

## INDIGENOUS KNOWLEDGE AND ENVIRONMENTAL GOVERNANCE – A LOCAL WISDOM-BASED APPROACH IN INDONESIA (LITERATURE REVIEW)

**Author(s) / Szerző(k):**

**Efilina Kissiya<sup>1</sup>**

Debrecen Reformed Theological University (Hungary)  
Indonesia

**Gábor Biczó (Prof., PhD)<sup>2</sup>**

University of Debrecen (Hungary)

**Cite:** Kissiya, Efilina & Biczó, Gábor (2025). Indigenous Knowledge and Environmental Governance – A Local Wisdom-Based Approach in Indonesia (Literature Review).  
**Idézés:** *Különleges Bánásmód Interdiszciplináris folyóirat [Special Treatment Interdisciplinary Journal]*. 11(SI), 65-79. DOI: <https://doi.org/10.18458/KB.2025.SI.65>



This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

**EP / EE:** Ethics Permission / Etikai engedély: KB/2025SI/0005

**Reviewers:** *Public Reviewers / Nyilvános Lektorok:*

- Lektorok:**
1. Katalin Mező (PhD), University of Debrecen (Hungary)
  2. Norbert Tóth (PhD), University of Debrecen (Hungary)

*Anonymous reviewers / Anonim lektorok:*

3. Anonymous reviewer (PhD) / Anonim lektor (PhD)
4. Anonymous reviewer (PhD) / Anonim lektor (PhD)

### Abstract

This paper aims to explore how indigenous communities in Indonesia play an important role in environmental management based on local wisdom that has been passed down through generations. The method used in this study is descriptive qualitative research. The data for this study were obtained through

---

<sup>1</sup> Efilina Kissiya. Department of Ethnography, Faculty of Arts, University of Debrecen, Program of Ethnography and Cultural Anthropology, PhD School of History and Ethnography (Hungary). Associate Professor of Ministry of Higher Education Republik Indonesia-History Education Study Program, Faculty Teacher Training and Education Science-Pattimura University (Indonesia). E-mail address: efilinakissiya12@gmail.com, ORCID ID: <https://orcid.org/0000-0002-4585-4451>.

<sup>2</sup> Gábor Biczó (Prof., Ph.D.). Department of Social Sciences, Faculty of Education for Children and Special Educational Needs, University of Debrecen (Hungary). E-mail address: biczogabor@ped.unideb.hu, ORCID ID: <https://orcid.org/0000-0003-3797-3060>.

a literature review. The method employed is descriptive qualitative analysis, examined through various social, anthropological, and environmental theories. These theories highlight the close relationship between social norms, ecological knowledge, and environmental sustainability. The results of the literature study indicate that various indigenous communities in Indonesia implement sustainable ecological systems through traditional conservation practices, such as the subak system in Bali, sasi for marine and terrestrial resources in Maluku, and prohibitions on indiscriminate tree cutting in Waerebo and among the Baduy community. This system is based on cultural and spiritual values that emphasize the balance between humans and nature. However, the continuity of this indigenous system faces challenges from modernization, the exploitation of natural resources, as well as changes in land use policies and marine environmental pollution. Therefore, this study emphasizes the importance of legal protection and inclusive policies that recognize the rights of indigenous communities in environmental management. Integrating local wisdom with modern conservation policies is a strategic step towards achieving sustainable development based on the participation of indigenous communities. This study contribute to social cultural and environment areas.

**Keywords:** Indigenous communities, local wisdom, environmental management, sustainability, community-based conservation

**Discipline:** Cultural Anthropology

#### **Absztrakt**

#### **ŐSHONOS TUDÁS ÉS KÖRNYEZETI KORMÁNYZÁS – A HELYI BÖLCSESSÉGEN ALAPULÓ MEGKÖZELÍTÉS INDONÉZIÁBAN (IRODALMI ÁTTEKINTÉS)**

