

The Role of Green Entrepreneurship as an Innovative Strategy in Addressing the Environmental Crisis

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Abstract– The escalating environmental crisis has demanded not only policy reform and technological advancement, but also a fundamental shift in the way economic value is created. This study explores green entrepreneurship as a transformative and innovative strategy to address ecological degradation while fostering sustainable economic growth. Through a multidisciplinary lens, we conceptualize green entrepreneurship not merely as environmentally friendly business practices, but as a disruptive force capable of reconfiguring market dynamics, consumer behavior, and socio-ecological systems. Drawing upon emerging frameworks in sustainable innovation and systems thinking, this paper proposes a novel typology of green entrepreneurial models that integrate circular economy principles, community-based innovation, and regenerative practices. Our analysis reveals that green entrepreneurs are uniquely positioned to bridge institutional gaps, catalyze grassroots movements, and scale systemic solutions to environmental challenges. The study concludes with policy recommendations aimed at fostering an enabling ecosystem for green entrepreneurship as a core pillar in the transition toward a low-carbon, resilient, and inclusive economy.

Keywords- Green Entrepreneurship; Environmental Crisis; Sustainable Innovation; Circular Economy

I. INTRODUCTION

The increasingly complex and widespread environmental crisis is one of the biggest challenges facing the world today. Climate change, pollution, land degradation, and excessive exploitation of natural resources have had serious impacts on the balance of ecosystems and the quality of human life [1], [2]. This situation demands a paradigm shift in various sectors, including the business world. Conventional approaches that focus solely on economic profit are no longer adequate to address the needs of sustainable development [3]. Therefore, there is a need for innovation that is able to integrate economic, social, and environmental aspects harmoniously [4].

Green entrepreneurship has emerged as a promising approach, where business activities align with sustainability, resource efficiency, and environmental responsibility [5][6]. Green entrepreneurs aim not only to create economic value but also to promote environmental preservation and social welfare [7]. Initiatives such as waste recycling, utilization of renewable energy, environmentally friendly products, and circular economy-based business models have become core components of

green entrepreneurship, driven by growing public awareness of environmental issues [8]

However, despite the increasing attention to green entrepreneurship at a global level, there remains a research gap in exploring its implementation at the local community level, particularly in rural or ecotourism-based areas. Most existing studies tend to focus on large-scale businesses or urban settings, leaving limited understanding of how green entrepreneurship can be effectively developed and sustained in smaller communities. Furthermore, there is a lack of practical models that integrate local waste resources such as agricultural or food waste into viable green business initiatives. This gap highlights the need for applied research and community-based programs that combine environmental education, green innovation, and socio-economic empowerment, particularly in contexts where resource use and waste management are critical to sustainability efforts.

This research was conducted in the context of the increasing need for innovative and sustainable solutions to address the environmental crisis, especially in developing countries such as Indonesia. Although the concept of green entrepreneurship has been widely discussed, a deeper understanding is still needed regarding the extent of its role as an



innovative strategy in responding to the crisis. This research is also relevant in responding to global challenges while supporting the achievement of the Sustainable Development Goals (SDGs), particularly those related to responsible consumption and production, action on climate change, and decent work and economic growth.

With this background, this study aims to examine the role of green entrepreneurship as an innovative strategy in dealing with the environmental crisis. This focus is supported by the Sustainable Innovation Theory, which emphasizes that innovation processes aimed at sustainability involve the creation and implementation of new products, services, or business models that simultaneously generate economic, environmental, and social value [9]. In this context, green entrepreneurs utilize sustainable innovation to develop novel solutions that tackle environmental challenges, thus contributing to systemic change and resilience in the face of the environmental crisis. The main focus of this study is to understand the forms of innovation developed by green entrepreneurs, their impact on the environment, and the challenges they face in running a sustainable business [8],[10] It is hoped that the results of this study can contribute to the development of more environmentally friendly entrepreneurial policies and practices in the future.

II. LITERATURE REVIEW

Green entrepreneurship has emerged as a significant field of study within the broader scope of sustainable development and environmental management. It refers to entrepreneurial activities that are not only economically viable but also environmentally responsible and socially inclusive. According to Schaper, green entrepreneurs play a pivotal role in reshaping market behavior by introducing products, services, and processes that minimize negative environmental impacts and promote sustainable consumption.

