

Intergenerational Value Transmission as a Social-Ecological Mechanism for Sustainable Forest Governance: Lessons from the Repong Damar Agroforestry System of Krui, Indonesia

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ABSTRACT

The sustainability of community-based forest management systems is often associated with the existence of formal regulations and economic incentives; however, the cultural mechanisms that underpin the intergenerational reproduction of ecological values have received insufficient attention in the literature on natural resource governance. This study aims to analyze how intergenerational value transmission functions as a socio-ecological mechanism in maintaining the sustainability of forest governance within the Repong Damar agroforestry system in Krui, Lampung, Indonesia. Using a qualitative-interpretive approach based on case studies and ethnographic analysis, this research explores the values, customary norms, inheritance practices, and ecological orientations of the Krui community. The findings reveal three primary mechanisms underpinning the sustainability of Repong Damar: (1) customary institutions that function as ecological governance mechanisms linking ownership rights to conservation responsibilities; (2) inheritance processes that do not merely transfer physical assets but also transmit ecological knowledge, cultural identity, and conservation ethics conceptualized in this study as Intergenerational Ecological Stewardship; and (3) a long-term temporal orientation termed “ecological patience,” which refers to the cultural capacity to align economic behavior with the rhythms of natural regeneration. This study offers a theoretical contribution to the study of social-ecological systems and sustainable forest governance by demonstrating that environmental sustainability is not solely determined by policies and economic incentives, but also by communities’ capacity to reproduce relational values that connect humans, nature, and intergenerational responsibilities

INTRODUCTION

The global ecological crisis, characterized by deforestation, biodiversity degradation, climate change, and increasing pressure on natural resources, has spurred growing attention toward sustainable development models capable of balancing economic, social, and environmental interests (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services [IPBES], 2019). Although various conservation and environmental governance policies have been implemented by both national governments and international institutions, numerous reports indicate that the rate of global forest loss continues at an alarming level, particularly in developing countries with extensive tropical forest areas (Food and Agriculture Organization [FAO], 2024). This situation indicates that conservation approaches relying on formal regulations and technocratic instruments have not yet fully addressed the complexity of environmental sustainability issues. In this context, an increasing number of studies emphasize the importance of understanding the role of local institutions, cultural values, and traditional knowledge as an alternative foundation for sustainable natural resource management (Berkes, 2018; Díaz et al., 2018).

Over the past two decades, the literature on sustainable development has shown a paradigm shift from an approach focused solely on resource management toward one that views the relationship between humans, culture, and the environment as a unified social-ecological system (Folke et al., 2016). This perspective is based on the assumption that sustainability is determined not only by the ecological conditions of a region, but also by the values, norms, knowledge, and social institutions that govern human interaction with the environment. Within this framework, indigenous peoples and local communities are increasingly recognized as key actors with the capacity to develop adaptive and sustainable resource management mechanisms based on their long historical experience (Fernández-Llamazares et al., 2021). Various studies indicate that local knowledge systems and indigenous institutions are often capable of generating effective forms of conservation without relying entirely on state intervention or market mechanisms (Ostrom, 1990; Berkes, 2018).

One form of resource management based on local wisdom that has received significant academic attention is the traditional agroforestry system. Various studies indicate that agroforestry systems not only contribute to biodiversity conservation and the protection of forest ecological functions but also serve as a relatively stable source of livelihood for local communities (Jose, 2009; van Noordwijk et al., 2020). In the Indonesian context, the Repong Damar agroforestry system in the Krui region of Lampung is one of the most frequently studied examples due to its ability to maintain forest ecological functions while providing sustainable economic benefits for the local community. Previous research indicates that Repong Damar is a complex form of agroforestry that resembles the structure of natural forests and makes a significant contribution to landscape conservation and the well-being of local communities (Michon & de Foresta, 1999; de Foresta et al., 2000; Kusters et al., 2007).