A tanulmány azt vizsgálja, hogy Indonézia őshonos közösségei milyen fontos szerepet játszanak a környezetgazdálkodásban, a generációkon átörökött helyi bölcsesség alapján. A kutatás módszere leíró kvalitatív vizsgálat. Az adatok szakirodalmi áttekintés révén kerültek összegyűjtésre. Az alkalmazott módszer a leíró kvalitatív elemzés, amelyet különböző társadalmi, antropológiai és környezeti elméletek segítségével vizsgáltunk. Ezek az elméletek rávilágítanak a társadalmi normák, az ökológiai tudás és a környezeti fenntarthatóság szoros kapcsolatára. A szakirodalmi vizsgálat eredményei azt mutatják, hogy Indonézia különböző őshonos közösségei fenntartható ökológiai rendszereket alkalmaznak hagyományos természetvédelmi gyakorlatokon keresztül. Ilyen például a subak öntözőrendszer Balin, a sasi szabályrendszer a tengeri és szárazföldi erőforrások védelmére Malukuban, valamint a válogatás nélküli fakivágás tilalma Waerebóban és a Baduy közösség körében. Ezek a rendszerek kulturális és spirituális értékeken alapulnak, amelyek az ember és a természet közötti egyensúly fenntartását hangsúlyozzák. Az őshonos rendszerek folytonosságát azonban számos kihívás fenyegeti, például a modernizáció, a természeti erőforrások kizsákmányolása, valamint a földhasználati politikák változása és a tengeri környezetszennyezés. Ezért a tanulmány kiemeli a jogi védelem és az inkluzív politikák fontosságát, amelyek elismerik az őshonos közösségek jogait a környezetgazdálkodásban. A helyi bölcsesség integrálása a modern természetvédelmi politikákba stratégiai lépést jelent a fenntartható fejlődés elérése érdekében, az őshonos közösségek részvételére alapozva. A kutatás hozzájárul a társadalmi, kulturális és környezeti tudományok területének mélyítéséhez.

**Kulcsszavak:** őshonos közösségek, helyi bölcsesség, környezetgazdálkodás, fenntarthatóság, közösség-alapú természetvédelem

**Diszciplína:** kulturális antropológia

Indigenous communities are social groups that have lived for generations in specific territories inherited from their ancestors. They hold sovereignty over the land and natural resources in their surroundings and conduct social and cultural life regulated by customary law. The continuity of these communities is maintained through customary institutions that play a role in preserving traditions and managing communal life. This concept aligns with the idea of indigenous populations popularized by Jose R. Martinez Cobo in his research on discrimination and minority protection at the UN, where groups with historical continuity from pre-invasion and pre-colonial communities are defined as indigenous. These groups exhibit cultural, social, and political characteristics that differ from the dominant society in their country and strive to maintain their unique identity despite facing pressures from colonization and modernization (Cobo, 1987). The definition of indigenous communities is also influenced by various international legal instruments, such as the UN Declaration on the Rights of Indigenous Peoples (UNDRIP) adopted in 2007, and ILO Convention No. 169 of 1989, which affirm the protection of their rights to land, natural resources, and cultural practices. In various literature, the term "indigenous communities" is often used interchangeably with terms such as native inhabitants, indigenous ethnic groups, or minority groups marginalized due to differences in identity from the dominant group (International Labour Organisation, 2020).

Indonesia, as a country with an extraordinary wealth of culture and ecology, has indigenous communities that play a vital role in maintaining environmental balance through the management of natural resources based on local wisdom. Indigenous communities across various regions have long developed and passed down sustainable ecological systems as an integral part of their cultural identity and social structure. Traditional

practices that have been preserved to this day, such as Subak in Bali, sasi marine and land in Maluku, and the ban on indiscriminate tree cutting in Waerebo, serve as clear evidence that indigenous communities possess a deep understanding of the relationship between humans and nature. This system not only functions to preserve the environment but also acts as a social regulatory mechanism that ensures the fair distribution of natural resources and maintains the natural balance of ecosystems.

However, in recently the continuity of indigenous systems has increasingly faced various challenges, primarily due to modernization, natural resource exploitation, and changes in land use policies. The emergence of extractive industries such as mining, large-scale plantations, and modern infrastructure development has threatened indigenous territories that were once managed based on community-based conservation principles. Many companies and development projects have failed to consider the interests of indigenous communities, resulting in land seizures, environmental degradation, and the loss of access to land and forests that have long been integral to their way of life. Additionally, development policies that prioritize macro-economic growth often neglect the participation of indigenous communities in decision-making processes, leading to agrarian conflicts and environmental injustice.

Although laws in Indonesia have recognized the rights of indigenous communities through various regulations, their implementation in the field still faces many obstacles. The recognition of customary rights and indigenous land ownership is often not optimally enforced, leaving many indigenous communities grappling with legal uncertainties in protecting their territories. Furthermore, the indigenous-based environmental management system is frequently not fully integrated into national environmental policies, resulting in several modern conservation initiatives

that fail to incorporate the ecological knowledge of indigenous communities. Consequently, many conservation programs end up conflicting with traditional practices that have proven to be sustainable over time.

Therefore, research on indigenous communities and environmental management based on local wisdom is crucial for designing more inclusive and sustainable environmental policies. This study aims to examine how the implementation of traditional conservation practices by indigenous communities can contribute as a solution to the global ecological crisis. The community-based natural resource management approach is considered more effective than the top-down approach, which often does not reflect local social and ecological realities. By integrating the values of local wisdom into national environmental policies, it is expected that a development model that not only preserves the environment but also respects the rights of indigenous communities as guardians of traditional ecosystems can be realized.

