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Research article

Traditional Ecological Wisdom for the Resilience of Indigenous Peoples in Indonesia

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Abstract This paper will discuss how traditional ecological wisdom is invaluable to indigenous peoples in Indonesia because it provides them with techniques for sustainable resource management while at the same time encouraging conservation practices that are rooted in spirituality. The analytical approach will use the concept of Sustainable Practices, thus the importance of this knowledge is not only for preserving indigenous culture but also for achieving long-term environmental sustainability on a global scale. Traditional ecological wisdom refers to the knowledge and practices passed down through generations by indigenous communities. These practices are deeply rooted in a sustainable approach to living in harmony with nature. This understanding guides their sustainable practices, such as rotational farming and fishing techniques that allow for natural regeneration. Throughout history, indigenous communities have developed a deep understanding of land management and agriculture techniques that are rooted in their connection to the natural world. This knowledge has been passed down through generations, allowing indigenous peoples to sustainably cultivate the land and ensure its productivity for future generations.

Keywords Ecological wisdom; heritage preservation; indigenous people; Indonesia; sustainable practices.

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1. INTRODUCTION

Traditional Ecological Wisdom refers to the knowledge and practices that have been passed down through generations in indigenous communities (Supyan et al., 2021). It encompasses a deep understanding of the natural world and the

interconnectedness of all living beings. This view is rooted in a holistic approach to ecology, recognizing that humans are an integral part of nature rather than separate from it (Septiani & Asrawijaya, 2023). Indigenous communities have developed intricate systems of resource management, based on their observations and interactions with the environment over centuries (Asteria et al., 2021; Taryana et al., 2020). These practices ensure sustainability and balance between human needs and the health of ecosystems.

One key aspect of traditional ecological wisdom is the concept of reciprocity. Indigenous peoples understand that they must give back to nature as much as they take from it (Asrawijaya, 2020b). This involves rituals, ceremonies, and practices aimed at expressing gratitude and maintaining harmony with the natural world. Another important element is the recognition of biodiversity and its value (Mirajiani et al., 2019). Indigenous communities have long understood that diversity within ecosystems leads to resilience and stability. They prioritize preserving different species, habitats, and genetic variations for future generations (Persoon et al., 2004).

Traditional ecological wisdom also emphasizes community cooperation and decision-making processes based on consensus-building rather than individualism or hierarchical structures (Asrawijaya & Hudayana, 2021). This ensures that everyone's voice is heard, fostering a sense of collective responsibility towards environmental stewardship. This view holds valuable lessons for our modern society grappling with environmental challenges. By embracing this tradiditional ecological wisdom principles such as reciprocity, biodiversity preservation, community cooperation, we can learn how to live in harmony with nature while ensuring a sustainable future for all living beings (Wicaksono et al., 2022).

Indigenous communities view themselves as custodians of the land and believe in living in harmony with nature rather than exploiting it for personal gain (Asrawijaya, 2020a). Their sustainable farming techniques prioritize soil fertility and water conservation while minimizing environmental degradation (Mirajiani et al., 2019). Moreover, traditional ecological wisdom is deeply intertwined with indigenous spirituality. These communities perceive nature as sacred and believe in a reciprocal relationship between humans and the environment. Rituals and ceremonies are conducted to honor natural elements such as mountains or rivers, fostering a sense of respect for the Earth's resources (Asrawijaya, 2022).

Furthermore, traditional ecological wisdom also serves as a means of preserving cultural heritage (Nafila, 2013). Indigenous communities often have strong spiritual

connections with their natural surroundings and view themselves as stewards rather than owners of the land (Asrawijaya, 2022). This worldview is deeply rooted in their traditions and beliefs, which are passed down through generations. By practicing sustainable methods handed down from their ancestors, indigenous peoples maintain a connection with their cultural heritage while also safeguarding it for future generations (Jumiyati et al., 2021).

Traditional ecological wisdom enables indigenous communities to adapt to environmental changes effectively (Magni, 2017). Climate change poses significant challenges globally (Gonzalez, 2011), however indigenous peoples' knowledge allows them to respond more resiliently. They possess an intimate understanding of local weather patterns and can predict changes based on natural indicators such as animal behavior or plant flowering times. This knowledge allows them to adjust agricultural practices or migration routes accordingly (Habiyaremye & Korina, 2021).

It can be concluded that traditional ecological wisdom plays a crucial role in the lives of indigenous peoples in Indonesia. For centuries, these communities have relied on their deep understanding of the environment to sustain their livelihoods and maintain a harmonious relationship with nature. This traditional knowledge encompasses various aspects, including resource management, conservation practices, and spiritual beliefs.

