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ABSTRACT

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INTRODUCTION

Environmental degradation remains one of the most pressing global challenges of the 21st century, especially in regions where rural livelihoods are closely tied to natural resource extraction. Rural communities, particularly in developing countries, face a dual challenge: ensuring economic development while conserving the ecological systems that sustain them. Within this context, Environmental Conservation Efforts (ECE) at the village level are gaining attention in policy and academic discourse due to their role in achieving sustainability goals (Budiono et al., 2024; Safitri et al., 2025; Wulandari et al., 2025).

In Indonesia, decentralization has redefined the governance landscape by granting villages more autonomy in planning and development, including environmental protection. However, while national regulations have broadly promoted environmental sustainability, local implementation varies significantly. This is particularly evident in Bangka Belitung, a province characterized by economic dependency on tin mining and monoculture plantations, with rising ecological vulnerabilities (Duadji et al., 2022). These developments pose challenges to achieving sustainable rural development, where conservation must be integrated into village-level planning.

The core objective of this study is to examine the institutional and infrastructural predictors of ECE in 309 villages in Bangka Belitung Province, using nationally representative data from PODES 2021. Specifically, this research focuses on governance indicators, inter-village cooperation, economic infrastructure, and digital governance tools, all analyzed through both bivariate and multivariate statistical techniques.

While several studies in Southeast Asia have examined community-based conservation, most have focused on localized case studies, qualitative insights, or single policy interventions (Horigue et al., 2023; Dinh &

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Wesseler, 2024). This study contributes beyond existing research by using nationally representative village-level data (PODES 2021) to identify institutional and infrastructural predictors of conservation behavior in a decentralized governance context. It provides a rare quantitative analysis from Indonesia—specifically Bangka Belitung—offering scalable evidence that complements prior work in countries like Vietnam, the Philippines, and Malaysia (Micheli et al., 2024; Padilla et al., 2025). By doing so, the study expands the empirical basis for understanding how local governance mechanisms influence environmental outcomes across resource-dependent settings in the region.

Figure 1 illustrates a bibliometric map generated from Scopus-indexed literature related to environmental conservation and village governance. The visualization identifies dominant themes such as "environmental protection," "natural resource conservation," and "forest management," reflecting the core focus on human-environment dynamics. Additional clusters, including "participation," "local knowledge," and "governance," indicate a growing academic interest in community-based approaches. Rather than expanding this discussion further, this study shifts attention to the empirical gap—specifically, the lack of systematic, village-level analysis using nationally representative data in Indonesia. The findings are intended to complement and contextualize these global research patterns by grounding them in a regionally specific case.

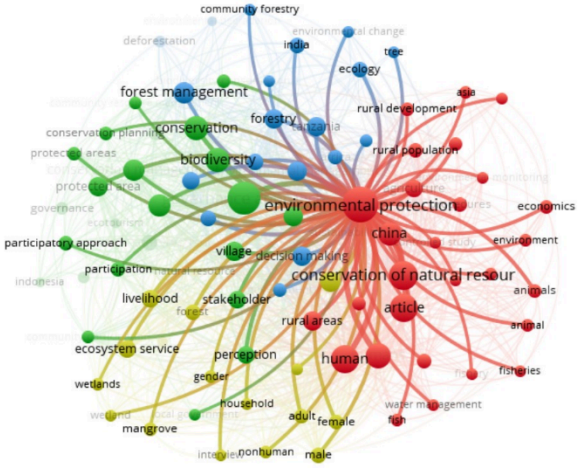

Figure 1. Bibliometric Visualization of Key Themes in Environmental Conservation and Village Governance
Source: VOSviewer analysis of Scopus-indexed articles, 2020–2024)

The bibliometric map demonstrates that research around village governance and environmental protection has evolved into a multi-disciplinary field. The red cluster, with keywords such as "environmental protection," "conservation of natural resources," and "human," indicates that human-environment interaction is a central concern. The green cluster emphasizes governance, biodiversity, and forest management, while the blue and yellow clusters show emerging themes related to stakeholder participation, local knowledge, and perceptions. This study seeks to contribute to these scholarly conversations by offering empirical evidence from an under-researched region in Southeast Asia.

Despite the growing interest in decentralized environmental governance, there remains a significant research gap in understanding how institutional variables interact to shape conservation behavior at the village level. Much of the literature has focused on either biophysical factors (e.g., deforestation, biodiversity loss) or macro-level governance reforms. Far less is known about how meso-level indicators such as village assets, inter-village cooperation, or the presence of public spaces influence environmental behavior. Studies from China (Zhou & Liu, 2023), the Philippines (Horigue et al., 2023), and Kenya (Jabali et al., 2020) suggest that participatory governance and community-led interventions play a decisive role, yet there is a dearth of systematic, quantitative analysis from Indonesia.

Bangka Belitung represents a compelling case study for exploring these questions. With its mix of coastal, forested, and plantation landscapes, coupled with decentralized village planning authorities, it offers a laboratory for studying the dynamics between governance, development, and conservation. However, the province also exemplifies the risks of fragmented planning and underdeveloped institutional capacity, which could impede environmental initiatives.

The novelty of this study lies in its integration of village-level statistical data with institutional indicators, framed within a governance-based understanding of conservation. By combining chi-squared tests and logistic regression models, this research identifies which village characteristics most strongly predict ECE. Key variables include the presence of digital governance systems, inter-village cooperation, waste recycling programs, and public spaces. The inclusion of both bivariate and multivariate techniques enhances the robustness of the findings, which are then contextualized with regional and international literature.

This study addresses the following research questions:

1. What institutional and infrastructural factors are significantly associated with environmental conservation efforts at the village level in Bangka Belitung?

2. How do digital governance tools, public infrastructure, and inter-village networks influence the likelihood of conservation behavior?
3. What policy implications emerge from these findings for scaling up ECE in other resource-dependent regions?

The significance of this research is both academic and practical. Academically, it advances theories of decentralized environmental governance by empirically linking governance variables to conservation outcomes. Practically, it provides policymakers with evidence-based insights into how to structure local development initiatives that support sustainability. The findings may also guide the formulation of village-level environmental regulations, capacity-building programs, and inter-village cooperation frameworks.

Furthermore, the study draws lessons from other parts of the Global South to reinforce its policy relevance. For example, community forestry in Ghana (Gyamfi et al., 2021; Narh et al., 2025; Sackey et al., 2025), watershed governance in South Korea (Cho & Kweon, 2022), and participatory planning in Kenya (Jackson et al., 2025) all demonstrate the importance of institutional design in fostering environmental engagement. This comparative perspective ensures that the study's findings are not only locally grounded but also globally resonant.

In sum, this research responds to the critical need for empirical insights into how governance structures and institutional resources can be harnessed to support environmental conservation in village settings. By focusing on Bangka Belitung, it sheds light on both opportunities and constraints in implementing sustainability at the grassroots level, offering a model that could inform broader conservation efforts in Indonesia and beyond.