### Method

This investigation employs a literature review approach with a qualitative methodology, concentrating on the analysis of both textual and numerical data without directly engaging with field subjects. It is grounded in textual criticism, where the careful reading and interpretation of documents, books, and articles are essential for deriving academic insights (Snyder, 2019). Since literature data consists of "dead" records preserved in writing (Creswell, 2012), it remains static and is not bound by spatial or temporal constraints. This allows researchers to access a wealth of information from diverse historical periods and sources without the need for fieldwork. Moreover, this method aligns with various relevant library theories. For example, John Dewey's concept of the Library as a Learning Resource suggests that

libraries serve not merely as storage spaces for information but as dynamic environments for constructing knowledge through the interpretation and analysis of texts a principle that mirrors the core focus of literature research.

In addition, according to the Bibliographic Paradigm theory developed by Jesse Shera and Margaret Egan, literature research is viewed as a systematic process of organizing, interpreting, and disseminating knowledge. According to this theory, library sources are not merely static objects but also serve as tools for understanding the development of a discipline through literature mapping and bibliographic analysis (Egan & Shera, 1952). Furthermore, literature research is closely linked to Paul Otlet's Documentation Theory, which argues that documents are dynamic entities that possess historical and epistemological value in constructing scientific understanding (Otlet, 2015). In this context, literature research enables a deeper exploration of texts and documented academic discourse.

In practice, the content analysis method used in literature research can be linked to the Shannon and Weaver Information Theory, which highlights how data is encoded, stored, and interpreted within a communication system. This is important for understanding how academic literature is categorized and analyzed in scientific research. Thus, literature research not only serves as a data collection method but also as a critical approach to understanding, organizing, and interpreting existing information (Shannon & Weaver, 1971). Through various literature theories, all information on indigenous communities, environmental management, and local wisdom is collected and utilized according to the needs of this paper, and then analyzed to produce a comprehensive scholarly work that contributes to the development of knowledge by offering a broader perspective on the dynamics of academic discourse and the evolution of literature across various disciplines.

### Findings and interpretation

Indonesia is one of the largest archipelagic countries in the world, comprising more than 17,000 islands, stretching from Sabang in the west to Merauke in the east. Of these islands, approximately 6,000 are inhabited, while the rest remain as forests, conservation areas, or remote regions that have not yet undergone significant development. With a population exceeding 270 million, Indonesia ranks as the fourth most populous country in the world, following China, India, and the United States. Its geographical and demographic diversity presents various challenges, including equitable development, sustainable natural resource management, and the protection of indigenous rights across different regions (Kissiya & Biczó, 2024; Muhamad, 2014).

Geographically, Indonesia is located between two continents, Asia and Australia, and is flanked by two oceans, the Indian Ocean and the Pacific Ocean. See Figure 1.

*Figure 1: Map of Indonesia. Source: Indonesia Map: Geographic and Demographic Information*



This position makes Indonesia a strategically important region for trade and cultural exchange since ancient times. However, its vast archipelagic nature, consisting of thousands of islands, also presents challenges, particularly in infrastructure and interregional connectivity. These difficulties are more pronounced for indigenous communities,

the majority of whom reside in remote areas, mountainous regions, or forested lands. Limited access to transportation and uneven development have created significant barriers for many indigenous groups in obtaining healthcare, education, and economic opportunities (Kissiya & Biczó, 2022).

Indonesia's social and geographical diversity also influences its governance system. As a democratic country with a presidential republic system, Indonesia implements the principle of decentralization through regional autonomy policies. This policy grants regional governments the authority to manage their territories more independently, adapting to their respective potentials and needs. However, given the country's vast territorial expanse and the varying social and economic conditions across different regions, ensuring equitable welfare distribution remains a major challenge in national development.

Despite facing various complex challenges, Indonesia continues to develop an inclusive and sustainable governance system. Its rich diversity serves as one of its greatest strengths in maintaining unity, as reflected in the national motto "Bhinneka Tunggal Ika", which emphasizes that despite differences, the Indonesian people remain united. The official language used is Bahasa Indonesia, which functions as both the national and official language across the country. Its role is crucial in shaping national identity, strengthening unity, and serving as the primary means of communication among the country's diverse ethnic groups and communities. Given the vast number of regional languages spoken throughout the archipelago, Bahasa Indonesia plays a fundamental role in uniting society within a multicultural environment (Soemarmi et al., 2019).