This paper will discuss how traditional ecological wisdom is invaluable to indigenous peoples in Indonesia because it provides them with techniques for sustainable resource management while at the same time encouraging conservation practices that are rooted in spirituality. The analytical approach will use the concept of Sustainable Practices, thus the importance of this knowledge is not only for preserving indigenous culture but also for achieving long-term environmental sustainability on a global scale.

2. RESULTS AND DISCUSSION

2.1. Sustainable Practices

The sustainable practices are deeply rooted in a sustainable approach to living in harmony with nature. They offer valuable insights into how we can address the pressing environmental challenges of our time. Indigenous communities understand that all living beings are interconnected, and their actions have consequences for the entire ecosystem (Asrawijaya, 2020a). This understanding guides their sustainable

practices, such as rotational farming and fishing techniques that allow for natural regeneration.

Another important aspect is the emphasis on conservation and respect for natural resources. Indigenous communities have developed intricate systems to ensure the long-term availability of essential resources like water, forests, and wildlife. For example, they practice selective harvesting, only taking what is necessary while allowing plants and animals to replenish themselves (Asrawijaya, 2020a; Kenedy & Deffinika, 2022).

Throughout history, indigenous communities have developed a deep understanding of land management and agriculture techniques that are rooted in their connection to the natural world. This knowledge has been passed down through generations, allowing indigenous peoples to sustainably cultivate the land and ensure its productivity for future generations. Indigenous communities recognize that they are part of a larger ecosystem and have a responsibility to maintain a harmonious relationship with the land. They understand that taking care of the environment will ultimately benefit them as well (Tamma & Duile, 2020).

Indigenous agricultural techniques also demonstrate an intimate understanding of local ecosystems. They employ methods such as crop rotation, intercropping, and agroforestry to maximize yields while minimizing soil degradation and pest infestations. These practices not only ensure food security but also contribute to biodiversity conservation (Brainard, 2011). Furthermore, indigenous knowledge emphasizes the importance of preserving traditional seed varieties. Indigenous farmers have cultivated diverse crops over centuries, selecting seeds that are adapted to local conditions. This genetic diversity not only enhances resilience against climate change but also preserves cultural heritage (Marhini et al., 2021).

Traditional fishing and hunting methods have long been practiced by indigenous communities. These methods not only sustain their livelihoods but also promote conservation of natural resources. Unlike modern industrial practices, traditional methods prioritize sustainability and ensure the long-term survival of species. In fishing, traditional techniques such as using nets, traps, or hooks are employed instead of destructive methods like trawling or dynamite fishing. These techniques allow for selective harvesting, targeting specific species and sizes while minimizing bycatch. Additionally, indigenous communities often have strict regulations on the number of fish caught or the size limits to prevent overfishing (Stacey et al., 2012).

Similarly, traditional hunting methods focus on sustainable practices (Pattiselanno & Arobaya, 2011). Indigenous hunters have a deep understanding of animal behavior and ecosystems, allowing them to hunt in a way that maintains ecological balance. They respect seasonal breeding patterns and migration routes to avoid disrupting population dynamics.Moreover, these communities view nature as interconnected with their cultural identity and spirituality. They believe in reciprocity with nature - taking only what is necessary for survival and giving back through rituals or conservation efforts (Asrawijaya, 2020a). By embracing these traditional fishing and hunting methods, we can learn valuable lessons about sustainable resource management (Himes-cornell et al., 2021; Perea-Muñoz et al., 2022). Incorporating these practices into modern conservation strategies can help protect biodiversity while ensuring the well-being of both human communities and ecosystems for generations to come.

Indonesia is home to a rich cultural heritage, with indigenous communities playing a vital role in preserving the environment and promoting sustainability. These communities have implemented successful initiatives that serve as inspiring examples for the rest of the world. One such initiative is the Sasi system practiced by the Maluku people (Haulussy et al., 2020). This traditional form of resource management involves declaring certain areas off-limits for fishing or hunting during specific periods. By doing so, they allow marine life to replenish and ensure long-term sustainability. This practice has not only preserved their marine ecosystems but also increased fish populations, benefiting both their community and neighboring areas.

Another remarkable example comes from the Dayak people in Borneo who have established community-based forest management systems. They actively engage in reforestation efforts, protect endangered species, and promote sustainable livelihoods through eco-tourism initiatives. Their commitment to preserving biodiversity while improving local economies showcases how indigenous knowledge can be harnessed for sustainable development (Leo et al., 2022).

Furthermore, the Toraja people in Sulawesi have embraced agroforestry practices that integrate traditional farming methods with forest conservation. They cultivate crops like coffee and cocoa under a canopy of trees, which not only provides shade but also protects soil health and prevents erosion. This approach ensures food security while safeguarding natural resources (Lisnawati et al., 2017).

