

Sustainable Rural Development in Bangladesh Through Green Entrepreneurship: Challenges and Ways Forward

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Abstract

Although entrepreneurship is an integral component of capitalism, it would be incorrect to view entrepreneurial activities as inherently detrimental to rural development. Studies suggest that entrepreneurship can play a vital role in revitalizing rural areas by creating socioeconomic opportunities. However, sustainable rural development (SRD) presents a different perspective. It emphasizes not only the advancement of rural communities but also simultaneous protection of the environment. In this context, green entrepreneurship can be a key tool that focuses on creating opportunities through innovative initiatives such as sustainable agriculture, renewable energy projects, ecotourism, local handicrafts based on natural materials, and thus reduce environmental and social problems. However, these initiatives are crucial for rural livelihoods who are mainly dependent on nature. In this backdrop this study tries to identify the links and impact of green entrepreneurship towards SRD in Bangladesh applying mainly a qualitative method. A number of existing literature was reviewed, and some Key Informant Interviews (KII) were conducted for the purpose. The analysis is further extended to explore the challenges of green entrepreneurship towards SRD in Bangladesh as well as the ways forward. It is hoped that the findings may contribute to the policy as well as others concerned in Bangladesh.

Key Words: Green Entrepreneurship, Rural Development, Sustainable Development, and Sustainable Rural Development.



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Introduction

Rural development focuses on improving the quality of life, development of economy, and the environmental sustainability of communities residing in rural areas. But, development initiatives in rural areas frequently result in challenges such as environmental pollution, land degradation, resource depletion, loss of biodiversity, diminished income, and increased public health risks. These problems are particularly acute in the rural areas and isolated regions of developing nations (World Bank, 2015). The rural population of the world comprises about 70% and 60% of them are from low and lower-middle-income countries, and where on an average 80% live below the poverty line (World Bank, 2015). In Bangladesh, a total of 68.34% of population lives in villages, while 31.66% live in the urban areas. Bangladesh Bureau of Statistics (BBS) confirmed that 18.7% of the total population lived below the national poverty line at the national level, 20.5% in the rural areas, while 14.7% in the urban areas. The poverty rate is highest in rural Bangladesh compared to the urban areas. Many people have an inadequate diet and suffer from food shortage. One of the biggest cause of this poverty in rural Bangladesh is the fast-growing population rate, which also places huge pressure on the environment. Moreover, it leaves many without work and leads to unemployment. Limited land resources cannot support the growing population, especially in rural areas where most depend on agriculture for their livelihood (BBS, 2022). Nonetheless, Bangladesh, being highly climate-vulnerable, faces intensified challenges including food insecurity, reduced income opportunities for farmers, the spread of water-related diseases, inadequate education, low economic prospects, water scarcity, and groundwater depletion (The Daily Star, 2013).

Since its independence in 1971, Bangladesh has implemented various rural development activities to alleviate poverty and promote social development among its poor and disadvantaged communities. But the results are not that much satisfactory. Therefore, sustainability in rural development initiatives is very important. Sustainable rural development is an integrated and holistic approach that focuses on the links between various development factors, such

as energy, health, education, water, food, gender, and economic growth and seeks to create synergies between them to achieve sustainable outcomes.

The World Bank (2015) emphasizes that despite being a component of capitalism, entrepreneurial activity should not be viewed negatively in the context of rural development, as it is increasingly recognized for driving economic growth, productivity, innovation, and job creation, and is crucial for economic dynamism. Moreover, researchers are increasingly linking rural development to entrepreneurial activities (Petrin, 1994; Muñoz and Kimmitt, 2019). They mentioned the progression of the rural economy is an essential requirement for the overall development of the country. Entrepreneurial activities in rural areas can modify economic networks, provide opportunities for professional growth, socioeconomic integration, attract new inhabitants and improve the quality of life (Bryden and Hart, 2005; Akgün et al., 2010; Muñoz and Kimmitt, 2019). Therefore, entrepreneurship is now integrated into world development policies as a tool for the socioeconomic revival of rural areas (OECD, 1998; Das, 2014; Karimi, 2015).

However, for sustainable rural development (SRD) in Bangladesh green entrepreneurship can play an important role. Because, green entrepreneurship focuses on innovative, environmentally and socially conscious solutions to the complex challenges faced by rural areas such as creating sustainable goods and services, like local handicrafts, renewable energy, sustainable agriculture, and ecotourism etc. and generate huge employment opportunities for the rural people (Chandel, 2022). Moreover, it helps reduce environmental degradation, supports environmental preservation, economic growth, community resilience, social equity, ensuring that rural areas thrive while maintaining harmony with the mother planet earth, and promote long-term sustainability which is crucial for advancing SRD (Schaltegger and Wagner, 2011).

Notwithstanding, merely embracing green entrepreneurship as a key development strategy will not ensure SRD on its own. It is also crucial to create an environment that supports the growth of green entrepreneurship in rural Bangladesh. This supportive environment largely hinges on policies and

programs designed to foster green rural entrepreneurship. This study aims to contribute to this objective.

Literature Review

There are very few studies found on the issue of entrepreneurship and SRD. Specifically on the issue of green entrepreneurship towards sustainable rural development, no studies are found. However, some of the studies on the broader field of entrepreneurship, sustainable development and rural development are discussed below.