### Indigenous Communities in Indonesia

Indigenous communities in Indonesia are recognized in various laws and regulations as social groups that possess customary legal systems,

cultural practices, and traditional ways of life passed down through generations. Law No. 6 of 2014 on Villages defines indigenous communities as customary law communities that existed before the formation of the Unitary State of the Republic of Indonesia and have a distinct social structure. Additionally, Law No. 32 of 2009 on Environmental Protection and Management states that customary law communities are groups that have inhabited a particular area for generations, maintaining a close relationship with their environment, and possessing a value system that governs their social, economic, political, and legal aspects of life (van Leur, 2018).

Recognition of indigenous rights is also outlined in Law No. 41 of 1999 on Forestry, which stipulates that indigenous communities must have customary legal territories, traditional institutions, and customary rules that are still observed by their communities. Additionally, the Basic Agrarian Law No. 5 of 1960 acknowledges the customary land rights (*hak ulayat*) of indigenous peoples over their land, as long as they do not conflict with national interests. Although indigenous communities have been recognized in various regulations, their implementation still faces significant challenges, particularly concerning land disputes, natural resource exploitation, and the limited official recognition of customary territories. Therefore, strengthening policies and protecting indigenous rights are crucial to preserving cultural heritage and ensuring their well-being within national development efforts (FAO and Alliance of Bioversity International and CIAT, 2021; Boiral et al., 2020; Dove, 2006; Thornberry, 2013)).

Indonesia is known as a country with rich cultural diversity, including the presence of indigenous communities spread across various regions. The diversity of indigenous peoples in Indonesia is not only reflected in ethnic differences, but also in their social systems, languages, customs, beliefs, and ways of interacting

with nature and their surrounding environment. With over 1,300 ethnic groups and 700 regional languages, Indonesia's indigenous communities possess distinct characteristics based on the geographical conditions and historical background of their respective regions.

Each indigenous group upholds unique cultural values, customary legal systems, and social practices. For instance, the Baduy people in Banten maintain a simple lifestyle and reject modern technology as a form of adherence to their traditional laws. Meanwhile, the Dayak people in Kalimantan uphold a strong customary legal system, with a sustainable forest management concept as a way to honor nature. The Mentawai people in West Sumatera are known for their traditional body tattoos, which hold deep spiritual meaning, whereas the Asmat people in Papua are recognized for their wood carving art, which reflects their deep connection with their ancestors and natural surroundings. Similarly, the Alifuru, Alune, and Wemale peoples in Maluku continue to practice and preserve their unique cultural traditions to this day (Nugroho, 2021).

### **Indigenous Communities and Environmental Management**

Indigenous communities in Indonesia have an environmental management system based on local wisdom, which has been passed down through generations as part of their adaptive strategies to the natural environment. The core principle of indigenous ecological knowledge is maintaining harmony between humans and nature, where natural resource exploitation is carried out sustainably while ensuring ecosystem balance. From the perspective of social ecology, as proposed by Fikret Berkes, indigenous communities manage resources by integrating social, cultural, and ecological aspects in a balanced way. They believe that nature is not merely an economic

resource but also holds spiritual value that must be preserved for the sustainability of future generations.

In various regions of Indonesia, local wisdom-based environmental management practices have proven effective in preserving ecosystems. One well-known example is *sasi sea dan land* in Maluku, a marine resource management system that prohibits communities from fishing or harvesting marine resources in designated areas for a specific period. This practice allows for marine ecosystem regeneration and ensures resource availability for future generations. *Sasi Laut* is a tangible example of the Resilience Ecology approach, developed by C.S. Holling, which emphasizes that ecosystems must be given time to adapt and recover from pressures caused by human activities (Holling, 2010).

This concept demonstrates that ecosystem sustainability can be achieved by limiting exploitation and allowing natural resource regeneration. In practice, *sasi sea* and *sasi land* are implemented by designating protected zones and fishing prohibition periods, which are publicly announced and monitored by indigenous leaders and local community figures.

With the implementation of *sasi*, communities not only prevent overexploitation that could lead to marine and terrestrial ecosystem degradation, but also ensure that fishery and forest resources remain available for future generations. The success of this system demonstrates that traditional approaches based on local wisdom can serve as an effective solution for marine and terrestrial ecosystem conservation, while also maintaining a balance between economic needs and environmental sustainability. Furthermore, this practice reinforces the idea that indigenous communities play a crucial role in preserving natural resources, which should be supported and integrated into national and global environmental conservation policies.

In Kalimantan, the Dayak community follows a customary forest management system that is collectively managed and governed by strict traditional regulations. Their approach includes shifting cultivation, a rotational farming method that allows the soil to restore its fertility before being cultivated again, thereby helping to prevent large-scale deforestation. This traditional forest conservation system, rooted in local wisdom and passed down through generations, ensures that natural resource use follows established customary laws. These regulations not only determine who has access to forest resources but also set guidelines on how and when these resources can be utilized. The Dayak people's approach illustrates that they regard the forest as more than just an economic resource; it is a fundamental part of their cultural heritage and ecosystem that must be safeguarded to ensure both their present well-being and the sustainability of future generations. See Figure 2.

