

Original Article

Barriers and Opportunities for Green Entrepreneurship in Emerging Economies: A Case Study of Kilolo District, Tanzania

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Abstract - This study examined the barriers and opportunities for green entrepreneurship in emerging economies, focusing on Kilolo District, Tanzania. Green entrepreneurship, which emphasizes sustainable business practices, is increasingly seen as a vital component of both economic development and environmental conservation. Despite the potential benefits, several challenges hinder the growth of green enterprises in Kilolo, including limited access to finance, inadequate infrastructure, insufficient technical knowledge, regulatory barriers, and low levels of environmental awareness. Using a mixed-methods approach, this study surveyed 80 green entrepreneurs in the district and interviewed key stakeholders, including government officials, NGO managers, and financial institution leaders. The findings revealed that while 37.5% of entrepreneurs practiced organic farming and 25% utilized renewable energy sources, the majority faced significant obstacles. Many entrepreneurs relied on personal savings (50%) and had limited access to loans (25%). The study also identified gaps in technical training and regulatory support, with 62.5% of entrepreneurs reporting limited technical knowledge and 50% facing regulatory challenges. Moreover, environmental awareness was low, with 56.25% of respondents unaware of the environmental impact of their business activities. Despite these barriers, there were notable opportunities for growth, particularly through enhanced access to finance, infrastructure development, capacity-building programs, and policy reforms. The study concluded that addressing these challenges through targeted interventions could significantly promote green entrepreneurship in Kilolo District, contributing to both sustainable development and economic growth. The findings affect policymakers, financial institutions, and development organizations fostering green entrepreneurship in emerging economies.

Keywords - Green Entrepreneurship, Sustainable development, Environmental awareness, Green business, Environmental conservation, Rural entrepreneurship.

1. Introduction

Green entrepreneurship, which merges environmental sustainability with business ventures, has gained significant attention in emerging economies as a pathway to sustainable development. Green entrepreneurship provides environmental conservation and economic growth opportunities in Tanzania, where agriculture and natural resources are central to economic activity. However, these companies confront several difficulties, particularly in rural areas where structural and socioeconomic barriers impede their growth. Kilolo District in the Iringa Region presents a compelling case for examining the potential and constraints of green entrepreneurship. With its rich biodiversity, fertile land, and water resources, the district holds significant opportunities for green businesses in organic farming, eco-tourism, and renewable energy. However, local entrepreneurs often face challenges such as limited access to finance,

inadequate infrastructure, and insufficient technical knowledge. Moreover, the absence of supportive policies and complex regulatory requirements further hinder their growth. Despite these barriers, efforts by local communities, non-governmental organizations, and government initiatives have started to create a more conducive environment for green entrepreneurship. This study examined the socio-economic and institutional factors influencing green enterprise development in Kilolo District, aiming to identify strategies for overcoming challenges and leveraging opportunities to promote sustainable economic growth. Green entrepreneurship has emerged as a critical driver of sustainable development, aligning economic activities with environmental conservation [1]. This concept involves business ventures that reduce environmental degradation while generating economic value, often through eco-friendly technologies and sustainable consumption patterns [2]. The



rise of green entrepreneurship globally has been fueled by increasing environmental awareness, advancements in green technologies, and regulatory pressures to mitigate climate change [3]. Green entrepreneurs focus on producing environmentally friendly products and services, responding to growing consumer demand for sustainable options [4]. While the concept is still in its early stages, it is gaining momentum as businesses recognize the importance of integrating sustainability into their operations [2]. Green entrepreneurship presents opportunities and challenges, with successful ventures emerging in various countries, including India, where government initiatives and changing consumer preferences drive growth [4].

The transition to a green economy is crucial for sustainable development, with developed economies in Europe and North America leading the way through robust policies and financial incentives [5]. The European Union has been at the forefront of this transition, implementing strategies like the European Green Deal, which aims for carbon neutrality by 2050 [6]. This ambitious goal presents challenges and opportunities for industrial companies, requiring significant investments in new technologies and clean energy [7]. The EU has allocated substantial budgets to support green investments, including during the 2008 financial crisis, and set targets for reducing greenhouse gas emissions by at least 40% by 2030 compared to 1990 levels [6]. These policies foster sustainable development and create ecologically friendly human settlements, recognizing climate change's long-term effects on world economics and environmental pollution [8].