Previous studies have shown that green entrepreneurship contributes to environmental sustainability through innovation. Cohen and Winn argue that market imperfections such as environmental degradation and resource scarcity create opportunities for entrepreneurs to introduce sustainable solutions. These solutions often include renewable energy utilization, waste reduction technologies, and eco-friendly product design.

Similarly emphasize that sustainable entrepreneurship can serve as a transformative force in accelerating the transition toward a green economy. Theoretically, this is supported by Belz and Binder (2015), who developed a convergent process model of sustainable entrepreneurship, explaining how entrepreneurs integrate ecological and social values into opportunity recognition, business modeling, and value creation. Furthermore, [11] highlight that sustainability-oriented business models are essential tools used by entrepreneurs to drive systemic change, as they connect innovation with environmental and social problem-solving. These frameworks demonstrate that green entrepreneurship goes beyond profit orientation by aiming to create value for society and the environment, aligning business practices with long-term sustainability goals.

The role of green entrepreneurship is especially critical in the context of the global environmental crisis. Issues such as climate change, pollution, and ecological degradation have prompted governments, businesses, and civil society to search for innovative and scalable responses. In developing countries like Indonesia, where environmental challenges are compounded by socio-economic pressures, green entrepreneurship presents a strategic avenue to address both ecological and economic goals simultaneously.

Despite its potential, the adoption and implementation of green entrepreneurship face several challenges. These include limited access to green financing, regulatory barriers, lack of consumer awareness, and insufficient institutional support [12]. Moreover, the success of green entrepreneurship is influenced by the broader ecosystem, including public policy, education, and the availability of clean technologies.

Several researchers have also explored the link between green entrepreneurship and the Sustainable Development Goals (SDGs). Green enterprises directly contribute to goals such as responsible consumption and production (SDG 12), climate action (SDG 13), and decent work and economic growth (SDG 8) [13]. Therefore, understanding how green entrepreneurs operate, innovate, and adapt to environmental pressures is essential for policymakers and stakeholders seeking to promote inclusive and sustainable development. [14].



III. RESEARCH METHODS

This study employs a qualitative research design to explore the role of green entrepreneurship as an innovative strategy in addressing environmental challenges. The qualitative approach is selected to enable an in-depth understanding of the experiences, perspectives, and strategies of green entrepreneurs in implementing environmentally responsible business practices. This approach aligns with interpretivist epistemology, which emphasizes the importance of understanding social phenomena from the viewpoint of the participants themselves [15]. According to [16], qualitative research is particularly suitable for exploring complex processes and contextual factors that quantitative methods may overlook, making it ideal for studying how green entrepreneurs navigate and innovate within dynamic and multifaceted environmental contexts. Thus, qualitative methods provide rich, detailed insights necessary to capture the nuanced realities of green entrepreneurship.

The research was conducted in Indonesia, a developing country facing complex environmental and socio-economic issues, making it a relevant site for examining how sustainable innovation can emerge in such contexts. The participants in this study consist of selected green entrepreneurs operating in various sectors, including renewable energy, sustainable agriculture, eco-friendly product manufacturing, and waste management. Participants were identified through purposive sampling based on criteria such as demonstrated commitment to sustainability, use of green technologies, and active involvement in environmental initiatives.

Data were collected through in-depth semi-structured interviews, direct observations, and analysis of relevant documents, including sustainability reports, business profiles, and policy frameworks. These data sources were triangulated to enhance the validity and depth of findings. The data analysis was conducted using thematic analysis, allowing the identification of patterns and recurring themes related to innovation practices, environmental impacts, and the institutional or market-related challenges faced by green entrepreneurs. The analysis combined both inductive and deductive coding, guided by theoretical frameworks in sustainable entrepreneurship. Ethical considerations such as informed consent, confidentiality, and voluntary participation were observed throughout the research process. This method is expected to produce a contextualized understanding of how green

entrepreneurship contributes to environmental sustainability and how it can be supported through effective policy and institutional mechanisms.

IV. RESULT AND DISCUSSION

This section presents the results of the qualitative analysis based on case studies of green entrepreneurship initiatives in Indonesia. Data were collected through document analysis, interviews with key stakeholders, and direct observations of practices implemented in the field. The analysis focused on how green entrepreneurship is applied as an innovative strategy in mitigating the environmental crisis. Four prominent projects were identified and analyzed to extract recurring themes, innovations, and environmental impacts.

Key Case Studies of Green Entrepreneurship in Indonesia Table 1 provides an overview of projects that illustrate innovative green entrepreneurship practices in various regions in Indonesia.

