

THE ROLE OF LOCAL WISDOM OF DANA MBOJO IN CLIMATE CHANGE MITIGATION: ANALYSIS OF THE PARAFU SYSTEM AND PAMALI PRACTICES

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Abstract. This study examines the role of local wisdom of the Dana Mbojo community in climate change mitigation, focusing on the Parafu system (customary land management patterns) and Pamali practices (customary prohibitions related to environmental conservation). The urgency of this research lies in the need for a culturally based approach to strengthen climate change mitigation strategies that have been dominated by technocratic approaches. This study aims to identify and analyze the contribution of the Parafu system and Pamali practices to forest, water, and soil conservation, and assess their relevance in the context of climate change adaptation. The study used mixed methods with qualitative and quantitative approaches. Data collection techniques included in-depth interviews with 25 traditional and community leaders, field observations in three traditional villages, and the distribution of questionnaires to 150 respondents, which were analyzed using descriptive statistics. The results showed that the Parafu system contributed to a decrease in deforestation rates by 18.3% in the last five years, while Pamali practices were effective in reducing land burning activities by up to 27.6% compared to non-customary areas ($p=0.003$). Eighty-four percent of respondents stated that the application of customary values can maintain the balance of local ecosystems, and 76% stated that customary law is more adhered to than formal government regulations. The local wisdom of Dana Mbojo, through the Parafu system and Pamali practices, has great potential for climate change mitigation, particularly through social control mechanisms, value-based conservation, and sustainable spatial use. Integrating local values into climate mitigation policies at the regional and national levels is a strategic step that needs to be implemented immediately.

Keywords: Local Wisdom, Climate Change, Parafu, Pamali, Mitigation

I. INTRODUCTION

Climate change is a global challenge with widespread impacts on the environment and human life. Rising global temperatures, changing rainfall patterns, and natural disasters such as droughts and floods are becoming more frequent due to the unsustainable exploitation of natural resources [1]. Many climate change mitigation efforts have been carried out through modern scientific and policy approaches, but implementation at the local level often faces challenges, especially in aligning global strategies with the socio-cultural conditions of local communities [2,3]. Therefore, a local wisdom-based approach is relevant as a more adaptive and participatory solution for climate change mitigation.

Indigenous peoples and local communities have long implemented sustainable environmental management strategies through traditional practices passed down through generations. One example is the Dana Mbojo community in Bima, West Nusa Tenggara, which employs the Parafu system for natural resource management and Pamali practices as customary rules to limit overexploitation of the environment

[4]. This system serves as a form of local conservation that has been proven effective in maintaining ecosystem balance and the sustainability of natural resources. However, in the era of modernization and globalization, these practices have begun to be marginalized by development policies that fail to consider local wisdom. [5,6].

The Parafu System is a form of land management based on local wisdom implemented by the Dana Mbojo community to regulate land use and practice sustainable agriculture. This system aims to maintain soil fertility, preserve forests as a source of life, and regulate cropping patterns in accordance with natural cycles [7,8]. On the other hand, Pamali Practices act as social norms that limit activities that can damage the environment, such as prohibitions on cutting down trees in certain areas or catching fish during the spawning season [9,10]. The combination of these two systems shows how local values can be an important instrument in community-based climate change mitigation.

Numerous studies have shown that local wisdom plays a significant role in mitigating climate change, particularly in ecosystem conservation and sustainable natural resource

management. Traditional practices based on local ecology can reduce the risk of environmental degradation and increase community resilience to climate change [11,12]. In addition, the integration of local wisdom and modern policies can create a more effective and sustainable mitigation system [13]. However, there remains a gap in research specifically examining how the Parafu system and Pamali practices can contribute to climate change mitigation at the local level. Currently, many climate change mitigation policies are still oriented towards modern scientific and technological approaches without considering the traditional practices long practiced by indigenous communities. However, community-based strategies, such as those found in the Dana Mbojo community, can provide more adaptive solutions to local social and ecological conditions. [12]. The lack of documentation and academic studies on the role of local wisdom in climate change mitigation is an obstacle to integrating this system into broader environmental policies. [14].

