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Green Business Readiness in Rural Bali: Community Perceptions and Sustainability Potentials in Tourism-Energy Nexus

Kesiapan Bisnis Hijau di Pedesaan Bali: Persepsi Masyarakat dan Potensi Keberlanjutan dalam Kesalingbergantungan Energi - Pariwisata

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Green Business, Renewable Energy, Sustainable Tourism, Community Perception, Rural Development, Bali

Abstract

This study investigates the readiness of four rural Balinese villages—Banjarasem, Blimbingsari, Bongan, and Bantas—to adopt green business practices, specifically within the tourism and energy sectors. The primary aim was to assess local perceptions, economic structures, energy demands, and existing barriers to sustainable development. Utilizing community-level survey data, the research employed a descriptive quantitative approach to gather insights into the villages' current state and future potential. Results reveal a significant community interest in renewable energy, particularly solar photovoltaic (PV), alongside a growing awareness of green tourism opportunities. However, critical impediments identified include financial constraints and a lack of comprehensive knowledge regarding green business models. In conclusion, while the foundational interest exists, overcoming these economic and educational barriers is crucial for successful green business integration. This research contributes by providing a detailed assessment of rural Bali's green business landscape, offering actionable insights for policymakers to develop targeted interventions, financial incentives, and educational programs that align with local socio-economic conditions and environmental goals, thereby fostering sustainable development in similar contexts.

Kata kunci:
Bisnis Hijau, Energi Terbarukan, Pariwisata Berkelanjutan, Persepsi Masyarakat, Pembangunan Pedesaan, Bali

Abstrak

Studi ini menyelidiki kesiapan empat desa pedesaan Bali — Banjarasem, Blimbingsari, Bongan, dan Bantas — untuk mengadopsi praktik bisnis hijau, khususnya di sektor pariwisata dan energi. Tujuan utamanya adalah untuk menilai persepsi lokal, struktur ekonomi, permintaan energi, dan hambatan yang ada untuk pembangunan berkelanjutan. Memanfaatkan data survei di tingkat masyarakat, penelitian ini menggunakan pendekatan kuantitatif deskriptif untuk mengumpulkan wawasan tentang keadaan desa saat ini dan potensi masa depan. Hasilnya mengungkapkan minat

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masyarakat yang signifikan pada energi terbarukan, khususnya panel surya (PV), di samping meningkatnya kesadaran akan peluang pariwisata hijau.Hambatan kritis yang diidentifikasi termasuk kendala keuangan dan kurangnya pengetahuan yang komprehensif mengenai model bisnis hijau. Sebagai kesimpulan, meskipun ada beberapa kepentingan dasar, mengatasi hambatan ekonomi dan pendidikan ini sangat penting untuk keberhasilan integrasi bisnis hijau. Penelitian ini berkontribusi dengan memberikan penilaian terperinci tentang lanskap bisnis hijau pedesaan Bali, menawarkan wawasan yang dapat ditindaklanjuti bagi pembuat kebijakan untuk mengembangkan intervensi yang ditargetkan, insentif keuangan, dan program pendidikan yang selaras dengan kondisi sosial-ekonomi lokal dan tujuan lingkungan, sehingga mendorong pembangunan berkelanjutan.

INTRODUCTION

The shift to green business models in rural areas is increasingly recognized as a strategic approach for reaching sustainable development goals (SDGs). This is especially true in regions where tourism and agriculture are the main economic drivers (UNEP, 2022). In Bali, Indonesia, rural communities are leading this shift, striving to balance tourism expansion with environmental conservation and energy stability (Nugraha et al., 2024). Incorporating renewable energy and sustainable tourism practices is vital not only to reduce carbon emissions but also to build community resilience and support economic diversification (Schubert, 2022).

In light of the evolving landscape detailed above, this article next examines the potential for developing green businesses in four Balinese villages. By investigating community perceptions, energy practices, and tourism involvement, the study aims to offer policymakers and practitioners practical recommendations for creating inclusive and effective sustainability strategies.

LITERATURE REVIEW

Green business refers to enterprises that adopt environmentally sustainable practices across their operations, including energy use, waste management, and product lifecycle (Dey et al., 2020). In rural tourism contexts, green business models often involve community-based tourism, eco-lodging, and renewable energy to reduce operational costs and environmental impacts (Kumar & Singh, 2021).

Studies have shown that community engagement is a critical factor in the success of green initiatives (Zhang et al., 2022). However, financial barriers, lack of technical knowledge, and institutional weaknesses often hinder adoption (Arifin et al., 2022). In Indonesia, rural energy transitions face similar challenges, with solar PV emerging as a preferred technology due to its scalability and declining costs (Torro et al., 2024).