*Figure 2: One of the stages in the shifting cultivation rotation. Source: Kalteng.aman.or.id*



The principle of customary forest management aligns with the Sustainability Theory, developed by Herman Daly. This theory emphasizes that natural resource utilization must consider the regenerative capacity of nature and should not exceed the

environmental carrying capacity (Daly, 2014). In practice, the Dayak community ensures that only specific parts of the forest are used, while other areas are preserved as protected forests, serving as ecological reserves for future generations. Additionally, this system can also be linked to Political Ecology Theory, which highlights how power and policy influence the ways communities manage their environment. Many customary forests of the Dayak community are now under threat due to the interests of extractive industries, such as palm oil plantations and mining, which are replacing the shifting cultivation system with a monoculture farming model.

This situation can be related to Antonio Gramsci's Hegemony Theory, where dominant groups (the state and corporations) utilize legal and economic mechanisms to control indigenous communities' access to their own natural resources (Gramsci, 1971). Beyond ecological and political perspectives, the practice of shifting cultivation is also relevant to Eugen Ehrlich's Living Law Theory. This theory asserts that law does not solely originate from formal state regulations but also emerges from social norms and practices that develop within a community (Ehrlich, 1962). In the context of the Dayak community, customary laws governing the shifting cultivation system hold their own legal authority, where every community member is obligated to follow the rotational farming mechanisms that have been passed down for generations.

We shift our focus to Bali with local wisdom-based environmental management by indigenous communities there, where traditional irrigation management is implemented through the Subak system. Subak irrigation is one of Bali's cultural heritage systems, which has been used for centuries to manage and distribute water to rice fields fairly and efficiently. This system is not merely a method of water management for agriculture, but it also embodies philosophical values rooted in Tri Hita

Karana, which emphasizes the balance between humans (pawongan), nature (palemahan), and God (parahyangan) (Armini, 2013).

This concept highlights that ecosystem sustainability is not only dependent on technical factors but also on the harmonious relationship between humans and their environment. From the perspective of Human Ecology Theory, developed by Amos H. Hawley (Hawley, 1944), the subak system can be categorized as a form of ecological adaptation where communities manage natural resources while considering social, economic, and spiritual aspects. Hawley argues that the relationship between humans and their environment is always dynamic, and the subak system exemplifies how the Balinese people have developed an irrigation method that not only supports agricultural productivity but also maintains ecological balance. See Figure 3.

*Figure 3: Traditional subak Irrigation, Fair and Efficient Water Management and Distribution to Rice Fields in Bali–Jatiluwih Rice Terrace. Source: Authors, 2024.*



Additionally, subak can be explained through Marvin Harris's Cultural Adaptation Theory, which posits that social and cultural systems develop in response to environmental challenges (Harris, 1964). In the Balinese context, the subak system enables communities to manage water effectively and efficiently, ensuring that all farmers within a given area receive fair water distribution. Through coordination within Subak groups, water is allocated based on a hierarchical system that has

been passed down through generations, preventing conflicts over water access and ensuring the sustainability of agriculture (Yuliana, 2017).

In addition to being a water management system, Subak also serves as a social mechanism that strengthens community cohesion. This can be linked to Pierre Bourdieu's Social Capital Theory (Bourdieu, 1977), which suggests that the success of the subak system is not solely dependent on formal regulations, but also on social networks and trust among community members. Through this system, the community collaborates in maintaining irrigation channels, managing agricultural land, and conducting religious ceremonies aimed at preserving soil fertility and ecosystem balance (Adnyawati, 2019).

The subak system can also be examined through the lens of Émile Durkheim's Social Function Theory, which suggests that a well-structured social system helps maintain stability within society (Durkheim, 1975). Beyond being a technical irrigation system, Subak serves a vital role in upholding the social and religious fabric of Balinese culture. Farmers are engaged not only in agricultural production but also in ritual ceremonies at water temples (Pura Ulun Danu), which strengthen their cultural identity and communal ties within the system. From the perspective of Political Ecology Theory, subak also safeguards indigenous communities' rights to natural resources, particularly as tourism expansion and urbanization in Bali pose increasing threats. However, land-use changes, modernization, and economic-driven development policies present challenges to this system, as they often prioritize economic growth over environmental sustainability. This theory helps explain how conflicts of interest between the government, investors, and indigenous communities influence the long-term viability of traditional systems like subak.