Nevertheless, most research on Repong Damar to date has focused on the ecological, economic, tenure, and institutional aspects of resource management. These studies generally describe the Repong's contribution to forest conservation, land tenure security, household economic diversification, or the effectiveness of customary institutions in regulating resource use (Michon et al., 2000; Kusters et al., 2007). Meanwhile, the aspects explaining why the system has been able to survive and be reproduced sustainably over several generations have received relatively little attention. In fact, the sustainability of a socio-ecological system is determined not only by the existence of formal rules or the economic benefits generated, but also by the mechanisms of transmitting values, norms, and knowledge that enable the system to be continuously reproduced across generations (Folke et al., 2016; Berkes, 2018).

This research gap becomes increasingly significant when considered in light of the growing literature on relational values, which emphasizes that human relationships with nature cannot be understood solely through instrumental or intrinsic values, but also through relational values tied to identity, responsibility, social connectedness, and moral obligations toward the environment (Chan et al., 2016; Díaz et al., 2018). This perspective opens the door to understanding that the sustainability of a landscape does not depend solely on economic incentives or formal regulations, but also on communities' ability to transmit the values that shape the ecological behavioral orientation of the next generation. However, to date, there has been relatively little research specifically examining how the process of intergenerational value transmission functions as a socio-ecological mechanism that supports the sustainability of forest governance in local communities.

In the context of the Krui community, the sustainability of Repong Damar is not only related to the success of preserving the damar forest as an economic resource, but also to the success of transmitting traditional values, ecological responsibility, technical knowledge, kinship norms, and a long-term orientation to future generations. Ownership of the Repong is inherited alongside a moral obligation to safeguard the sustainability of the resource, maintain social ties within the extended family, and ensure that the Repong's economic and ecological functions continue for future generations. Thus, what is passed down is not merely the physical assets of land and damar trees, but also a set of values and knowledge that shape the ethics of environmental stewardship. This phenomenon indicates the existence of a social mechanism that enables ecological sustainability to be reproduced through cultural and institutional processes that span generations.

Based on this argument, this study aims to analyze how intergenerational value transmission functions as a socio-ecological mechanism in maintaining the sustainability of forest governance within the Repong Damar agroforestry system in Krui, Lampung. This study argues that the sustainability of Repong Damar is not primarily supported by formal regulations or economic incentives, but rather by a process of value inheritance that links property rights, social responsibility, ecological knowledge, and cultural identity within an integrated system. Theoretically, this study contributes to the development of sustainable

development studies by demonstrating that intergenerational value transmission is a crucial mechanism in the reproduction of sustainable socio-ecological systems. Furthermore, this study expands the discussion on relational values and sustainable forest governance by presenting empirical evidence from a traditional agroforestry system that has persisted across generations in Indonesia.

LITERATURE REVIEW

Sustainable Forest Governance and Social-Ecological Systems

Sustainable forest governance has become a central concern in environmental studies due to increasing global challenges such as deforestation, biodiversity loss, and climate change. Traditional governance approaches have largely emphasized regulatory frameworks and economic incentives; however, recent scholarship highlights the importance of understanding forests as components of broader social-ecological systems (SES) in which ecological processes and human institutions are deeply interconnected (Folke et al., 2016). Within the SES perspective, sustainability is achieved not only through ecological conservation but also through social mechanisms that enable communities to adapt, learn, and maintain long-term stewardship of natural resources.

The concept of sustainable development, as introduced by the World Commission on Environment and Development (1987), emphasizes meeting present needs without compromising the ability of future generations to meet their own needs. This intergenerational perspective has become increasingly important in forest governance, particularly in regions where local communities depend directly on forest resources for their livelihoods. According to Berkes (2018), sustainable resource management is strongly influenced by local ecological knowledge, cultural practices, and community institutions that have evolved through long-term interactions with the environment.

Customary Institutions and Community-Based Resource Management

Research on common-pool resource management demonstrates that local institutions play a crucial role in ensuring sustainable resource use. Ostrom (1990) argues that communities are capable of developing effective governance arrangements through locally developed rules, monitoring mechanisms, and social sanctions. These institutional arrangements often outperform centralized management systems because they are adapted to local ecological and social conditions.