These examples highlight how indigenous communities in Indonesia are successfully implementing sustainable practices rooted in their cultural traditions. Their initiatives demonstrate that environmental conservation can go hand-in-hand with economic prosperity when guided by local wisdom and respect for nature. It is crucial for policymakers and society at large to recognize these successes and support indigenous communities' efforts towards a more sustainable future.

2.2. Cultural Heritage Preservation

Cultural heritage preservation is a crucial endeavor that seeks to protect and safeguard the rich history, traditions, and artifacts of a particular culture or society (Stefano et al., 2014). It is an essential aspect of maintaining our collective identity and understanding the roots from which we have grown. By preserving cultural heritage, can be ensure that future generations can appreciate and learn from the past.

One of the primary reasons for cultural heritage preservation is to prevent the loss of valuable historical knowledge. Cultural artifacts, such as ancient manuscripts, artworks, or architectural structures, provide insights into the beliefs, customs, and achievements of our ancestors. These artifacts are irreplaceable windows into our past and help us understand how societies have evolved over time.

Cultural heritage preservation fosters a sense of pride and identity among communities (Asrawijaya, 2022). By celebrating their unique traditions and customs, individuals feel connected to their roots and develop a stronger sense of belonging. This connection helps build social cohesion within communities by promoting mutual respect and understanding.

Preserving cultural heritage also has economic benefits. Historical sites attract tourists from all over the world who are eager to explore different cultures (Rizkiana, 2020). This influx of visitors stimulates local economies by creating jobs in tourism-related industries such as hospitality, transportation, and retail.

Cultural heritage preservation plays a vital role in maintaining the identity and traditions of indigenous peoples in Indonesia. These communities have a rich cultural history that is deeply intertwined with their land, language, and customs. However, rapid globalization and modernization have posed significant threats to their cultural heritage.

Preserving cultural heritage is crucial for indigenous peoples as it helps them maintain a sense of belonging and pride in their roots. It allows them to pass down

traditional knowledge, rituals, and practices from one generation to another (Batten et al., 2023). By safeguarding their cultural heritage, indigenous communities can ensure the continuity of their unique way of life.

Additionally, cultural heritage preservation contributes to the overall diversity and richness of Indonesian society. Indigenous cultures offer alternative perspectives on life, nature, and spirituality that can enrich mainstream society's understanding and appreciation for different ways of living. Furthermore, cultural heritage preservation has economic benefits for indigenous communities. Traditional crafts, arts, music, and dance are not only expressions of culture but also potential sources of income through tourism or local markets. By preserving these practices and passing them down through generations, indigenous peoples can sustain themselves economically while maintaining their way of life.

A. Link of Culture and Environment in Indigenous Communities

The link between culture and environment within indigenous communities is a profound and intricate relationship that has shaped their way of life for centuries (Asrawijaya, 2022). Indigenous cultures have developed a deep understanding of their natural surroundings, recognizing the interconnectedness between humans, animals, plants, and the land.

In these communities, culture is deeply rooted in the environment. Indigenous people view themselves as stewards of the land rather than owners. They possess an intimate knowledge of local ecosystems, which is passed down through generations via oral traditions and storytelling. This knowledge includes sustainable practices such as hunting, fishing, and farming techniques that ensure the preservation of resources for future generations.

Furthermore, indigenous cultures often incorporate spiritual beliefs into their relationship with the environment. They see nature as sacred and believe in maintaining a harmonious balance with it (Asrawijaya, 2020a). Rituals and ceremonies are performed to honor nature's gifts and seek guidance from ancestral spirits.

However, this delicate link between culture and environment is increasingly threatened by modernization and globalization. The encroachment of industrial activities on indigenous lands disrupts traditional ways of life while causing environmental degradation. Deforestation, pollution, loss of biodiversity – all

these have severe consequences not only for indigenous communities but also for the planet as a whole.

To preserve this invaluable connection between culture and environment within indigenous communities, it is crucial to recognize their rights to land ownership and self-determination. Supporting sustainable development projects that align with their cultural values can help maintain traditional practices while promoting economic growth (Septiani & Asrawijaya, 2023).

The link between culture and environment within indigenous communities is inseparable. Their deep understanding of nature has allowed them to thrive sustainably for centuries. However, this connection must be protected from external threats to ensure both cultural preservation and environmental sustainability for future generations.

B. Role of Traditional Ecological Wisdom

Traditional ecological wisdom plays a crucial role in preserving cultural identity. Throughout history, indigenous communities have developed deep connections with their natural environment, understanding the delicate balance between humans and nature. This wisdom is passed down through generations, ensuring the preservation of cultural practices and values.