METHOD

This study employs a descriptive analysis of survey data collected from 138 respondents across four villages: Banjarasem (n=34), Blimbingsari (n=37), Bongan (n=41), and Bantas (n=26). The survey covered demographics, tourism participation, renewable energy awareness, energy needs, economic sectors, and financial preferences. The data was synthesized to identify patterns relevant to green business development and sustainability planning.

FINDINGS

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Demographics and Local Roles

The surveyed populations across the four villages showed variations in gender distribution, educational attainment, and age profiles. For example, Banjarasem had 34 respondents, while Bongan had 41.

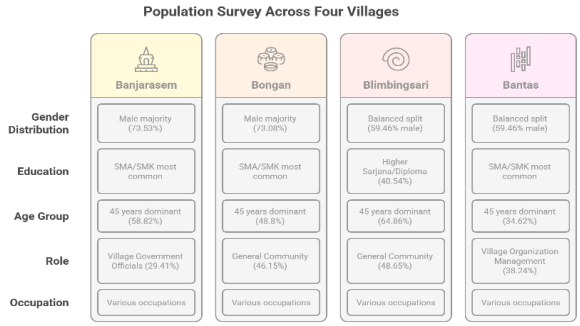

Figure 1. Demographics and Village Roles

As shown in Figure 1, males formed the majority in Banjarasem (73.53%) and Bongan (73.08%), while Blimbingsari and Bantas had more balanced gender splits (males 59.46%, females 40.54%). Blimbingsari had the highest tertiary education rate (40.54%). Most respondents were over 45 and worked in agriculture, private employment, or village governance.

Tourism Engagement and Green Business Potential

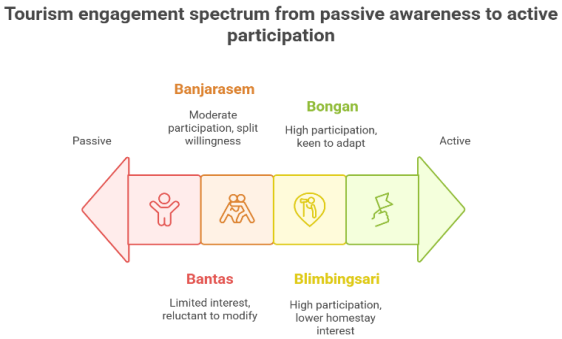

Figure 2. Tourism Awareness and Participation

Tourism awareness levels were highest in Blimbingsari and Bongan (100%), which corresponded with high participation rates (86.49% and 90.24%, respectively). Figure 2, however, indicates that interest in converting homes to homestays was relatively low, as was the willingness to modify homes for eco-tourism, highlighting a gap between tourism awareness and entrepreneurial readiness.

Interest in converting homes to homestays was low in Banjarasem (38.24% Yes) and Blimbingsari (40.54% Yes). Bongan showed greater interest (60.98% Yes), while Bantas showed less interest (34.62% Yes). Willingness to modify rooms to meet healthy homestay standards was mixed in Banjarasem (50% Yes, 50% No) and lower in Blimbingsari (45.95% Yes), Bongan (29.27% Yes), and Bantas (11.54% Yes). Actual homestay ownership was very low across all villages, ranging from 2.94% in Banjarasem to 13.51% in Blimbingsari.

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Renewable Energy Awareness and Preferences

Solar energy was the most recognized and preferred resource in all villages, with Solar PV as the top energy technology in Banjarasem (76.47%) and Bantas (73.08%).

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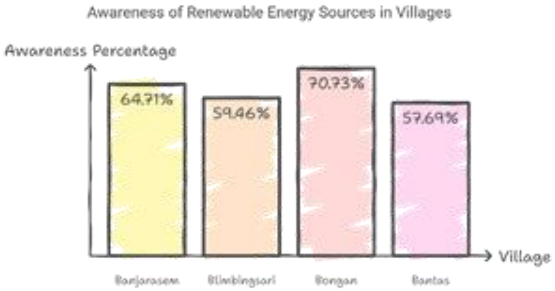

