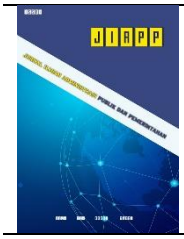

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Local Industry Transformation through ESG: Evidence from Bone Regency on Policy Impact, Business Competitiveness and Sustainability

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Abstract

This study analyzes the impact of implementing Environmental, Social, and Governance (ESG) principles on local industrial transformation in Bone Regency, South Sulawesi, focusing on business competitiveness and sustainability. The study addresses a critical research gap by examining ESG in small-scale rural industries, a context underexplored compared to studies on large corporations. A qualitative approach with a case study design was used to understand the dynamics of change in small-scale fisheries and agriculture-based industries. Data was collected through in-depth interviews, field observations, and policy document reviews, involving 18 informants from business actors, government officials, community facilitators, and local academics. The study identified six key themes: improved operational efficiency and market access; changes in perceptions and the image of the local industry; infrastructure and technological limitations; low literacy and human resource capacity; multi-stakeholder collaboration strategies; and social innovation and product diversification. Findings indicate that ESG adoption drives production efficiency, expands market opportunities, enhances community pride, and fosters locally-based innovation. However, limited facilities, sustainability literacy gaps, and coordination among actors remain significant obstacles. These findings provide both theoretical contributions—by contextualizing ESG in rural community industries—and practical implications for policymakers seeking to design adaptive, inclusive, and collaborative sustainability frameworks. The study concludes that a bottom-up, community-driven approach, reinforced by supportive policies and cross-sectoral collaboration, is essential for ensuring the long-term sustainability of local industries in Indonesia's rural regions.

Keywords: ESG; Local Industry; Social Innovation; Sustainability; Rural Development

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INTRODUCTION

The transformation of local industries towards sustainability is now a strategic agenda in many countries (Kunkel & Matthess, 2020; Sachs et al., 2019), including Indonesia, and is in line with increasing global pressure for more environmentally, socially, and governance (ESG) responsible business practices (Hakim & Fuad, 2021; Nareswari et al., 2023a; Purnomo et al., 2025). A report by the United Nations Development Programme in 2023 confirms that more than 85% of developing countries still face capacity gaps in adopting ESG principles, while 60% of small and medium-sized enterprises do not yet have a structured ESG framework (Bidoia, 2024; Diana, 2024). This situation poses significant risks to the competitiveness of local industries due to increasing international regulatory demands, growing consumer preferences for sustainability, and long-term environmental risks that could disrupt supply chains (Bahadori et al., 2021; Patil et al., 2021). This global trend highlights the urgency of investigating ESG implementation not only in multinational corporations but also in local industries that form the backbone of rural economies.

The Indonesian context presents more complex challenges. The disparity in ESG adoption between urban and non-urban industries remains relatively high (Handayani, 2019; Ihsani et al., 2023; Nareswari et al., 2023b). Data from the Central Statistics Agency 2023 shows that only 31% of small industries outside metropolitan areas have accessed sustainability assistance programs (Sumargo et al., 2024). This disparity impacts competitiveness gaps and slows down the transformation of local industries toward sustainable business models. Bone Regency in South Sulawesi is a real-world example of these challenges. Despite its strong potential in fisheries and agriculture-based industries, initial surveys indicate that over 75% of small-scale industrial actors and households in Bone have not received ESG training, and only 14% understand the direct link between ESG and their business competitiveness (Jasasmi et al., 2025). This evidence situates Bone as a relevant case to explore how ESG adoption unfolds in rural contexts marked by limited infrastructure, low literacy, and uneven policy implementation.

Global literature notes that ESG implementation can improve operational efficiency by up to 20% and open new market access, particularly through sustainable supply chains (Cheng et al., 2020; Karwowski & Raulinajtys-Grzybek, 2021; Kluza et al., 2021). However, most previous studies have focused on large corporations or capital markets (Capelli et al., 2021; Daugaard, 2020), while research on small industries in non-metropolitan areas is relatively limited (Ng et al., 2020; Sul & Lee, 2020). This gap points to the need for empirical research on how small, rural industries adopt ESG principles, and what role local policy and community actors play in shaping that process. This creates a vital research gap: how ESG principles are implemented in the context of local industries with low sustainability infrastructure and literacy, and how public policies influence their adaptation and competitiveness.

