

STRENGTHENING REGULATIONS FOR ENVIRONMENTAL PROTECTION IN PETAK VILLAGE, GIANYAR, BALI

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Abstract

This community service article examines the regulatory strengthening efforts for environmental protection in Petak Village, Gianyar Regency, Bali. Petak Village, situated in the heart of Bali's cultural and agricultural landscape, faces significant environmental challenges arising from the intersection of agricultural traditions, tourism development, and urbanization pressures. This article documents and analyzes a community service program aimed at reinforcing the regulatory framework governing environmental management in the village. The program employs a multi-pronged approach encompassing legal education, regulatory drafting assistance, community capacity building, and institutional strengthening. Drawing upon participatory action research methodology, the program engaged diverse stakeholders including village government officials, customary village leaders, subak (irrigation collective) organizations, farming groups, tourism awareness groups (Pokdarwis), and local youth organizations. The findings reveal that Petak Village possesses a rich tapestry of formal and customary regulatory instruments, including Village Regulation Number 02 of 2021 on Source-Based Waste Management, various subak awig-awig (customary rules), and community-developed pararem (customary agreements). However, the effective implementation of these regulations remains constrained by limited legal awareness, weak enforcement mechanisms, institutional coordination gaps, and the rapid pace of socio-economic change. The program successfully facilitated the drafting of complementary regulatory provisions, enhanced stakeholder capacity in environmental law, established community-based monitoring systems, and strengthened coordination between formal and customary governance institutions. This article concludes that strengthening environmental regulations in rural Balinese villages requires an integrated approach that respects customary institutions while building modern regulatory capacity, and that community service programs can serve as effective catalysts for such regulatory strengthening.

Keywords: Environmental Regulation, Community Service, Customary Law, Waste Management, Sustainable Agriculture

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INTRODUCTION

The intersection of environmental protection and community development represents a significant challenge in contemporary Indonesia. Bali, as a major tourism destination and a region with rich cultural heritage, faces increasing environmental pressures resulting from rapid tourism development, including natural resource exploitation, land conversion, water scarcity, waste management problems, and the erosion of traditional ecological knowledge (Saputra et al., 2022; Zen et al., 2024). These challenges are particularly relevant in rural communities that must balance economic development, cultural preservation, and environmental sustainability.

Petak Village, located in Gianyar Regency, Bali, illustrates these challenges. The village possesses important natural, agricultural, and cultural resources, including extensive rice terraces managed through the traditional subak irrigation system. The village comprises six banjar dinas, five desa adat, and seven subak organizations managing nearly 200 hectares of agricultural land (Kelly & Windia, 2019; Lestari et al., 2021; Wisnumurti et al., 2019). However, increasing tourism activities, waste generation,

agricultural land conversion, and competition for water resources have created growing environmental pressures. Tourism development has increased demand for land and resources, while inadequate waste-processing infrastructure and limited recycling capacity remain important concerns (Ewadh & Hussain, 2020; Laksmi et al., 2023; Saputra et al., 2025). Agricultural land conversion further threatens ecological functions and the cultural landscape, while increasing competition for water may affect the sustainability of the subak system (Chrastina et al., 2020; Ghorbanpour et al., 2022; Schilling et al., 2020).

Environmental governance in Petak Village is further complicated by the coexistence of formal and customary institutions. Environmental protection is supported by national regulations, including Law Number 32 of 2009 on Environmental Protection and Management and Law Number 18 of 2008 on Waste Management, as well as provincial and regency regulations concerning pollution control, waste management, spatial planning, and environmental protection (Saputra, 2018, 2021; Saputra et al., 2021; Sancaya & Saputra, 2024). At the village level, Petak Kaja Village has established Village Regulation Number 02 of 2021 on Source-Based Waste Management. At the same time, desa adat and subak institutions regulate environmental practices through customary instruments such as awig-awig and pararem (Landrawan & Juliawan, 2022; Sumarjo, 2018). Although this hybrid governance structure provides complementary mechanisms for environmental protection, coordination, jurisdictional ambiguity, limited legal awareness, and inconsistent enforcement remain important challenges (Astawa et al., 2019; Steinebach, 2022; Wisnumurti et al., 2019).

These conditions indicate that the existence of environmental regulations alone does not necessarily guarantee effective environmental protection. Regulatory implementation requires adequate legal awareness, institutional capacity, community participation, effective enforcement, and coordination between formal and customary governance institutions (Pan et al., 2023; Sara et al., 2020). In Petak Village, these needs are particularly important in addressing waste management, tourism pressure, agricultural land conversion, water resource management, and emerging environmental challenges. Strengthening the connection between formal regulations and locally embedded customary institutions may therefore provide a more effective and culturally appropriate approach to environmental governance.