We move now to the Baduy indigenous community in the Banten-West Java region. The Baduy

community in Banten is recognized as one of the indigenous groups that strictly uphold environmental conservation practices, minimizing contact with the outside world and adhering to customary laws that restrict excessive resource exploitation. In their daily lives, the Baduy people, particularly those in Baduy dalam, reject modern technology, believing it can disrupt the natural balance. They lead a simple lifestyle and incorporate traditional wisdom in managing their environment by prohibiting indiscriminate tree felling, avoiding chemical use in farming, and limiting excessive resource extraction (Amanda & Purwanto, 2024). This approach aligns with Traditional Ecological Knowledge (TEK), a concept introduced by Fikret Berkes, which highlights how indigenous communities inherit ecological knowledge through generations, allowing them to maintain a balanced and sustainable relationship with nature.

Equally important, the Baduy way of life can be linked to Deep Ecology Theory, developed by Arne Naess, which emphasizes that humans should not exploit nature solely for economic gain but must live in harmony with the ecosystem (Naess, 1993). In practice, the Baduy people show deep respect for their environment by limiting land use and extracting resources only as needed, rather than for commercial purposes or wealth accumulation. For example, in Baduy dalam, strict regulations prohibit the use of motorized vehicles, electricity, plastic, and modern infrastructure development, as these are believed to disrupt both ecological and spiritual harmony (Nadriana, 2024).

Baduy Dalam is one of the areas inhabited by the Baduy people, an indigenous Sundanese ethnic group from West Java. They reside in the mountainous region of Lebak Regency, Banten Province.

Apart from managing forests and marine resources, indigenous communities in Indonesia

also implement environmental conservation practices through rituals and traditional customs. In various areas of Sumatra and Sulawesi, indigenous groups conduct ceremonial rites before preparing land for agriculture, which serve both as a form of respect for nature and a social framework to regulate resource use responsibly. These rituals typically include spiritual ceremonies, ancestral prayers, and the designation of specific areas for cultivation or protection. By upholding these traditions, indigenous communities contribute to preserving ecological balance, ensuring that natural resources are utilized sustainably and not exploited excessively.

From the perspective of Structuralist Anthropology Theory, introduced by Claude Lévi-Strauss, traditional rituals can be understood as a symbolic structure within society, where each component holds both social and ecological meaning. Indigenous communities perceive the connection between humans and nature as not only physical but also spiritual. By conducting rituals before clearing land, they are not just seeking ancestral and nature deities' blessings, but also establishing ethical boundaries to regulate environmental use, ensuring that overexploitation is prevented. Moreover, these ceremonial practices align with Victor Turner's Ritual Theory, which emphasizes that rituals serve as social mechanisms to reinforce communal unity. In the context of land use, these rituals act as a transitional phase and a form of social regulation, where the entire community collectively acknowledges that land utilization must comply with customary laws. Consequently, land-clearing decisions are made collectively rather than individually, ensuring that both environmental sustainability and communal welfare are prioritized.

From the perspective of Talcott Parsons' Functionalism Theory, rituals performed before land clearing also play a crucial role in maintaining social and ecological stability. Parsons argues that every social system has mechanisms that uphold

order and ensure the continuity of society. In this context, traditional ceremonies function as a form of social control, ensuring that land clearing is conducted responsibly and in accordance with sustainability principles that have been passed down through generations.

Not to mention, this practice can also be linked to Aldo Leopold's Environmental Ethics Theory, which emphasizes that humans should adopt a "land ethic" approach to treating nature as part of their moral community. This concept asserts that humans should not view nature merely as a resource for exploitation but should treat it with respect and responsibility (Leopold, 2020). Traditional rituals performed before land clearing reflect this principle, as they reinforce the idea that natural resource utilization must be guided by moral and ecological considerations, rather than solely for short-term economic gain. What's more, from the perspective of Travis Hirschi's Social Control Theory, these customary rituals function as a form of social regulation within indigenous communities. The requirement to conduct rituals before land clearing ensures that community members are bound by customary norms, which limit irresponsible exploitation. This demonstrates that customary systems serve not only a spiritual purpose but also act as a community-based resource management mechanism (Hirschi, 2001).

Although this system has been proven effective in preserving ecological balance, the impact of modernization and large-scale development policies has caused many indigenous communities to lose authority over their ancestral lands. Numerous major corporations fail to acknowledge customary rituals and traditional land-use regulations, leading to agrarian conflicts and environmental deterioration that significantly affect both indigenous societies and nearby ecosystems. From this perspective, Karl Marx's Conflict Theory offers insight into how conflicting interests between indigenous communities and capitalist

entities often drive resource exploitation without considering long-standing sustainability principles embedded in traditional practices (Marx, 1867).