Entrepreneurship in Africa presents both opportunities and challenges. While the continent's vast natural resources and growing population offer potential for green entrepreneurship [9], several barriers hinder its widespread adoption. These include inadequate access to financial capital, limited infrastructure, weak policy frameworks, and lack of technical expertise [10, 11]. The informal nature of many African economies poses additional challenges, as small-scale entrepreneurs often operate outside formal systems [12]. Despite these obstacles, some countries recognize the role of the green economy in sustainable development [9]. To overcome these challenges, strengthening public institutions, prioritizing policy frameworks, mainstreaming private sector involvement, closing capacity gaps, and creating public awareness are recommended [9]. Additionally, addressing infrastructure deficiencies, improving access to financing, and simplifying regulatory complexities are crucial for fostering entrepreneurial growth in Africa [12]. Several African countries, notably South Africa and Kenya, have made significant progress in green entrepreneurship, driven by supportive policies and investments. South Africa's Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) has attracted over USD

20 billion in private investment, procuring 6,328 MW of renewable energy capacity [13]. This program has been recognized as a model for public-private partnerships in the renewable sector [14]. In addition, the South African government has established various policies and institutions to foster green entrepreneurship, which has opened new business opportunities in areas like recycling and energy efficiency [15, 16]. However, challenges such as access to funding and knowledge persist, highlighting the need for continued government and private sector support to sustain these initiatives [15]. These examples emphasize the critical role of policy support and infrastructure in advancing green entrepreneurship in Africa.

Tanzania is trying to transition towards a green economy as a pathway to sustainable development, particularly in rural areas [17]. While the country lacks a specific national policy on green economy, various initiatives and actions have been implemented to support this transition [17]. Challenges to climate change adaptation and sustainable development in rural Tanzania include poverty, rapid population growth, and high illiteracy rates [18]. Fishery policies like Beach Management Units have positively affected Lake Victoria's sustainability of economically important fish species [19]. However, implementing green economy initiatives, like the Southern Agricultural Growth Corridor of Tanzania (SAGCOT), has led to land-use conflicts and pastoral evictions, particularly in the Kilombero valley [20]. These conflicts are often legitimized through degradation narratives, which may themselves be drivers of conflict [20].

The country's commitment to reducing greenhouse gas emissions by 30-35% by 2030 emphasizes the importance of renewable energy in climate change mitigation [21]. Renewable energy sources have the potential to contribute significantly to sustainable development and emissions reduction in Tanzania [22]. However, challenges in renewable energy development persist. To address these issues, entrepreneurship education has been identified as a proactive approach to fostering green entrepreneurial intentions among students [23]. The study discovered that entrepreneurship education benefited green entrepreneurial goals by increasing green entrepreneurial self-efficacy and environmental awareness. These findings are significant for policymakers and educators looking to improve entrepreneurial programs focusing on green ventures that would help Tanzania achieve its sustainable development goals. Small and Medium Enterprises (SMEs) in Tanzania face numerous challenges that impede their growth and development. Access to finance remains a significant barrier, particularly for rural entrepreneurs lacking collateral [24-26]. Inadequate infrastructure, especially in remote areas, limits market access and technological adoption [24, 26]. The regulatory environment poses difficulties, with complex licensing and compliance requirements hindering SME growth [24, 26]. Limited business training and

entrepreneurial knowledge further constrain SME development [25, 26]. Corruption, poor technology, and competition from cheap imports also challenge entrepreneurs [27]. Despite some positive factors, such as improved banking systems and strong family ties, the overall business environment in Tanzania remains complex and often inhibitive for SMEs and graduate entrepreneurs [24, 27].

The papers highlight challenges and opportunities for green entrepreneurship in rural Tanzania, including Kilolo District. Limited access to finance, inadequate infrastructure, and lack of business training are key barriers to enterprise growth [28, 29]. However, the region's rich natural resources offer potential for sustainable sectors like organic agriculture and renewable energy [30, 31]. Voluntary Financial Saving Groups (VFSGs) show promise in promoting rural entrepreneurship but face challenges such as small loan amounts and high dropout rates [29]. The organic agriculture sector in Tanzania has significant export potential, though government support has been limited [31]. Despite these challenges, several stakeholders, including non-governmental organizations, government agencies, and community-based organizations, have launched initiatives to foster green entrepreneurship in Kilolo. For example, projects encouraging organic farming and sustainable forestry methods have been undertaken to increase environmental conservation and livelihoods. Partnerships with international organizations have also aided in introducing renewable energy technology, like solar electricity, into rural communities. These efforts have shown that green entrepreneurship can contribute to long-term economic growth and environmental conservation in the Kilolo District.