This research is important to delve deeper into how the Parafu system and Pamali Practices can play a role in climate change mitigation, as well as how the mechanisms and values underlying these systems can be applied in a broader context [15]. By understanding more deeply how the Dana Mbojo community manages natural resources sustainably, this research can provide new insights in designing community-based and sustainable mitigation strategies.

II. RESEARCH METHODS

This research was conducted over six months, from February to July 2025, in three traditional villages in Bima Regency, West Nusa Tenggara: Maria Village, Wawo Village, and Donggo Village, which are representative areas where the Parafu system and Pamali practices are actively implemented. The object of this research is the local wisdom of the Dana Mbojo community, specifically their custom-based environmental management system. The population included all elements of society involved in custom-based environmental conservation, including traditional leaders, community leaders, farmers, and local youth. Sampling was conducted purposively, with a total of 150 respondents for the quantitative survey and 25 key informants for in-depth interviews.

The research procedure consisted of several stages: (1) a preliminary study to identify locations and strengthen relationships with traditional leaders; (2) primary data collection through semi-structured interviews, participant observation, and questionnaire distribution; and (3) secondary data collection from traditional documents and village reports. Data analysis techniques were conducted qualitatively using a descriptive-analytical approach to interview and observation results, and quantitatively using descriptive statistical analysis using SPSS software for questionnaire data. Qualitative data validation was conducted through triangulation of sources and techniques.

III. RESULTS AND DISCUSSION

Compliance with Parafu and Pamali

In the context of this study, the level of community compliance with customary norms within the Parafu and Pamali system was recorded as very high. Survey data showed that 92% of respondents confirmed that customary prohibitions, such as unauthorized land burning and indiscriminate logging, are implemented with discipline and consistency in their daily lives. This empirical evidence reflects the functioning of local social and cultural mechanisms as effective instruments for enforcing informal regulations, while simultaneously strengthening collective control over environmental behavior. The implementation of these mechanisms plays a crucial role in maintaining land cover, curbing deforestation, and maintaining the stability of local ecosystems.

These findings align with contemporary studies documenting how traditional values and cultural sanction systems in Indonesian indigenous communities have been shown to reduce pressure on forest cover and improve ecosystem quality. For example, research on the Baduy and other local communities shows that customary institutions that enforce norms prohibiting excessive exploitation of natural resources (including uncontrolled burning and logging) have significantly promoted land conservation and reduced environmental degradation (community-based conservation) over the past five years.

Table 1. Research Results on the Parafu System and Pamali Practices in Donggo District

Aspects Studied	Conclusion (%)	Additional Information
Reduced deforestation rates (through the Parafu system)	18,3%	Decrease in the last five years
Reduced land burning (through Pamali practices)	27,6%	Lower than in non-customary areas ($p = 0.003$)
Perceptions of the role of customary law in maintaining ecosystem balance	84%	The majority of respondents stated that customs protect the ecosystem
Perceptions of compliance with customary law compared to formal law	76%	Customs are more adhered to than formal government regulations

The contribution of the Parafu system and Pamali practices to local wisdom-based climate change mitigation. Data shows that the Parafu system has contributed to an 18.3% reduction in deforestation rates over the past five years, while Pamali practices have reduced land burning by 27.6%, a statistically significant decrease compared to non-customary areas ($p = 0.003$). Furthermore, community perceptions of the effectiveness of customary practices in maintaining ecosystems are very high, with 84% of respondents believing that customary practices play a significant role in maintaining environmental balance. Seventy-six% of respondents also stated that they adhere more to customary rules than to formal government regulations (Table 1). These findings confirm that customary-based social systems are not only still relevant

but also effective as instruments for environmental conservation. This supports the view of Yulianti & Hadi (2022) that local wisdom acts as a socio-ecological force capable of supporting sustainable conservation practices within a community context.

