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Community-Led Green Initiatives and Their Role in Rural Sustainability: Insights from Mizoram, India

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Abstract— The paper examines community-led green initiatives in Sailutar and North Serzawl villages in Mizoram using a qualitative case study approach. It analyses solar energy and composting interventions and highlights how environmental awareness, community participation, and maintenance behaviour shape rural sustainability outcomes.

The growing environmental challenges of the twenty-first century, including climate change, biodiversity loss, and pollution, have intensified the need for sustainable development. This paper examines green initiatives as community-led mechanisms for promoting environmental responsibility and rural sustainability, with particular attention to the role of behavioural and educational factors. Using qualitative case studies from Sailutar and North Serzawl villages in Mizoram, the study analyses the implementation of solar energy systems and composting practices and compares their outcomes. The findings show that sustainability initiatives are more likely to succeed where environmental awareness, community participation, and maintenance behaviour are strong. The paper argues that technological intervention alone is insufficient unless supported by local leadership, social learning, and continued institutional support.

Index Terms— ***community participation, green initiatives, Mizoram, rural sustainability, sustainable development.***

I. INTRODUCTION

The world is undergoing rapid social, economic, and technological transformation, but these changes are accompanied by serious environmental challenges. Overconsumption has increasingly been recognised as one of the principal causes of environmental degradation, making sustainable development an urgent concern. Although sustainability is often discussed in relation to cities, industries, and corporate systems, rural communities are equally significant in the global sustainability transition.Villages are not merely passive spaces affected by environmental change; they can also serve as active sites of innovation and community-led sustainability. In recent years, several rural settlements have adopted green practices such as renewable energy use, composting, organic farming, and waste management. These experiences suggest that sustainability is not limited by geography or economic scale, but depends substantially on social organisation, awareness, and local initiative.This paper explores how community-led green initiatives contribute to rural sustainability through case studies of Sailutar and North Serzawl villages in Mizoram. It specifically examines the role of participation, environmental awareness, maintenance practices, and behavioural adaptation in shaping the success or failure of green interventions.

II. REVIEW OF LITERATURE

Environmental degradation, climate variability, and depletion of natural resources have intensified the need for sustainable development and sustainable consumption. Since consumers directly and indirectly influence ecological outcomes through their consumption behaviour, scholars have increasingly highlighted the need for environmentally responsible practices. Green products and green initiatives have therefore become important themes in debates on sustainability.Green products are generally understood as goods designed to minimise environmental harm throughout their life cycle, including production, use, and disposal. Sustainable consumption goes beyond purchasing environmentally friendly goods; it also includes minimising waste, improving efficiency, extending product life, and ensuring proper disposal and segregation. The Oslo Symposium definition of sustainable consumption and production remains especially relevant because it links human well-being with reduced resource use and lower pollution.Scholars such as Roseland have emphasised that a sustainable community seeks a better quality of life while maintaining ecological balance over time. Janikowski further identified major principles of sustainable consumption, namely selection, minimisation, maximisation, and segregation. These principles are particularly useful for understanding village-level practices, where daily behaviour, resource use, and waste management directly shape sustainability outcomes.At the behavioural level, previous studies indicate that environmental knowledge does not automatically translate into environmentally responsible action. Greenwashing, affordability constraints, and weak trust in producers' claims often limit sustainable consumption. This suggests that environmental awareness alone is insufficient unless reinforced by community norms, leadership, and systems that make sustainable practices practical and meaningful.

III. OBJECTIVES OF THE STUDY

The study is guided by the following objectives:

1. To assess the green initiatives of rural communities in India.
2. To compare and contrast approaches to sustainable initiatives by select villages in Mizoram.
3. To identify factors that facilitate or hinder the success of sustainable development projects in select villages.

IV. METHODOLOGY

The study adopts a qualitative research design to examine the relationship between community behaviour and sustainability outcomes. Primary data were collected through semi-structured interviews conducted in February 2025 with selected households, village council members, and key informants from Sailutar and North Serzawl villages.A purposive sampling technique was used to select respondents with direct exposure to the green initiatives under study. Approximately 50 participants were interviewed, and each interview lasted between 30 and 50 minutes. The conversational format enabled the collection of detailed reflections on awareness, participation, maintenance practices, and local perceptions of sustainability.The collected data were analysed using thematic analysis. Major themes included environmental awareness, community participation, maintenance behaviour, infrastructure use, and behavioural responses to sustainability initiatives.

V. GREEN INITIATIVES AND RURAL SUSTAINABILITY

A. Green Initiatives in the Broader Context

This study relates particularly to Sustainable Development Goal 12, which seeks to ensure sustainable consumption and production patterns, and Sustainable Development Goal 7, which focuses on access to affordable, reliable, sustainable, and modern energy. Achieving these goals requires policies that support the shift to sustainable practices and reduce the environmental costs of development.

At the global level, green initiatives have included circular economy strategies, renewable energy transitions, recycling systems, and integrated sustainability plans. In India, the National Action Plan on Climate Change provides an important umbrella framework for climate-related interventions, with missions relating to solar energy, energy efficiency, habitat, water, agriculture, and ecosystem conservation.

Several Indian villages illustrate the diversity of rural green initiatives. Dharnai in Bihar is known for solar electrification; villages in Sikkim are associated with organic farming; Punsari in Gujarat introduced household-level waste segregation and recycling; and Mawlynnong in Meghalaya has become well known for cleanliness and eco-tourism. These examples demonstrate that rural sustainability can be built through different local pathways.