While global and regional studies have highlighted the potential of green enterprises in fostering sustainable development, few have focused on the localized challenges and opportunities in rural districts such as Kilolo. Existing literature primarily addresses urban-centered initiatives or broader policy frameworks, neglecting the socio-economic and institutional barriers rural entrepreneurs face. This study addresses this gap by examining the distinct factors influencing green entrepreneurship in Kilolo District, providing context specific insights for fostering sustainable rural enterprises. Therefore, this study explores the barriers and opportunities for green entrepreneurship in Kilolo District, focusing on identifying strategies to overcome challenges and leverage the district's natural resources for sustainable development. By examining the local context within the broader regional and global perspectives, the research seeks to understand how emerging economies like Tanzania can foster green entrepreneurship as a pathway to sustainable economic growth and environmental resilience. This study is significant as it provides critical visions into the potential of green entrepreneurship to promote sustainable development in rural areas, particularly in developing

economies. By identifying the socio-economic and institutional barriers faced by green entrepreneurs, the research offers a comprehensive understanding of the challenges limiting the growth of sustainable businesses in emerging economies. It also shows the importance of financial access, infrastructure development, and technical support in fostering green enterprises. Additionally, the study emphasizes the role of government policies, non-governmental organizations, and community-based initiatives in creating an enabling environment for green entrepreneurship. The findings contribute to the knowledge of sustainable rural development and offer practical recommendations for policymakers, development practitioners, and local entrepreneurs. Ultimately, the study aims to support efforts to enhance environmental conservation, generate economic opportunities, and improve livelihoods in rural communities by promoting a green business model.

2. Methodology

This study employed a mixed-methods approach, combining qualitative and quantitative research techniques to investigate the barriers and opportunities for green entrepreneurship in Kilolo District, Tanzania. The research targeted 80 respondents, selected from various stakeholder groups, including green entrepreneurs, local government officials, Non-Governmental Organizations (NGOs), financial institutions, and community leaders involved in environmental conservation and business development. The research was conducted in Kilolo District, located in the Iringa Region of Tanzania, a rural area with significant potential for green entrepreneurship in organic farming, eco-tourism, and renewable energy sectors.

2.1. Study Area and Sampling Technique

A purposive sampling method was used to select 50 green entrepreneurs operating in Kilolo District, ensuring representation from different sectors. Additionally, 30 respondents were selected from government agencies, NGOs, and financial institutions based on their roles in supporting or regulating green enterprises.

2.2. Data Collection Methods

Structured questionnaires were administered to 50 green entrepreneurs to gather quantitative data on their socio-economic backgrounds, business challenges, access to resources, and perceptions of government policies. Semi-structured interviews were conducted with 30 key informants from local governments, NGOs, and financial institutions to collect qualitative data on institutional support, policy implementation, and potential strategies for promoting green entrepreneurship. Two focus group discussions were held with selected entrepreneurs to gain deeper insights into their experiences, challenges, and recommendations for enhancing green business development.

Table 1. Results on entrepreneurs' access to finance

Indicator	Sub-Indicator	N/Resp	(%)
Access to Finance	Access to loans	20	25
	Denied loans	30	37
	Personal savings	40	50
	Receiving grants	10	12
	Microfinance	15	18

2.3. Data Analysis

Quantitative survey data were analyzed using descriptive statistics to identify trends and patterns related to barriers and resource availability. Qualitative data from interviews and FGDs were analyzed thematically, identifying key themes related to institutional support, policy impacts, and potential strategies for promoting green entrepreneurship.

3. Results and Discussion

In this section, the results and discussion of the findings are presented and discussed with the support of some quotations from respondents. The main indicating factors in the form of access to finance, infrastructure availability, technical knowledge and skills, policy and regulatory environments and environmental awareness, together with their relevant sub-indicators, are critically discussed, and the results presented.

3.1. Access to Finance

Access to finance was pivotal in determining the success and sustainability of green entrepreneurship in Kilolo District, Tanzania. The results in Table 1 revealed that only 25% of the surveyed entrepreneurs had access to formal loans, indicating a significant financial gap for green businesses. Many respondents attributed this limited access to stringent collateral requirements, high interest rates, and lengthy approval processes. One entrepreneur noted:

"Securing a loan from the bank is nearly impossible without substantial collateral. Most of us rely on small-scale operations that do not meet these requirements."

This opinion shows rural entrepreneurs' structural challenges when seeking financial support from conventional banking institutions. Conversely, 37.5% of respondents reported being denied loans, reflecting a broader trend of financial exclusion in the district. Entrepreneurs whom formal financial institutions rejected expressed frustration over the lack of tailored financial products for green businesses. One respondent stated:

"The bank officials do not understand the nature of green enterprises. They often see them as risky and unprofitable."

This perception of riskiness among financial providers limited the ability of green entrepreneurs to scale their businesses and invest in environmentally friendly

technologies. Given these challenges, 50% of the respondents reported relying on personal savings as their primary source of capital. This heavy reliance on personal funds limited their capacity to expand operations or invest in innovative green solutions. Entrepreneurs noted that personal savings, while essential for startup phases, were often insufficient for long-term growth. One participant explained:

"I started my organic farming business with my savings, but expanding requires more capital than I can generate on my own."