The approach used in this study departs from an inclusive local industry development paradigm. ESG principles are analyzed as normative compliance and as a transformative framework capable of integrating environmental, social, and governance dimensions into local community business strategies. By focusing on the lived experiences of local actors in Bone Regency, this study provides a grounded perspective on ESG adoption that complements macro-level analyses. This study focuses on two main questions: (1) how ESG policies impact the competitiveness of local industries, and (2) what challenges and strategies local industry actors adopt in embedding sustainability principles into their operations. The novelty of this research lies in its focus on the rural context, multi-actor involvement (local government, business actors, academics, and communities), and the integration of policy analysis with specific field practices in Bone Regency. Thus, the study contributes theoretically by extending ESG scholarship into rural industrial contexts and practically by offering evidence-based recommendations for sustainable policy design and community-driven industrial transformation.

RESEARCH METHODS

This study uses a qualitative approach with a case study design to understand how Environmental, Social, and Governance (ESG) policies affect the competitiveness and sustainability of local industries in Bone Regency. A qualitative approach was chosen because it captures the

complexity of local actors' perceptions, institutional dynamics, and adaptation strategies that are often invisible in quantitative surveys. The case study design (Yin, 2018) was used to focus the analysis on small and medium-sized industries based on fisheries and agriculture, which are the backbone of Bone's local economy, thereby enabling a comprehensive understanding of the challenges and opportunities of ESG implementation in a rural context. This design ensures depth and contextualization, which are critical for exploring policy-practice interactions.

The research location was selected purposively, covering several sub-districts with significant concentrations of home-based industries, particularly in the fish processing, rice milling, and agricultural product processing sectors. These sectors were prioritized because they generate substantial economic activity in Bone while facing structural constraints in ESG adoption. This selection considered the existence of local policies that have encouraged sustainability initiatives but have not yet been fully adopted by small industry actors. A total of 18 informants were involved in this study: small business owners, industry association representatives, relevant government officials (industry and environment), community leaders, and local academics involved in ESG assistance programs. This diversity of informants allowed cross-validation of perspectives between policy makers, practitioners, and facilitators, strengthening the reliability of findings.

Data collection techniques were conducted through three primary methods. First, semi-structured in-depth interviews explored business actors' perceptions, experiences, and adaptation strategies toward ESG policies. The interview guide was developed based on the ESG theoretical framework and initial findings from international literature (Daugaard, 2020; Kluza et al., 2021), ensuring flexibility while remaining focused on competitiveness and sustainability issues. Second, field observations were conducted to document operational practices in the industry, including waste management, energy utilization, and internal policies implemented by business actors. Third, regional policy documents, sustainability reports, and industry statistics were analyzed to complement and validate field findings. The combination of these techniques enabled methodological triangulation and enriched contextual understanding.

The data analysis process used the interactive Miles and Huberman model, which consists of data reduction, data presentation, and conclusion drawing stages. In the reduction stage, interview and observation data were coded to identify key themes such as ESG principle integration, implementation challenges, and their impact on competitiveness. The data were then presented in a thematic matrix to facilitate cross-informant and cross-industry analysis. Conclusions were drawn through an iterative process involving member checking with several key informants to ensure the validity of interpretations. This iterative approach enhanced the credibility of interpretations and minimized researcher bias.

The validity of the research is ensured through source and technique triangulation. Source triangulation is done by comparing information from business actors, government, and academic advisors, while technique triangulation combines interviews, observations, and document studies. In addition, peer debriefing is conducted with local academics to ensure the objectivity of the analysis. Ethical considerations were addressed by ensuring the confidentiality of informants' identities and obtaining their consent before interviews. Nevertheless, as with most case studies, the findings are context-specific and not statistically generalizable, but they are transferable to similar rural industrial settings. With this approach, the research was able to capture the dynamics of ESG implementation comprehensively while minimizing bias in interpretation.