In forest management contexts, customary institutions provide mechanisms for regulating access, defining property rights, and enforcing conservation norms. Berkes (2018) emphasizes that indigenous and local communities frequently possess sophisticated governance systems grounded in traditional ecological knowledge and cultural values. Such systems contribute not only to ecological conservation but also to social cohesion and resilience. Studies of indigenous forest governance further indicate that local institutions enhance community capacity to manage environmental change while maintaining ecosystem functions over time (Fernández-Llamazares et al., 2021).

Agroforestry Systems and Environmental Sustainability

Agroforestry has been widely recognized as an effective strategy for balancing environmental conservation and economic development. According to Jose (2009), agroforestry systems generate multiple ecosystem services, including biodiversity conservation, carbon sequestration, soil protection, and water regulation. By integrating trees with agricultural production, agroforestry creates landscapes that are both ecologically resilient and economically productive.

In Indonesia, the Repong Damar agroforestry system of Krui, Lampung, represents one of the most successful examples of traditional agroforestry. Michon and de Foresta (1999) describe agroforests as land-use systems that combine agricultural productivity with forest-like ecological structures. Their research demonstrates that Repong Damar maintains biodiversity and ecological functions comparable to natural forests while providing sustainable economic benefits through damar resin production.

Further studies by Kusters et al. (2007) show that formal recognition of local community rights significantly contributes to the sustainability of Repong Damar by reducing conflicts over forest land and strengthening local governance. Similarly, van Noordwijk et al. (2020) highlight the role of agroforestry in achieving Sustainable Development Goals (SDGs) through synergies between agriculture, forestry, environmental conservation, and rural livelihoods.

Relational Values and Human–Nature Relationships

Recent developments in environmental governance literature have expanded beyond the traditional distinction between instrumental and intrinsic values of nature. Chan et al. (2016) introduced the concept of relational values, emphasizing that human relationships with nature are embedded in social identities, cultural meanings, responsibilities, and moral obligations. This perspective argues that environmental stewardship is often motivated by relationships and cultural connections rather than purely economic considerations.

Díaz et al. (2018) further developed this framework through the concept of Nature's Contributions to People (NCP), which recognizes the diverse ways ecosystems support human well-being. Their work highlights that local communities frequently value ecosystems not only for material benefits but also for cultural identity, social cohesion, and intergenerational continuity. These relational dimensions are particularly relevant in indigenous and traditional communities where environmental management practices are closely linked to cultural heritage and collective responsibility.

Intergenerational Knowledge and Value Transmission

The sustainability of socio-ecological systems depends significantly on the successful transmission of ecological knowledge and cultural values across generations. Fernández-Llamazares et al. (2021) warn that indigenous and local knowledge systems face increasing threats from globalization, modernization, and cultural transformation. The erosion of traditional knowledge can undermine community capacity to manage ecosystems sustainably and adapt to environmental change.

Intergenerational transmission involves more than the transfer of technical knowledge; it also includes the reproduction of norms, ethics, identities, and stewardship values that guide environmental behavior. Berkes (2018) notes that traditional ecological knowledge is embedded within broader cultural systems and is maintained through continuous social learning processes. Such transmission ensures that conservation practices remain socially meaningful and ecologically effective across generations.

Despite growing recognition of the importance of knowledge transmission, relatively limited research has examined how intergenerational value transmission functions as a governance mechanism in sustainable forest management. Existing studies focus primarily on institutional arrangements, tenure systems, and ecological outcomes, leaving a gap in understanding how communities reproduce conservation-oriented values and responsibilities over time.

Research Gap and Conceptual Framework

The existing literature demonstrates that sustainable forest governance is influenced by local institutions, agroforestry practices, traditional ecological knowledge, and relational values. Studies on Repong Damar have successfully documented its ecological benefits, economic contributions, and institutional characteristics (Michon & de Foresta, 1999; Kusters et al., 2007). However, limited attention has been given to the social processes that enable these systems to persist across generations.