This reliance on personal funds emphasized the vulnerability of green businesses to financial instability and external shocks. Only a small proportion of entrepreneurs, approximately 12.5%, received grants from government programs, non-governmental organizations, or international development partners. These grants were often project-based and short-term, providing limited support for sustainable business growth. Beneficiaries acknowledged the importance of such grants but emphasized the need for more consistent and long-term funding.

"The grant helped us purchase solar panels for our business, but ongoing maintenance and expansion require continuous funding," remarked one grant recipient.

Microfinance Institutions (MFIs) played a modest role in supporting green entrepreneurship, with 18.75% of respondents accessing financial services from these institutions. MFIs offered more flexible loan products and lower collateral requirements than traditional banks, making them an attractive option for some entrepreneurs. However, the limited scale of microfinance loans often constrained the ability of green businesses to commence large-scale projects. One entrepreneur shared:

"Microfinance helped me start my biogas tree plantation, but the loan amount was too small to cover all needed operational costs."

Despite these limitations, MFIs were perceived as a critical alternative for financing green enterprises, especially in rural areas where traditional banks had limited presence.

Overall, the findings show that access to finance remained a significant barrier to green entrepreneurship in Kilolo District. The lack of tailored financial products, limited availability of grants, and the reliance on personal savings constrained the growth and sustainability of green businesses. Addressing these financial challenges would require a complex approach, including developing specialized loan products for green enterprises, increased investment in microfinance institutions, and establishing long-term grant programs to support environmentally sustainable businesses.

Table 2. Results on entrepreneurs' access to infrastructure

Indicator	Sub-Indicator	N/Resp	(%)
Infrastructure	reliable electricity	30	37.50
	unreliable electricity	35	43.75
	Good road networks	28	35
	transportation challenges	52	65

3.2. Infrastructure Availability

Infrastructure availability significantly influenced the development of green entrepreneurship in Kilolo District, with the quality of electricity supply and transportation networks playing a critical role in shaping green enterprises' operational efficiency and growth potential. As shown in Table 2, the study results revealed that only 37.5% of the entrepreneurs had access to reliable electricity, which limited their ability to implement energy-dependent technologies essential for green business operations. Entrepreneurs with consistent electricity supply reported greater operational stability, enabling them to adopt renewable energy solutions such as solar-powered irrigation systems and biogas production. One entrepreneur at Mawambara farm explained:

“With consistent power, we have maintained cold storage for our organic produce, reducing post-harvest losses and increasing profitability.”

However, this group represented a minority, indicating the district's uneven distribution of reliable energy infrastructure. In contrast, 43.75% of respondents faced challenges due to unreliable electricity, which disrupted business operations and hindered the adoption of innovative green technologies. Frequent power outages increased operational costs as entrepreneurs were forced to rely on costly alternatives such as diesel generators. One respondent noted:

“The power supply is so inconsistent that we spend more on fuel for generators than on actual business investments.”

This financial strain limited the ability of green entrepreneurs to scale their operations and diminished their competitive advantage in the market. Moreover, the dependence on non-renewable backup energy sources contradicted the environmental objectives of green enterprises, creating a contradiction that many entrepreneurs struggled to reconcile. The study also shows the critical role of transportation infrastructure, with only 35% of entrepreneurs having access to good road networks. These entrepreneurs benefitted from reduced transportation costs, timely delivery of goods to markets, and improved access to raw materials and inputs. One participant emphasized:

“Good roads have allowed us to reach new markets in nearby towns, increasing our customer base and revenue.”

For these entrepreneurs, the availability of quality road networks facilitated business expansion and integration into

broader supply chains, enhancing their economic viability. However, approximately 65% of respondents faced significant transportation challenges due to poor road conditions. These entrepreneurs reported frequent delays in delivering products to markets, particularly during the rainy season when roads became impassable. This limited their ability to meet market demand and often resulted in losses due to spoilage of perishable goods. One entrepreneur shared:

“During the rainy season, it can take days to transport goods that would normally take a few hours. This affects both our income and customer satisfaction.”

The lack of reliable transportation infrastructure also restricted access to essential business services, such as supply chains, technical support, and market information, further limiting the growth potential of green enterprises. The findings indicated that inadequate infrastructure, particularly unreliable electricity and poor road networks, remained significant barriers to green entrepreneurship in Kilolo District. Addressing these challenges would require targeted investments in rural infrastructure development, including expanding renewable energy systems and improving road networks. Such investments would enhance the operational efficiency of green businesses and create a more conducive environment for sustainable economic growth and environmental conservation in the region.