Figure 3. Awareness of renewable energy

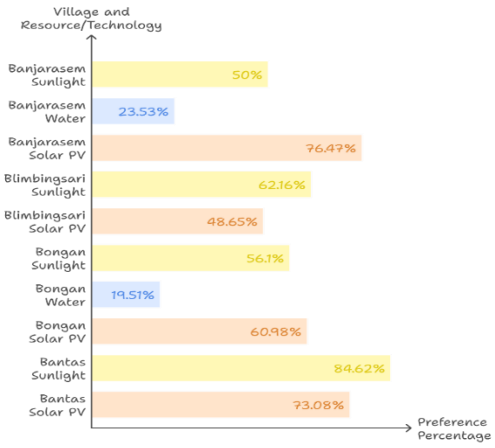

Figure 4. Renewable resources & Preference Technology

Shown in Figure 3, Awareness of renewable energy sources (water, wind, solar, and waste) was prevalent in Banjarasem (64.71%), Blimbingsari (59.46%), Bongan (70.73%), and Bantas (57.69%). Sunlight was cited as the most abundant resource: Banjarasem (50%), Blimbingsari (62.16%), Bongan (56.1%), Bantas (84.62%). Solar PV was the most preferred technology: Banjarasem (76.47%), Blimbingsari (48.65%), Bongan (60.98%), and Bantas (73.08%). Other technologies had limited support.

As mentioned by Arifin (Arifin et al., 2022), the Willingness to pay more for environmentally friendly energy was high: Banjarasem (67.65%), Blimbingsari (67.57%), Bongan (75.61%), and Bantas (61.54%). Participation in village energy projects was greater in Banjarasem (85.29%) and Bongan (70.73%) than in Blimbingsari (56.76%) and Bantas (57.69%). Main barriers included high costs, limited understanding, maintenance, politics, and traditions—high costs and lack of awareness were most cited.

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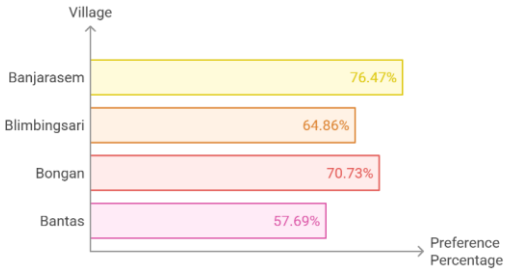

Figure 5. Preferences for Solar PV Installation by Village

As shown in Figure 5, interest in home or homestay Solar PV installation was high: Banjarasem (76.47%), Blimbingsari (64.86%), Bongan (70.73%), Bantas (57.69%). Preferences differed: Banjarasem favored private rooftop panels (38.24%), while Blimbingsari preferred utility/company solar farms (40.54%).

Bongan showed a strong preference for utility/company-managed systems (63.41%), whereas Bantas respondents were more split, slightly favoring utility/company-managed systems (57.69%).

Despite this, barriers such as high costs and limited understanding were widely reported. "Community willingness to adopt solar PV is high, but financial and informational barriers must be addressed through targeted policy instruments" (Arifin et al., 2022)

Energy Stability and Business Needs

Most respondents reported using PLN (state electricity), but energy instability affected 41–57% of the sample. A significant majority (>75%) indicated that public facilities and productive sectors require at least a 30% increase in energy supply. Agriculture and tourism were the dominant sectors, both of which are energy-intensive and could benefit from decentralized renewable systems.

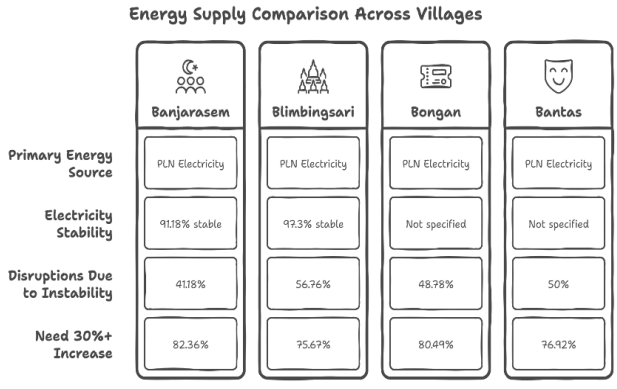

Figure 6. Stability and Needs

Figure 6 shows that while most facilities were reported to have stable electricity in Banjarasem (91.18%) and Blimbingsari (97.3%), a significant portion of respondents across all villages reported experiencing disruptions due to unstable energy supply: Banjarasem (41.18%), Blimbingsari (56.76%), Bongan (48.78%), and Bantas (50%).

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Specific public facilities needing sufficient energy supply included small roads/alleys, main roads, and village markets, varying by village. The dominant energy needed for business activities was electricity. Estimates of additional energy needed for public facilities and productive sectors varied, but a substantial portion in all villages indicated needing 30% or more increase: Banjarasem (82.36% needing >30%), Blimbingsari (75.67% needing >30%), Bongan (80.49% needing >30%), and Bantas (76.92% needing >30%).