The indigenous people of Waerebo in East Nusa Tenggara uphold customary laws that forbid arbitrary tree cutting and emphasize reforestation as a crucial aspect of their communal life. Waerebo is a remote indigenous village located in Manggarai Regency, East Nusa Tenggara. It is recognized as one of the cultural tourism destinations in the region. Situated at an altitude of 1,200 meters above sea level, Waerebo consists of only seven main traditional houses, known as Mbaru Niang. In August 2012, UNESCO designated Waerebo as a World Cultural Heritage Site, surpassing 42 other countries. In the Manggarai language, the word "Wae" means "water". The correct spelling is Waerebo, written as a single word without spaces, contrary to how it is often written in the media. The village has a history spanning 1,200 years, with its community now in its 20th generation, where each generation is estimated to last approximately 60 years. Kabupaten Manggarai, Provinsi Nusa Tenggara Timur. See Figure 4.

*Figure 4: Situation of living area Waerebo in the mountain-Nusa Tenggara Timur (NTT). Source: Florestourkomodo.com*



These regulations serve not only as societal norms but also as an ecological strategy aimed at preserving forest ecosystem sustainability. The deep-rooted environmental consciousness, passed down through generations, reflects how indigenous communities have established effective adaptive measures to sustain ecological balance and safeguard natural resources.

From this perspective, the Waerebo community's conservation efforts can be analyzed through Herbert Blumer's Symbolic Interactionism Theory, which highlights that social meanings and symbols significantly influence human behavior. In Waerebo, the forest is not only valued for its economic benefits but is also regarded as a spiritual entity and a core part of their cultural heritage. The ban on indiscriminate tree cutting is more than just an environmental regulation—it is a manifestation of the belief that humans hold a moral duty to protect nature as an integral part of the broader community.

Moreover, the customary-based environmental management system aligns with William Ogburn's Social Change Theory, which describes how technological, economic, and social shifts impact how societies engage with their environment (Ogburn, 2023). In Waerebo, the shift from a traditional agrarian lifestyle to a tourism-driven economy introduces new challenges in preserving customary laws that have long maintained ecological stability. The rapid pace of modernization can create tensions between traditional conservation-oriented practices and economic demands that encourage resource exploitation. Thus, recognizing social change dynamics is essential for safeguarding local traditions while adapting to the pressures of globalization.

Beyond that, the community conservation efforts in Waerebo can be examined through the lens of Dependency Theory, introduced by Andre Gunder Frank. This theory suggests that developing nations frequently face resource exploitation due to

economic control exerted by external powers (Frank, 1967). In the context of Wae Rebo, the growth of tourism investments and capitalist influence presents a potential risk to their traditional system and ecological autonomy, especially if tourism management overlooks its effects on environmental balance and cultural preservation. Thus, it is essential to ensure that economic initiatives driven by local communities uphold environmental sustainability and safeguard long-standing indigenous traditions, which have proven to be effective in maintaining ecological harmony.

As well, the traditional conservation model in Wae Rebo can be associated with Warwick Fox's Ecocentrism Theory, which asserts that nature holds intrinsic value, regardless of its usefulness to humans (Fox, 1995). From this viewpoint, customary regulations that prohibit indiscriminate tree cutting are not solely focused on economic sustainability or human welfare, but rather on acknowledging ecosystems as entities with the right to persist and thrive. This perspective stands in stark contrast to anthropocentric views, which position humans as the primary focus and regard nature merely as a resource for exploitation.

Apart from ecological and social perspectives, environmental management in Wae Rebo can also be understood through Claude Lévi-Strauss' Structuralism Theory, which highlights that social structures function as a means to maintain order and stability within a community. In Wae Rebo, customary environmental regulations do more than just govern human interactions with nature they also strengthen social unity, uphold collective norms, and preserve traditional leadership systems, ensuring that conservation efforts continue across generations.

Considering these theoretical perspectives, it becomes evident that customary laws in Wae Rebo serve as a community-driven conservation model that has evolved naturally within their social

framework. These rules not only protect the environment but also contribute to cultural identity formation and reinforce social sustainability. Thus, customary-based environmental approaches, like those in Waerebo, should be acknowledged and incorporated into national and global environmental policies as a viable and sustainable conservation strategy led by local communities.

Indigenous communities in Indonesia have long practiced sustainable resource management, predating the emergence of modern conservation principles. Despite their effectiveness, these traditional environmental practices face growing threats from the expansion of extractive industries, changes in land-use policies, and modernization, which disrupt established cultural and ecological systems. As a result, stronger legal protections are needed to preserve these practices and ensure their integration into both national and international environmental policies. The application of indigenous knowledge in environmental management illustrates that traditional wisdom offers a practical solution to the global environmental crisis. By acknowledging and strengthening the role of indigenous communities in natural resource governance, we can not only protect biodiversity but also guarantee that future generations continue to benefit from a sustainable environment.