3.3. Technical Knowledge and Skills

In Figure 1, the study results revealed that only 22.5% of entrepreneurs had formal training in green business practices, significantly enhancing their ability to adopt innovative and environmentally sustainable technologies. These entrepreneurs reported a higher capacity to implement green production techniques, optimize resource utilization, and comply with environmental regulations. One entrepreneur explained:

“The training I received on organic farming techniques allowed me to increase productivity while preserving soil quality and reducing chemical inputs.”

Such formal education equipped them with the technical expertise to compete effectively in local and regional markets. However, approximately 56.25% of most respondents relied on traditional knowledge to manage their businesses. While this indigenous knowledge provided a valuable understanding of local environmental conditions and resource management, it often lacked the technological superiority required to scale green enterprises or meet modern market demands. Entrepreneurs relying solely on traditional practices faced challenges in adopting advanced renewable energy technologies, waste management systems, and sustainable agricultural methods. One respondent during FGD noted:

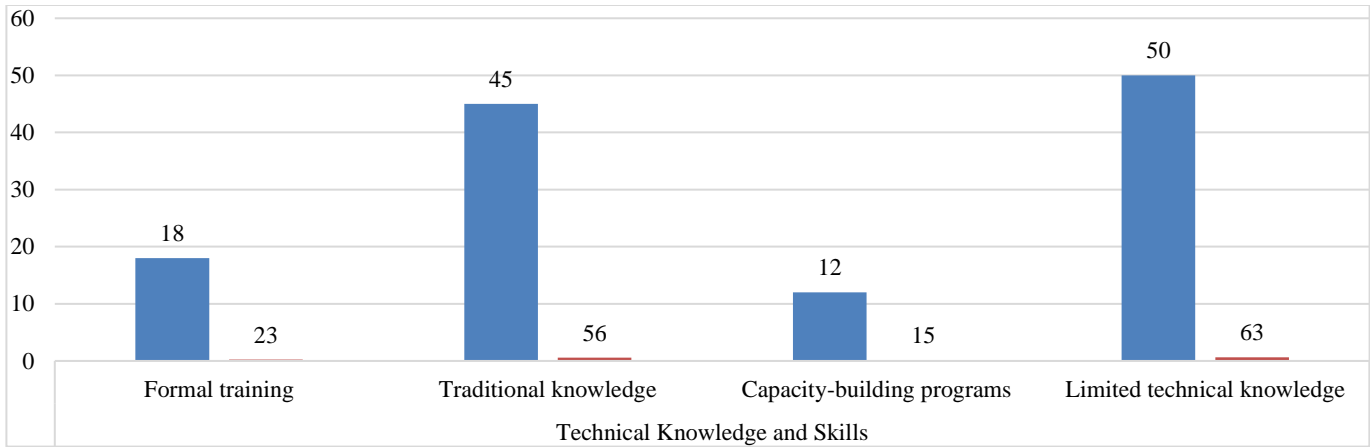


Fig. 1 Entrepreneurs technical knowledge and skills

“We have been farming the same way for generations, but it is becoming harder to meet the market’s demands without new techniques.”

This reliance on traditional methods limited their ability to innovate and constrained the growth potential of their businesses. Participation in capacity-building programs was relatively low, with only 15% of respondents reporting involvement in such initiatives. These programs, often organized by Non-Governmental Organizations (NGOs) and government agencies, provided entrepreneurs with training on sustainable business practices, financial management, and market access strategies. Participants in these programs expressed appreciation for the knowledge gained, showing its impact on improving their business operations. One entrepreneur remarked:

“The capacity-building program taught me how to reduce waste in my production process, which has helped me cut costs and attract more environmentally conscious customers.”

Despite these positive outcomes, the limited reach of such programs meant that many entrepreneurs in the district remained unaware of or unable to access these opportunities. A significant finding of the study was that 62.5% of entrepreneurs reported limited technical knowledge, which posed a substantial barrier to the growth of green enterprises. This lack of expertise hindered their ability to adopt new technologies, optimize production processes, and meet the quality standards required by modern markets. Entrepreneurs with limited technical knowledge often struggle to differentiate their products from conventional alternatives, making it difficult to attract environmentally conscious consumers. One respondent highlighted this challenge, stating:

“I know there is a growing market for eco-friendly products, but I do not have the skills or resources to meet those standards.”

The gap in technical knowledge also affected their ability to access financial support, as many financial institutions required detailed business plans and projections that these entrepreneurs could not provide. Generally, the findings show the critical need for increased investment in education and training programs tailored to the needs of green entrepreneurs.

Enhancing technical knowledge and skills would enable entrepreneurs in Kilolo District to adopt innovative solutions, improve operational efficiency, and expand their market reach. Addressing this gap would require collaborative efforts from government agencies, educational institutions, and development partners to design and implement targeted capacity-building initiatives that empower green entrepreneurs with the skills necessary for sustainable growth and environmental stewardship.