In response to these challenges, a community service program was designed and implemented through collaboration among university researchers, the village government, customary institutions, and community organizations (Jayawarsa & Saputra, 2025; Saputra & Dharmawan, 2025a, 2025b). The program aimed to strengthen legal awareness and regulatory capacity among village officials, customary leaders, and community members; facilitate the development of complementary environmental regulations; improve institutional mechanisms for implementation and enforcement; strengthen coordination between formal and customary institutions; and establish community-based monitoring mechanisms for environmental compliance. The program also sought to address regulatory gaps related to waste management, tourism development, land-use protection, and environmental stewardship.

Accordingly, this article presents the implementation and outcomes of the community service program in Petak Village. It examines the environmental and regulatory context of the village, describes the program's methodology and implementation, and evaluates its contribution to strengthening community-based environmental governance. The study highlights the importance of integrating formal legal frameworks with customary institutions and community participation to promote more effective, sustainable, and locally responsive environmental protection in rural Bali.

METHODS

The program employed a participatory action research methodology, recognizing that effective regulatory strengthening requires active engagement of all stakeholders. The methodology encompassed several phases:

- 1) Needs Assessment and Stakeholder Mapping: The program began with a comprehensive assessment of the existing regulatory framework, identification of implementation gaps, and mapping of relevant stakeholders. This phase involved document review, key informant interviews, and focus group discussions with village government officials, customary leaders, subak representatives, farmer groups, tourism awareness groups (Pokdarwis), and youth organizations.
- 2) Legal Education and Capacity Building: Based on the needs assessment, the program developed and delivered legal education and capacity building activities. These activities included workshops on environmental law fundamentals, training on regulatory drafting, and sessions on enforcement procedures. The training was designed to be interactive and participatory, incorporating case studies and practical exercises relevant to Petak Village's context.
- 3) Regulatory Drafting Assistance: The program provided technical assistance to the village government in drafting complementary regulatory provisions. This assistance involved legal research, drafting of regulatory text, facilitation of stakeholder consultations, and support for the formal enactment process.
- 4) Institutional Strengthening: The program worked with existing institutions to strengthen their regulatory implementation capacity. This included support for the development of standard operating procedures for enforcement, establishment of coordination mechanisms between formal and customary institutions, and creation of community-based monitoring systems.
- 5) Monitoring and Evaluation: Throughout the program, monitoring and evaluation activities tracked progress, identified challenges, and informed adaptive management. The evaluation employed both quantitative indicators (e.g., number of regulations drafted, number of individuals trained) and qualitative assessments (e.g., stakeholder perceptions, institutional capacity changes).

Program Activities. The program implemented a range of activities designed to achieve its objectives:

- 1) Environmental Law Outreach: Building on successful models of environmental legal education in Bali, the program conducted outreach sessions in each of the village's six banjar dinas. These sessions covered the hierarchy of environmental regulations, the rights and responsibilities of community members, and the procedures for reporting violations. Particular attention was given to explaining Village Regulation Number 02 of 2021 and its practical implications for community members.
- 2) Regulatory Drafting Workshops: The program facilitated workshops to draft complementary regulatory provisions addressing identified gaps. These workshops brought together village government officials, customary leaders, and community representatives to identify priority regulatory needs and develop draft provisions. The participatory nature of these workshops ensured that the resulting regulations reflected community values and practical realities.
- 3) Coordination Forums: The program established regular coordination forums bringing together representatives from formal governance institutions (village government, Satpol PP) and customary institutions (desa adat, subak) to discuss environmental governance issues. These forums provided a platform for information sharing, joint problem-solving, and coordinated action.
- 4) Community-Based Monitoring Training: The program trained community members in environmental monitoring techniques, enabling them to identify and report violations of environmental regulations. This training built on successful community-based environmental monitoring initiatives in Bali, such as those documented in Desa Bona and other Gianyar villages.
- 5) Clean Environment Action: In collaboration with Pokdarwis and youth organizations, the program organized environmental clean-up actions that served both practical and educational

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purposes. These actions improved environmental conditions while demonstrating the importance of collective responsibility for environmental stewardship.

RESULT AND DISCUSSION

Enhanced Legal Awareness and Capacity. The program's legal education activities reached a broad cross-section of the Petak Village community. A total of 145 individuals participated in environmental law outreach sessions, including village government officials, customary leaders, subak representatives, farmer group members, Pokdarwis members, and youth organization representatives. Pre- and post-training assessments revealed significant improvements in legal awareness. Participants demonstrated increased understanding of the hierarchy of environmental regulations, their rights and responsibilities under those regulations, and the procedures for reporting violations (Fitria et al., 2020; Song et al., 2020).

Particularly noteworthy was the increased awareness among customary leaders of the relationship between customary regulations and formal legal instruments. This enhanced understanding facilitated more effective integration of customary and formal regulatory approaches (Ho et al., 2023; R. Saputra & Widiensyah, 2022).