RESULTS AND DISCUSSION

Results

Theme 1: Improved Operational Efficiency and Market Access

The transformation of local industries in Bone Regency through the implementation of ESG principles has significantly impacted operational efficiency and market access. Field findings show that energy efficiency and waste management training programs facilitated by the local government and academic partners have reduced production costs while increasing the attractiveness of products in the market. Small industries that previously relied on conventional practices are now adopting simple technologies, such as solar panels for lighting and water

recirculation systems, to reduce resource consumption. These changes result in cost savings and open doors for local products to enter broader markets, particularly national marketplaces that increasingly value environmentally friendly products. Business operators shared their experiences as follows:

"Since the energy efficiency training from the local government, we started using small solar panels for factory lighting. Our electricity bills have decreased by almost 20%." (Fish processing industry operator)

"We learned waste management from the ESG program. Now, production waste is turned into briquette fuel, which is quite cost-effective." (Metal craftsman)

"Water usage in the rice factory has been reduced through a recycling system. The impact on production costs is significant." (Rice factory manager)

"Our eco-friendly products are now available on national marketplaces, and many consumers are looking for 'eco-friendly' options." (Young entrepreneur from Bone)

"Government-provided equipment has made the production process more efficient, but ongoing support is still needed for management." (Head of MSME association)

Interpreting these findings indicates a paradigm shift in local industry from simply pursuing productivity to more efficient and sustainable resource management. These initiatives show that despite their small scale, industries in Bone can respond to global trends toward sustainable products by leveraging policy support and simple technologies. However, the sustainability of these initiatives still depends on ongoing guidance and managerial capacity building to ensure that efficiency is achieved in the program's initial stages and maintained as part of long-term business strategies.

Theme 2: Changes in Perceptions and the Image of Local Industries

The shift in perception toward the local industry in Bone District is one of the significant impacts of applying ESG principles in production and marketing processes. Small industries, which were previously viewed as traditional businesses with low-quality standards, are now gaining broader recognition from local consumers and external parties. Implementing environmentally friendly standards and social programs not only improves product quality but also transforms the image of local businesses into a more modern and comparable one with products from major cities. This transformation has also boosted community pride in local products and attracted the interest of younger generations who are more aware of social values and sustainability. This image change is reflected in the statements of the following stakeholders:

"Now when it comes to quality, people trust that our products are not only cheap but also environmentally friendly." (Craft SME actor)

"We see young people, especially students, who are usually looking for side jobs and are quite interested in working in businesses that have social programs, not just salaries." (Local community leader)

"The ESG label makes us look more modern, no less than products from big cities." (Home industry owner)

"The village government often uses our business as an example when there are visits from the district." (Head of a small industry group)

"Before the ESG program, it was difficult for us to participate in exhibitions. Now we are invited because our products are considered worthy of promotion." (Weaver)

"Consumers in Bone are starting to take pride in buying local products because of their sustainability story." (Village cooperative activist)

Interpretation of these findings shows that the ESG program has not only impacted technical aspects of production, but also changed how the community and stakeholders view local industries. The existence of an environmentally friendly label has become a symbol of modernity and a means of differentiation in a competitive market. Local consumers' pride in their products has strengthened domestic market loyalty and created a domino effect on regional marketing. However, this positive image still requires consistent sustainability practices so that it does not stop as a passing trend but is internalized as part of the identity of a locally competitive industry.

Theme 3: Infrastructure and Technology Limitations

The implementation of ESG principles in local industries in Bone Regency faces significant infrastructure and supporting technology challenges. Despite progress in awareness and motivation among business actors, limitations in waste treatment facilities, energy-efficient equipment, and environmentally friendly production technology remain significant obstacles. Many small businesses must make do with limited facilities, including using village land for waste treatment or sending specific processes to other cities due to technological limitations in the region. Also, unstable electricity supply and the absence of emission measurement tools make implementing comprehensive ESG standards difficult. These challenges impact production efficiency and affect businesses' ability to meet growing market demands for ESG reporting. The following informants describe these conditions:

"The main obstacle is the waste processing facility, which is still located on village land." (Food industry actor)

"Energy-efficient production equipment is expensive, and assistance from government agencies has not been evenly distributed." (Metal craftsman)