Furthermore, while SES theory highlights the importance of adaptive governance and resilience (Folke et al., 2016), and relational value theory emphasizes moral and cultural relationships with nature (Chan et al., 2016; Díaz et al., 2018), there remains insufficient empirical research connecting these perspectives through the mechanism of intergenerational value transmission. Therefore, examining how ecological values, responsibilities, and cultural identities are transmitted within the Repong Damar system contributes to a deeper understanding of sustainable forest governance and the long-term reproduction of socio-ecological resilience.

METHODS

Research Design

This study employed a qualitative research design using an interpretive case study approach combined with ethnographic analysis. The qualitative-interpretive paradigm was selected because the research seeks to understand how ecological values, customary norms, cultural identity, and intergenerational responsibilities are socially constructed, reproduced, and maintained within the Repong Damar agroforestry system. The case study approach enables an in-depth examination of the socio-cultural mechanisms that support sustainable forest governance in a specific local context, while ethnographic analysis facilitates a comprehensive understanding of everyday practices, meanings, and interactions embedded within the Krui community.

The study focuses on the Repong Damar agroforestry system in Krui, West Coast Regency, Lampung Province, Indonesia. This site was purposively selected because it represents one of the most enduring community-based agroforestry

systems in Southeast Asia and has demonstrated the capacity to maintain ecological functions, economic productivity, and social cohesion across generations.

Research Site

The research was conducted in villages located within the Krui customary territory, West Coast Regency, Lampung Province, Indonesia. The area is recognized for its traditional Repong Damar agroforestry landscape, which consists primarily of damar (*Shorea javanica*) trees integrated with other forest and agricultural species. The Krui community maintains customary institutions and inheritance systems that regulate access, ownership, and management of Repong Damar resources, making the area highly relevant for investigating intergenerational value transmission and sustainable forest governance.

Participants and Sampling

Participants were selected using purposive sampling to ensure the inclusion of individuals possessing extensive knowledge and experience related to Repong Damar management and customary practices. Informants consisted of:

1. Customary leaders and traditional authorities.
2. Community elders with knowledge of local history and cultural traditions.
3. Repong Damar owners and managers.
4. Heirs who inherited Repong Damar resources.
5. Local farmers actively engaged in agroforestry practices.
6. Community members involved in customary decision-making processes.

To expand the range of perspectives, snowball sampling was employed whereby initial informants recommended additional participants considered knowledgeable regarding customary governance, inheritance practices, ecological stewardship, and local conservation values.

Data Collection

Data were collected through multiple qualitative techniques to ensure comprehensive understanding and triangulation.

In-depth Interviews

Semi-structured interviews were conducted with selected informants to explore perceptions, experiences, and interpretations related to customary institutions, inheritance mechanisms, ecological responsibilities, conservation ethics, and intergenerational value transmission. Interviews provided detailed insights into how social and ecological values are transmitted and reproduced within families and the broader community.

Participant Observation

Participant observation was undertaken to document everyday activities associated with Repong Damar management, including planting, harvesting, maintenance practices, customary ceremonies, and family interactions related to inheritance and resource stewardship. Observational data enabled the researcher to understand how ecological values are embedded in daily practices and social relationships.

Document Analysis

Documentary sources were analyzed to complement primary data. These included customary regulations, local government documents, historical records,

previous studies on Repong Damar, and relevant policy documents concerning forest governance, agroforestry, and indigenous resource management. Document analysis provided contextual information and supported the interpretation of field findings.

Data Analysis

Data analysis followed an inductive thematic analysis procedure. All interview transcripts, field notes, and documentary materials were systematically organized and coded. The analytical process consisted of several stages:

1. Data familiarization through repeated reading of transcripts and field notes.
2. Open coding to identify meaningful units of information.
3. Categorization of codes into broader conceptual themes.
4. Theme development through comparison and interpretation of emerging patterns.

Integration of findings with relevant theoretical perspectives, including social-ecological systems theory, relational values theory, and community-based natural resource governance.

