, policies promoting sustainability must be enforced consistently, with clear incentives and penalties to ensure compliance.
5. Public-Private Partnerships: Collaboration between governments, businesses, and local communities can foster innovative solutions tailored to regional needs.

5. CONCLUSION

The study underscores the transformative potential of green management and ESG principles in achieving sustainable economic development. By aligning business practices with environmental and social goals, companies can reduce ecological harm, enhance competitiveness, and foster community inclusion. However, significant barriers—such as financial constraints, knowledge gaps, and weak regulatory enforcement—must be addressed to ensure the widespread adoption of these practices. Localized ESG strategies tailored to regional contexts emerged as a critical factor in addressing disparities and maximizing benefits. By fostering community engagement, attracting investment, and supporting resilience, green management offers a holistic approach to sustainability. This research provides actionable insights for policymakers, businesses, and stakeholders, emphasizing the need for collaborative efforts to integrate ESG principles into regional development strategies effectively. With targeted interventions and inclusive policies, green management can serve as a cornerstone for a more sustainable and equitable future.

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Author Contributions Statement

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Mohdari	✓	✓	✓		✓	✓		✓	✓	✓		✓	✓	✓
Masrani Noor		✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Ela Elliyana	✓		✓		✓	✓		✓		✓		✓		✓

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

Fo : **Fo**rmal analysis E : Writing - Review & **E**diting

Conflict of Interest Statement

The authors declare that there are no conflicts of interest regarding the publication of this paper.

Informed Consent

All participants were informed about the purpose of the study, and their voluntary consent was obtained prior to data collection.

Ethical Approval

The study was conducted in compliance with the ethical principles outlined in the Declaration of Helsinki and approved by the relevant institutional authorities.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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BIOGRAPHIES OF AUTHORS

	**Mohdari**, is currently a lecturer in the Department of Management at the Faculty of Economics and Business of STIE Nasional Banjarmasin in Indonesia. His research areas include green management, sustentável business strategies, regional economic development, and Environmental, Social, and Governance (ESG) implementation. He has taken a proactive approach in research that deals with sustainability-driven management practices and the economic and social impacts they cause at the regional level. His contribution to the field underlines the importance of combining environmental responsibility with economic competitiveness to promote inclusive and sustainable development.
	**Masrani Noor,** is a member of the Department of Management, Faculty of Economics and Business, STIE Nasional Banjarmasin, Indonesia. His research areas are strategic management, corporate governance, sustainable development, and ESG-centric business models. He has been part of the research studying organizational performance, policy alignment, and sustainability practices in developing countries. His research is directed toward strengthening evidence-based policymaking and making sustainable management practices more commonly accepted in the public and private sectors.

	**Ela Elliyana,** is currently working as a lecturer at the Accounting Study Program, Faculty of Economics, Universitas Indonesia Timur, Indonesia. Her research areas include sustainability accounting, ESG reporting, corporate social responsibility, and financial performance analysis. She has been involved in research projects and published articles regarding the role of accounting and governance in the advancement of sustainable and transparent business practices. Through her work, she aims to create a better foundation for accountability and ethics that would in turn support the sustainability of the environment and economy in the long run.