3.4. Policy and Regulatory Environment

The policy and regulatory environment played a pivotal role in shaping the success and challenges green entrepreneurs face. However, the study results in Figure 2 revealed a mixed scenery where awareness, support, and bureaucratic barriers often defined the experience of many entrepreneurs. Only 31.25% of the respondents were aware of green entrepreneurship policies, suggesting a significant information gap.

Entrepreneurs who knew these policies managed to align their operations with government sustainability initiatives and accessed available incentives. One government official from the Kilolo District Council noted:

“We have established programs to support green enterprises, but many entrepreneurs remain unaware of them, limiting their participation in sustainable development.”

This statement emphasized the need for better communication and outreach from government institutions.

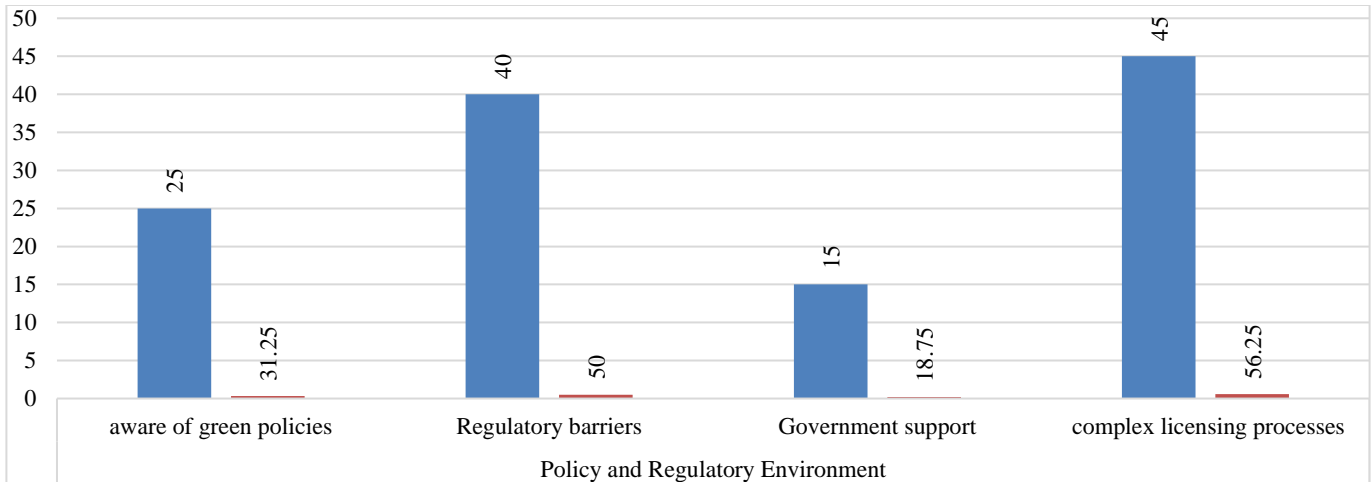


Fig. 2 Results on policy and regulatory framework

Despite supportive policies, 50% of the respondents highlighted regulatory barriers as a significant obstacle to their growth. These barriers often included high taxes, complex compliance requirements, and a lack of clarity on environmental regulations. A local leader emphasized the community's struggles, stating:

“Many small businesses in Kilolo fail to comply with environmental laws not because they do not want to, but because the requirements are too complicated and costly.”

This complexity discouraged new green entrepreneurs from entering the formal economy and forced some existing ones to operate informally, thus limiting their access to formal markets and financial support. Only 18.75% of the respondents reported government support for green entrepreneurship, suggesting government programs' limited reach and impact. Entrepreneurs who benefited from this support often received grants, training, or technical assistance that enabled them to scale their operations. One NGO manager working on sustainability initiatives in the district commented:

“The government’s support for renewable energy projects has been helpful, but the resources are limited, and only a few entrepreneurs can benefit.”

Financial institutions also played a role in supporting green businesses, though their engagement remained minimal. A representative from a local microfinance institution explained:

“We are willing to provide loans to green entrepreneurs, but many of them lack the necessary documentation and business plans, making it difficult to assess their creditworthiness.”

However, a significant challenge for 56.25% of the entrepreneurs was the unclear and complex licensing process

required to start and operate a green business. The licensing procedures were often described as time-consuming, costly, and opaque, deterring many from formalizing their enterprises. One frustrated entrepreneur shared:

“I spent months trying to get a license for my organic farming business. Whenever I thought I had completed the process, another requirement would come up.”

This sentiment was echoed by a financial institution manager, who noted:

“The regulatory framework needs to be simplified if we are to support more green entrepreneurs in accessing formal financial services.”