"The electricity network here sometimes goes out, so it is difficult to implement the automation system recommended by ESG." (Fish processing business owner)

"We need a special warehouse for waste separation, but land is limited." (MSME group leader)

"Environmentally friendly packaging technology is not yet available in Bone, so we still send our products to Makassar." (Chip industry owner)

"Emissions measurement tools are not yet available, so it is difficult to provide complete ESG reports." (Representative of the Environment Agency)

"Sometimes we are confused about what the ESG standards are, because there are no concrete examples in the region." (Community leader)

Interpretation of these findings indicates that the successful implementation of ESG depends not only on the commitment of business actors but also on the readiness of infrastructure and access to adequate technology. This gap in facilities highlights the disparity between ESG policies at the national level and the reality on the ground, where sustainability standards are often difficult to achieve without adequate technical support. This situation also underscores the importance of local government intervention and multi-stakeholder collaboration to provide shared facilities, technology subsidy programs, and technical assistance to ensure that ESG standards can be applied more evenly and inclusively in local industries.

Theme 4: Low Literacy and Human Resource Capacity

Low literacy and human resource capacity are among the main challenges in ESG implementation in local industries in Bone Regency. Although sustainability policies have begun to be introduced, public understanding of the ESG concept is still limited, and even the term ESG itself is only known to some industry players following recent socialization efforts by government agencies. These limitations make implementing basic practices, such as waste separation, production data recording, and sustainability reporting, challenging. The need for continuous mentoring and practical learning has emerged as a response from business actors who find it difficult to understand the concepts through theory alone. This dynamic is further complicated by a generational gap, with younger people being more adaptable due to their familiarity with digital technology. At the same time, older business actors need more time to adapt. The following statements from informants illustrate this:

"We only heard the term ESG last year during a socialization program from the government agency." (Rice processing industry actor)

"We need continuous assistance; if it's just one-time training, we quickly forget." (Head of an industrial cooperative)

"Many craftsmen do not understand how to separate organic and inorganic waste." (Community facilitator)

"We need real examples, not just theory. It's easier to learn with hands-on practice." (Bamboo craft SME actor)

"It is difficult to prepare sustainability reports because we are not used to recording production data." (Small business owner)
"Young people understand ESG more quickly because they are familiar with social media." (Local youth leader)
"Sometimes I am confused, does ESG focus only on the environment or also on workers' rights?" (Home industry actor)

The interpretation of these findings indicates that the success of ESG transformation is greatly influenced by the level of literacy and the capacity of local human resources. The lack of basic understanding makes internalizing ESG policies into daily practices difficult, especially without repeated training and real-life examples. Generational gaps also need to be managed with different training approaches, such as leveraging the role of young people as digital mentors and change facilitators. This emphasizes the need for a continuous learning strategy based on the community's real needs, rather than just a one-time socialization, so ESG principles are truly integrated into the local industrial culture.

Theme 5: Multi-actor Collaboration Strategies

Multi-actor collaboration strategies are a key element in the successful implementation of ESG in local industries in Bone Regency. Research findings show that various parties, ranging from village governments, relevant agencies, students, village-owned enterprises (BUMDes), to large companies through corporate social responsibility (CSR) programs, play an active role in supporting the transformation of local industries towards sustainable practices. This collaboration is manifested through technical support, such as designing environmentally friendly packaging, facilitating ESG certification, and providing sales facilities for recycled products. Additionally, village governments have initiated competition-based activities, such as eco-friendly product contests, to boost community motivation. The presence of these actors demonstrates that ESG implementation cannot be achieved by individual businesses alone but requires a collaborative ecosystem capable of connecting resources, knowledge, and cross-sectoral market networks. This is illustrated in the following interview excerpts:

"KKN students assist us in designing environmentally friendly packaging." (Local food business actor)
"The agency often acts as our liaison to ESG certification bodies." (Fish industry owner)
"BUMDes cooperation is important; they facilitate the sale of our products." (Metal SME actor)
"Large companies' CSR programs in Bone help provide recycling equipment." (Community leader)
"The village government facilitates eco-friendly product competitions to motivate residents." (Village official)

The interpretation of these findings indicates that the collaboration model formed in Bone has created synergy between public, private, and community actors in implementing ESG principles. Students act as catalysts for innovation, the government acts as regulator and facilitator, and the private sector provides resource support through CSR. This collaboration not only enhances the technical capacity of business actors but also expands marketing networks and access to sustainability certification. However, the success of this collaboration depends on ongoing coordination between actors, requiring formal mechanisms such as multi-stakeholder forums to ensure the sustainability of this synergy in the long term.