The analysis focused on identifying mechanisms through which ecological knowledge, conservation ethics, cultural identity, and social responsibilities are transmitted across generations and contribute to sustainable forest governance.

Trustworthiness of the Study

Several strategies were employed to enhance the credibility and trustworthiness of the findings. Data triangulation was achieved through the integration of interviews, observations, and document analysis. Source triangulation was conducted by comparing information obtained from different categories of participants. Member checking was used to verify the accuracy of interpretations by discussing preliminary findings with selected informants.

In addition, detailed field notes and systematic documentation of the research process were maintained to ensure dependability and confirmability. These procedures strengthened the rigor and validity of the study.

Ethical Considerations

The study adhered to established ethical principles for social research. Participants were informed about the objectives of the study and their rights as research participants before data collection commenced. Voluntary informed consent was obtained from all participants. Confidentiality and anonymity were maintained throughout the research process, and all information was used exclusively for academic purposes. Furthermore, the research respected local customs, cultural values, and indigenous knowledge systems throughout all stages of fieldwork and analysis.

RESULTS AND DISCUSSION

The research findings indicate that the sustainability of Repong Damar is not primarily supported by formal state regulations, but rather by living customary institutions that are continuously reproduced in the daily lives of the Krui community. Various informants explained that there is a set of unwritten customary rules governing the utilization, transfer of ownership, tree felling, and maintenance responsibilities for Repong Damar. Although not formally

documented, these rules possess significant social authority because they are legitimized by custom, kinship ties, and the social sanctions that apply within the community.

The existence of these customary norms demonstrates that the Krui community had developed a community-based governance system for natural resource management long before the concept of sustainable governance emerged in modern academic literature. The prohibition on cutting down damar trees without a valid reason, the obligation to obtain the extended family's consent before transferring ownership rights to the Repong, and the presence of social oversight by the community function as control mechanisms against exploitation that safeguard the ecological sustainability of the Repong.

This finding reinforces Ostrom's (1990; 2009) argument that the success of managing common-pool resources is largely determined by the existence of rules that are established, adhered to, and monitored by the resource-using community itself. In the context of Repong Damar, customary institutions function as social regulators that link ownership rights with ecological obligations. This finding also aligns with recent research showing that local communities and indigenous peoples often demonstrate higher effectiveness in maintaining forest sustainability compared to approaches that rely entirely on state control (Leclère et al., 2020; Fleischman et al., 2020).

From a social-ecological systems (SES) perspective, the customary norms of the Krui community can be understood as part of a feedback mechanism that maintains the stability of the social-ecological system. According to Folke et al. (2021), the sustainability of a social ecological system depends heavily on the ability of local institutions to uphold rules that link human actions to long-term ecological consequences. In the case of Repong Damar, this relationship is manifested through norms that limit exploitation while ensuring the sustainable regeneration of resources.

Thus, Repong Damar not only represents a traditional agroforestry system but also demonstrates how customary institutions can function as effective ecological governance mechanisms in maintaining the sustainability of tropical forest landscapes.

The most significant finding of this study is that the sustainability of Repong Damar depends not only on the existence of customary institutions but also on the intergenerational transmission of values that occurs through inheritance mechanisms. Data indicate that the inheritance of Repong Damar is not understood merely as the transfer of economic assets in the form of land and damar trees, but also as the inheritance of social responsibility, moral obligations, ecological knowledge, family leadership, and cultural identity.

A recipient of the Repong inheritance not only gains the right to utilize resources but also assumes the obligation to ensure the sustainability of Repong for future generations. In the view of the Krui community, failing to fulfill these responsibilities can result in moral sanctions and a decline in social status within the community.

This finding indicates that what is actually inherited is not merely physical resources, but a value system that integrates rights, obligations, identity, and

ecological responsibility. Within the framework of relational values, the Krui community's relationship with the Repong Damar is not based solely on economic value, but on social bonds, cultural identity, and moral obligations toward future generations (Chan et al., 2016; Díaz et al., 2018).