Complementary Regulatory Provisions. The program successfully facilitated the drafting of complementary regulatory provisions addressing identified gaps in the existing regulatory framework. These provisions addressed:

- 1) **Tourism Environmental Management:** Recognizing the environmental impacts of tourism development and the absence of sufficient regulations for effective tourism management, the program assisted in drafting provisions requiring environmental impact assessments for tourism facilities, establishing carrying capacity limits for tourist sites, and mandating waste management plans for tourism businesses (Cao et al., 2021; Gerged et al., 2023).
- 2) **Agricultural Land Protection:** Responding to the threat of agricultural land conversion, the program facilitated the drafting of provisions to strengthen the protection of agricultural land. These provisions established procedures for land use change applications, required environmental impact assessments for land conversion, and created incentives for maintaining agricultural land (Darmawan et al., 2023; Laksmi et al., 2024).
- 3) **Water Resource Conservation:** Addressing concerns about water scarcity and competition, the program assisted in drafting provisions to strengthen water resource conservation. These provisions established water use priorities, required water conservation measures, and strengthened the authority of subak organizations in water management (Branstrator et al., 2023; Stronza et al., 2019).
- 4) **Waste Management Enhancement:** Building on existing waste management regulations, the program facilitated the drafting of provisions to strengthen waste reduction, recycling, and composting requirements. These provisions included requirements for household waste sorting, incentives for waste reduction, and establishment of community composting facilities (Okafor-Yarwood et al., 2020).

Institutional Strengthening. The program contributed to significant institutional strengthening for environmental governance in Petak Village:

- 1) **Village Government Capacity:** Village government officials demonstrated enhanced capacity in regulatory implementation and enforcement. They developed standard operating procedures for environmental regulation enforcement, established a systematic approach to handling environmental complaints, and improved coordination with Satpol PP for enforcement actions (Sara & Saputra, 2021; Sujana et al., 2020).

- 2) Customary Institution Capacity: Customary institutions, including desa adat and subak organizations, strengthened their regulatory implementation capacity. They developed procedures for enforcing customary regulations, established mechanisms for coordinating with formal institutions, and enhanced their capacity to address emerging environmental challenges (Yap et al., 2024).
- 3) Coordination Mechanisms: The coordination forums established through the program continued to function after the program's conclusion, providing an ongoing platform for collaboration between formal and customary institutions. These forums addressed issues ranging from waste management to water resource conservation to tourism regulation (Jayawarsa et al., 2022; Putra & Maharani, 2021).

Community-Based Monitoring Systems. The program established community-based monitoring systems that enabled community members to participate actively in environmental governance. Trained community monitors identified and reported environmental violations, participated in environmental compliance assessments, and contributed to the development of environmental improvement plans.

This community-based approach built on successful models of community participation in environmental management in Bali and demonstrated the potential for community members to serve as effective environmental stewards.

Environmental Improvements. While systematic environmental impact assessment was beyond the program's scope, observable environmental improvements were documented. Environmental clean-up actions resulted in improved environmental conditions in tourist areas. Waste management practices showed improvement, with increased household waste sorting and reduced waste requiring disposal at Temesi. Agricultural practices demonstrated continued movement toward organic methods, with four of seven subak implementing healthy farming practices and the remainder in transition. The return of ecological indicators such as earthworms, dragonflies, butterflies, and fireflies provided evidence of ecosystem recovery.

The Importance of Integrated Regulatory Approaches. The Petak Village experience demonstrates the importance of integrated regulatory approaches that combine formal legal instruments with customary regulations. The village's regulatory framework, encompassing national laws, provincial regulations, regency regulations, village regulations, and customary instruments, provides multiple layers of protection. However, the effectiveness of this framework depends on the coordination and complementarity of its various components (Ekayani et al., 2020; Jayawarsa et al., 2022).

The program's success in facilitating coordination between formal and customary institutions highlights the potential for synergy between these governance systems. Formal institutions provide legal authority, enforcement capacity, and technical resources, while customary institutions provide legitimacy, local knowledge, and community acceptance. When these systems work together, they can achieve environmental protection outcomes that neither could achieve alone (Sujana et al., 2020).

The Role of Community Participation. The program's emphasis on community participation reflects the recognition that effective environmental governance requires active engagement of all stakeholders. The community-based monitoring systems established through the program demonstrate that community members can serve as effective environmental stewards when provided with appropriate training and support. This finding aligns with broader research on community-based environmental management in Bali and reinforces the importance of participatory approaches to environmental governance (Lee & Jan, 2019; Salazar, 2012). Community participation not only enhances regulatory enforcement but also builds social capital, strengthens democratic governance, and fosters environmental stewardship values.