Local leaders also highlighted the need for collaboration between government institutions, NGOs, and financial bodies to create a more enabling environment for green entrepreneurship. One community leader during FGD remarked:

“If we want to see more green businesses thrive, we must simplify the regulatory framework and provide more training and financial support.”

Similarly, an NGO manager called for more targeted interventions, stating:

“Capacity-building programs, combined with a streamlined regulatory process, can significantly improve the growth of green enterprises in rural areas like Kilolo.”

Therefore, while policies aimed at supporting green entrepreneurship exist in Kilolo District, their implementation faces significant challenges due to low awareness, regulatory complexity, and limited government support.

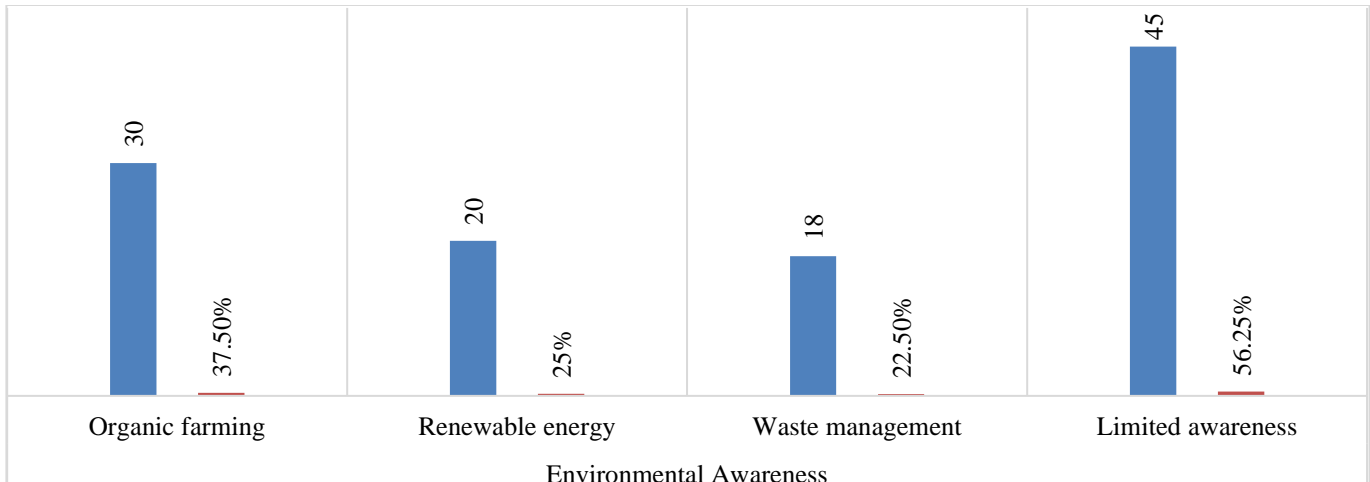


Fig. 3 Entrepreneurs' environmental awareness

Addressing these barriers through enhanced communication, simplified licensing processes, and increased collaboration between stakeholders could foster a more supportive environment for green entrepreneurs, thereby contributing to sustainable economic development in the region.

3.5. Environmental Awareness

The study results in Figure 3 revealed that only 37.5% of the respondents actively practiced organic farming, a key component of environmentally friendly business operations. Most of them are avocado farmers. These entrepreneurs demonstrated a commitment to sustainable agriculture by avoiding chemical fertilizers and pesticides and instead using natural alternatives to enhance soil fertility and crop yields.

One avocado farmer explained:

"Switching to organic farming has not only improved the health of my soil but also increased the demand for my products in local markets that prefer eco-friendly produce."

Despite these positive outcomes, the relatively low percentage of organic farmers shows the need for greater promotion and support for sustainable agricultural practices. A smaller proportion, 25% of the respondents, adopted renewable energy sources such as solar and biogas to power their operations. These entrepreneurs reported significant cost savings and reduced reliance on traditional energy sources like firewood and diesel. One entrepreneur utilizing solar energy noted,

"Investing in solar panels was initially expensive, but it has drastically reduced my energy costs and improved the reliability of power for my business."

However, the high costs and limited access to financing remained significant barriers for many entrepreneurs, preventing wider adoption of renewable energy technologies.

In terms of waste management, only 22.5% of respondents implemented strategies to reduce, recycle, or properly dispose of waste generated by their businesses. These entrepreneurs recognized the importance of minimizing environmental pollution and often collaborated with local communities to create awareness about proper waste disposal. One business owner involved in waste recycling remarked:

"We collect plastic waste from the community and convert it into useful products like building materials. This not only reduces pollution but also provides employment opportunities."

Despite such initiatives, most green entrepreneurs lacked the resources and knowledge necessary to implement effective waste management systems, limiting their contribution to environmental conservation.