The novelty of this study lies in its empirical focus on village-level governance factors influencing environmental conservation, using nationally representative data (PODES 2021) from 309 rural communities in a resource-dependent region. While existing literature often emphasizes national policies or ecological variables, this study highlights underexplored institutional mechanisms such as inter-village cooperation, digital governance tools, and public infrastructure. This approach provides a scalable, governance-based model to understand how decentralized systems affect local sustainability outcomes. Building on this framework, the study formulates three key research questions to guide the analysis.

METHOD

Bangka Belitung was chosen as the study site due to its distinctive characteristics as a resource-dependent province. The region relies heavily on extractive industries, particularly tin mining and monoculture plantations, which have significant environmental implications. At the same time, the province has relatively decentralized village governance structures, making it a relevant setting to examine how institutional and infrastructural factors influence conservation behavior. These contrasting dynamics—between ecological vulnerability and local autonomy—make Bangka Belitung a strategic case for studying bottom-up environmental governance in the Global South context.

To enhance transparency and clarity, the operational definitions of both dependent and independent variables drawn from the PODES 2021 dataset are presented in Table 1 below.

Table 1. Operational Definitions of Dependent and Independent Variables Used in the Analysis

Variable	Definition	Type
ECE (dependent)	Village engages in any environmental conservation program	Dummy (1/0)
Waste recycling	Existence of a waste recycling initiative in the village	Dummy (1/0)
Inter-village cooperation	Collaboration activities with other villages	Dummy (1/0)
Public spaces	Presence of open public spaces in the village	Dummy (1/0)
Economic facilities (4+)	Village has four or mo re economic infrastructures (mar-kets, cooperatives, etc.)	Categorical
Village-owne d assets	Count of village-owned physical assets	Categorical
Digital governance system	Availability of a digital village information system	Dummy (1/0)

Source: Statistics Indonesia, Village Potential Census (PODES) 2021, processed by authors.

This study employed a quantitative design using secondary data from the 2021 Village Potential Census (PODES), covering 309 villages in Bangka Belitung, Indonesia. This method was chosen to enable systematic analysis of how village governance,

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environmental policies, assets, and infrastructure relate to ECE in resource-dependent areas (Budiono et al., 2024).

The dataset, compiled by Statistics Indonesia, consists of standardized village-level indicators collected from village officials. PODES has been validated and used in peer-reviewed Scopus-indexed studies for diverse topics such as rural energy poverty (Rizal et al., 2024), renewable electrification (Wirawan & Gultom, 2021), financial inclusion's impact on energy poverty (Widyastuti et al., 2023), disaster resilience (Utami et al., 2023), rural road improvement (Zulham et al., 2025) and productivity linked to electrification (Wulandari et al., 2025). This reinforces its methodological reliability and credibility.

It includes information on environmental programs, development planning, and public infrastructure. The data are publicly available, aggregated, and anonymized—ensuring ethical compliance. The dependent variable was binary (1 = village engaged in ECE, 0 = not engaged), while independent variables were grouped into governance, policy, asset, and economic dimensions.

Data Analysis Process Funnel

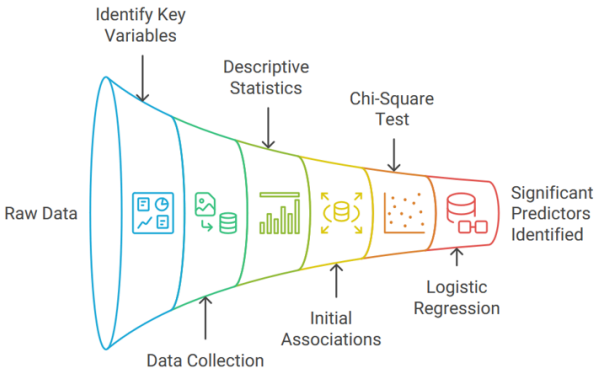

Figure 1. Data Analysis Process Funnel for Identifying Significant Predictors of Environmental Conservation.

Figure 1 illustrates the three-phase analytical process. First, descriptive analysis examined distributions of all variables. Second, bivariate analysis using chi-square tests identified candidate predictors ($p < 0.25$). Third, multivariate logistic regression modeled significant predictors:

$$\log (p / (1 - p)) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta \cdot X\square$$

Where:

- p: Probability of a village engaging in ECE
- $X_1, X_2, \ldots X\square$: Predictor variables (e.g., cooperation, recycling)
- β_0: Intercept
- $\beta\cdot$: Coefficients for each variable

Odds Ratios (OR) and 95% Confidence Intervals (CI) were computed to evaluate direction and strength. OR > 1 indicates a positive association.

Analyses were conducted using Stata version 14, including diagnostics for missing data and multicollinearity to ensure model robustness (Salerno et al., 2021)(Hmimou et al., 2023); (L. Liang et al., 2024; Shin et al., 2009)

RESULTS AND DISCUSSION

(The Results and Discussion sections must not be written separately and should be combined into a single integrated section.)

Governance Structures and ECE

The study examined the role of governance structures in shaping ECE in Bangka Belitung, Indonesia, where resource-dependent communities face significant ecological challenges. The results presented in Table 2 reveal that certain governance mechanisms—such as waste recycling programs and inter-village cooperation—are significantly associated with increased participation in conservation efforts.

The bivariate analysis reveals that villages with waste recycling programs show a significantly higher rate of participation in conservation efforts, with 69.49% of these villages engaged in ECE compared to 30.51% in villages without recycling programs. The chi-square test ($p = 0.000$) supports this significant relationship, indicating that waste recycling programs are strongly linked to higher conservation engagement. This finding is consistent with similar studies in Southeast Asia and Latin America, where waste recycling initiatives have been shown to catalyze broader environmental actions (Araya-Córdova et al., 2021)(Yang et al., 2024). For instance, in China, community-driven waste management programs not only reduced waste but also increased community involvement in sustainable environmental practices, such as water conservation and biodiversity protection.

The findings suggest that local governance systems that prioritize cooperation, shared responsibility, and community-based decision-making are more effective in promoting environmental conservation. This aligns with the work of (Cai et al., 2024; Kapsalis, 2022; Yi et al., 2024), who argue that local governance is most effective when it leverages endogenous resources such as local knowledge and community cooperation. Decentralized governance, as seen in Indonesia, has given villages more autonomy to manage environmental policies, but this has not always translated into effective conservation due to challenges in institutional capacity. Therefore, strengthening collaborative frameworks at the village level can help ensure that environmental

goals are achieved and sustained in the long term (Budiono et al., 2024).

The Role of Public Spaces and Digital Governance in Environmental Conservation

In this study, the availability of public spaces within villages emerged as a significant factor influencing participation in ECE.