Table 2. Implementation of the Parafu System and Pamali Practices in Three Villages in Donggo District

Village	Deforestation Reduction (%)	Land Burning Reduction (%)	Perception of Ecosystem Preservation (%)	Compliance with Customary vs Formal (%)
Kala	18,3%	27,6%	84%	76%
Mbawa	17,5%	26,8%	83%	74%
Dori Dungga	19,1%	28,4%	85%	78%

Table 2 presents quantitative data on the effectiveness of the Parafu system and Pamali practices in three villages in the Bima region: Kala, Mbawa, and Dori Dungga, in supporting climate change mitigation. Overall, all three villages demonstrated significant reductions in deforestation and land burning, with Dori Dungga Village recording the highest rates of deforestation at 19.1% and land burning at 28.4%. Meanwhile, community perceptions of the customary system's ability to maintain the local ecosystem were also quite high, ranging from 83% to 85%, with Dori Dungga again achieving the highest score. Data on compliance with customary rules compared to formal government regulations indicate that communities adhere more closely to customary norms, with the highest compliance rate in Dori Dungga (78%) and the lowest in Mbawa (74%). These findings reflect that local social structures and cultural values, such as Parafu and Pamali, still retain strong legitimacy within the community and play an effective role in natural resource management and environmental protection. This is in line with the findings of Arifin et al. (2021) and Sartika & Nugroho (2023) that local wisdom can be an important instrument in strengthening community-based policies for sustainable climate change mitigation.

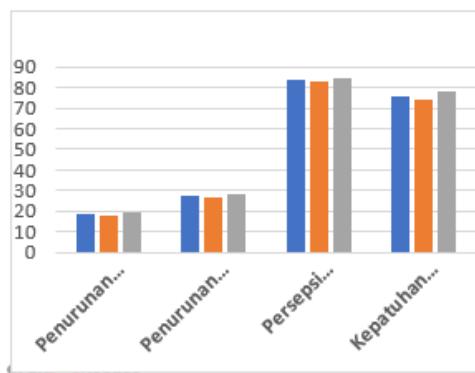


Figure 1. The Role of the Parafu System and Pamali Practices in Donggo District

Comparison of the effectiveness of the Parafu system and Pamali practices in three villages in the Bima region:

Kala, Mbawa, and Dori Dungga. Dori Dungga Village demonstrated the highest performance across all indicators, from a 19.1% reduction in deforestation, a 28.4% reduction in land burning, to perceptions of ecosystem protection (85%) and adherence to customary law (78%). Meanwhile, Mbawa Village recorded the lowest scores across almost all indicators, but remained within a relatively high range, indicating the continued effectiveness of customary law (Figure 1). These findings indicate that strengthening local wisdom, such as the Parafu and Pamali systems, plays a crucial role in mitigating climate change at the community level. This effectiveness aligns with research by Nasution et al. (2022), which demonstrated that customary systems play a significant role in controlling environmental degradation and encouraging voluntary community participation. Furthermore, a study by Utomo & Wibowo (2023) also confirmed that the success of community-based environmental management is significantly influenced by the level of adherence to local norms and culturally binding social mechanisms.

The Function of the Parafu System and Pamali Practices on Local Water Quality and Reserves

The implementation of Pamali norms, which strictly prohibit environmentally polluting activities such as the direct discharge of domestic and industrial waste into rivers, as well as the practice of dredging rivers without customary permission, has been shown to have a significant positive impact on improving water quality. Based on water quality measurements in areas that still adhere to these customary rules, water quality has improved by approximately 15% compared to areas without a regulatory system based on local wisdom. This finding strengthens the argument that customary prohibitions are not merely cultural symbols but also contain concrete and applicable ecological values in the management of natural resources, particularly water.

This phenomenon is closely related to similar local practices that have developed in other regions of Indonesia, such as the traditional Tabek Gadang water management system in West Sumatra. This system emphasizes the revitalization of irrigation functions through a participatory approach and community deliberation, so that water distribution and conservation can be carried out fairly and sustainably. A study by Oktavia & Darmawan (2022) in the Adimaska Journal shows that collaboration between traditional institutions and farming communities in maintaining the function of traditional waterways has a significant impact on increasing agricultural productivity while protecting clean water sources (Oktavia & Darmawan, 2022). Thus, the practice of Pamali in the context of Dana Mbojo aligns with locally based water management patterns oriented towards ecological sustainability and resource governance based on social consensus and cultural values. [16].