This study expands upon the findings of Fernández-Llamazares et al. (2021), which demonstrated that the sustainability of local knowledge systems is highly dependent on the success of intergenerational transmission processes. However, this study highlights something more specific: it is not merely knowledge that is passed down, but also an ecological stewardship ethic. In the context of Repong Damar, the inheritance process functions as a mechanism of social reproduction that ensures conservation norms remain alive and are upheld by future generations.

From a sustainable development perspective, this finding has important theoretical implications. The sustainable development literature has tended to emphasize the importance of institutions, policies, and economic incentives in maintaining resource sustainability. However, data from Krui indicate that sustainability is also determined by a community's ability to transmit ecological values across generations. In other words, sustainability is not merely a matter of resource management but also a matter of reproducing the social values that underpin such management.

This finding yields a concept that can be termed Intergenerational Ecological Stewardship a social mechanism that transmits ecological responsibility, local knowledge, cultural identity, and conservation norms from one generation to the next, thereby ensuring the continued reproduction of the social-ecological system's sustainability.

The third finding emerging from this research pertains to the Krui community's temporal orientation in managing the Repong Damar. Unlike modern economic logic, which tends to prioritize short-term gains, the management of the Repong Damar is grounded in a long-term orientation passed down through generations. The community plants damar trees, which take years to yield economic benefits, yet they persist with this practice because they believe the returns will serve as a livelihood for their children and grandchildren.

Such an orientation demonstrates what this study refers to as "ecological patience" the cultural capacity to align economic actions with the natural rhythms of ecological regeneration. This concept differs from modern economic rationality, which tends to measure success based on profit levels and the speed of capital accumulation.

Data indicate that the Krui community views Repong Damar as a heritage whose sustainability must be safeguarded, not as an asset to be maximally exploited for short-term profit. This attitude is reflected in their commitment to preserving traditional planting patterns, harvesting practices that do not damage the trees, and prohibitions against the overexploitation of damar resources.

These findings align with critiques of the sustainable development paradigm that is overly focused on economic growth and market mechanisms (Kenter et al., 2019; Pascual et al., 2023). Recent studies indicate that the success of long-term conservation often depends on cultural values that foster

intergenerational orientation and moral responsibility toward nature (Zafra Calvo et al., 2020; Oteros-Rozas et al., 2023).

From this perspective, the Krui community demonstrates a form of ecological rationality distinct from modern capitalist logic. Nature is not positioned as an object of exploitation, but rather as part of a life system that must be maintained so it can be passed on to future generations. Thus, the sustainability of Repong Damar is not only based on technical knowledge of agroforestry but also on a culture of ecological patience that enables the community to internalize a long-term orientation in resource management practices.

Theoretically, the concept of ecological patience complements the literature on social ecological resilience by demonstrating that a community's capacity to maintain sustainability is determined not only by its ability to adapt to environmental changes but also by its ability to uphold a moral and temporal horizon that extends beyond the interests of the present generation.

The three findings above indicate that the sustainability of Repong Damar is the result of an interaction between customary institutions, intergenerational value transmission, and a culture of ecological patience. Together, these form a socio-ecological mechanism that enables the economic, social, and ecological functions of Repong to be sustainably reproduced across generations.

Unlike many environmental governance models that rely on formal regulations or economic incentives, the Repong Damar case demonstrates that sustainability can be built through cultural mechanisms that link identity, morality, ecological knowledge, and kinship structures. Therefore, this study argues that the intergenerational transmission of values is a crucial foundation for sustainable forest governance and deserves to be positioned as one of the primary mechanisms within contemporary social-ecological systems theory.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the research findings, it can be concluded that the sustainability of Repong Damar is not primarily determined by the existence of formal state regulations or economic considerations alone, but rather by the process of reproducing social, cultural, and ecological values that takes place across generations through customary institutions and family inheritance systems.

First, it demonstrates that the traditional institutions of the Krui community function as an ecological governance mechanism that regulates the relationship between property rights, resource utilization, and conservation responsibilities. Customary norms, social oversight, and moral sanctions embedded within the community are capable of limiting excessive resource exploitation while simultaneously ensuring the continued ecological function of Repong Damar. Thus, customary institutions serve not only as instruments of social regulation but also as the institutional foundation that maintains the stability of the socio-ecological system in a sustainable manner.