Vidhya and Mohanasundari (2024) examine how start-up enterprises can drive positive economic, social, and environmental changes in rural communities, addressing issues like economic stagnation and environmental degradation. They highlighted entrepreneurship as a potential method for reviving rural areas. Tekala et al. (2024) pointed out that green entrepreneurship importantly intensify business sustainability and green structural capital. Chandel (2022) describes the increasing global environmental problems and employment crises, aiming to address environmental hazards like pollution, global warming, and climate change by offering innovative solutions to ecosystem disruption via green entrepreneurship. Starchenko et al. (2021) and Ramakrishna et al. (2022) highlighted the significance of adopting eco-friendly entrepreneurial activities to promote economic growth and environmental protection in rural areas. In addition, Muñoz et al. (2019) emphasis on the critical role of policy alignment and interventions in creating an environment to promote rural entrepreneurship.

Krishna (2018) warns against applying a uniform approach to all rural communities, underscoring the need for customized interference to address community specific social dynamics. Rodriguez-Pose and Hardy (2015) stress that human capital is important in rural development and advocate for education and skills development policies. Swinnen and Squicciarini (2012) stress on the importance of agricultural policies to support small farmers, acknowledging their role in sustainable rural development. Schaltegger and Wagner (2011) argued that environmental considerations should be

incorporated into the rural development strategies, and proposed a comprehensive framework that aligns economic growth with sustainable environment. Wennekers et.al. (2010) focused on the transformative impact of entrepreneurship pointing out its potential to create employment, boost local economies, and empower rural communities. Hart (2008) noted that entrepreneurship in rural areas is valuable for its ability to effective utilization of local resources, contributing to the sustainable management of natural resources.

However, existing literature preponderantly investigates the relationship between entrepreneurship and SRD, focusing on the need for lucid policies, targeted interventions, and agricultural support for small farmers. It also explores the consolidation of environmental issues into rural development policies and strategies and the role of local resources in sustainable use. However, there is limited research on the specific role of green entrepreneurship in SRD. Some studies suggest that eco-friendly entrepreneurial practices can foster both economic growth and environmental conservation, and argue that green entrepreneurship may help address environmental challenges.

Considering this gap, this study tries to explore the relationship between green entrepreneurship and SRD and their roles which is very significant for the countries like Bangladesh. In this backdrop, the research questions are: is green entrepreneurship supportive to sustainable rural development in Bangladesh; are the policies supportive to green entrepreneurship development in Bangladesh; and is there any challenge of green entrepreneurship development?

Objectives and Research Methodology

The main aim of this paper is to critically examine the relationship between green entrepreneurship and SRD in Bangladesh. The specific objectives of the study are as follows:

- a) To examine the nexus between green entrepreneurship and SRD;
- b) To identify the policies and programs supporting green entrepreneurship in Bangladesh;
- c) To explore the challenges of green entrepreneurship towards SRD in Bangladesh; and
- d) To suggest some policy recommendations.

To achieve the objectives of the study a qualitative methodology was followed, as we know, qualitative methodology is particularly suitable to uncover deeper meanings, understand subjective experiences, explore complex social processes, and provide rich, and detailed data (Denzin and Lincoln, 2011).

Both secondary and primary data were collected for the purpose. However, existing literature on green entrepreneurship, rural development and sustainable rural development, collected from various sources such as published articles, different government and non-government organizational reports, and web sources were reviewed for secondary data, while for primary data Key Informant Interviews (KII) were conducted. As we know, in qualitative research sample size is flexible and determined based on the nature of the study, and data saturation (**Guest, Bunce, and Johnson 2006; Creswell, and Poth, 2018**), a number of 10 respondents from the relevant academics and experts on the issue were selected for the interviews. The aim was to obtain rich, and in-depth insights rather than achieving statistical representativeness.

However, researchers personal network and snow ball sampling technique were applied to select the informants. A qualitative data analysis technique, namely Interpretative Phenomenological Analysis (IPA) was applied to analyze the collected data and presented consequently, as **it** is a widely used qualitative data analysis technique in social researches for exploring how individuals make sense of their personal and social worlds (**Creswell, and Poth, 2018**).

Green Entrepreneurship

The term "Green entrepreneurship" merges the concepts of entrepreneurship and environmental stewardship, specifically addressing environmental or social issues through innovative business ideas. It combines core entrepreneurial traits such as innovation, risk-taking, and new business concepts with a commitment to social and ecological concerns (Chandel, 2022). Unlike traditional entrepreneurs, those in green entrepreneurship are driven by intrinsic values and motivations, aiming to create positive environmental impacts through their business practices, rather than merely targeting niche markets with eco-friendly products or services (Das, 2024).

Rural Development

Rural development (RD) pertains to the holistic advancement of rural areas aimed at enhancing the quality of life for those living there. It is a broad and multi-faceted concept. World Bank views RD as a strategy to elevate the economic and social conditions of the rural poor, including small-scale farmers, tenants, and landless individuals (World Bank, 2002). RD has been referred to a 'change' towards a desirable direction that may be of two kinds: institutional and technological. The success of one depends on the success of the other. However, two important aspects of development have fallen behind the screen: employment generation and poverty alleviation. So, the strategy that does not consider these two problems cannot be a strategy for rural development (World Bank, 2015).