Firstly, traditional ecological wisdom fosters a sense of belonging and identity within indigenous communities (Halim et al., 2021). The intimate knowledge of the land, its resources, and the interdependence between humans and nature forms the foundation of their culture (Setiadi et al., 2017). By maintaining this wisdom, indigenous people can sustain their unique way of life and pass it on to future generations.

Secondly, traditional ecological wisdom promotes sustainable practices that are essential for environmental conservation (Thontowi, 2013). Indigenous communities have long practiced sustainable agriculture, fishing techniques, and land management strategies that prioritize the long-term health of ecosystems. These practices not only ensure food security but also contribute to biodiversity conservation.

Thirdly, traditional ecological wisdom encourages a holistic approach to life that emphasizes interconnectedness between all living beings. This worldview fosters respect for nature's resources and promotes harmony with the

environment. By preserving these values and practices, indigenous cultures contribute to global efforts towards sustainability.

Traditional ecological wisdom is vital in preserving cultural identity as it provides a strong connection between indigenous communities and their natural environment. By passing down this knowledge from generation to generation, these cultures can maintain their unique way of life while promoting sustainable practices that benefit both humans and nature. It is crucial for society as a whole to recognize the value of traditional ecological wisdom in preserving cultural diversity and protecting our planet's ecosystems.

2.3. The Preservation Efforts Made by Indigenous Communities

A. Land Conservation in Toraja Rituals and Ceremonies

The Toraja people, an indigenous group residing in the highlands of South Sulawesi, Indonesia, have long been known for their unique rituals and ceremonies (Lisnawati et al., 2017). Among these practices are those related to land conservation, which play a crucial role in preserving the environment and sustaining their way of life.

One such ritual is called "Ma'nene," also known as the "Cleaning of Corpses." This ceremony involves exhuming the bodies of deceased family members from their graves and dressing them in new clothes . While this may seem unusual to outsiders, it serves a profound purpose for the Toraja people. By periodically revisiting the gravesites and taking care of their ancestors' remains, they demonstrate respect for the land and acknowledge its importance in maintaining their cultural heritage (Saputri & Pramiyanti, 2021).

Another significant practice is the "Rambu Solo" ceremony, which marks the funeral rites for a prominent member of society. During this event, large numbers of buffalo are sacrificed as offerings to ensure a smooth transition into the afterlife. The Toraja believe that by sacrificing these animals, they maintain harmony with nature and show gratitude for its provisions (Embon, 2019).

These rituals not only reflect deep spiritual beliefs but also serve as effective means of land conservation. The Toraja people's strong connection to their ancestral lands compels them to protect and preserve it for future generations. Through these ceremonies, they emphasize sustainable practices that promote environmental balance.

The Toraja people's rituals and ceremonies related to land conservation showcase their profound understanding of ecological harmony. These practices not only honor their ancestors but also serve as reminders that nature must be respected and preserved. By embracing these traditions, they ensure that both cultural heritage and environmental sustainability are upheld within their community.

B. Preserving Ancestral Knowledge in Baduy Oral Traditions

The Baduy tribe, residing in the remote regions of Indonesia, has managed to preserve their ancestral knowledge through the oral traditions passed down from generation to generation (Kenedy & Deffinika, 2022). This unique cultural practice has allowed them to maintain a deep connection with their past and ensure the survival of their traditional way of life.

The Baduy people believe that oral traditions are not only a means of communication but also a way to preserve their history, customs, and values (Habiyaremye & Korina, 2021). Through storytelling, songs, and rituals, they pass on invaluable knowledge about agriculture techniques, medicinal plants, spiritual beliefs, and social norms. This oral transmission ensures that each new member of the tribe is well-equipped with the wisdom necessary for survival in their natural environment.

This preservation of ancestral knowledge through oral traditions serves as a unifying force within the Baduy community. By sharing stories around campfires or during ceremonies, they strengthen social bonds and reinforce a sense of identity among tribe members. The elders play a crucial role in this process as they are regarded as custodians of wisdom and are responsible for passing it on to younger generations.

One of the most prominent rituals practiced by the Baduy people is called "Seba," which takes place every six months. During Seba, all agricultural activities come to a halt as villagers engage in communal work such as repairing irrigation systems or cleaning water sources. This practice not only fosters unity among community members but also ensures sustainable land management by preventing soil erosion and maintaining water quality (Rusnandar, 2013).

The Baduy people's commitment to land conservation goes beyond these ceremonies; it is deeply ingrained in their way of life. They adhere strictly to

traditional farming methods that prioritize organic practices over modern techniques that may harm the environment. Additionally, they limit deforestation by using fallen trees for construction purposes instead of cutting down healthy ones.

