

Local Wisdom of the Sungai Mempura Village Community in Preserving Natural Resources and the Environment (A Study of the Sungai Mempura Tourism Village, Siak Regency)

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Abstract

This study examines the forms, functions, and continuity of local wisdom practiced by the Malay community of Sungai Mempura in preserving natural resources and the environment. Using a qualitative descriptive approach, data were collected through field observations, in-depth interviews with community leaders and cultural practitioners, and documentation of traditional practices. The findings reveal that the community maintains a strong ecological ethic rooted in ancestral customs, expressed through prohibitions on cutting trees, sustainable use of natural resources, ritual practices on land and water, and collective activities such as river cleaning and environmental stewardship. These practices not only reinforce cultural identity but also serve as community-based strategies for environmental preservation and climate change adaptation. Despite their resilience, local wisdom traditions face challenges, including ecological degradation, limited facilities, and declining interest among younger generations. Strengthening collaboration between communities, local authorities, and educational institutions is therefore essential to ensure the sustainability of local wisdom as a foundation for environmental conservation and cultural continuity.

Keywords: Local Wisdom; Preserving Natural Resources; Tourism Village.

INTRODUCTION

Amid rapid modernization and accelerated development, efforts to preserve the environment and manage natural resources face increasing challenges, particularly in regions with strong cultural and ecological potential. Sungai Mempura Village in Siak Regency, Riau, illustrates how local wisdom can serve as a vital foundation for maintaining ecological balance and ensuring the long-term sustainability of natural resources. Community-based environmental practices rooted in customary values and cultural traditions not only help safeguard the natural landscape but also strengthen local identity. At the same time, these practices provide a platform for sustainable economic growth, especially through the development of nature- and culture-based tourism (Riannada & Mardliyah, 2021).

In recent years, tourism villages have become an important instrument in advancing sustainable tourism, particularly in areas with rich cultural heritage. Such villages do more than preserve distinctive traditions they also contribute directly to regional economic development. When managed through a cultural and ecological lens, local potentials can be transformed into tourism experiences that harmonize traditional values with community welfare.

Tourism villages therefore offer significant opportunities for rural advancement. By showcasing unique cultural, historical, and natural features, they create authentic and memorable experiences for visitors. Scholars such as Nguyen et al. (2022) and Zeng et al. (2022) highlight that these distinctive qualities enable tourism villages to stand apart from conventional destinations, offering more meaningful and immersive interactions with local culture.

The Siak River, one of the major waterways in Riau Province and recognized as the deepest river in Indonesia, plays a central role in the region's environmental and economic landscape. Research by Naditia and Junita (2011) reports that the river reaches depths of 8 to 12 meters. Flowing through the provincial capital of Pekanbaru, the river supports the community's economic activities, particularly water transportation and trade.

Sungai Mempura Village, situated along this important river corridor, exemplifies a community that integrates Malay cultural heritage with the sustainable use of natural resources. Its riverside location shapes local livelihood patterns, ranging from transport and fisheries to cultural expression. The village's natural assets—its clean river flow, fertile agricultural land, and fishery resources—are key elements in developing tourism grounded in nature and culture. Activities such as river tours, durian orchard agro-tourism, and local fish processing demonstrate how residents utilize natural resources responsibly while maintaining cultural continuity. The Siak River not only sustains the village's economy but also reinforces its cultural identity, reflected in traditions such as *pantun*, *zapin*, and distinctive Malay culinary practices (Naditia & Junita, 2011; Salleh, 2018)

Sungai Mempura Village, located in Siak Regency, Riau, is one of the tourism villages rich in natural, cultural, and historical potential that has been preserved across generations. The community has long applied local wisdom in managing natural resources and the environment, encompassing prudent resource use, cultural preservation, and the integration of customary values into daily life.

Local wisdom of the Sungai Mempura Village community in the management of natural resources and the environment is reflected through practices grounded in customary values, traditions, and local knowledge passed down from generation to generation. The villagers not only utilize natural resources wisely to meet their daily needs, but also preserve the sustainability of river ecosystems, forests, and agricultural land through customary regulations and sustainable patterns of use. This approach forms the foundation for the development of Sungai Mempura as a tourism village, where environmental and cultural aspects are not separated but instead mutually reinforce one another.

Such local wisdom is derived from general knowledge that has been internalized through intergenerational practices and has become an integral part of the community's everyday culture. As explained by Puspita (2017), these habits have been tested over time and proven beneficial due to their consistency, which is shaped through repeated social interactions.

Therefore, this research is important for exploring and documenting local values that continue to live and develop within the community of the Sungai Mempura Tourism Village. The findings of this study are expected to contribute to the development of a culturally based environmental management model that can be adopted by other regions with similar characteristics (Roqobih et al., 2025).