Sustainable Development (SD)

Sustainable development (SD) refers to establishing a balanced and harmonious relationship between humanity, society, and nature (Merzlov et al., 2012). It is an approach to growth and human progress that seeks to fulfill the current needs without jeopardizing the ability of future generations to meet their own needs (Robert et al., 2005). The goal is to create a society where living conditions and resources adequately address human needs while preserving the integrity of the planet. SD strives to reconcile economic, environmental, and social well-being (Mensah, 2019).

Sustainable Rural Development (SRD)

Sustainable Rural Development (SRD) highlights the enhancement of the quality of life in rural areas by addressing their ecological, cultural, political, institutional, and socioeconomic aspects, side by side ensuring that their future generations are not burdened (Merzlov et al., 2012). This means that the prosperity and environmental sustainability of rural areas are deeply interconnected; thus, human settlements can only thrive if environmental and social goals are fully integrated with economic objectives (Vidhya and Mohanasundari, 2024). SRD requires a comprehensive approach, ensuring that the basic needs of rural communities are met through dependable public utilities, along with technical, socioeconomic, and environmental conditions that support regional economies and foster rural-urban connections.

Analytical Framework of the Study

Green entrepreneurship in rural areas supports income-generating activities by offering sustainable products and services, creating employment opportunities in environmental technology, sustainable enterprises, and green services (Hussain, 2023). This approach helps address social issues such as unemployment, poverty, malnutrition, pollution, and resource depletion, while mitigating the challenges of environmental degradation. Over time, green entrepreneurship aids in environmental protection, promotes conservation, fosters sustainable practices, and contributing to long-term economic growth. Aligning with Sustainable Development Goals (SDGs), specifically, ending poverty, protecting the planet, and ensuring peace and harmony green entrepreneurship ensures sustainable rural development. This, in turn, drives national economic development. However, the analytical framework of this study (Figure 1) posits that green entrepreneurship supports sustainable development goals towards ensuring sustainable rural development and, ultimately leads to national economic development.

Sustainable Rural Development in Bangladesh Through Green Entrepreneurship: Challenges and Ways Forward

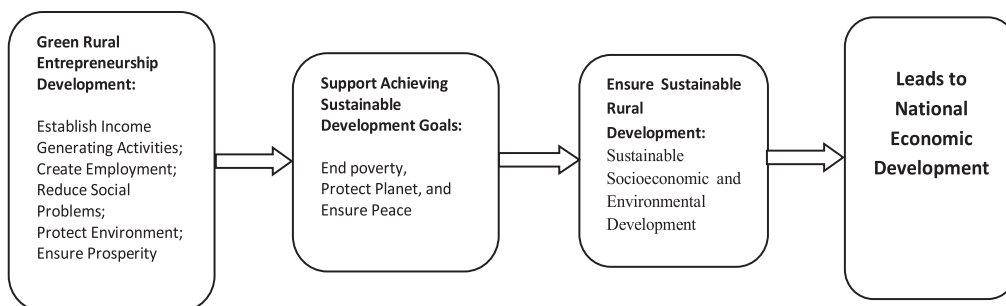


Figure 1: Analytical Framework of the Study
Source: Author

Findings and Analysis

Green Entrepreneurship and SRD: Exploring the Relationships

Green entrepreneurship in rural areas is considered the appropriate tool to catalyze SRD by integrating environmental sustainability, economic prosperity, and social inclusion as claimed by the researchers (Tien et.al, 2023; Das, 2024). By leveraging local resources, promoting green technologies, and empowering communities green entrepreneurship can contribute to building resilient and thriving rural economies that are in harmony with their natural environments (Chandel, 2022; Wennekers et.al., 2010). Therefore, it can be said that green entrepreneurship and SRD are internally linked. (Syam et.al, 2018). Let us try to explore and summarize the linkages and roles of green entrepreneurship and sustainable rural development based on the common features shown in the following figure 2.