The rituals and ceremonies practiced by the Baduy people play a vital role in preserving their ancestral lands' ecological balance. By establishing a spiritual connection with nature through these practices, they reinforce their commitment as stewards rather than exploiters of the land. Their sustainable farming methods combined with communal work further contribute to maintaining biodiversity while ensuring food security for future generations. The world can learn valuable lessons from the Baduy people's harmonious relationship with nature, as their practices offer a blueprint for sustainable land conservation.

2.4. Adaptation to Environmental Changes

Traditional ecological wisdom refers to the knowledge and practices developed by indigenous communities over centuries, which enable them to adapt to environmental changes effectively. Indigenous communities have long understood the delicate balance between humans and nature, recognizing that their survival depends on maintaining this harmony.

Indigenous communities possess an intimate knowledge of their surroundings, including the behavior of plants, animals, and natural resources. This knowledge allows them to predict environmental changes and adjust their practices accordingly. For example, they may modify hunting or fishing techniques based on seasonal patterns or migrate to more favorable areas during extreme weather events.

Traditional ecological wisdom emphasizes sustainable resource management. Indigenous communities have developed intricate systems for utilizing natural resources without depleting them. They understand that overexploitation can lead to long-term consequences for both themselves and the environment. By employing techniques such as rotational farming or selective harvesting, they ensure the regeneration of resources for future generations. Traditional ecological wisdom is passed down through generations via oral traditions and cultural practices. This collective knowledge fosters a sense of responsibility towards nature and encourages cooperation in times of environmental challenges.

Traditional ecological wisdom plays a vital role in enabling indigenous communities to adapt effectively to environmental changes. Their deep understanding of local ecosystems, sustainable resource management practices, and strong community ties allow them to navigate these challenges while preserving their way of life for future generations. As we face increasing global environmental crises today, there is much we can learn from these ancient traditions in our quest for sustainability and resilience.

Knowledge of climate patterns and ecosystems is crucial for indigenous peoples in Indonesia, as their livelihoods are intimately connected to the land and natural resources. These communities have developed a deep understanding of their local environments over generations, enabling them to adapt and thrive in diverse ecosystems. One example of this knowledge can be seen among the Dayak people in Borneo. They possess an intricate understanding of the rainforest ecosystem, including its flora, fauna, and climate patterns. This knowledge allows them to sustainably manage their resources, such as hunting and gathering practices that ensure the preservation of biodiversity.

Another case example is found among the Mentawai people in West Sumatra. They have a profound understanding of marine ecosystems and weather patterns along their coastal territories. This knowledge enables them to predict changes in sea currents and weather conditions, allowing for safe navigation during fishing expeditions.

Indigenous peoples' knowledge is not only limited to specific ecosystems but also extends to broader climate patterns. For instance, the Toraja people in Sulawesi have developed sophisticated agricultural practices based on their understanding of seasonal variations. They know when to plant crops or harvest based on climatic cues like rainfall patterns or temperature fluctuations. However, despite their invaluable knowledge systems, indigenous communities face numerous challenges that threaten their traditional ways of life. Deforestation due to logging or palm oil plantations disrupts delicate ecosystems they rely upon while climate change brings unpredictable weather patterns that affect agriculture and fishing activities.

Indigenous peoples' knowledge of climate patterns and ecosystems plays a vital role in sustaining their livelihoods in Indonesia. Preserving this traditional wisdom is essential for promoting sustainable development while ensuring the protection of unique biodiversity hotspots across the archipelago.

The ability of indigenous peoples to adjust the use of resources based on natural fluctuations is a testament to their deep understanding and harmonious relationship with the environment. This adaptability has been observed in various parts of the world, including Indonesia. Indonesia, with its vast archipelago and diverse ecosystems, is home to numerous indigenous communities. These communities have developed intricate knowledge systems that enable them to sustainably manage their resources. They possess an intimate understanding of local flora and fauna, weather patterns, and ecological processes.

One example of this adaptability can be seen in the practices of the Dayak people in Kalimantan, Indonesia. The Dayak have traditionally relied on swidden agriculture, a method that involves clearing small patches of land for cultivation. However, they have also developed mechanisms to prevent overexploitation and ensure resource regeneration. They rotate their fields regularly and leave fallow periods for soil recovery.

Indigenous communities in Indonesia have also demonstrated resilience in times of natural disasters or climate change-induced events. For instance, during periods of drought or flooding, they adjust their fishing or hunting practices accordingly to ensure sustainable yields. However, despite their invaluable knowledge and practices, indigenous peoples often face challenges from external forces such as deforestation and land encroachment by industries. Their rights are not always recognized or protected by governments.