Financial Behavior and Green Investment Readiness

Average monthly household energy costs predominantly fell below Rp500,000 in Banjarasem (88.24%), Blimbingsari (83.79%), Bongan (87.8%), and Bantas (65.39%). As shown in Figure 9, a notable percentage in Blimbingsari paid Rp170.000–500.000 (56.76%), while in Bantas, a higher percentage paid over Rp500,000. Awareness of energy subsidies varied, but a large majority in Blimbingsari, Bongan, and Bantas reported receiving them. The impact of subsidies was most often described as "Slightly helpful" or "Reducing a significant burden"

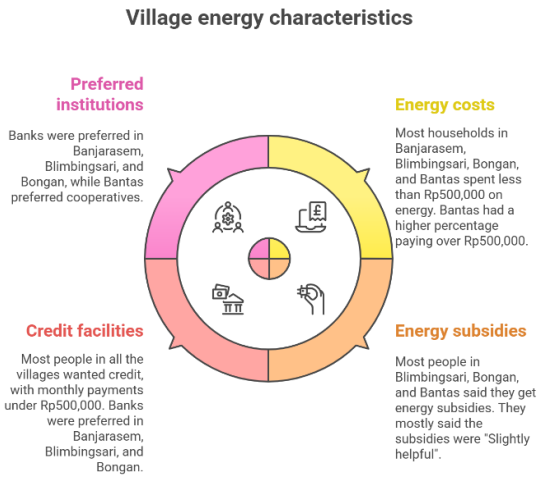

Figure 9. Village Energy & Financial

Among villages provided with credit facilities, a large majority across all villages were interested in using them: Banjarasem (91.18%), Blimbingsari (91.89%), Bongan (90.24%), and Bantas (84.62%). The preferred monthly installment amount that would not be burdensome was predominantly below Rp500,000. The preferred institutions for receiving credit were banks in Banjarasem (64.71%), Blimbingsari (37.84%), and Bongan (65.85%), while Bantas showed a stronger preference for cooperatives (35.14%), almost equal to banks (37.84%).

Banks were the preferred credit institution, except in Bantas, where cooperatives were equally favored. “Access to green financing mechanisms is a critical enabler for renewable energy adoption in rural communities” (Kumar & Singh, 2021).

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Green Area Perception and Environmental Awareness

All villages reported having green spaces such as farms and community gardens. Nearly half of the respondents in Banjarasem and Bongan perceived these areas as decreasing, highlighting concerns over environmental degradation

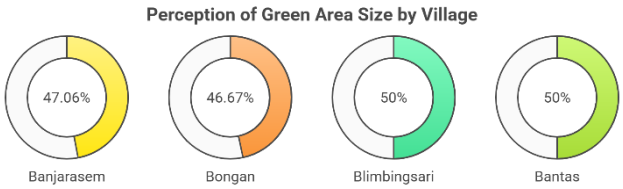

Figure 9. Decreasing Green Areas

. The majority considered green areas "very important," indicating strong environmental awareness. As shown in Figure 9, perceptions of the size of these green areas varied by village, ranging from "Starting to decrease" in Banjarasem (47.06%) and Bongan (46.67%) to "Sufficient" or "Large" in Blimbingsari and Bantas.

The existence and function of green areas were considered "Very Important" by a large majority across all villages.

DISCUSSION

The findings suggest that these Balinese villages possess foundational elements for green business development: environmental awareness, tourism potential, and interest in renewable energy. However, the transition to green business models requires addressing structural barriers, particularly in financing and education.

From a policy perspective, the strong preference for solar PV and willingness to participate in credit schemes present opportunities for public-private partnerships and green microfinance programs. Integrating solar energy into tourism infrastructure—such as eco-homestays and community facilities—can enhance both sustainability and economic appeal (Schubert, 2022).

Moreover, the prominence of agriculture and tourism as economic drivers aligns with the concept of green value chains, where renewable energy supports productivity and reduces operational costs (Zhang et al., 2022). The use of organic waste for biogas could also link waste management with energy production, creating circular economy benefits.

CONCLUSION

This study comprehensively examines the readiness and challenges faced by four rural villages in Bali in adopting green business practices, particularly in the context of tourism and energy. The findings show strong community interest in renewable energy, especially solar photovoltaics (PV), and increased awareness of the potential for green tourism. However, the transition to a green business model is still hampered by significant obstacles, namely financial constraints and a lack of knowledge.

To facilitate this transition, targeted policy interventions, financial incentives, and educational initiatives tailored to local socio-economic conditions and environmental goals are needed. Policy recommendations include developing public-private partnerships and green microfinance programs, integrating solar energy into tourism infrastructure, and utilizing green value chains in the agriculture and tourism sectors. By overcoming structural barriers in financing and education, rural villages in Bali have the potential to become models of sustainable development in developing countries, in line with global sustainable development goals.

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