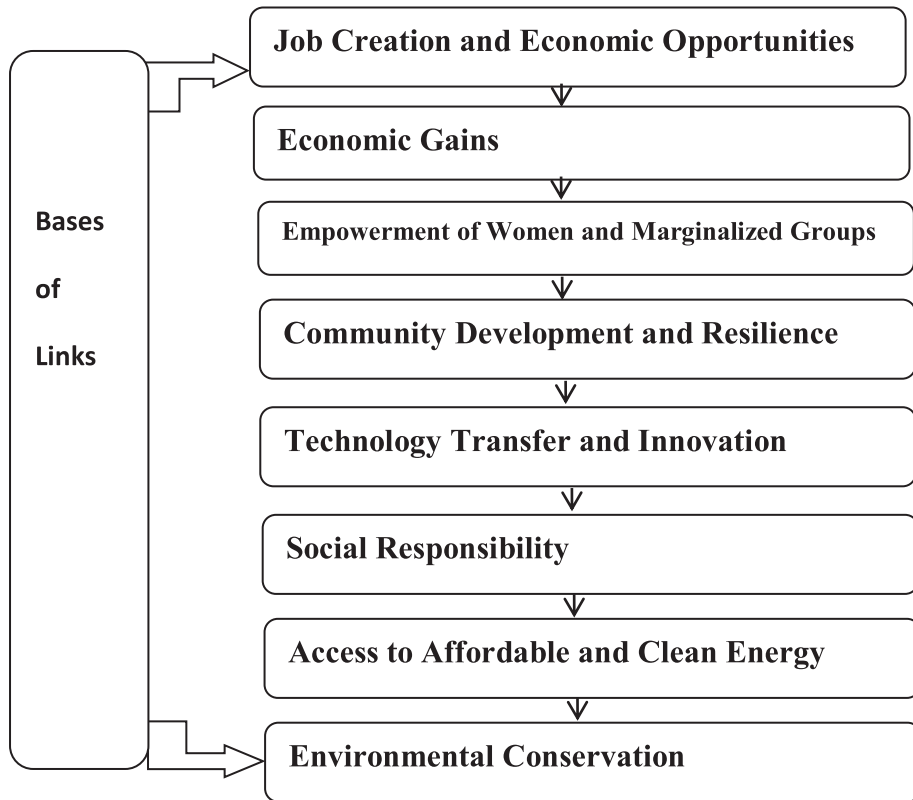


Figure 2: Green Entrepreneurship and SRD: Exploring the Relationships;
Source: Author

Job Creation and Economic Opportunities

Green entrepreneurship can create employment opportunities in rural areas through initiatives such as sustainable agriculture, renewable energy projects, eco-tourism ventures, and local handicrafts utilizing natural materials which are supportive to SRD. These enterprises are not only generating income but also enhancing the skills and capacity of the rural communities (Das, 2024; Hussain, 2023).

Economic Gains

Sustainable development requires inclusive and environmentally sustainable economic growth which is the aim of green entrepreneurship as well. Green entrepreneurship creates opportunities for economic growth through creation of green jobs, development of new products and services, and promotes entrepreneurship in communities. This may lead to a more resilient economy which values environmental stewardship along with profitability (Tein et.al., 2020; Soomro et.al., 2024).

Empowerment of Women and Marginalized Groups

Green entrepreneurship focuses on the inclusivity and empowerment, particularly for the rural poor women and marginalized groups and supports SRD. Initiatives like women-led cooperatives for sustainable agriculture or community-based enterprises for forest conservation may increase social equity and economic resilience within these communities.

Community Development and Resilience

Green entrepreneurship may strengthens social cohesion and resilience in rural areas through the promotion of local ownership and community participation. Green entrepreneurial initiatives involving community-based natural resource management, disaster preparedness via sustainable practices, and cooperative enterprises may foster sustainable rural community development and resilience which are rooted in local needs and priorities.

Technology Transfer and Innovation

Green entrepreneurship focuses on the innovative technologies and practices to rural communities, fosters knowledge transfer and capacity building. This may empower local entrepreneurs and farmers to adopt sustainable practices independently, and enhance their ability to adapt environmental and economic challenges linked to SRD (Tekala et al., 2024).

Social Responsibility

Green entrepreneurs often prioritize social responsibility and consider the well-being of communities and future generations. They engage in fair trade,

ethical sourcing, and community development practices that contribute to social equity. This holistic approach is linked to the principles of SRD and focuses on balancing socioeconomic, and environmental issues (Das, 2024; Tien et al., 2023).

Access to Affordable and Clean Energy

Green entrepreneurship may introduce reliable and affordable energy solutions such as solar panels, small-scale hydroelectric plants, or biogas plants. These green technologies not only provide clean energy but also empower communities by reducing dependency on fossil fuels and improving energy access that leads to sustainable rural development.

Environmental Conservation

Green entrepreneurship promotes sustainable practices by conserving natural resources and protect ecosystems. For example, organic farming reduces chemical inputs and soil degradation, while reforestation initiatives restore biodiversity and mitigate climate change impacts. These practices ensure long-term environmental sustainability that is crucial for sustainable rural livelihoods (Soomro et al., 2024; Schaltegger and Wagner, 2011).

In sum, it can be said that both green entrepreneurship and SRD call for environment-friendly technologies, production systems, and environmental impact assessment on human activities to avoid adverse effects on the environment. Both aim to enhance the quality of life for the rural poor by building capacities that encourage community involvement, ensure food security, protect the environment, and support sustainable economic growth. This approach helps community members break free from the cycle of poverty and realize their full potential (Soomro et al., 2024). Moreover, it is also found from the above discussion that in job creation and economic opportunities, economic gains, empowerment of women and marginalized groups, community development and resilience, technology transfer and innovation, social responsibility, access to affordable and clean energy, and environmental conservation, both the terms green entrepreneurship and SRD are equally contributing. Hence, both the terms green entrepreneurship and SRD are supportive to each other and linked.

Green Entrepreneurship towards SRD in Bangladesh: Exploring the Policies and Programs

Many rural areas in developing nations still rely on traditional economies based on subsistence agriculture, which are highly vulnerable to natural hazards like extreme weather, flash floods, landslides, erosion, and drought, which often result in unemployment, severe poverty, land abandonment, and large-scale migration (Das, 2024; Islam, 2024). Bangladesh is the 8th most populous country globally, with its large population contributing to high levels of unemployment. Of the 26.8 million youth aged 15-29, approximately 2.15 million are unemployed, which is notably higher than the national unemployment rate of 3.53%. This disparity highlights the significant employment challenges faced by young people (BBS, 2022; Saif, 2023).