Table 3. Multivariate Logistic Regression Model of Environmental Conservation Efforts

Variable	AOR (Full Model)	95% CI (Lower)	95% CI (Upper)	AOR (Reduced Model)
Village information system	0.56	0.29	1.16	0.51
Inter-illage cooperation	3.09	1.39	6.88	3.26
Boat mooring	1.98	1.06	3.71	2.08
Waste recycling	7.59	3.01	19.62	8.89
Number of assets (3–4)	0.58	0.27	1.23	0.56
Number of assets (5+)	1.11	0.45	2.79	1.10
Economic facilities (4+)	0.40	0.21	0.75	0.43
Open public spaces	3.62	1.34	9.75	0.51
Soil pollution	3.69	1.18	11.61	3.61

Source: Statistics Indonesia, Village Potential Census (PODES) 2021, processed by authors

The results in Table 3 demonstrate that villages with open public spaces were 3.62 times more likely to engage in conservation efforts (AOR = 3.62; 95% CI: 1.34–9.75). These spaces function not only as physical infrastructure but also as vital platforms for community engagement and environmental education. Studies in rural Jiangsu, China support this finding, where public spaces were utilized to conduct community-based environmental workshops that significantly improved public involvement in conservation programs (Z. Xu & Miao, 2022a). Similarly, research in Vietnam found that community spaces enhanced local participation in sustainability initiatives, especially when linked to public policy and education programs (Dinh & Wesseler, 2024).

The study also shows that public spaces play a dual role in fostering environmental stewardship. They serve as areas for volunteer programs, tree planting, and community clean-ups, all of which contribute to sustainability efforts at the village level. According to reports, the success of environmental education in Cambodia was largely due to the active use of public spaces for engaging youth in conservation projects (Padilla et al., 2025). This is similar to findings in China, where public spaces were used for community mobilization around climate adaptation strategies (Y. Zhang, 2024). In Bangka Belitung, however, many public spaces remain underutilized, which represents both a challenge and an opportunity for local governments. Transforming these spaces into hubs for environmental learning could significantly enhance community resilience and improve engagement in conservation activities.

Moreover, digital governance has emerged as a powerful tool for improving participation in environmental governance. Villages with digital governance systems demonstrated a 67.47% participation rate in conservation activities, compared to 53.33% in villages without these systems. The chi-square test ($p = 0.040$) suggests that digital tools play a critical role in enhancing public engagement and facilitating environmental monitoring. This is supported by recent studies that highlight the role of digital platforms in local governance and community involvement in sustainability efforts (Baeza et al., 2023; Liu et al., 2024). For instance, e-governance tools in Vietnam have enabled real-time communication between local authorities and citizens, leading to better decision-making and more effective environmental management (Nguyen et al., 2020).

However, while digital governance has the potential to improve environmental participation, its effectiveness is contingent upon institutional capacity and digital literacy. The study highlights a significant gap between the availability of digital infrastructure and the ability of local governments to utilize it effectively. Local leaders in Bangka Belitung may need further training and support to fully integrate digital platforms into governance structures. Previous research in across Asia has shown that digital literacy programs for village leaders and community members can improve the effectiveness of e-governance and lead to better participation in environmental governance (Yanting &

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Ali, 2023). As such, the findings suggest that improving digital literacy, alongside investing in e-governance infrastructure, is crucial for enhancing public participation in sustainability initiatives.

Moreover, digital governance systems must be coupled with transparent policies and inclusive platforms to facilitate meaningful engagement. As highlighted, digital tools are most effective when combined with open data sharing, public participation mechanisms, and clear governance frameworks that ensure the inclusivity of decision-making processes (Tabor et al., 2024). This study thus calls for collaborative digital platforms that facilitate real-time data sharing, community feedback, and environmental monitoring, allowing villages to better align their development and conservation efforts.

Economic Infrastructure and Its Impact on Environmental Conservation Efforts (ECE)

The relationship between economic infrastructure and ECE emerged as a key finding in this study. Villages with more than four economic facilities showed a significantly lower likelihood of participating in conservation efforts. The logistic regression results presented in Table 3 indicate a negative association between economic infrastructure and ECE, with an Adjusted Odds Ratio (AOR) of 0.43 (95% CI: 0.21–0.75). Villages with a greater concentration of economic facilities—including markets, cooperatives, and industrial zones—were found to engage in conservation activities at much lower rates than those with fewer facilities. This suggests that economic development, particularly in extractive industries, may prioritize short-term growth over long-term sustainability goals.

These findings are consistent with global studies that have identified the negative impacts of economic expansion on environmental outcomes. In China, industrial growth and the expansion of mining operations have been linked to increased deforestation, biodiversity loss, and a decline in community participation in environmental protection (D. Xu et al., 2025; Liu & Han, 2023) . Similarly, in Brazil, the expansion of the palm oil sector has resulted in environmental degradation, particularly in areas where economic facilities and extractive industries dominate (Felipe Sobczynski et al., 2023a). This suggests that while economic facilities can drive local development, their expansion must be carefully managed to avoid negative environmental consequences.

The findings highlight the importance of integrating environmental impact assessments into economic development planning (Sabet & Khaksar, 2024). In Bangka Belitung, the expansion of economic infrastructure, particularly in resource-extractive industries, needs to be aligned with sustainability goals to avoid further environmental degradation. Policymakers should encourage the development of green technologies and eco-friendly infrastructure that can support both economic growth and environmental sustainability. The implementation of environmental safeguards, such as sustainable land-use policies and carbon offset programs, could mitigate the potential negative effects of industrial expansion on local ecosystems and community conservation efforts.

Furthermore, the positive relationship between economic facilities and economic development must be carefully considered in the context of resource-dependent regions like Bangka Belitung. While economic growth can provide financial resources for conservation, it also comes with trade-offs. As Szabo et al. (2022) argue, regions heavily dependent on . The challenge for Bangka Belitung lies in finding a balance between economic growth and environmental preservation. Policymakers must develop strategies that promote sustainable development, such as eco-tourism, agroforestry, and renewable energy initiatives, which provide economic benefits without compromising the environment.

Village-Owned Assets and Their Influence on ECE Participation

In addition to governance and economic factors, the analysis of village-owned assets provided valuable insights into their influence on ECE. Village-owned assets—such as forests, boat moorings, and communal resources—were hypothesized to play a significant role in shaping local participation in environmental conservation. The bivariate analysis in Table 3 did not show a statistically significant relationship between asset ownership and ECE ($p = 0.344$). However, the multivariate regression analysis in Table 3 revealed a more complex relationship, with villages possessing 3–4 assets exhibiting a lower likelihood of participating in ECE (AOR = 0.56), while those with 5 or more assets showed a neutral effect (AOR = 1.10).

These results suggest that resource ownership alone is not sufficient to guarantee effective conservation outcomes. Similar findings have been observed in Ghana's decentralized forest governance, where legal ownership of resources did not necessarily lead to sustainable management without proper governance frameworks (Mawutor & Hajjar, 2022). In Bangka Belitung, village-owned forests and communal spaces may not be fully utilized for conservation unless governance structures support participatory management and provide adequate incentives for resource stewardship.

The study suggests that asset accumulation must be complemented by effective governance structures and institutional support to realize their full conservation potential. For example, eco-tourism or sustainable forest management programs could serve as viable models for turning village-owned assets into economic drivers while simultaneously supporting biodiversity conservation. Moreover, aligning national conservation goals with local asset management strategies can help villages mobilize resources for environmental protection. As Tarun et al. (2024) point out, community-based forest management programs that involve local communities in resource decision-making can enhance conservation outcomes and improve the livelihoods of rural populations.