The main objective of this study is to examine how environmental wisdom in Sungai Mempura Village is able to survive and develop amid the dynamics of changing times. The sustainability of these values serves as an important indicator in understanding the adaptability of local culture, particularly in responding to challenges arising from advances in science and technology, especially in the era of digitalization and information globalization (Aryani, 2020).

Through this research, it is expected that a new concept or approach relevant to sustainable development strategies can be formulated, particularly in the agricultural sector and in community-based natural resource management.

RESEARCH METHODS

This study employed a qualitative descriptive design to explore the forms and continuity of local environmental wisdom in Sungai Mempura Village, Siak Regency. Data were collected through field observation, in-depth interviews, and documentation based on Creswell's qualitative inquiry framework (Creswell, 2016). Five key informants were selected using purposive sampling, including a community leader, a traditional authority figure, a cultural practitioner, and two residents with extensive knowledge of local traditions and environmental

practices. Observations were conducted throughout community activity sites and along the Siak River to document behavior, cultural interactions, and environmental conditions. Interviews were used to capture community perspectives on cultural preservation and environmental management, while documentation from village archives, cultural institutions, and local regulations served to validate and enrich the findings. Data analysis followed the Miles, Huberman, and Saldaña (2014) interactive model, comprising data reduction, data display, and conclusion drawing with verification through triangulation to ensure credibility and validity.

RESULT AND DISCUSSION

Environmental Conservation Practices Based on Local Wisdom among the Malay Community of Sungai Mempura Village

Environmental conservation practices among the Malay community of Sungai Mempura Village are deeply rooted in local wisdom that has evolved through long-standing interactions between humans and nature. These practices are reflected in customary norms, traditional beliefs, and communal agreements that regulate the use of natural resources. Rather than exploiting the environment for short-term benefits, the community emphasizes balance and responsibility, ensuring that rivers, forests, and agricultural lands remain productive for future generations.

Local wisdom functions not only as cultural heritage but also as an informal environmental management system. Through collective activities such as mutual cooperation, seasonal land use, and customary restrictions on resource exploitation, the Malay community maintains ecological stability while meeting social and economic needs. These locally grounded practices demonstrate that traditional knowledge can effectively complement modern environmental conservation approaches, particularly in rural contexts where community participation plays a crucial role.

In the context of contemporary challenges, including modernization and environmental degradation, the persistence of local wisdom in Sungai Mempura Village highlights the adaptive capacity of indigenous knowledge systems. Environmental conservation based on local values enables the community to respond to change without losing its cultural identity. Therefore, understanding and documenting these practices is essential for developing sustainable, community-based environmental management models that can be applied in other regions with similar cultural and ecological characteristics. This study examines the local wisdom of the Malay community in Sungai Mempura Village in relation to their efforts to protect and preserve the natural environment. Data were obtained through direct field observations and interviews with key informants who possess knowledge and experience regarding local traditions and ecological practices. Observation allowed the researcher to understand how environmental values are applied in daily life, while interviews provided deeper insights into cultural meanings and community perspectives.

Historically, the main ritual associated with environmental and spiritual harmony was carried out in two settings, on land and on the river. On land, the community performed collective chanting while carrying torches and walking around the village, including visiting abandoned houses and uninhabited areas. This practice symbolized the expulsion of unseen forces and reflected the community's intention to maintain balance between humans and nature. On the river, the ritual was conducted using small boats, beginning with the call to prayer delivered by an assistant of the ritual leader.

Over time, the ritual has evolved and is now performed solely on the river using a ferry and several motorized boats. Participants are limited to adult men due to safety considerations, as the ritual is held at night. Although participant numbers are restricted, the ritual remains open to public observers, including visitors from outside the village. Beyond its spiritual function, the

ritual represents a form of environmental awareness, emphasizing respect for river ecosystems and reinforcing the community's commitment to maintaining river cleanliness as an essential source of life.

Based on interviews with several community leaders, the Malay community in Sungai Mempura Village continues to uphold various forms of local wisdom that play an essential role in protecting and preserving the natural environment. This local wisdom functions not only as a guide for social behavior but also as a value system that governs the harmonious relationship between humans and nature. The customary values passed down through generations serve as the foundation for regulating community actions toward their surrounding environment. One of the enduring forms of environmental wisdom is the prohibition against cutting down trees indiscriminately in forested areas or near settlements. The community believes that felling trees without customary permission invites misfortune, as it is considered a violation of natural balance. This belief indirectly acts as a social mechanism that prevents forest degradation caused by excessive exploitation. Another example is the tradition of Khatib Beghanyut, a communal ritual of collective prayer on the river that expresses gratitude to God while symbolizing respect for nature. This tradition illustrates how spiritual values are integrated into environmental stewardship practices (Retno Ningsih et al., 2023).