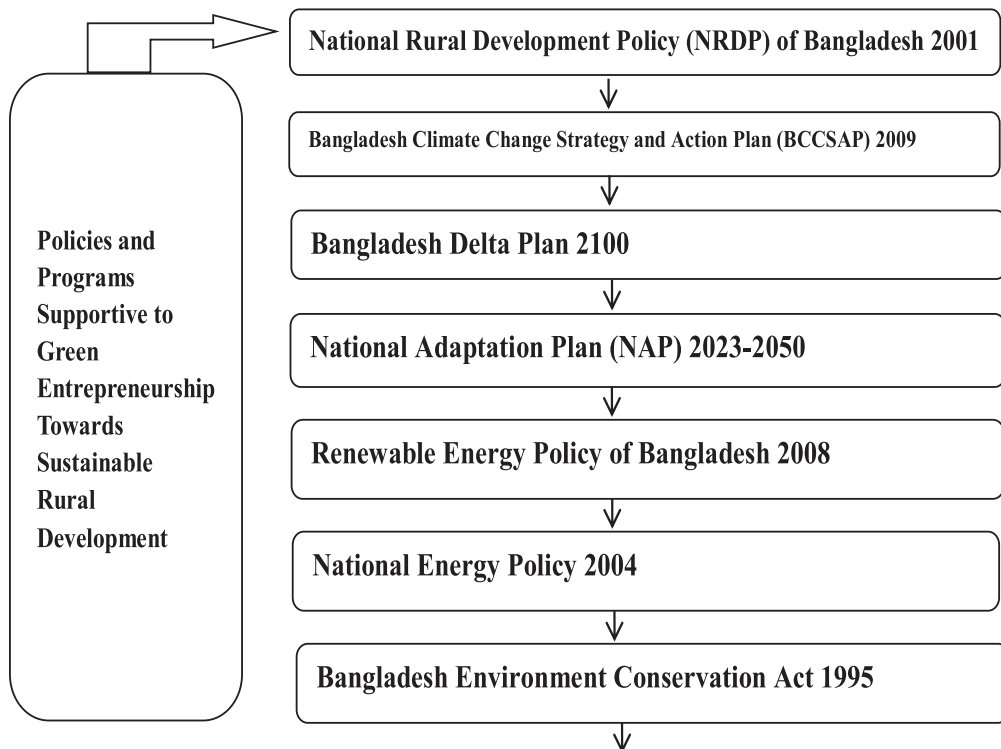
Bangladesh Bureau of Statistics (BBS) reports that the unemployment rate is higher among literate individuals compared to illiterate ones in both urban and rural areas, across both genders. Of the unemployed, 27.8% are university graduates, 19.7% are higher secondary graduates, and 23.8% are secondary school graduates. In urban areas, the unemployment rate for literate females is 8.52%, compared to 3.14% in rural areas, and 4.03% nationally. Notably, 70.9% of the unemployed youth come from rural areas, equating to about 1.81 million unemployed individuals in rural areas and 0.77 million in urban areas. There is a significant disparity in unemployment rates based on literacy levels in Bangladesh (BSS 2023; Saif 2023). This underscores the need to focus on creating sustainable employment opportunities for the youths.

Additionally, the Global Climate Risk Index 2021 ranks Bangladesh as the seventh most vulnerable country to climate change over the long term. The country faces frequent natural disasters, having incurred an estimated loss of USD 3.72 billion from climate change between 2000 and 2019 (Eckstein et al., 2021). It is estimated that by 2080, 40% of productive land in the southern region will be lost in Bangladesh. Rising sea levels could lead to the loss of up to 17% of the country's land by 2050, potentially displacing around 20 million people. Therefore, it is crucial for Bangladesh to prioritize climate change

mitigation in its long-term sustainable rural development strategies (Saif, 2023).

Considering the above scenario of Bangladesh, green entrepreneurship can be one of the most appropriate tools to create huge employment opportunities for the rural youths through green enterprises, make the country more resilient to climate change, integrate economic prosperity, environmental sustainability, and social inclusion. Moreover, due to the imminent threat of land loss as a result of climate change in Bangladesh it is very important to have adequate innovative and climate-resilient initiatives in agricultural practices in the rural areas as the respondents claim. However, Bangladesh has been proactive in promoting green entrepreneurship through various policies and programs towards SRD.

Some of the key policies and programs are shown in the following figure 3:



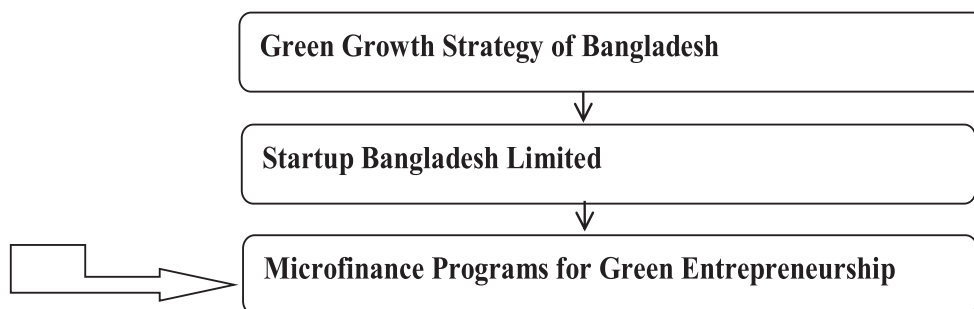


Figure 3: Policies and Programs Supportive to Green Entrepreneurship
Towards Sustainable Rural Development; Source: Author

National Rural Development Policy (NRDP) of Bangladesh 2001

The main objective of NRDP 2001 is to enhance the quality of life for rural populations by fostering economic prosperity and reducing disparities between rural and urban areas. The goals include: integrating rural development activities to alleviate poverty; improving the quality of life of poor women; promoting economic development for landless and marginal farmers; expanding education, health, nutrition, and family welfare; creating economic self-reliance opportunities for rural people; ensuring efficient use of resources at the household and village levels; supporting development for the handicapped, tribal, and ethnic minorities; and enhancing rural environment, power, and energy. Despite these aims, expected outcomes have not been fully realized.

Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009

BCCSAP 2009 outlines the strategy for climate change adaptation and mitigation, including initiatives to promote renewable energy, energy efficiency, sustainable agriculture, and resilient infrastructure. It also focuses on green entrepreneurship by creating a conducive policy environment and providing financial and technical support for green initiatives which may lead to SRD.

Bangladesh Delta Plan 2100

Bangladesh Delta Plan 2100 is a detailed 100-year strategic initiative designed for gradual and SD through adaptive delta management. The aims of this plan are to create a safe, climate-resilient, and prosperous delta by focusing on long-term water and food security, economic growth, and environmental sustainability.

National Adaptation Plan (NAP) 2023-2050

The aim of NAP 2023-2050 is to boost the country's climate adaptation efforts. It covers eight key sectors: water resources, disaster management, social safety and security, agriculture, fisheries, aquaculture and livestock, urban areas, ecosystems and biodiversity, policies and institutions, and capacity development in order to reduce climate change risks and vulnerabilities by building a climate-resilient nation through effective adaptation strategies, promoting a robust society, and encouraging sustainable economic growth.

Renewable Energy Policy of Bangladesh 2008

This policy focuses on the development and utilization of renewable energy sources such as solar, wind, biomass, and hydroelectric power. It includes incentives for the renewable energy projects, tariff structures, and regulatory support to attract investment in clean energy technologies and promote green entrepreneurship in the energy sector.

National Energy Policy 2004

National Energy Policy 2004 focuses on energy efficiency, renewable energy adoption, and sustainable energy development in order to reduce dependency on fossil fuels, enhance energy security, and promote environmentally friendly energy solutions through incentives and supportive measures for green businesses.

Bangladesh Environment Conservation Act 1995

Bangladesh Environment Conservation Act 1995 provides a legal framework for environmental protection and sustainable development in Bangladesh. It

includes provisions for regulating pollution, conserving natural resources, and promoting environmentally sound practices, which are essential for green entrepreneurship activities.

The 8th Five Year Plan 2023-2027: Green Growth Strategy of Bangladesh

The 8th Five Year Plan commits to a green growth strategy. But, it currently defines narrowly within the environmental sector, specifically the forest sub-sector. This aims at promoting economic growth while minimizing environmental impact and enhancing resource efficiency. It also focuses on the sectors like renewable energy, sustainable agriculture, waste management, and eco-tourism that offer opportunities for green entrepreneurs and contribute to sustainable development.

Startup Bangladesh Limited

It is a venture capital company to support and nurture startups across diverse sectors in Bangladesh. It mainly encourages innovation and entrepreneurship, including green entrepreneurship by providing incubation support, access to funding, mentoring, and networking opportunities for startups working on sustainable technologies and solutions.

Microfinance Programs for Green Entrepreneurship

A number of microfinance institutions in Bangladesh such as Grameen Bank, BRAC, ASA, YPSA, etc. have been working to support green entrepreneurship among rural and under served communities by providing financial services, including loans and savings products, tailored to green businesses such as organic farming, renewable energy installations, and eco-friendly enterprises that leads to SRD.

However, these policies and initiatives illustrate Bangladesh's commitment to promoting green entrepreneurship as a key driver of SRD, environmental conservation, and inclusive economic growth. But expected results are yet to be achieved due to some challenges and problems existing. So a coordinated effort is necessary.

Challenges of Green Entrepreneurship towards SRD in Bangladesh

Though green entrepreneurship is supportive and linked to SRD, implementing green entrepreneurship activities in the rural areas of the countries like Bangladesh are not easy tasks. This study had 10 Key Informants Interviews (KIIs) with the academics and experts to explore the challenges of green entrepreneurship and ways forward to face those challenges towards SRD in Bangladesh. Some of the key challenges as identified are shown in the following table 1:

Table 1: Challenges of Green Entrepreneurship towards SRD in Bangladesh

Sl.	Challenges of Green Entrepreneurship towards Sustainable Rural Development	Frequency	%	Ranks
1	Limited Access to Capital	7	70	4
2	Technological Barriers	9	90	2
3	Poor Infrastructure	8	80	3
4	Regulatory and Policy Implementation	5	50	6
5	Cultural and Social Factors	6	60	5
6	Environmental Challenges	7	70	4
7	Capacity and Knowledge Gaps	9	90	2
8	Lack of Awareness and Literacy	10	100	1

Source: KII, January 2024; N=10

Lack Awareness and Literacy

All the respondents opined that lack of awareness and literacy on the impact of green entrepreneurship towards sustainable rural development among the rural people in Bangladesh is number one challenge. Rural people like to stay very traditional. As a result, implementing green entrepreneurship to ensure sustainable rural development in Bangladesh is hampered.