B. Green Initiatives in Mizoram

Mizoram, one of the eight Northeast States of India, possesses favourable climatic conditions for solar energy adoption and substantial potential for renewable energy development. The Government of Mizoram adopted the Solar Power Policy of Mizoram, 2017, and designated the Zoram Energy Development Agency (ZEDA) as the nodal body for implementation and promotion of solar energy initiatives in the state.

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Within Aizawl district, Sailutar and North Serzawl villages present useful case studies of rural sustainability efforts. Sailutar, located in Darlawn RD Block, had around 120 households as of April 2024, while North Serzawl had approximately 150 households. Both villages attempted to implement solar energy and composting-based green initiatives, but their outcomes differed significantly.

C. Sailutar Village

In 2017, Sailutar installed a 10 kW off-grid solar power system through a locally driven initiative led by the headmaster of the middle school and supported by the Village Council. The system consisted of 30 solar panels and 60 batteries and was funded through villagers' contributions, including wages earned under MGNREGA, along with a 90 percent subsidy from ZEDA. The solar infrastructure was installed on the school rooftop, and power was distributed to participating households for limited domestic use.

The initiative was appreciated for its affordability and reliability, especially during frequent electricity disruptions. A notable strength of Sailutar was the community's active involvement in maintenance and oversight. School staff and the Village Council collectively managed the system, which contributed to its continued functionality.

Sailutar also promoted household-level compost pits through support from centrally sponsored schemes. Although adoption began slowly, the practice expanded gradually as awareness increased and households observed its benefits. This reflects the importance of community learning and demonstration effects in rural sustainability.

D. North Serzawl Village

Inspired by Sailutar, North Serzawl introduced a similar solar system in 2021 and extended access to all households with basic usage limits. However, the initiative became non-functional within a year because of inadequate maintenance and limited technical understanding. As a result, the village returned to conventional energy sources.

North Serzawl also established two community compost pits using tied grants from the Fifteenth Finance Commission. Yet these facilities remained largely unused because villagers had limited knowledge regarding their operation and maintenance. Only one household independently adopted composting, indicating low awareness and weak community engagement.

The experience of North Serzawl illustrates that infrastructure alone does not ensure sustainable outcomes. Without behavioural adaptation, technical knowledge, and collective responsibility, even well-supported interventions can fail within a short period.

VI. BEHAVIOURAL AND EDUCATIONAL DIMENSIONS

Sustainable development is not solely a matter of technology, funding, or infrastructure. It is fundamentally influenced by human behaviour, environmental awareness, and the capacity of communities to internalise and sustain green practices over time. In rural settings, social norms, local leadership, and informal learning systems strongly affect whether sustainability initiatives are maintained.

The contrast between Sailutar and North Serzawl demonstrates that behavioural and educational factors are central to sustainability outcomes. Sailutar benefited from stronger participation, better maintenance behaviour, and higher functional awareness of the initiative, even if technical understanding remained limited. North Serzawl, by contrast, experienced weaker community ownership and lower behavioural commitment.

A. Behavioural Comparison of the Case Study Villages

Table: Behavioural Comparison of Case Study Villages

Factor	Sailutar	North Serzawl
Environmental Awareness	Moderate to High	Low
Community Participation	Active	Limited
Maintenance Behaviour	Strong	Weak
Adoption of Composting	Increasing	Minimal
Sustainability Outcome	Successful	Unsuccessful

These differences indicate that the success of green initiatives depends not only on resource availability but also on education, motivation, and shared responsibility. Behavioural change theories support this pattern by showing that awareness, reinforcement, and collective norms are crucial for long-term adoption of sustainable practices.

VII. FINDINGS AND DISCUSSION

The findings reveal that the effectiveness of green initiatives is shaped as much by behavioural and educational conditions as by physical infrastructure. Sailutar's experience suggests that local leadership, collective participation, and regular maintenance can convert a modest intervention into a functioning sustainability model. In contrast, North Serzawl demonstrates how inadequate awareness and poor follow-up can undermine similar initiatives.

The study also shows that community participation is not an optional addition but a core requirement of sustainability. Where villagers actively contribute to planning, upkeep, and learning, initiatives are more likely to become embedded in everyday life. Where green measures are introduced without sustained community engagement, they may remain symbolic or become defunct.

Another important finding is that environmental education must move beyond abstract awareness and connect directly to practical usage, maintenance, and long-term responsibility. Sustainability is therefore best understood as a behavioural and institutional process rather than only a technological one.

VIII. SUGGESTIONS

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Several measures can strengthen rural sustainability initiatives. First, environmental awareness should be improved through regular education campaigns, village-level meetings, and demonstration-based learning. Second, technical training should accompany the installation of green infrastructure so that users understand maintenance requirements and practical operation.

Third, continuous government support is necessary in the form of financial assistance, technical guidance, and policy coordination. Fourth, community participation should be encouraged through local leadership, shared monitoring, and participatory planning. Finally, integrated waste management practices, including composting and segregation, should be promoted with adequate capacity building.

IX. LIMITATIONS OF THE STUDY

This study is limited to two villages in Aizawl district and is based on qualitative evidence. The findings therefore provide in-depth contextual insight but may not be generalisable to all rural settings. Future research may expand the scope through larger samples and quantitative methods.

X. CONCLUSION

The study shows that green initiatives can play an important role in advancing rural sustainability, but their success depends heavily on behavioural and educational factors. The comparison between Sailutar and North Serzawl demonstrates that awareness, participation, maintenance behaviour, and local ownership are decisive in determining whether sustainability interventions endure.

Rural sustainability cannot be achieved through infrastructure alone. Long-term success requires an integrated approach combining technology, policy support, community education, and collective responsibility. In this sense, sustainable development is as much a social and behavioural project as it is an environmental and technical one.

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