The Influence of Marine Resource Dependence on ECE

The study also examined the role of marine resource dependence, as indicated by the presence of boat moorings in the villages of Bangka Belitung, in shaping participation in ECE. Villages with boat moorings, which are indicative of reliance on marine resources, were more likely to engage in ECE. Specifically, the logistic regression analysis in Table 3 revealed an Adjusted Odds Ratio (AOR) of 2.08 (95% CI: 1.06–3.71), suggesting that villages with marine-related assets are more likely to participate in environmental conservation activities compared to those without such assets.

This finding aligns with studies in Indonesia's coastal regions and Baja California, where fisher-dependent communities have demonstrated stronger inclinations toward marine conservation as part of their local development strategies (Micheli et al. (2024). In these areas, the interdependence between local livelihoods and the health of marine ecosystems has led to increased participation in marine conservation programs. In Bangka Belitung, the presence of boat moorings indicates a significant reliance on marine resources, which may explain the stronger conservation outcomes in these villages.

The relationship between marine resource dependence and ECE suggests that villages heavily reliant on coastal ecosystems are more motivated to protect those resources (Aldasoro-Said & Ortiz-Lozano (2021). This highlights the importance of aligning economic incentives with conservation goals. In this context, sustainable fisheries management, marine protected areas, and eco-tourism initiatives could be viable strategies to strengthen conservation in marine-dependent villages. Moreover, policy interventions that promote sustainable fishing practices and offer economic alternatives to overfishing can help balance economic needs with marine ecosystem preservation.

However, the effectiveness of marine conservation depends not only on community engagement but also on institutional capacity and policy support Zhao et al. (2022). The study points to the need for integrated coastal zone management and collaborative governance to ensure that marine resource management aligns with broader environmental and development policies. Such integration can enhance community resilience to climate change impacts while preserving vital marine ecosystems.

The Role of Digital Governance Systems in Enhancing ECE

The role of digital governance systems in influencing ECE was another significant finding from the analysis. Digital tools such as village information systems were found to be strong predictors of environmental participation. Villages with digital governance platforms exhibited a higher rate of ECE participation (67.47%) compared to those without these systems (53.33%), with a chi-square p-value of 0.040 indicating statistical significance. This demonstrates that digital platforms can enhance public engagement, improve data transparency, and facilitate community participation in sustainability planning.

The importance of digital governance is supported by recent studies that highlight the role of digital tools in improving environmental management. For example, Khalid et al. (2024) argue that e-governance systems provide real-time data sharing and decision-making tools, which improve the efficiency of local governance and foster greater public participation in environmental protection. Similarly, Wang & Guo (2024) found that digital platforms help local governments and communities make data-driven decisions, enhancing the effectiveness of conservation policies.

However, the impact of digital governance is contingent on the institutional capacity of local governments to utilize these systems effectively. In Bangka Belitung, where digital literacy among village leaders may be limited, there is a need for capacity-building programs to ensure that digital tools are used effectively. Training programs for local officials and public awareness campaigns can help bridge the gap between digital infrastructure and effective governance. Furthermore, policy frameworks should be developed to integrate digital governance with participatory planning, ensuring that e-governance systems are used to enhance community involvement in environmental decision-making.

The Influence of Village Assets on ECE Participation

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The role of village-owned assets in shaping participation in ECE was examined through both bivariate and multivariate analysis. Table 3 shows that ownership of certain assets, such as forests, boat moorings, and communal resources, can influence a village's involvement in conservation activities. However, the analysis revealed a more nuanced relationship between asset ownership and ECE. Villages with 3-4 assets exhibited a reduced likelihood of engaging in ECE, as shown by an Adjusted Odds Ratio (AOR) of 0.56 (95% CI: 0.26–1.20), suggesting that moderate levels of asset ownership may not automatically translate into higher participation in environmental conservation.

The lack of a significant relationship between village assets and ECE in Table 3 ($p = 0.344$) aligns with findings from other regions, where resource ownership alone did not ensure effective resource management or conservation outcomes. For instance, studies on decentralized forest governance in China indicate that legal ownership of resources without an appropriate governance framework can result in ineffective conservation management (W. Liang et al., 2024). Similarly, in Indonesia, resource-rich villages often face challenges in effectively managing their natural resources, such as forests, due to gaps in institutional capacity and governance structures (Setiawan et al., 2024).

This finding underscores the importance of governance frameworks that support participatory resource management. In Bangka Belitung, villages with 5 or more assets showed a neutral effect on ECE participation (AOR = 1.10), which suggests that the effectiveness of asset ownership is contingent upon the quality of governance and management practices. For example, eco-tourism, sustainable agriculture, and agroforestry initiatives can transform village-owned assets into economic opportunities while simultaneously supporting conservation goals. Research in Southeast Sulawesi demonstrates how community-based natural resource management programs have successfully integrated local assets into sustainable development models Setiawan et al. (2024).

Economic Development and the Trade-offs with Conservation

The negative correlation between economic facilities and ECE highlights the trade-off between economic development and environmental protection. Table 3 shows that villages with more than four economic facilities had a significantly lower likelihood of participating in ECE, with an AOR of 0.43 (95% CI: 0.21–0.75). This suggests that the expansion of economic infrastructure, particularly in extractive industries, can undermine environmental commitments by prioritizing short-term economic gains over long-term sustainability goals. The expansion of economic infrastructure, such as markets and industrial zones, has been shown to reduce community engagement in conservation efforts, a finding that mirrors the experiences of China, Brazil, and Indonesia, where economic growth often results in environmental degradation (Ali et al., 2018; Reale et al., 2022; Miller et al., 2020).

This study provides additional evidence that resource-dependent villages in regions like Bangka Belitung face significant challenges in balancing economic growth with environmental protection. Economic growth in resource-extractive industries often leads to the degradation of natural ecosystems and biodiversity. Policymakers should take these trade-offs into account when designing economic development plans. Integrating environmental safeguards, such as sustainable land-use policies and eco-friendly business practices, into economic development strategies is critical for ensuring that growth does not come at the expense of the environment. The findings suggest that economic infrastructure should be evaluated for its long-term ecological impacts, with environmental impact assessments and green technologies prioritized in resource-intensive industries.

Furthermore, as Han (2024); and Suleymanov et al. (2023) argue, there is a growing need for sustainable development policies that incorporate both economic development and environmental sustainability. Green technologies, such as renewable energy, eco-tourism, and sustainable agriculture, can serve as alternative pathways for economic development without compromising environmental goals. Policymakers should consider supporting these sectors through incentives and performance-based funding mechanisms, which would encourage local communities to adopt sustainable practices while still benefiting from economic development.

The Influence of Village-Owned Assets on ECE Participation

The role of village-owned assets in shaping participation in ECE was examined through both bivariate and multivariate analysis. Table 3 shows the results of the bivariate analysis, which investigated the relationship between asset ownership and environmental behavior in the villages. The analysis revealed that villages with more village-owned assets—such as forests, boat moorings, and communal resources—tended to have higher participation rates in conservation activities. However, the p-value of 0.344

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from the chi-squared test indicated that asset ownership did not show a statistically significant relationship with ECE at the bivariate level.