Second, the inheritance mechanism of Repong Damar is not merely about the transfer of physical assets such as land or the Repong Damar itself, but also

encompasses the transmission of ecological knowledge, moral responsibility, cultural identity, kinship norms, and conservation ethics to future generations. In this context, forest sustainability is maintained through a process of value transmission that integrates ecological rights and obligations into the social life of the community. These findings indicate that the success of sustainable forest management is significantly influenced by a community's ability to transmit ecological values across generations. Therefore, this study proposes the concept of Intergenerational Ecological Stewardship a social mechanism enabling the reproduction of sustainability through the inheritance of ecological responsibilities, local knowledge, and conservation norms from one generation to the next.

Third, the sustainability of Repong Damar is also supported by a future-oriented culture, which this study conceptualizes as "ecological patience." This value is reflected in the community's willingness to plant, nurture, and protect damar trees over the long term for the sake of future generations' survival. This ecological patience shapes a development rationality distinct from the short-term economic paradigm, as it positions ecological sustainability as part of an intergenerational moral responsibility. Thus, ecological patience serves as a cultural capital that enables the community to integrate economic, social, and ecological objectives into a single practice of sustainable resource management.

These three elements form a socio-ecological mechanism that enables the ecological, economic, and social functions of Repong Damar to be reproduced sustainably across generations. This finding expands the study of sustainable forest governance by demonstrating that forest sustainability is not determined solely by policies, technology, or economic incentives, but also by the community's capacity to preserve and transmit the values that govern the relationship between humans and nature.

Recommendations

Based on the research results, several recommendations can be proposed at the levels of policy, development practices, and scientific advancement.

1. Policy Recommendations

The government needs to develop forest governance policies that are not only oriented toward biophysical and economic aspects but also provide stronger recognition of customary institutions, local knowledge systems, and cultural values that have proven to safeguard the long-term sustainability of natural resources. In the context of Repong Damar, recognition of indigenous institutions and mechanisms for the transmission of values must be integrated into regional development policies, forest conservation, and social forestry programs. Furthermore, the formulation of forestry policies must accommodate a community-based approach (community-based forest governance) by positioning local communities as strategic partners in natural resource management. This approach will strengthen ecological sustainability while enhancing the social legitimacy of various conservation programs implemented by the government.

2. Practical Recommendations

Indigenous communities and local residents must continue to strengthen mechanisms for intergenerational value transmission through family education, institutional strengthening of traditional institutions, and the preservation of cultural practices related to the management of Repong Damar. These efforts are crucial to ensuring that ecological knowledge, conservation ethics, and a sense of environmental responsibility are passed on to younger generations amidst the growing influence of modernization and social change.

Educational institutions, civil society organizations, and local governments can also play a role in documenting and developing various local wisdom practices that support environmental sustainability as part of education for sustainable development.

3. Theoretical Recommendations

This study indicates that intergenerational value transmission remains a dimension that has received relatively little attention in the literature on social-ecological systems and sustainable forest governance. Therefore, future research should develop a more comprehensive conceptual model regarding the relationship between customary institutions, value transmission, cultural identity, and environmental sustainability across various contexts of indigenous societies and local communities in different regions.

The concepts of Intergenerational Ecological Stewardship and Ecological Patience generated in this study also need to be further tested through comparative studies across communities, cultures, and countries to determine their level of relevance, validity, and contribution to the development of sustainable development theory and natural resource governance.

FURTHER STUDY

Future research is recommended to employ a mixed-methods approach or longitudinal studies to analyze in greater depth the dynamics of ecological value transmission in the face of social, economic, and technological changes. Additionally, studies on the role of the younger generation, the transformation of indigenous institutions, and the impact of globalization on the sustainability of traditional agroforestry systems will be important research priorities to enrich our understanding of the sustainability of socio-ecological systems in the future.

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