Capacity and Knowledge Gaps

Many rural entrepreneurs lack the necessary knowledge and skills to effectively run a green enterprise in the rural areas of Bangladesh as 90%

respondents mentioned. But, green entrepreneurship requires innovation, which may be limited by the lack of research and development resources in rural areas. These gaps may hinder SRD in Bangladesh.

Technological Barriers

Rural areas lack access to modern technologies that are crucial for green enterprise development as also mentioned by the 90% respondents. These include advanced agricultural techniques, renewable energy systems, and waste management technologies. There may be a lack of trained and skilled rural entrepreneurs that can adopt and effectively use green technologies in rural areas which may hamper sustainable rural development.

Poor Infrastructure

Rural areas have limited and poor infrastructure, such as roads and communication networks, that may hinder the distribution and marketing of green products produced by the rural green entrepreneurs in rural Bangladesh as 80% respondents mentioned. Moreover, rural entrepreneurs may struggle to reach larger markets or find buyers for their green products, limiting their growth potential.

Limited Access to Capital

Entrepreneurs in rural areas often struggle to access sufficient capital to start or scale their green enterprises in rural Bangladesh, as opined by the 70% respondents. Traditional financial institutions may be hesitant to invest in high-risk green enterprises in rural Bangladesh. There may be a scarcity of investment vehicles specifically tailored for green entrepreneurship in rural settings towards SRD.

Environmental Challenges

Rural areas in Bangladesh are highly vulnerable to climate change, which can impact agricultural productivity and the viability of green businesses and hamper SRD as mentioned by 70% respondents. Moreover, over-exploitation of natural resources can undermine the sustainability of green ventures.

Cultural and Social Factors

Rural people like traditional practices and may resist to new methods which can impede the adoption of green entrepreneurship towards SRD in Bangladesh as opined by 60% respondents. They also mentioned that cultural norms and practices may be slow to embrace sustainable changes that may hamper sustainable rural development practices in rural communities.

Regulatory and Policy Challenges

There may be insufficient governmental support or incentives for green entrepreneurship towards SRD in Bangladesh, as 50% respondents opined. They mentioned that effective policies and effective implementation of those policies are needed to promote green entrepreneurship and support SRD practices. Moreover navigating regulatory requirements sometimes very complex and discourage small-scale entrepreneurs in the rural areas.

These are some of the key challenges identified by respondents that hinder the growth of green entrepreneurship in Bangladesh, thereby impeding SRD. To address these issues and foster the growth of green enterprises, respondents have recommended implementing effective measures. These steps are essential for advancing the socioeconomic development of the country.

Promoting Green Entrepreneurship towards SRD in Bangladesh: Some Policy Implications

To overcome the challenges of developing green entrepreneurship in rural areas, it is crucial to establish an environment that fosters sustainable initiatives and empowers local communities. According to the KII data, some suggestions were prioritized that can help facing the challenges as well as promote green entrepreneurship in rural areas and achieve SRD in Bangladesh. These are shown in the following table 2:

Table 2: Suggestions to face the challenges of GE towards SRD

Sl.	Suggestions to face the challenges of GE towards SRD	Frequency	%	Ranks
1	Access to Finance	8	80	6
2	Infrastructure Development	9	90	3
3	Capacity Building and Training	9	90	2
4	Market Linkages and Value Chains	6	60	8
5	Policy Support	6	60	7
6	Technology and Innovation	9	90	4
7	Community Engagement and Participation	7	70	5
8	Awareness and Education	10	100	1
9	Networking and Collaboration	6	60	9
10	More Focus on Youth Involvement	8	80	6
				Ranks

Source: KII, January 2024; N=10

Awareness and Education

All the respondents mentioned that raise awareness and knowledge about the benefits of green entrepreneurship and sustainable practices among rural people and related stakeholders can promote SRD in rural Bangladesh. In order to ensure this activities concerned authorities may conduct outreach programs, workshops, and campaigns on environmental conservation, social responsibility, and economic opportunities associated with green entrepreneurial activities.

Capacity Building and Training

Providing training and capacity-building programs for the rural people focusing on sustainable practices, business management, and green entrepreneurial skills cab be another important measure to promote green entrepreneurship in Bangladesh as 90% respondents opined. This will enable the local people with the knowledge and appropriate techniques to start their green enterprises sustainably, such as organic farming, renewable energy installations, or ecotourism ventures towards SRD.

Infrastructure Development

The rural infrastructure in Bangladesh is not that much developed. 90% respondents mentioned that improving rural infrastructure, such as renewable energy grids, water management systems, and transportation networks can support green businesses by ensuring easy access to markets. They also mentioned infrastructure development will enhance the feasibility and competitiveness of green enterprises in remote areas that can support SRD.

Technology and Innovation

Advancing the adoption of appropriate green technologies and innovation in rural areas can be another important measure towards sustainable rural Bangladesh as suggested by 90% respondents. Because, it may improve productivity, reduce costs, and ensure environmental sustainability. They also mentioned that this can be ensured through research and development activities, technology transfer, and partnerships with universities or research organizations on green entrepreneurship towards SRD.

Access to Finance

Ensuring easy access to finance may tailor green entrepreneurship development in the rural areas of Bangladesh as mentioned by 80% respondents. This could include easy financing options from the nationalized banks, options from micro financial institutions, or partnerships with financial institutions that support green initiatives. Financial support is crucial for overcoming initial investment barriers and scaling up green businesses that could create ample employment for the rural youths.