Despite the lack of significant results in the bivariate analysis in Table 3, the multivariate regression analysis in Table 2 provided a more nuanced understanding. Villages with 3–4 assets had a reduced likelihood of engaging in ECE (AOR = 0.56), while those with 5 or more assets had a neutral effect (AOR = 1.10). This suggests that moderate asset ownership does not necessarily lead to higher levels of environmental engagement. These findings are consistent with studies in China, where forest ownership alone did not guarantee successful sustainable management without strong governance frameworks (Friedman et al., 2020 and Butler et al., 2022).

The results also highlight that asset accumulation alone is insufficient to ensure effective conservation outcomes. Bangka Belitung presents a unique case where village-owned forests and communal assets may be underutilized unless there is sufficient institutional support and governance capacity. Eco-tourism, agroforestry, and other sustainable resource management practices should be explored as potential strategies for using these assets to both enhance conservation efforts and generate economic benefits for local communities. This aligns with the work of Tarun et al. (2024), which emphasizes the need for community-based resource management that integrates local assets into sustainable development strategies.

Economic Development and the Trade-offs with Conservation

The analysis also reveals a negative correlation between the number of economic facilities and ECE. According to the data in Table 3, villages with more than four economic facilities—such as markets, cooperatives, and industrial zones—were significantly less likely to participate in conservation efforts (AOR = 0.43; 95% CI: 0.21–0.75). This finding suggests that the expansion of economic infrastructure, particularly in resource-extractive industries, may divert attention from sustainable development goals and environmental protection.

This result supports global studies showing that economic development focused on extractive industries often leads to environmental degradation and diminished community participation in conservation. For instance, in China and Brazil, industrialization and economic growth in resource-rich regions have resulted in deforestation and the loss of biodiversity, as industrialization often takes precedence over environmental concerns Tang et al. (2025) and Felipe Sobczynski et al. (2023). In Bangka Belitung, where tin mining and palm oil production drive economic growth, the trade-off between economic development and environmental sustainability is particularly pronounced.

The study highlights the need for sustainable development policies that align economic growth with environmental goals. Green technologies, eco-friendly infrastructure, and environmental safeguards should be prioritized to ensure that the benefits of economic development do not come at the expense of the environment. Policymakers should adopt impact assessments for new projects and performance-based incentives to encourage villages to integrate environmental concerns into their economic plans.

Integrating Environmental Education and Policy for Long-Term Sustainability

The findings underscore the essential role of environmental education in enhancing ECE at the village level. Public spaces and digital governance systems can serve as platforms for environmental learning and awareness-building. In Bangka Belitung, villages with active youth engagement in conservation programs demonstrated greater long-term sustainability in environmental initiatives. Studies, such as those conducted by Ehara et al. (2023), highlight the significance of involving youth in community forestry programs to ensure the continuity of conservation efforts. Similarly, in Jiangsu, China, public spaces were utilized for organizing workshops and training programs that successfully increased community participation in conservation (Xu & Miao, 2022).

Incorporating environmental education into village-level planning, school curricula, and youth initiatives is crucial for cultivating a generation more attuned to sustainable practices. This aligns with the findings of Tiwari & Nguyen (2024) , which emphasize that education is a cornerstone of community-driven environmental governance. The study suggests that Bangka Belitung could benefit from incorporating environmental education into the local development agenda, particularly in the school system and through youth engagement programs. Moreover, public spaces could serve as venues for tree-planting campaigns, clean-up events, and community workshops, reinforcing the idea that community-based education fosters collective responsibility for environmental conservation.

This study also emphasizes the need for policy alignment between economic development and environmental conservation. The findings indicate that economic facilities—such as markets and industrial zones—have a negative impact on ECE. The study suggests that sustainable development policies should

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promote green technologies and eco-friendly infrastructure alongside economic growth. Integrating environmental safeguards into the planning and approval process for new economic projects is crucial. Policymakers should consider performance-based incentives to encourage villages to meet environmental conservation goals while still promoting economic development.

Research by Paudel et al. (2024) supports these conclusions, highlighting that environmental policies must be integrated into economic planning to achieve sustainable outcomes. The findings suggest that Bangka Belitung, with its reliance on extractive industries, must balance economic growth with conservation by adopting policies that prioritize green technologies and sustainable practices.

Linking Findings to Broader Conservation Strategies

In addition to the economic-development-environmental trade-off, the study provides a clear pathway for integrating socio-economic factors with environmental conservation efforts in Bangka Belitung. Participatory governance, community-based management, and digital tools are central to creating effective sustainability models. As noted by Ahmed et al. (2023) and Mbidzo et al. (2021), the role of programs is crucial in localizing global sustainability goals and fostering shared ownership of environmental resources. This study suggests that inter-village cooperation and digital governance systems can be leveraged to promote scalable conservation strategies that address both local needs and global sustainability goals.

The study also emphasizes the importance of cross-sectoral collaboration in resource-dependent regions. By integrating climate adaptation, disaster resilience, and environmental governance into local planning, policymakers can create a holistic approach to sustainability. As demonstrated by King et al. (2023) and Sidney Correa et al. (2024), when environmental initiatives are aligned with health, education, and disaster resilience, communities are more likely to embrace sustainability measures.

This study further suggests that the global shift towards climate adaptation provides an opportunity to reinforce local conservation efforts. Banda et al. (2024) argue that integrating environmental conservation with climate adaptation strategies improves resilience to climate risks, such as flooding and droughts. For Bangka Belitung, aligning conservation efforts with climate adaptation planning not only protects ecosystems but also strengthens the village's capacity to deal with climate-related vulnerabilities.

The empirical results of this study are consistent with several studies conducted in other developing regions, which emphasize the role of local governance and participatory infrastructure in promoting environmental conservation. For example, community-led recycling initiatives in Vietnam and participatory marine management in the Philippines have shown similar patterns of increased conservation engagement when local institutions are empowered. In the Indonesian context, Budiono et al. (2024) demonstrated that mangrove conservation efforts were more effective when supported by strong village leadership and decentralized planning. Likewise, Setiawan et al. (2024) found that community forest management in Southeast Sulawesi succeeded when aligned with local governance structures and economic incentives. This study reinforces and extends these findings by offering a province-wide, data-driven analysis that not only confirms the value of institutional support but also quantifies its relative influence across multiple variables.

CONCLUSION

This study provides a comprehensive analysis of the factors influencing ECE in resource-dependent villages in Bangka Belitung, Indonesia. The key findings reveal that governance structures, particularly inter-village cooperation, waste recycling programs, and the availability of public spaces, play a significant role in fostering participation in conservation activities. Specifically, waste recycling programs were identified as the most significant predictor of ECE, with villages that had recycling programs being almost nine times more likely to engage in conservation efforts. Additionally, inter-village cooperation and open public spaces were positively correlated with increased participation in conservation activities, suggesting that collaborative governance and community involvement are essential drivers of sustainability.