The community also maintains customary regulations governing the protection of river ecosystems and ancestral land. The use of chemical substances or poisons for fishing is strictly prohibited because it is believed to disturb aquatic balance. Collective activities such as regular river clean-ups reflect communal concern for environmental hygiene and sustainability. Additionally, ancestral land is highly respected and cannot be sold arbitrarily due to its perceived spiritual significance. These forms of local wisdom demonstrate a strong ecological awareness among the Malay community, who perceive nature not merely as an economic resource but as an integral part of life that must be safeguarded with respect. This aligns with Sari and Lubis (2022), who argue that Malay local wisdom reflects the spiritual relationship between humans, nature, and the Creator. Thus, the customary values still upheld by the community in Sungai Mempura Village can serve as a model for culturally grounded environmental management relevant to contemporary sustainable development.

Application of Local Wisdom to Reduce the Impacts of Climate Change

The Malay community of Sungai Mempura continues to uphold ancestral local wisdom that guides their relationship with the natural environment. This wisdom is reflected in several cultural expressions, including beliefs in natural signs, the influential role of traditional leaders or village healers in ensuring community safety, and the observance of customary prohibitions that aim to maintain ecological balance. The community believes that nature possesses spiritual forces capable of providing warnings when customary norms are violated. Respect for the environment is also expressed through prohibitions against cutting trees indiscriminately and the obligation to protect ancestral land as a symbol of identity and honor. These values demonstrate that customary traditions function not only as inherited cultural practices but also as moral and ethical frameworks that guide the people of Sungai Mempura to live in harmony with nature while preserving their cultural heritage.

The Malay community in Sungai Mempura Village practices various forms of local wisdom that contribute significantly to mitigating the impacts of climate change. These traditions emerged from generations of interaction with the natural environment and have been transmitted as guiding principles for daily life. Their customary values emphasize the importance of maintaining balance between human needs and environmental sustainability. This principle is reflected in prohibitions against random tree cutting, traditions of communal river clean-ups, and reforestation activities around the village. In agriculture, the community continues to practice traditional farming methods that respect environmental rhythms. Before the planting season, residents perform kenduri menanam padi, a communal ritual to express gratitude and pray for a

successful harvest and fertile soil. The community also possesses traditional knowledge of the “four winds system,” the ability to interpret wind directions and star positions to determine planting times and predict weather conditions. This knowledge enables them to adapt naturally to climate variability without relying entirely on modern technology.

To preserve the river ecosystem, residents avoid using poisons or chemicals for fishing, as such practices are believed to disrupt ecological balance and anger the spiritual guardians of the river, such as crocodiles regarded as protectors of nature. This belief effectively serves as a social control mechanism to maintain water quality and aquatic biodiversity. Meanwhile, the long-standing tradition of planting fruit trees such as durian, mango, and guava acts as a local adaptation strategy to environmental change while contributing to carbon sequestration. These practices demonstrate that the community has long applied principles of sustainable development, even before climate change became a global concern. Local wisdom functions not only as cultural heritage but also as an ecological strategy aligned with climate mitigation and adaptation efforts. This supports Siregar and Putri (2023), who emphasize that environmental-based local wisdom can strengthen ecosystem resilience and enhance community participation in responding to climate impacts. Thus, the preservation of customary values in Sungai Mempura plays a crucial role not only in safeguarding Malay cultural identity but also in sustaining the environment amid global climate challenges.

Environmental Challenges Faced by the Malay Community in Sustaining Local Wisdom

The Malay community in Sungai Mempura Village faces multiple environmental challenges that directly threaten the continuity of local wisdom inherited across generations. Environmental degradation resulting from industrial expansion and plantation development is one of the most significant threats, causing deforestation and disrupting river ecosystems. Forests that once served as sources of livelihood and sites for traditional rituals have diminished, hindering the practice of activities such as khatib berhanyut and kenduri alam. River pollution and sedimentation further exacerbate the problem. The Siak River, once the center of social and economic activity has experienced a decline in water quality due to sediment buildup, rapid spread of kumpai grass, and waste from human activities. This not only disrupts traditional river-based practices but also affects the community’s access to clean water. Although residents continue to clean the river through communal work, limitations in tools and government support hinder the effectiveness of these efforts.