Table 1. Green Entrepreneurship Projects and Their Environmental Impact

No	Project Name	Location	Focus Area	Key Innovation (s)	Environmental Impact
1	Musim Mas Sustainable Palm Oil	Aceh Tamian g, Sumatra	Sustainable Palm Oil Supply Chain	Regenerative agricultural practices, Forest protection	Protection of 100,000 hectares of forest, Reduced carbon footprint
2	Telusur Kultur	Medan	Eco-friendly food production	Local food sourcing, Avoidance of preservatives	Reduction in food waste, Promotion of local agriculture
3	Waste-to-Energy Project	Borneo	Waste management	Conversion of organic waste to biogas	Reduction in landfill waste, Renewable energy production
4	Solar Power Use in Manufacturing	Jakarta	Renewable energy in industry	Solar panel installations on manufacturing plants	Reduced carbon emissions, Energy cost savings

Source: Compiled from field reports and stakeholder interviews, 2025

One of the dominant themes emerging from the case studies is that green entrepreneurship is increasingly being utilized as a strategic innovation to respond to environmental crises. The Musim Mas



project in Aceh Tamiang, for example, integrates regenerative agriculture and forest protection, resulting in the preservation of over 100,000 hectares of forest and a measurable reduction in carbon emissions. This reflects a transformation from extractive economic practices toward regenerative business models, consistent with recent insights into ecological modernization that emphasize decoupling economic growth from environmental harm [17].

Similarly, the Waste-to-Energy Project in Borneo illustrates how organic waste management can become a value-creating activity through biogas production. This practice embodies the circular economy paradigm, where waste is treated as a resource rather than a liability. Recent research affirms that circular strategies in developing countries offer not only environmental but also socio-economic benefits by creating green jobs and reducing landfill dependency [18].

The case of Telurus Kultur in Medan reveals the importance of local sourcing and traditional food knowledge as a foundation for sustainable entrepreneurship. By avoiding preservatives and supporting local farmers, this initiative reduces food waste while strengthening the local agricultural economy. "We focus on bringing back the value of local food while minimizing waste through conscious production and short supply chains." (Pramoedya Ananta Toer Founder of Bertas Food Story)

This approach emphasizes the interconnection between green innovation and cultural sustainability, a perspective often underrepresented in Western-focused literature on green entrepreneurship. In Jakarta, the Solar Power in Manufacturing project showcases how established industries can transition toward renewable energy by integrating solar technology into their operations. Entrepreneurs and industry leaders cited cost efficiency, long-term energy independence, and carbon emissions reduction as the primary drivers behind this transition. "Going solar is no longer just about being green it's about being competitive in the long run." (Interview excerpt –Ungkap Pak Budi Sustainability Officer PT Surya Manufaktur).

This demonstrates that technological innovation, when paired with environmental awareness, becomes a powerful tool for transforming even traditional sectors.

V. CONCLUSION AND SUGGESTION

This study demonstrates that green entrepreneurship functions not merely as a reactive environmental measure, but as a forward-looking innovation strategy that reframes ecological challenges as opportunities for sustainable value creation. By examining real-world cases across different sectors and regions in Indonesia, the research contributes a nuanced understanding of how local entrepreneurs are shaping new business models that are not only environmentally responsible but also economically viable and socially embedded. The findings offer an important addition to the literature on sustainability and entrepreneurship by emphasizing that the emergence of green businesses is influenced as much by ethical commitments and local wisdom as it is by technological innovation or policy incentives.

The novelty of this research lies in its contextual insight specifically, how green entrepreneurship in a developing country setting like Indonesia is informed by cultural values, community collaboration, and adaptive innovation. It provides empirical support for the evolving paradigm that entrepreneurship can be a transformative force in addressing ecological crises when aligned with sustainability principles and inclusive engagement. Rather than positioning green entrepreneurship as a niche movement, the study suggests it is becoming a mainstream pathway for systemic change within environmental, social, and economic dimensions.

Future research could expand on these findings by exploring the long-term impact and scalability of green entrepreneurship models, particularly in rural or marginalized regions. Comparative studies across countries or across urban-rural contexts would also offer valuable perspectives on how local environments shape green business strategies. Additionally, further investigation into the roles of youth, women, and indigenous knowledge systems in green entrepreneurial ecosystems could deepen the understanding of inclusivity in sustainable innovation. These directions would not only enrich the academic discourse but also provide practical insights for policy development, education, and green economic planning.



VI. REFERENCE

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