The Challenge of Tourism Development. The program's focus on tourism environmental management reflects recognition of the particular challenges posed by tourism development in Bali. The dominance of mass tourism has generated significant environmental impacts, and the absence of sufficient regulations for effective tourism management has been identified as a critical gap. The regulatory provisions drafted through the program address these challenges by establishing environmental requirements for tourism facilities, setting carrying capacity limits, and mandating environmental management plans (Dai et al., 2025; Mahajan et al., 2021). These provisions, if effectively implemented and enforced, can help ensure that tourism development in Petak Village proceeds in an environmentally sustainable manner.

The Need for Ongoing Capacity Building. While the program achieved significant outcomes, it also highlighted the need for ongoing capacity building in environmental governance. Environmental regulations evolve, environmental challenges change, and institutional capacity requires continuous development. The program's institutional strengthening activities established foundations for ongoing capacity building, but continued support will be needed to maintain and enhance these capacities (Dewi et al., 2025; Saputra & Dharmawan, 2025a). The program's success in engaging youth organizations in environmental activities suggests the potential for intergenerational transfer of environmental stewardship values. Continued engagement of youth in environmental governance will be essential for long-term sustainability.

Implications for Community Service Programs. The Petak Village program offers lessons for community service programs focused on environmental regulation strengthening:

- 1) **Participatory Approaches Work:** The program's participatory methodology, engaging all stakeholders in needs assessment, program design, and implementation, was essential to its success. Community members who participated in drafting regulatory provisions felt ownership of those provisions and were more likely to comply with them.
- 2) **Customary Institutions Matter:** The program's engagement with customary institutions was crucial to its effectiveness. Customary institutions provide legitimacy, local knowledge, and community acceptance that formal institutions alone cannot provide.
- 3) **Legal Education is Essential:** The program's legal education activities were essential to building the awareness and capacity needed for effective regulatory implementation. Community members cannot comply with regulations they do not understand, and officials cannot enforce regulations they do not know.
- 4) **Institutional Strengthening Takes Time:** The program's institutional strengthening activities achieved significant outcomes but also highlighted the time required for institutional change. Sustainable institutional strengthening requires sustained engagement, not one-time interventions.
- 5) **Monitoring and Evaluation are Critical:** The program's monitoring and evaluation activities enabled adaptive management and provided evidence of outcomes. Community service programs should incorporate robust monitoring and evaluation systems from the outset.

CONCLUSION

This community service program in Petak Village, Gianyar, Bali, demonstrates the potential for regulatory strengthening to enhance environmental protection in rural Balinese villages. The program successfully enhanced legal awareness and capacity, facilitated the drafting of complementary regulatory provisions, strengthened institutional mechanisms for regulation implementation and enforcement, fostered coordination between formal and customary governance institutions, and established community-based monitoring systems.

The program's success was built on several key factors: the existence of a robust regulatory framework at multiple levels of government, the presence of strong customary institutions with environmental governance authority, the commitment of village government and community leaders to

environmental protection, and the participatory methodology that engaged all stakeholders in program design and implementation.

The program also highlighted ongoing challenges: the need for continued capacity building, the tension between economic development and environmental protection, the complexity of coordinating multiple governance institutions, and the difficulty of enforcing regulations in the face of rapid socio-economic change. Addressing these challenges will require sustained commitment from all stakeholders, continued support from government and civil society organizations, and ongoing adaptation to changing circumstances.

For Petak Village, the regulatory strengthening achieved through this program provides a foundation for continued environmental protection. The village's movement toward organic agriculture, its success in waste reduction, and its emerging sustainable tourism initiatives demonstrate the potential for environmentally sustainable development. The regulatory framework strengthened through this program can help ensure that this development proceeds in a manner that protects the environment, preserves cultural heritage, and promotes community well-being.

For broader application, the Petak Village experience offers lessons for community service programs and environmental governance initiatives throughout Bali and beyond. The integration of formal and customary regulatory approaches, the emphasis on community participation, the focus on capacity building, and the commitment to participatory methodology provide a model that can be adapted to diverse contexts. As Bali and Indonesia confront the environmental challenges of the twenty-first century, such integrated, participatory approaches to environmental governance will be essential.

The vision articulated by the Petak Village leadership—of harmonizing economic development, environmental conservation, and cultural preservation—provides an inspiring goal. The regulatory strengthening achieved through this community service program contributes to realizing that vision, creating a framework within which sustainable development can flourish. The challenge ahead is to maintain and build upon this foundation, ensuring that environmental protection remains a priority as Petak Village continues to develop and change.

In conclusion, strengthening environmental regulations in rural Balinese villages requires an integrated approach that respects customary institutions while building modern regulatory capacity. Community service programs can serve as effective catalysts for such regulatory strengthening, providing the technical assistance, capacity building, and institutional support needed to translate regulatory frameworks into effective environmental protection. The Petak Village program demonstrates that such approaches can achieve meaningful outcomes, contributing to both environmental protection and community development.

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