The ability of indigenous peoples in Indonesia to adjust resource use based on natural fluctuations is a testament to their wisdom and sustainable practices. It is crucial for governments and society at large to acknowledge their expertise and provide support for the preservation of these invaluable traditions.

A. Sama-Bajau's Adaptation Strategies against Rising Sea Levels

The Sama-bajau community, a group of indigenous people living in Southeast Asia, is facing the imminent threat of rising sea levels due to climate change. This case study highlights their remarkable adaptation strategies that have allowed them to survive and thrive in this challenging environment.

One key adaptation strategy employed by the Sama-bajau community is their unique housing construction. Traditionally, they build stilt houses on shallow waters or floating houses that can rise with the tides. This innovative

approach ensures their safety and minimizes damage caused by flooding. Additionally, their mobility allows them to relocate easily when necessary.

The Sama-bajau people have developed sustainable fishing practices that help them maintain a stable food supply despite changing ocean conditions. They possess extensive knowledge of marine ecosystems and utilize traditional techniques such as fish corrals and handline fishing. These methods not only ensure their survival but also contribute to the preservation of marine biodiversity. Moreover, the Sama-bajau community's strong sense of solidarity and cooperation has been instrumental in adapting to rising sea levels. They rely on communal decision-making processes and mutual support networks to address challenges collectively. This unity enables them to share resources effectively and respond swiftly during emergencies (Ismail et al., 2015).

The Sama-bajau community's adaptation strategies against rising sea levels serve as an inspiration for other vulnerable communities worldwide. Their innovative housing construction, sustainable fishing practices, and strong social cohesion demonstrate how indigenous knowledge can be harnessed to mitigate the impacts of climate change effectively. It is crucial for governments and international organizations to recognize these valuable strategies and support these communities in preserving their way of life while facing this existential threat.

B. Dayak's Fire Management Techniques in Mitigating Forest Fires

Forest fires have become a global concern due to their devastating impact on the environment, wildlife, and human health. However, indigenous communities like the Dayak in Borneo have been successfully mitigating forest fires for centuries through their ancestral fire management techniques. These techniques involve controlled burning practices that help maintain a healthy ecosystem and reduce the risk of uncontrolled wildfires.

The technique employed by the Dayak is known as "swidden agriculture" or shifting cultivation. This involves clearing small patches of land through controlled burning, followed by planting crops and allowing the land to regenerate naturally over time. By regularly burning small areas, they prevent the accumulation of dry vegetation that can fuel large-scale forest fires.

The Dayak also practice "fireline construction," which involves creating firebreaks around their villages and agricultural fields. These firebreaks act as barriers that prevent wildfires from spreading into inhabited areas or valuable resources. Traditional knowledge passed down through generations has equipped the Dayak with an understanding of optimal weather conditions for controlled burns. They carefully choose periods when humidity is high and winds are calm to ensure that fires do not get out of control. Critics argue that these ancestral techniques are outdated and ineffective in modern times. However, research has shown that these methods can significantly reduce the severity and frequency of forest fires when implemented properly.

Efforts made by Dayak communities in mitigating forest fires through ancestral fire management techniques should be recognized and supported. Their sustainable practices demonstrate how indigenous knowledge can contribute to environmental conservation while preserving cultural heritage. Governments and organizations should collaborate with indigenous communities to integrate these traditional methods into modern wildfire prevention strategies for a more sustainable future.

3. CONCLUSION

The significance of traditional ecological wisdom for the resilience of indigenous peoples in Indonesia cannot be overstated. Indigenous communities have long relied on their deep understanding of the environment to sustainably manage their resources and maintain a harmonious relationship with nature. This wisdom, passed down through generations, holds invaluable lessons for modern society grappling with environmental challenges.

Indigenous peoples possess an intricate knowledge of local ecosystems, including plant and animal species, weather patterns, and natural resources. They understand the delicate balance that must be maintained to ensure the long-term sustainability of these ecosystems. By incorporating traditional ecological wisdom into conservation efforts, we can benefit from their expertise and preserve biodiversity.

Indigenous communities have developed sustainable practices that minimize environmental impact while meeting their needs. For example, they practice rotational farming techniques that allow soil to regenerate naturally and avoid

overexploitation. These methods not only ensure food security but also contribute to climate change mitigation by sequestering carbon in healthy soils. By recognizing and respecting indigenous knowledge systems, we can foster a more inclusive approach to environmental management in Indonesia. This means involving indigenous communities in decision-making processes regarding land use and resource.

REFERENCES

Arif, A., Marini, A., & Utomo, E. (2021). Character Education in Baduy Tribe Communities in Indonesia. *International Journal of Multicultural and Multireligious Understanding*, *8*(4), 646–653.