On the other hand, economic infrastructure demonstrated a negative relationship with ECE, with villages having more than four economic facilities being less likely to engage in conservation. This finding highlights the trade-off between economic growth, particularly in extractive industries, and environmental sustainability. Furthermore, digital governance tools, including village information systems, were shown to enhance environmental participation by improving public access to data and enabling better governance. These results underscore the importance of aligning economic development with sustainable governance to ensure that growth does not come at the cost of environmental protection. Multi-level governance that integrates local knowledge, community participation,

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and institutional support is essential for building resilient conservation strategies.

These findings carry clear implications for village governance policy. Policymakers should consider embedding environmental criteria into village development planning (RKPDes), including support for recycling infrastructure, community-managed public spaces, and platforms for inter-village cooperation. Furthermore, strengthening digital governance systems at the village level—paired with leadership training and public engagement—can enhance participation in conservation programs. Village governments need both institutional autonomy and technical support to translate sustainability goals into locally grounded initiatives. Integrating these policy directions into regional planning and funding mechanisms can help scale effective environmental governance across resource-dependent rural areas.

While this study offers valuable insights, there are several limitations to consider. First, the cross-sectional nature of the data limits the ability to infer causal relationships. A longitudinal study that tracks changes in conservation efforts over time would provide deeper insights into the long-term impact of governance models and policy interventions. Additionally, this study is focused on Bangka Belitung, which may limit the generalizability of the findings to other regions with different socio-economic and ecological contexts. Future research could explore similar models in other regions of Indonesia or in comparative studies with other countries in the Global South to assess the transferability of these governance frameworks.

REFERENCES

(The manuscript must include a minimum of 40 references that are relevant, up to date, and sourced from reputable journals. Self-citation is limited to a maximum of two articles, and only from reputable and relevant journals)

Aldasoro-Said, G., & Ortiz-Lozano, L. (2021). Marine resource dependence in rural coastal communities south of the Reef Corridor of the Southwest Gulf of Mexico. *Ocean and Coastal Management*, *211*. https://doi.org/10.1016/j.ocecoaman.2021.105778

Ali, M., Kennedy, C. M., Kiesecker, J., & Geng, Y. (2018). Integrating biodiversity offsets within Circular Economy policy in China. *Journal of Cleaner Production*, *185*, 32–43. https://doi.org/10.1016/j.jclepro.2018.03.027

Araya-Córdova, P. J., Dávila, S., Valenzuela-Levi, N., & Vásquez, Ó. C. (2021). Income inequality and efficient resources allocation policy for the adoption of a recycling program by municipalities in developing countries: The case of Chile. *Journal of Cleaner Production*, *309*. https://doi.org/10.1016/j.jclepro.2021.127305

Banda, L. O. L., Banda, C. V., Banda, J. T., Hlaing, T. T., & Mwaene, E. (2024). Assessing farmers' knowledge of environmental policy along the Ayeyarwady River: Strides towards the Indian Ocean marine life safety. *Heliyon*, *10*(16). https://doi.org/10.1016/j.heliyon.2024.e35503

Budiono, P., Wulandari, C., Apriliani, A. P., & Sari, F. Y. (2024). The Impact of Village Governance Environmental Management on Community-Based Mangrove Development in Karang City, Bandar Lampung. *International Journal of Environmental Impacts*, *7*(4), 675–683. https://doi.org/10.18280/ijei.070408

Butler, B. J., Caputo, J., Henderson, J. D., Pugh, S., Riitters, K., & Sass, E. M. (2022). Cross-Boundary Sustainability: Assessment across Forest Ownership Categories in the Conterminous USA Using the Montréal Process Criteria and Indicators Framework. *Forests*, *13*(7). https://doi.org/10.3390/f13070992

Cai, M., Zhang, Q., & Zhao, X. (2024). Social Embeddedness, Power Balance, and Local Governance in China. *World Development*, *179*(February), 106592. https://doi.org/10.1016/j.worlddev.2024.106592

Cho, S., & Kweon, D. (2022). Horizontal cooperation among communities and govern-ments for sustainable village woodlands in Wando County, South Korea. In *International Forestry Review* (Vol. 24, Issue 3).

Dinh, H. H., & Wesseler, J. (2024). Decentralization Of Vietnam'S forestlands: The policy process and impact. *Land Use Policy*, *143*. https://doi.org/10.1016/j.landusepol.2024.107194

Duadji, N., Tresiana, N., Putri, A. M. L. S., & Riniarti, M. (2022). Can the Implementation of Conservation Village Increase the Environmental Support in Forest Management in Bukit Barisan Selatan National Park, Lampung, Indonesia? *International Journal of Sustainable Development and Planning*, *17*(3), 751–763. https://doi.org/10.18280/ijsdp.170306

Ehara, M., Matsuura, T., Gong, H., Sokh, H., Leng, C., Choeung, H. N., Sem, R., Nomura, H., Tsuyama, I., Matsui, T., & Hyakumura, K. (2023). Where do people vulnerable to deforestation live? Triaging forest conservation interventions for sustainable non-timber forest products. *Land Use Policy*, *131*. https://doi.org/10.1016/j.landusepol.2023.106637

Felipe Sobczynski, G., Tschöke Santana, D., & Rechia, S. (2023a). Sustainable Village Project: the importance of leisure and public space for collective organization. *Leisure Studies*, *42*(3), 397–412. https://doi.org/10.1080/02614367.2022.2121414

Felipe Sobczynski, G., Tschöke Santana, D., & Rechia, S. (2023b). Sustainable Village Project: the importance of leisure and public space for collective organization. *Leisure Studies*, *42*(3), 397–412. https://doi.org/10.1080/02614367.2022.2121414

Friedman, R. S., Rhodes, J. R., Dean, A. J., Law, E. A., Santika, T., Budiharta, S., Hutabarat, J. A., Indrawan, T. P., Kusworo, A., Meijaard, E., St. John, F. A. V., Struebig, M. J., & Wilson, K. A. (2020). Analyzing procedural equity in government-led community-based forest management. *Ecology and Society*, *25*(3), 1–18. https://doi.org/10.5751/ES-11710-250316

Gyamfi, E., Derkyi, M. A. A., & Brobbey, L. K. (2021). Insights, motives, and means of overcoming forest offenses in Ghana's forestry sector: The case of the Bibiani Forest District. *Scientific African*, *13*, e00962. https://doi.org/10.1016/j.sciaf.2021.e00962

Han, S. (2024). Integrating mineral and natural resources for enhanced environmental resilience and sustainability. *Resources Policy*, *91*. https://doi.org/10.1016/j.resourpol.2024.104869

Hmimou, A., Iaousse, M., Hmimou, S., Hachimi, H., & El Kettani, Y. (2023). On the Performance of Full Information Maximum Likelihood in SEM Missing Data. *Mathematics and Statistics*, *11*(1), 134–143. https://doi.org/10.13189/ms.2023.110115

Horigue, V., Richards, R., Taju, A., & Maina, J. (2023). Disentangling the influence of the economic development discourse on the management of national parks through systems thinking: Case studies from the Philippines and Mozambique. *Land Use Policy*, *125*. https://doi.org/10.1016/j.landusepol.2022.106499

Jabali, W., Wamukota, A., & Fulanda, B. (2020). The role of indigenous knowledge in the management of marine resources: a case study of Kuruwitu and Mkunguni fishing areas in Kenya. *Western Indian Ocean Journal of Marine Science*, *19*(1), 19–31. https://doi.org/10.4314/wiojms.v19i1.2