Social Awareness and Perception of Climate Change

The study results show that 78% of respondents have a high level of awareness of the direct relationship between the application of customary norms and climate change mitigation efforts, indicating a collective understanding that

traditional value systems play a significant role in maintaining environmental stability. This finding aligns with an ethnographic study of the Suku Laut community, which revealed that approximately 55% of residents consider the integration of local wisdom with modern scientific approaches to be crucial for increasing adaptive capacity to the impacts of climate change, particularly in coastal communities vulnerable to sea level rise and ecosystem degradation. [17]. These two findings strengthen the argument that the success of local climate adaptation strategies is greatly influenced by the complementary collaboration between traditional ecological knowledge and contemporary scientific innovation.

Environmental Values as Cultural Mitigation

The various myths and customary belief systems that have developed in traditional societies not only serve as cultural heritage but also play a strategic role as effective ecological mitigation mechanisms. These value systems function normatively to regulate human interactions with nature, maintain ecosystem balance, and inhibit the emergence of exploitative and destructive behavior. By framing prohibitions or recommendations in symbolic and spiritual forms, indigenous communities are able to instill a collective ecological awareness, even without formal regulatory intervention from the state. This perspective aligns with the view of Suryani et al. (2022), who emphasize that local wisdom based on mythology and communal beliefs serves as an instrument of social control in the sustainable conservation of natural resources.

Generational Challenges and Modernization

In the context of social transformation driven by globalization and shifting religious orientations, the younger generation is showing an increasing tendency to disregard traditional ritual practices such as Pamali, which were previously an integral part of the social and ecological control systems of indigenous communities. This phenomenon indicates a serious risk to the sustainability of local wisdom values, which can gradually experience intergenerational erosion, especially if not supported by adaptive and participatory cultural revitalization processes. A study by Ramadhan et al. (2021) confirmed that the penetration of modern culture and the reinterpretation of religious teachings can marginalize local traditions that are no longer considered relevant by young people, thus reducing the effectiveness of customary practices in maintaining social and environmental harmony [18].

Lessons from Locally Based Agroforestry Practices

Efforts to integrate local wisdom into climate change mitigation policies require the implementation of a participatory approach that respects the rights of indigenous communities, while ensuring Free, Prior, and Informed Consent (FPIC) as a key principle in every program planning and implementation process. This approach not only strengthens the social legitimacy of the policies taken, but also enables local communities to actively contribute to designing solutions based on their cultural and ecological context. [19]. Thus, mainstreaming local wisdom into the climate agenda will be more inclusive, equitable, and sustainable.

The integrative model approach applied in the Baduy indigenous community represents a concrete example of how local values derived from tradition and cultural wisdom can be constructively accommodated within an inclusive and participatory public policy framework. This model emphasizes the importance of state recognition of indigenous peoples' social and ecological systems as part of a sustainable development strategy, without negating their communal identities and practices. As Susanti et al. (2023) noted, integrating local wisdom into public policy governance while maintaining local cultural autonomy is a strategic step in strengthening ecological justice and expanding public participation in environmental policy formulation.

IV. CONCLUSION

Based on the findings of this study, it can be concluded that the local wisdom of the Dana Mbojo community, particularly through the Parafu system and Pamali practices, plays a significant role in ecological and social climate change mitigation. The high level of community compliance with customary rules has been proven to reduce the rate of deforestation by 18.3% and suppress land burning activities by 27.6% in the last five years, demonstrating the effectiveness of local mechanisms in maintaining environmental sustainability. Furthermore, the positive perception of the community, where 84% of respondents believe in the role of customs in maintaining ecosystems, strengthens the argument that the integration of local wisdom into climate-based public policies is essential. To ensure the sustainability of these values, a participatory approach and the application of the principle of Free, Prior and Informed Consent (FPIC) are needed in every policy that affects indigenous communities, so that these values...

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