Asrawijaya, E. (2020a). Gerakan Ekopopulisme komunitas Samin melawan perusahaan semen di pegunungan Kendeng. *Jurnal Sosiologi Pendidikan Humanis*, *5*(1), 35–47.

Asrawijaya, E. (2020b). The Dynamics of the Samin Movement Against the Planned Establishment of a Cement Factory in Pati , Central Java. *Jurnal Imu Sosial Mamangan*, *9*(2), 76–89.

Asrawijaya, E. (2022). Harmonization between customs and Islam in the Jalawastu Community. *Journal of Indonesian Islam*, *16*(02), 378–398. https://doi.org/10.15642/JIIS.2022.16.2.378-398

Asrawijaya, E., & Hudayana, B. (2021). The Power of a Leader in the Samin People's Opposition Movement to the Development of a Cement Factory in the North Kendeng Mountains. *Jurnal Humaniora*, *33*(1), 26. https://doi.org/10.22146/jh.56224

Asteria, D., Negoro, A. B. A., & Sudrajad, M. R. (2021). Contribution of Customary Law in Sustainable Forest Management for Supporting Climate Action. *IOP Conference Series: Earth and Environmental Science*, *940*(1), 1–8. https://doi.org/10.1088/1755-1315/940/1/012080

Batten, R., Galant, O., Karanjikar, M., & Spatari, S. (2023). Meeting sustainable aviation fuel policy targets through first generation corn biorefineries. *Fuel*, *333*, 126294. https://doi.org/10.1016/j.fuel.2022.126294

Brainard, S. (2011). The Impact of Indonesian Agricultural Policies on Indigenous Populations , Natural Resources and the Economy : The Limits of Democratic Self-Determination Under Capitalist Regimes. *University of Miami Inter-American Law Review*, *43*(1), 165–193.

Embon, D. (2019). Sistem simbol dalam upacara adat Toraja Rambu Solo : kajian semiotik. *Jurnal Bahasa Dan Sastra*, *4*(2).

Gonzalez, C. G. . (2011). Climate Change , Food Security , And Agrobiodiversity : Toward A Just , Resilient , And Sustainable Food System. *Fordham Environmental Law Review*, *22*(3), 493–522.

Habiyaremye, A., & Korina, L. (2021). Indigenous Knowledge Systems in Ecological Pest Control and Post- Harvest Rice Conservation Techniques : Sustainability Lessons from Baduy Communities. *Sustainability*, *13*(9148), 1–16.

Halim, A., Basyid, A., & Prihananto. (2021). Religious Identity Transformation. Cultural Interbreeding Between Dayak Indigenous Culture and Islam. *Journal of Indonesian Islam*, *15*(1), 171–192. https://doi.org/10.15642/JIIS.2021.15.1.171-192

Haulussy, R. R., Idris, R., Dody, A., & Putra, M. (2020). The Sustainability Of The Sasi Lola Tradition And Customary Law (Case Study In Masawoy Maluku , Indonesia). *International Journal of Scientific & Technology Research*, *9*(02), 5193–5195.

Himes-cornell, A., Francisco, J., Sa, L., Dalton, K., & Metzner, R. (2021). Positive social transformations of coastal communities : what conditions enable the success of territorial use rights for fishing ? *Environmental Sustainability*, *53*, 1–8. https://doi.org/10.1016/j.cosust.2020.12.008

Ismail, I. E., Sani, A., & Ibrahim, I. (2015). Influences of Regional Sama-Bajau Coastal Dwellings : Social Perspectives through Identity Molding. *International Journal of Culture and History*, *1*(2), 115–121. https://doi.org/10.18178/ijch.2015.1.2.022

Jumiyati, S., Nurdin, R., Rahman, I., Alam, A. S., & Akkas, N. (2021). Economic and ecological adaptation to changes in agricultural land use to increase sustainable economic resilience Economic an. *Earth and Environmental Science*, 1–8. https://doi.org/10.1088/1755-1315/800/1/012049

Kenedy, B. A., & Deffinika, I. (2022). *Environmental Adaptation of Indigenous People : Baduy Tribe ' s Local Wisdom in Environmental Management*. https://doi.org/10.1088/1755-1315/1066/1/012017

Leo, S., Supriatna, J., Mizuno, K., & Margules, C. (2022). Indigenous Dayak Iban customary perspective on sustainable forest management , West Kalimantan , Indonesia. *Biodiversitas*, *23*(1), 424–435. https://doi.org/10.13057/biodiv/d230144

Lisnawati, A., Lahjie, A. M., Simarangkir, B. D. A. S., & Yusuf, S. (2017). Agroforestry system biodiversity of Arabica coffee cultivation in North Toraja District , South Sulawesi , Indonesia. *Biodiversitas*, *18*(2), 741–751. https://doi.org/10.13057/biodiv/d180243

Magni, G. (2017). Indigenous knowledge and implications for the sustainable development agenda. *Eur J Educ.*, *52*, 437–447. https://doi.org/10.1111/ejed.12238

Marhini, L. O., Harjoprawiro, L., Malik, E. S., Saputri, S. A., & Rihu, A. (2021). Kearifan lokal masyarakat muna dalam pengelolaan hasil panen jagung sebagai upaya menjaga ketahanan pangan. *Seshiski*, *1*(2), 157–176.