More Focus on Youth Involvement

80% respondents suggested to give more focus on involving Bangladesh's youths in green entrepreneurship development initiatives, as they are creative, and willing to take risks. Moreover, as the respondents opined, in Bangladesh youth unemployment rate in the rural areas is huge. So, it will create employment opportunities for them, reduce rural poverty, and ensure SRD in Bangladesh.

Community Engagement and Participation

Involving rural communities is more likely to support and benefit from green ventures. So, engaging local communities in the planning and implementation of green entrepreneurship activities can ensure SRD as mentioned by 70% respondents. They specifically mentioned that we should promote community ownership and participation through different cooperatives, community-based organizations, and inclusive decision-making.

Networking and Collaboration

Networking and collaboration initiatives can help sharing knowledge, resources, and best practices to promote a supportive ecosystem for green entrepreneurship development. Therefore, promoting networking opportunities and collaborations among green entrepreneurs, government agencies, non-governmental organizations (NGOs), and private sector are important as mentioned by 60% of the respondents.

Policy Support

Formulating supportive policies and regulations that encourage green entrepreneurship in rural areas is also very important as 60% respondents mentioned. They also mentioned that these may include incentives for renewable energy projects, subsidies for sustainable agriculture practices, simplified bureaucratic processes for setting up green enterprises, land tenure issues and environmental permission.

Market Linkages and Value Chains

60% respondents also opined that promoting linkage between green entrepreneurs and the local, regional and even international markets for their green products or services is also very important. This linkage can be facilitated through partnerships, certification programs, and platforms for marketing sustainable products.

It is believed that by implementing the above strategies, Bangladesh can create an enabling environment which will be supportive to the development of green entrepreneurship, leading to SRD, as well as, national economic development.

Concluding Remarks

Green entrepreneurship focuses on creating income generating activities, addressing environmental and social challenges as well as seeking profitability. It creates innovative products, services, or processes that enhance sustainability, reduce carbon footprints, conserve resources, and minimize environmental impact (Das, 2024) by minimizing environmental harm and balancing environmental goals, meeting consumer demand for eco-friendly products, and fostering local community involvement. It also creates jobs and promotes fair labor practices (Hussain, 2023; Tien et al., 2023). However, this study reveals that this approach prioritizes long-term sustainability and adapts strategies to address environmental challenges, while also raising awareness and encouraging community engagement in sustainable economic efforts that ensures SRD.

However, as per the existing literature and the key informants opinion, SRD is crucial for achieving the SDGs and involves enhancing rural life by focusing on socioeconomic, political, and environmental aspects. It emphasizes efficient resource use, ecosystem protection, and waste reduction while supporting diverse economic activities, improving infrastructure, and providing essential services (Merzlov et al., 2012). Moreover, SRD promotes gender equality, educational access, and resilience against climate change and economic shocks that are directly linked to SDGs, as well as, aligns with green entrepreneurship as they integrates advanced technologies and sustainable practices and build resilient, thriving communities as the respondents opined.

Moreover, rural populations are particularly vulnerable to extreme poverty, social exclusion, and environmental injustice, especially in developing countries across Africa, Asia, and Latin America (Merzlov et al., 2012). Their economic development is heavily influenced by local geographical conditions, including climate, natural resources, landscape, and socioeconomic and demographic factors (Rodríguez-Pose and Hardy, 2015). Over the past three decades, rural economies worldwide have undergone significant changes. Rural enterprises are key drivers of employment and economic growth

globally, with entrepreneurship in these areas increasingly integrating resources both within and beyond agriculture, including green entrepreneurship as a crucial tool (Muñoz and Kimmitt, 2019). Despite various policy measures aimed at growth and development over the years, Bangladesh continues to face several challenges in achieving sustainable rural development. These challenges include maintaining macroeconomic stability, improving education and healthcare, addressing governance issues, tackling high unemployment and extreme poverty, attracting new investments, and adapting to a dynamic entrepreneurial environment (Das, 2024). Additionally, despite their impressive growth, green rural enterprises may encounter common systemic barriers to development.

Nonetheless, it is believed that policy recommendations suggested by the key informants, specifically, awareness and education on green entrepreneurship development, capacity building and training to the rural entrepreneurs, infrastructure development, access to finance, youth involvement, community engagement and participation are very important towards achieving the aims of SRD. Yet, we also should focus on sound national economic policy with respect to agriculture, including recognition of the vital contribution of green entrepreneurship to SRD, as well as for the development and channeling of green entrepreneurial talent and green entrepreneurial thinking. Everyone concerned including rural people and rural development organizations should be active enough to get institutional support to develop green entrepreneurship in rural areas towards SRD. It is hoped that by adopting and implementing the above mentioned suggestions, policymakers, development agencies, and stakeholders can create an enabling environment where green entrepreneurship can thrive in rural areas. This approach will not only promote SRD, but also national economic development.

The intersection of green entrepreneurship and SRD presents a rich field for future research. This study covers a small part of the area. However, some promising directions for future research may include investigating how rural entrepreneurs can leverage green technologies to create sustainable enterprise; examine the financial models that make green entrepreneurship viable in rural areas; examine how green entrepreneurship can address social issues in rural

areas, such as poverty reduction, education, and healthcare; and study how cultural attitudes and behaviors towards sustainability impact the success of green enterprises in rural areas.

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