Theme 6: Social Innovation and Product Diversification

Social innovation and product diversification are tangible impacts of applying ESG principles in local industries in Bone Regency. This transformation is evident in the community's creativity in processing waste into value-added products, expanding markets, and enhancing consumer appeal. Traditional products like bamboo weaving are modified with eco-friendly designs, while organic waste such as chicken and fish skin is processed into high-value crackers. Meanwhile, initiatives by young people leveraging social media to promote eco-friendly products further expand market reach. Diversification is also evident in packaging strategies, such as creating organic product hampers that are popular during certain occasions like Eid al-Fitr, and developing

educational workshops that attract tourists to learn directly about the recycling process. These practices demonstrate that an ESG-based circular economy impacts production efficiency and gives rise to new business models rooted in community creativity. These findings are reflected in the following statements from informants:

"Bamboo woven products now have eco-friendly motifs, and the market has increased." (Bamboo craftsman)

"We turn chicken and fish scraps into crackers instead of throwing them away." (Fish business owner)

"Young people are creating small startups to promote environmentally friendly products via Instagram." (Youth leader)

"Our organic products are packaged into hampers, which sell well during Eid." (Food MSME actor)

"We have developed educational workshops for tourists on the recycling process." (Community facilitator)

Interpretation of these findings indicates that implementing ESG encourages social innovation that can turn challenges into economic opportunities. Creativity in utilizing waste and packaging it into marketable products strengthens business sustainability and enhances local industries' competitiveness in a market increasingly valuing environmentally friendly products. Youth involvement in building digital startups and developing educational workshops demonstrates that ESG transformation can foster a new entrepreneurial ecosystem that integrates local cultural values, sustainability, and technological innovation.

Discussion

The results of this study show significant transformations in local industries in Bone Regency after implementing Environmental, Social, and Governance (ESG) principles. In general, these findings reveal dynamics of change at the operational level, social perceptions, resource capacity, and collaboration patterns, which ultimately gave rise to social innovation and product diversification. This discussion aims to contextualize these findings by comparing them with existing literature and sustainability theory. It also explores their practical implications for the competitiveness of local industries and public policy.

One of the key findings of this study is the increased operational efficiency and market access thanks to the adoption of simple ESG-based technologies. Energy-saving practices through solar panels, waste management into briquettes, and water recycling systems illustrate concrete steps toward resource optimization. Previous studies by Kandpal et al. (2024) and Velenturf & Purnell (2021) confirm that circular economy principles within ESG can reduce operational costs while increasing product value. The findings of this study align with these previous findings.

Still, the context of Bone reveals a unique adaptation: the use of simple technology due to capital and infrastructure constraints, yet still capable of creating significant cost-saving impacts. This phenomenon enriches the literature, which often focuses on large industries with substantial capital (Cheng et al., 2020; Handayani, 2019), by showing that small industries can also achieve efficiency through contextual, locally-based innovation. This operational transformation also impacts market access expansion, particularly the entry of local products into the national marketplace thanks to eco-friendly labels.

These findings align with research by Hakim & Fuad (2021), which states that modern consumers increasingly prioritize products with sustainability labels (eco-friendly) over price alone. This shift provides a new competitive advantage for the Bone industry, where product imagery is no longer solely traditional but also incorporates sustainability value differentiation that the market values. However, this initial success still faces consistency challenges; ESG literature reminds us that brand sustainability must be backed by actual practices and regular audits to avoid the phenomenon of "greenwashing" (Patil et al., 2021; Purnomo et al., 2025). Therefore, managerial support and sustainable certification systems are crucial to maintaining market trust in the long term.