Mirajiani, Sulaeni, & Sutisna, T. (2019). The local farming system based on custom and tradition to achieve sustainable agriculture in Baduy indigenous community. *The 1st International Conference on Agriculture and Rural Development*. https://doi.org/10.1088/1755-1315/383/1/012032

Nafila, O. (2013). Peran Komunitas Kreatif dalam Pengembangan Pariwisata Budaya di Situs Megalitikum Gunung Padang. *Perencanaan Wilayah Dan Kota*, *24*(1), 65–80.

Pattiselanno, F., & Arobaya, A. Y. S. (2011). Subsistence indigenous hunting in Papua : does it sustainable ? *Media Konservasi*, *16*(2), 95–100.

Perea-Muñoz, J. M., Miles, A., & Bayle-Sempere, J. T. (2022). Sharing goals by timely communication improves fishermen's satisfaction with marine protected areas: A case study in the Mediterranean. *Ambio*, *51*(6), 1520–1534. https://doi.org/10.1007/s13280-021-01683-y

Persoon, G. A., Minter, T., Slee, B., & Hammen, C. van der. (2004). *The position of indigenous peoples in the management of tropical forests*. Tropenbos International.

Rizkiana, M. S. (2020). Pengenalan Potensi, Budaya dan Pariwisata Kabupaten Brebes Berbasis Android Menggunakan Metode Disciplined Agile Delivery. *Jurnal of Informatics, Information System, Software Engineering and Applications*, *2*(2), 11–19. https://doi.org/10.20895/inista.v2i2.102

Rusnandar, N. (2013). Seba : puncak ritual masyarakat Baduy. *Patanjala*, *5*(1), 83–100.

Saputri, A., & Pramiyanti, A. (2021). Presepsi pemuda asal Toraja terhadap tradisi Ma ' nene. *E-Proceeding of Management*, *8*(6), 8989–8997.

Septiani, W., & Asrawijaya, E. (2023). Political Opportunities in the Samin Movement Against the Establishment of a Cement Factory in Pati. *Policy & Governance Review*, *7*(2), 125–139.

Setiadi, Saraswati, A. R., & Rosyid, N. (2017). Geger Sikep: Environmental (re) interpretation among the contemporary anti-cement movement in Kendeng, Central Java. *Komunitas: International Journal of Indonesian Society and Culture*, *9*(1), 13–28. https://doi.org/10.15294/komunitas.v9i1.8673

Stacey, N. E., Karam, J., Meekan, M. G., & Pickering, S. (2012). Prospects for Whale Shark Conservation in Eastern Indonesia Through Bajo Traditional Ecological

Knowledge and Community-based Monitoring. *Ashoka Trust for Research in Ecology and the Environment And*, *10*(1), 63–75. https://doi.org/10.4103/0972-4923.92197

Stefano, M. L., Davis, P., & Corsane, G. (Eds.). (2014). *Safeguarding intangible cultural heritage* (Vol. 8). Boydell & Brewer Ltd.

Supyan, A N, S., G M, S., & Sulistiono. (2021). Traditional wisdom as a starting point for conservation : A review. *2nd International Conference on Fisheries and Marine*. https://doi.org/10.1088/1755-1315/890/1/012064

Tamma, S., & Duile, T. (2020). Indigeneity and the State in Indonesia : The Local Turn in the Dialectic of Recognition. *Journal of Current Southeast Asian Affairs*, *39*(2), 270–289. https://doi.org/10.1177/1868103420905967

Taryana, A., Khotimah, F. K. H., Achsani, N. A., & Arifin, B. (2020). Innovative food system risk management of Baduy Tribe. *Business Review and Case Studies*, *1*(1), 1–13.

Thontowi, J. (2013). Perlindungan dan Pengakuan Masyarakat Adat dan Tantangannya dalam Hukum Indonesia. *Jurnsl Hukum IUS QUIA IUSTUM*, *20*(1), 21–36.

Wicaksono, A., Yunita, I., & Ginaya, G. (2022). Living side by side with nature : evidence of self-governance in three local communities in Indonesia. *Heliyon*, *8*(November), e12248. https://doi.org/10.1016/j.heliyon.2022.e12248

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