Jackson, C. M., Durowoju, O. S., Adelabu, S. A., & Adeniyi, S. A. (2025). An assessment of Kenya's forest policy and law on participatory forest management for sustainable forest management: Insights from Mt. Kenya Forest Reserve. *Trees, Forests and People*, *19*(December 2024), 100770. https://doi.org/10.1016/j.tfp.2024.100770

Kapsalis, T. A. (2022). A three-leg cultural relay race to sustainability of rural communities. *Current Research in Environmental Sustainability*, *4*(October 2021), 100136. https://doi.org/10.1016/j.crsust.2022.100136

Khalid, F., Sun, X., Akram, R., & Srivastava, M. (2024). Digital finance and corporate environmental violations. *Finance Research Letters*, *66*. https://doi.org/10.1016/j.frl.2024.105674

King, J. S., Manning, J., & Woodward, A. (2023). In this Together: International Collaborations for Environmental and Human Health. *Journal of Law, Medicine and Ethics*, *51*(2), 271–286. https://doi.org/10.1017/jme.2023.82

Lee, H., & Liu, Y. (2024). All hands on deck: the role of collaborative platforms and lead organizations in achieving environmental goals. *Journal of Public Administration Research and Theory*, *34*(3), 331–348. https://doi.org/10.1093/jopart/muae006

Liang, L., Zhuang, Y., & Yu, P. L. H. (2024). Variable selection for high-dimensional incomplete data. *Computational Statistics and Data Analysis*, *192*(November 2022), 107877. https://doi.org/10.1016/j.csda.2023.107877

Liang, W., Arts, B., Dong, J., Li, L., & Liu, J. (2024). “I’ll be back”: the emergence of recentralized forest devolution in the southern provinces of China. *Ecology and Society*, *29*(3). https://doi.org/10.5751/es-15321-290319

Liu, P., & Han, A. (2023). How Does Community Leadership Contribute to Rural Environmental Governance? Evidence from Shanghai Villages*. *Rural Sociology*, *88*(3), 856–894. https://doi.org/10.1111/ruso.12504

Mawutor, S. M., & Hajjar, R. (2022). Examining the powers decentralized to community resource management areas in Ghana. *Land Use Policy*, *119*. https://doi.org/10.1016/j.landusepol.2022.106204

Micheli, F., Saenz-Arroyo, A., Aalto, E., Beas-Luna, R., Boch, C. A., Cardenas, J. C., De Leo, G. A., Diaz, E., Espinoza-Montes, A., Finkbeiner, E., Freiwald, J., Fulton, S., Hernández, A., Lejbowicz, A., Low, N. H. N., Martinez, R., McCay, B., Monismith, S., Precoma-de la Mora, M., ... Woodson, C. B. (2024). Social-ecological vulnerability to environmental extremes and adaptation pathways in small-scale fisheries of the southern California Current. *Frontiers in Marine Science*, *11*. https://doi.org/10.3389/fmars.2024.1322108

Miller, A. E., Davenport, A., Chen, S., Hart, C., Gary, D., Fitzpatrick, B., Muflihati, Kartikawati, Sudaryanti, & Sagita, N. (2020). Using a participatory impact assessment framework to evaluate a community-led mangrove and fisheries conservation approach in West Kalimantan, Indonesia. *People and Nature*, *2*(4), 1061–1074. https://doi.org/10.1002/pan3.10133

Narh, J., Wehner, S., & Schmitt, C. B. (2025). "Odum will take forever to grow": The political ecology of agroforestry in Ghana. *Trees, Forests and People*, *19*(December 2024), 100771. https://doi.org/10.1016/j.tfp.2024.100771

Padilla, E. C., Giuliani, A., Kanniya, K. S., Heang, V. L., Sokchea, T., Hou, K., & Gilliéron, J. (2025). Community engagement in the governance of Cambodian recreation forests. *Forest Policy and Economics*, *170*. https://doi.org/10.1016/j.forpol.2024.103386

Paudel, P. K., Parajuli, S., Bohara, M., Kibria, M. G., Abedin, M. A., & Sinha, R. (2024). Mainstreaming ecosystem-based approaches into disaster risk reduction policies: a comparative study of Nepal, India, and Bangladesh. *Policy Design and Practice*, *7*(3), 324–342. https://doi.org/10.1080/25741292.2024.2368919

Reale, R., Ribas, L. C., & Magro Lindenkamp, T. C. (2022). Ecosystem services as a ballast to guide sustained economic growth by biodiversity conservation actions. *Journal of Cleaner Production*, *358*. https://doi.org/10.1016/j.jclepro.2022.131846

Rizal, R. N., Hartono, D., Dartanto, T., & Gultom, Y. M. L. (2024). Multidimensional energy poverty: A study

of its measurement, decomposition, and determinants in Indonesia. *Heliyon*, *10*(3), e24135. https://doi.org/10.1016/j.heliyon.2024.e24135

Sabet, N. S., & Khaksar, S. (2024). The performance of local government, social capital and participation of villagers in sustainable rural development. *Social Science Journal*, *61*(1), 1–29. https://doi.org/10.1080/03623319.2020.1782649

Sackey, R., Brobbey, L. K., Kumeh, E. M., & Ameyaw, J. A. S. (2025). Environmentality and the making of compliant subjects: Insights from collaborative forest management innovations in Southwestern Ghana. *Forest Policy and Economics*, *173*(September 2024), 103475. https://doi.org/10.1016/j.forpol.2025.103475

Safitri, I., Maharani, E., Sofiana, M. S. J., Purnama, M. F., & Nguyen, D. H. (2025). Assessing Mangrove Gastropod Biodiversity: Composition, Abundance, and Ecological Indices in Mempawah, West Kalimantan, Indonesia. *Egyptian Journal of Aquatic Biology and Fisheries*, *29*(2), 407–428. https://doi.org/10.21608/ejabf.2025.416697

Salerno, J., Andersson, K., Bailey, K. M., Hilton, T., Mwaviko, K. K., Simon, I. D., Bracebridge, C., Mangewa, L. J., Nicholas, A., Rutabanzibwa, H., & Hartter, J. (2021). More robust local governance suggests positive effects of long-term community conservation. *Conservation Science and Practice*, *3*(1). https://doi.org/10.1111/csp2.297

Setiawan, M. R., Nurrochmat, D. R., & Purwawangsa, H. (2024). Strengthening village forest management strategies in East Kolaka, Southeast Sulawesi, Indonesia. *Biodiversitas*, *25*(7), 2945–2959. https://doi.org/10.13057/biodiv/d250716

Shin, T., Davison, M. L., & Long, J. D. (2009). Effects of missing data methods in structural equation modeling with nonnormal longitudinal data. *Structural Equation Modeling*, *16*(1), 70–98. https://doi.org/10.1080/10705510802569918

Sidney Correa, F., Parmar, Y., Varma, P., Ahmed, W., Zagade, T., Gajendra Mohapatra, S. S., & Sharmao, A. (2024). The Influence of Environmental Policies on Public Health Outcomes. *Health Leadership and Quality of Life*, *3*. https://doi.org/10.56294/hl2024.370