Another significant impact is the shift in perception and image of the local industry. Before ESG implementation, many businesses in Bone were perceived as traditional, with product quality

that did not meet modern expectations. After the program was implemented, this image changed: local products began to be regarded as equivalent to those from major cities, even becoming a source of pride for the community. This transformation in perception aligns with institutional legitimacy theory, where organizations gain social acceptance when their values and practices align with widely recognized norms (Ng et al., 2020; Sul & Lee, 2020). The ESG label is a technical marker and a social symbol that enhances consumer trust and community pride. This phenomenon also encourages the participation of younger generations, who are more interested in working in businesses with social and sustainability values, supporting previous findings that sustainability values are an important motivational factor for young workers (Kunkel & Matthess, 2020). However, this positive euphoria does not mask the fundamental challenges, particularly regarding infrastructure and technological limitations.

The lack of waste processing facilities, the high cost of energy-efficient equipment, and the absence of emission measurement tools are serious obstacles to meeting increasingly complex ESG standards. These findings align with the study by Daugaard (2020), which noted that infrastructure gaps are one of the main barriers to implementing a circular economy in developing countries. The case of Bone highlights the reality of the gap between national policies that demand high ESG standards and limited local capacity. Partial solutions such as using village land for waste processing demonstrate community-based innovation, but are insufficient to meet the demands of modern markets that require measurable ESG reporting. Intervention from local and central governments is needed through technology subsidies, shared processing facilities, and environmentally friendly technology incubation programs that are accessible to small industries collectively.

In addition to physical limitations, this study found serious literacy and human resource capacity challenges. The lack of basic understanding of ESG, even of the terminology, means that policy implementation is often superficial and not internalized in daily practice. This confirms the findings of Bidoia (2024), who stated that low sustainability literacy is a significant barrier in the small and medium-sized enterprise sector. This study also highlights a generational gap: young people adapt more quickly because they are familiar with digital technology, while older business owners require a practice-based learning approach. A sustainable mentoring strategy, rather than a one-off socialization program, is key to the success of this cultural transformation. A peer-to-peer mentoring approach involving young people as digital facilitators could be an innovation that accelerates knowledge transfer while reducing resistance from the older generation.

The multi-actor collaboration dimension is one of the essential highlights of this study's findings. Through CSR programs, support from village governments, relevant agencies, village-owned enterprises, community service students, and large companies demonstrates a unique collaborative ecosystem. This collaboration illustrates the application of the quadruple helix innovation concept (Sachs et al., 2019), in which sustainable innovation arises from the interaction of four actors: government, academia, the private sector, and the community. Previous studies by Wondirad et al. (2021) have emphasized the importance of a multi-actor approach in sustainable tourism; this research expands that concept to the local industry sector, showing that similar principles apply in the ESG context. The challenge lies in building long-term coordination; incidental collaborations risk weakening if not formalized through multi-stakeholder forums or sustainable public-community partnerships.

The most inspiring findings from this study are the emergence of social innovation and product diversification. Waste previously discarded is now processed into crackers, bamboo weaving is modified into eco-friendly products, and organic products are packaged as high-value hampers. Beyond just products, these innovations demonstrate the community's creativity in responding to market demands while strengthening local cultural identity. This phenomenon supports the social innovation theory (Diana, 2024), which emphasizes community-based creative solutions to address socio-economic challenges. Young people are essential in these innovations, including forming Instagram-based startups that promote environmentally friendly products. This demonstrates a unique synergy between traditional values and digital innovation, which is rarely explored in ESG literature that focuses more on large corporations and capital markets (Bahadori

et al., 2021). If analyzed holistically, the findings of this study reveal a bottom-up ESG transformation pathway in Bone.

Initiatives start from the community and are strengthened by local policy support and external collaboration. This differs from many ESG studies in developing countries, which tend to be top-down through national regulations (Nareswari et al., 2023a). This bottom-up approach shows higher sustainability potential because it is rooted in local needs and values, even though it takes longer to achieve formal standards. Within the theoretical framework of sustainable livelihoods (Kluza et al., 2021), these findings demonstrate how social capital (community networks), human capital (youth capacity), and natural capital (local resources) interact to create adaptive sustainability strategies.