A persistent challenge is the uncontrolled growth of kumpai, a swamp plant that, while nutritionally beneficial as livestock feed, becomes problematic when it spreads excessively and obstructs water flow. River cleaning is still conducted manually through community labor, requiring significant time and physical effort (DD, interview, 2025). The lack of infrastructure remains a major constraint. The community has requested an amphibious excavator to assist with river cleaning, but the request has not yet been fulfilled (DS, interview, 2025). The cost of such equipment, which reaches billions of rupiah, remains beyond the capacity of both the community and the village government (KN, interview, 2025). Consequently, environmental preservation efforts rely heavily on traditional manual labor, which is not sustainable in the long term.

Despite these challenges, the community recognizes the importance of collaboration between government and local residents to balance environmental preservation with community welfare. As one informant noted, environmental conservation should be a priority in sustainable development because when nature is protected, community life also improves (PD, interview, 2025). These findings align with Rahman and Yuliana (2024), who state that the success of local wisdom-based environmental preservation depends on supportive policies and active community participation. Therefore, the environmental challenges faced by the Malay community in Sungai Mempura are not solely ecological but also structural and social. Efforts to preserve local wisdom require technological innovation, government support, and collective awareness to ensure that cultural traditions and the natural environment can be sustained for future generations.

Environmental Challenges Faced by the Malay Community in Preserving Local Wisdom Values

The Malay community in Mempura Village faces various environmental challenges, particularly in preserving the river that serves as their primary source of livelihood. One of the main issues is the rapid growth of kumpai grass, a type of wetland plant that has benefits as livestock feed but can become a threat to the river ecosystem if left uncontrolled, as it may block water flow. The community has attempted to address this problem through collective river-cleaning activities, although limited tools and financial constraints pose significant obstacles to maintaining the river's cleanliness and sustainability. They require technological support such as amphibious excavators so that the cleaning process can be carried out more efficiently without damaging the aquatic ecosystem.

The efforts of the Mempura community reflect a high level of ecological awareness, showing that protecting the river and the environment is not only a practical responsibility but also part of their moral obligation and Malay cultural heritage. This perspective aligns with findings by Wulandari et al. (2023), who state that local communities in coastal areas of Riau face similar challenges in preserving ecosystems due to limited resources, yet continue to actively participate through local wisdom and communal cooperation as forms of adaptation to environmental changes. In addition, Fitriani and Rahmadani (2022) emphasize that community participation in environmental conservation must be strengthened through government policy support to ensure ecological sustainability and social well-being.

Based on the interview results, the researcher concludes that the environmental challenges faced by the Malay community in Mempura Village are relatively complex, especially in maintaining the river's sustainability as their main source of life. One of the most prominent issues is the rapid growth of kumpai grass in the river waters. Although it has value as livestock feed, this plant can become a weed that obstructs water flow and disrupts the river ecosystem if not properly controlled. The community has made efforts through mutual cooperation activities, but the lack of equipment and funding remains a major hindrance. The use of heavy machinery such as amphibious excavators is considered an effective solution, but their high cost reaching billions of rupiah, makes it difficult for the community to acquire them without government support.

This condition indicates that while community participation in environmental conservation remains strong, it still requires adequate policy support and facilities from the local government so that conservation efforts can run optimally and sustainably. This is in line with Yuliana and Prasetyo (2023), who assert that collaboration between local communities and the government is crucial in maintaining ecosystem balance and the sustainability of natural resources, especially in rural areas that still rely on local wisdom. Furthermore, Rahman et al. (2024) emphasize that participatory approaches and environmentally friendly technologies are key to addressing ecological challenges in the modern era without compromising the cultural values of local communities.

CONCLUSION

Based on the findings of this study, the Malay community of Sungai Mempura maintains a set of cultural values and traditional practices that play an important role in preserving the natural environment. These values are reflected in practices such as restricting tree cutting, using natural resources responsibly, and conducting community clean-up activities to maintain the river and surrounding environment. Such traditions form an ecological ethic that guides a harmonious relationship between the community and nature.

The application of local wisdom in responding to climate change is evident through various adaptation and mitigation efforts. These include tree planting with productive species such as durian, mango, and guava, as well as the use of kumpai grass as an environmentally friendly livestock feed. The community also demonstrates ecological awareness through small-scale organic waste management and energy-saving practices. These efforts show that local wisdom can serve as a foundation for community-based adaptation strategies to reduce the impacts of climate change.

Despite these positive practices, the community still faces several challenges in sustaining local wisdom amid modernization pressures and environmental change. A major issue is the lack of facilities and equipment needed for environmental management, including the absence of amphibious excavators to clear river areas overgrown with kumpai grass. Changes in lifestyle and weak transmission of traditional knowledge among younger generations also threaten the continuity of these cultural values. Strengthened collaboration among government, local communities, and educational institutions is therefore essential to ensure that local wisdom remains relevant and adaptive to contemporary ecological challenges.

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