Suleymanov, M., Huazheva, A., & Akhyadov, E. (2023). Environmental economics and sustainable development. *BIO Web of Conferences*, *76*. https://doi.org/10.1051/bioconf/20237608007

Szabo, A., Shriver, T. E., & Longo, S. (2022). Environmental threats and activism against extractive industries: The case of gold mining in Rosia Montană, Romania. *Journal of Rural Studies*, *92*, 26–34. https://doi.org/10.1016/j.jrurstud.2022.03.017

Tabor, K. M., Stavros, N., Biehler, D., Castillo-Villamor, L. C., Mahmoudi, D., Moreno Amado, L. M., & Holland, M. B. (2024). Digital equity in a crowded tool space: Navigating opportunities and challenges for equitable implementation of conservation technologies. *Conservation Science and Practice*. https://doi.org/10.1111/csp2.13279

Tang, Z., Tian, H., Wang, Y., Zhang, J., Li, W., Wang, T., Cheng, J., Su, C., & Qi, L. (2025). Scale effects of supplementary nature reserves on biodiversity conservation in China's southern hilly region. *Journal of Environmental Management*, *373*. https://doi.org/10.1016/j.jenvman.2024.123676

Tarun, M. T. G., Gumiran, I. G., & Peñaflor, B. L. (2024). Cultivating Multifaceted Participation in the Community-Based Forest Management (CBFM) Program in Communities of Northern Isabela. *American Journal of Environment and Climate*, *3*(2), 91–105. https://doi.org/10.54536/ajec.v3i2.3262

Tiwari, S., & Nguyen, T. P. L. (2024). Towards social equity and sustainable economic prosperity through ecotourism: A case of caste diversified community along Annapurna Sanctuary trail (AST), Nepal. *World Development Perspectives*, *34*. https://doi.org/10.1016/j.wdp.2024.100592

Utami, D. D., Dhewanto, W., & Lestari, Y. D. (2023). Rural tourism entrepreneurship success factors for sustainable tourism village: Evidence from Indonesia. *Cogent Business and Management*, *10*(1). https://doi.org/10.1080/23311975.2023.2180845

Villalba Ferreira, M., Dijkstra, G., Scholten, P., & Sucozhañay, D. (2022). The effectiveness of inter-municipal cooperation for integrated sustainable waste management: A case study in Ecuador. *Waste Management*, *150*, 208–217. https://doi.org/10.1016/j.wasman.2022.07.008

Wang, H., & Guo, J. (2024). New way out of efficiency-equity dilemma: Digital technology empowerment for local government environmental governance. *Technological Forecasting and Social Change*, *200*. https://doi.org/10.1016/j.techfore.2023.123184

Widyastuti, A. T., Hartono, D., Sidig, D. S., & Rusmawati, E. (2023). Financial inclusion's impact on energy poverty: Evidence from Indonesia. *World Development Sustainability*, *3*(November), 100113. https://doi.org/10.1016/j.wds.2023.100113

Wirawan, H., & Gultom, Y. M. L. (2021). The effects of renewable energy-based village grid electrification on poverty reduction in remote areas: The case of Indonesia. *Energy for Sustainable Development*, *62*, 186–194. https://doi.org/10.1016/j.esd.2021.04.006

Wulandari, C., Latifah, L. N., Kaskoyo, H., Fitriana, Y. R., Erdian, Z., Kurniawan, V. A. T., Adinda, A. R., Sari, F. Y., & Zaidi, M. (2025). Community Social Capital in Supporting Ecosystem Recovery in Rawa Kidang of Way Kambas National Park. *Journal of Multidisciplinary Applied Natural Science*, *5*(1), 200–217. https://doi.org/10.47352/jmans.2774-3047.241

Xu, D., Liu, G., Zhao, H., Li, S., Li, H., Meng, F., Zhang, L., & Chen, Y. (2025). *Trade traceability assessment of regional biodiversity loss under multiple environmental pressures*. https://doi.org/10.1016/j.jclepro.2025.145284

Xu, Z., & Miao, S. (2022a). Effect of Public Space on Collective Action for Rural Waste Management

and the Mediating Effects of Social Capital. *Agriculture (Switzerland)*, *12*(7). https://doi.org/10.3390/agriculture12071020

Xu, Z., & Miao, S. (2022b). Effect of Public Space on Collective Action for Rural Waste Management and the Mediating Effects of Social Capital. *Agriculture (Switzerland)*, *12*(7). https://doi.org/10.3390/agriculture12071020

Yang, J., Yu, L., & Zhang, J. (2024). Impacts on Rural Community Development and Governance by Different Land Ownership: A Comparative Study Based on Two Villages in China. *European Journal of Development Research*. https://doi.org/10.1057/s41287-024-00653-w

Yanting, Z., & Ali, M. (2023). Artificial intelligence, digital finance, and financial inclusion: A conceptual framework. In *Financial Inclusion Across Asia: Bringing Opportunities for Businesses* (pp. 77–85). Emerald Group Publishing Ltd. https://doi.org/10.1108/978-1-83753-304-620231006

Yi, Y., Zhu, N., Zhao, Y., & Liu, C. (2024). How do capable village cadres influence the effectiveness of rural living environment improvement? Empirical evidence from China. *Heliyon*, *10*(20), e38727. https://doi.org/10.1016/j.heliyon.2024.e38727

Zhang, D., Narbaev, T., Cheng, J., & Mushravan, A. A. (2023). How natural resources collaboration affects the pollutants level and economic growth: Novel evidence from China. *Resources Policy*, *85*. https://doi.org/10.1016/j.resourpol.2023.103801

Zhang, Y. (2024). The use of heritage in the place-making of a culture and leisure community: Liangzhu Culture Village in Hangzhou, China. *International Journal of Heritage Studies*. https://doi.org/10.1080/13527258.2024.2401796

Zhao, Y., Pikitch, E. K., Xu, X., Frankstone, T., Bohorquez, J., Fang, X., Zheng, J., Li, Y., Chen, Z., Lin, W., Hu, W., & Xue, G. (Julia). (2022). An evaluation of management effectiveness of China's marine protected areas and implications of the 2018 Reform. *Marine Policy*, *139*. https://doi.org/10.1016/j.marpol.2022.105040

Zheng, G., Yi, H., Berry, F., & Tang, T. (2024). Interlocal collaborative processes and network position: the combined effects on environmental performance. *Public Management Review*. https://doi.org/10.1080/14719037.2024.2309624

Zhou, B., & Liu, T. (2023). The impact of economic performance on the environmental protection orientation of mining enterprises: A case study of the Yangtze River Economic Belt in China. *Resources Policy*, *86*. https://doi.org/10.1016/j.resourpol.2023.104169

Zulham, A., Sumaryanto, Wardono, B., Saptana, Permana, D., Pramoda, R., & Shafitri, N. (2025). Effect of rural road improvement on the main source of income changes: Evidence from brackishwater villages in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity*, *11*(1), 100452. https://doi.org/10.1016/j.joitmc.2024.100452