The study also highlighted a significant gap in environmental awareness, with 56.25% of respondents exhibiting limited understanding of the environmental impact of their business activities. Many entrepreneurs in this category continue to use conventional farming methods, rely on non-renewable energy sources, and neglect proper waste disposal practices. A local leader expressed concern, stating:

"Many small business owners in our community prioritize short-term profits over environmental sustainability because they do not fully understand the long-term benefits of eco-friendly practices."

This lack of awareness often came from limited access to information and training on environmental sustainability, particularly in rural areas. Government officials and NGO representatives during FGD emphasized the importance of increasing environmental education and providing technical support to green entrepreneurs. One NGO officer working on environmental conservation in the district commented:

“Raising awareness and offering training programs on sustainable practices can significantly improve the environmental performance of small businesses.”

Similarly, a government representative called for more targeted interventions, noting:

“We need to integrate environmental education into local business development programs to ensure that entrepreneurs understand the importance of sustainability.”

Generally, while some green entrepreneurs in Kilolo District demonstrated high levels of environmental awareness and adopted sustainable practices, a significant proportion continues to operate with limited knowledge and resources. Enhancing environmental education, providing financial support for renewable energy and waste management initiatives, and fostering collaboration between stakeholders could help bridge this gap and promote the growth of environmentally conscious enterprises in the region. By addressing these challenges, Kilolo District could serve as a model for sustainable entrepreneurship in emerging economies.

4. Conclusion and Recommendations

The study shows a complex interplay of factors influencing the growth and sustainability of eco-friendly enterprises. While there were notable efforts by a segment of entrepreneurs to adopt sustainable practices such as organic farming, renewable energy, and waste management, a significant portion faced critical barriers, including limited access to finance, inadequate infrastructure, insufficient technical knowledge, regulatory challenges, and low environmental awareness. Despite the growing global and national emphasis on sustainability, these challenges hindered the district's full potential for green entrepreneurship. Overcoming these challenges, entrepreneurs demonstrated improved business performance, access to niche markets, and enhanced community support. However, the study also emphasized the need for coordinated efforts from government institutions, NGOs, financial entities, and local leaders to create an enabling environment for green entrepreneurship. Addressing the identified barriers would enhance the viability of green enterprises and contribute to environmental conservation and sustainable economic development in Kilolo District and similar emerging economies.

The Study Recommends the following;

- Financial institutions and microfinance organizations should develop tailored loan products and grants specifically for green entrepreneurs. This could include lower interest rates, flexible repayment terms, and simplified loan application processes to accommodate small-scale, eco-friendly businesses.

- Investments in reliable infrastructure to support green entrepreneurship. The government should prioritize infrastructure development in rural areas to reduce operational challenges and improve market access for green businesses.
- Training programs on sustainable business practices, renewable energy technologies, and waste management strategies should be organized regularly. These programs should be accessible to established and aspiring green entrepreneurs, focusing on practical, hands-on learning. Collaboration with educational institutions, NGOs, and industry experts can enhance the effectiveness of these initiatives.
- The government should streamline licensing and regulatory processes to reduce bureaucratic obstacles for green entrepreneurs. Clear guidelines and support services should be provided to help entrepreneurs navigate complex regulations.
- Awareness campaigns on the importance of environmental sustainability should be conducted at the community level. These campaigns can be organized by local leaders, NGOs, and government agencies to educate entrepreneurs and the public on the benefits of eco-friendly practices.
- Building a collaborative ecosystem involving government agencies, financial institutions, NGOs, and local communities is essential for promoting green entrepreneurship. Regular stakeholder forums and networking events can facilitate knowledge sharing, resource mobilization, and forming strategic partnerships to support green businesses.

Areas for Future Study;

- Explore green enterprises' direct and indirect contributions to economic growth, job creation, and poverty reduction in rural areas like Kilolo District.
- Investigating the role of gender in green entrepreneurship can provide insights into the specific challenges and opportunities women entrepreneurs face in adopting sustainable practices.
- Examine how digital platforms, mobile applications, and e-commerce can be leveraged to promote, market, and scale green businesses in emerging economies.
- Analyzing the impact of government policies, subsidies, and regulatory reforms on the growth and sustainability of green enterprises would offer valuable guidance for policymakers.
- Research on innovative financing models, such as green bonds, impact investment, and crowdfunding, could provide insights into alternative funding mechanisms for eco-friendly businesses.
- Understanding consumer perceptions, preferences, and willingness to pay for green products in rural and urban markets would help entrepreneurs align their offerings with market demand.

- Exploring how partnerships between government, NGOs, and private sector actors can create a supportive ecosystem for green entrepreneurship would provide a holistic approach to fostering sustainable business growth.

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