The practical implications of this research are far-reaching. First, for local governments, the results highlight the need for supportive policies that provide shared infrastructure, subsidies for environmentally friendly technology, and affordable ESG certification programs for small industries. Second, the findings open opportunities for the private sector to strengthen CSR programs based on collaboration with communities, rather than merely donating equipment, providing long-term mentoring, and access to market networks. Third, for academics and educational institutions, the results of this study underscore the importance of the role of students and applied research in connecting academic knowledge with the practical needs of local industries. Fourth, for local communities, these findings prove that social innovation and creativity can be essential assets in building sustainable competitiveness without losing cultural identity.

Theoretically, this research enriches ESG literature by introducing the perspective of rural communities, which has received little attention. Previous studies have focused on large corporations and global market dynamics, while this study shows how ESG principles can be adapted to different local contexts, with unique challenges and opportunities. This study also integrates ESG concepts with social innovation theory and the quadruple helix, showing that the sustainability of local industries is not only a technical or economic issue, but also a social and cultural one.

This study emphasizes that the transformation of local industries through ESG in Bone Regency is a complex process involving a change in mindset, technological adaptation, strengthening of human resource capacity, and multi-actor collaboration. The initial successes seen through increased efficiency, image change, and product innovation demonstrate outstanding potential for replication in other rural areas in Indonesia. However, the sustainability of this process heavily depends on the ability of all stakeholders to maintain synergy, address infrastructure gaps, and ensure that sustainability values are truly integrated into the local industrial culture, not merely as a temporary market demand but as a long-term business paradigm.

CONCLUSION

This study highlights how applying Environmental, Social, and Governance (ESG) principles can drive significant transformation in local industries in Bone Regency, South Sulawesi. The research findings reveal six key aspects: improved operational efficiency and market access; changes in perceptions and the image of the local industry; infrastructure and technological limitations; low literacy and human resource capacity; multi-stakeholder collaboration strategies; and the emergence of social innovation and product diversification. The integration of ESG principles generates production efficiency and new market opportunities, sparks community pride, strengthens social networks, and inspires local creativity in managing waste into value-added products. However, the sustainability of this process still faces challenges such as limited facilities, sustainability literacy gaps, and the need for coordination among stakeholders. Overall, the findings demonstrate that ESG implementation functions not only as a technical tool for efficiency but also as a social and cultural driver of rural industrial transformation.

Theoretically, this research contributes by extending ESG literature into rural industrial contexts, showing how small-scale industries adapt ESG principles under resource constraints. It integrates ESG with social innovation theory and the quadruple helix model, providing a framework for understanding community-based sustainability transformation. Practically, the

study offers evidence-based insights for policymakers, emphasizing the need for supportive regulations, affordable certification schemes, shared infrastructure, and continuous capacity-building programs tailored to rural industries.

This study has several limitations that are important to note. First, the scope of the study is limited to one district, so the results cannot be generalized to all local industrial contexts in Indonesia. Second, the qualitative design provides depth of understanding but not quantitative data on the scale of economic impact or waste reduction achieved. Third, the study was conducted in a relatively short period after the ESG program's implementation, so it could not capture long-term dynamics, including the sustainability of initiatives and resistance that may emerge over time. Fourth, the perspective of external consumers (e.g., consumers in large cities or export markets) was not accommodated, even though their views are essential for understanding the competitiveness of sustainable products in broader markets. These limitations suggest that while the study provides strong contextual insights, its conclusions should be seen as exploratory and transferable rather than universally generalizable.

Further research is recommended to expand the scope to other regions with different industrial characteristics to enable cross-context comparisons. A mixed methods approach can combine qualitative and quantitative analysis to measure economic, social, and environmental impacts accurately. A more in-depth study of consumer preferences and market supply chains is also needed to understand more effective marketing strategies for sustainable products. Additionally, exploring the role of digital technology, such as e-commerce platforms and ESG reporting systems based on applications, could be a new focus to support the adoption of sustainability in small industries. Future studies should also investigate multi-level governance models to analyze how village, district, and national policies can be integrated to strengthen ESG adoption in rural industrial ecosystems. By doing so, subsequent research can refine conceptual frameworks while generating practical policy recommendations for scaling ESG in Indonesia's diverse industrial landscapes.

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