In Indonesia, environmental governance approaches that integrate indigenous knowledge and local wisdom face numerous complex challenges. Although the government has established policies to protect the rights of indigenous communities, the implementation of these policies in the field still encounters significant obstacles. Differences in paradigms between modern science and traditional values often hinder effective integration into environmental policies, especially when the extractive industry sector and economic development dominate. Protective government policies have not yet fully accommodated local wisdom in natural resource management, resulting in limited

indigenous community participation in decision-making. Consequently, conflicts arise between development interests and the environmental preservation principles that have been passed down through generations by indigenous communities. Therefore, a better synergy between government policies and governance innovations based on local wisdom is needed to create inclusive and sustainable solutions.

### Conclusion

Indigenous communities in Indonesia play a crucial role in environmental management based on local wisdom, which has been passed down through generations and has proven effective in maintaining ecosystem balance. Various traditional practices, such as sasi sea and land in Maluku, Subak in Bali, customary forest management by the Dayak people, as well as the strict environmental rules in Waerebo and Baduy, demonstrate that community-based resource management systems can sustain natural resources without disrupting ecological harmony. However, these traditional practices face numerous challenges, including the expansion of extractive industries, land-use changes, development policies that marginalize indigenous communities, and modernization that alters traditional ways of life. Although legal frameworks recognize indigenous rights to land and natural resources, their implementation remains inconsistent. Therefore, stronger legal protections and more inclusive policies are essential to ensure that traditional environmental management systems continue to thrive and are incorporated into national and international conservation strategies. By acknowledging and strengthening the role of indigenous communities in environmental governance, Indonesia can safeguard biodiversity, enhance ecological and social resilience, and uphold sustainability for future generations. Thus, integrating local wisdom

into global environmental policies is essential not only for conserving nature but also for respecting the rights of indigenous peoples, who have long served as stewards of the ecosystem.

### References

- Adnyawati, I. A. A. (2019). Land Conversion Versus Subak: How Bali's Face Gradually Changing Throughout History. *Bali Tourism Journal*, 3(1), 38–42. DOI <https://doi.org/10.36675/btj.v3i1.35>
- Alcorn, Janis. B. (1993). *Indigenous Peoples and Conservation*. 7(2), 424–426.
- Amanda, S. P., & Purwanto, I. (2024). *Praktik Ramah Lingkungan Pada Masyarakat Baduy*. 10(1), 12–34. <https://doi.org/10.31289/diversita.v10i1.11488>
- Armini, I. G. A. (2013). *Toleransi Masyarakat Multi Etnis dan Multiagama dalam Organisasi Subak di Bali*. 5(1), 39–53.
- Boiral, O., Heras-Saizarbitoria, I., & Brotherton, M.-C. (2020). Improving Environmental Management Through Indigenous Peoples' Involvement. *Environmental Science & Policy*, 103, 10–20. DOI <https://doi.org/10.1016/j.envsci.2019.10.006>
- Bourdieu, P. (1977). *Outline of a Theory of Practice*. Cambridge-United Kingdom: Cambridge University Press.
- Cobo, J. R. M. (1987). *Study of the Problem of Discrimination Against Indigenous Populations*. (Vol. 5). New York: United Nations.
- Creswell, J. W. (2012). *Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research* (4th ed).
- Daly, Herman. E. (2014). *Beyond Growth: The Economics of Sustainable Development*. Boston: Beacon Press.
- Dove, M. R. (2006). Indigenous People and Environmental Politics. *Annual Review of*

- Anthropology*, 35(1), 191–208. DOI <https://doi.org/10.1146/annurev.anthro.35.081705.123235>
- Durkheim, E. (1975). *Emile Durkheim on Morality and Society* (R. N. Bellah, Ed.). Chicago-IL: University of Chicago Press.
- Egan, Margaret. E., & Shera, Jesse. H. (1952). Foundations of a Theory of Bibliography. *The University of Chicago Press: The Library Quarterly (LQ) Journal*, 22(2), 1–28.
- Ehrlich, E. (1962). *Fundamental Principles of the Sociology of Law*. United States: Russell & Russell.
- FAO and Alliance of Bioversity International and CIAT. (2021). Indigenous Peoples' Food systems: Insights on Sustainability and Resilience from the Front Line of climate Change. *FAO, Alliance of Bioversity International, and CLAT*. DOI <https://doi.org/10.4060/cb5131en>
- Fox, W. (1995). *Toward a Transpersonal Ecology: Developing New Foundations for Environmentalism*. New York: State University of New York Press.
- Frank, A. G. (1967). *Capitalism and Underdevelopment in Latin America: Historical Studies of Chile and Brazil*. New York: Monthly Review Press.
- Gramsci, A. (1971). *Selections From Prison Notebooks*. London: Lawrence & Wishart-New York: International Publishers.
- Harris, M. (1964). *The Nature of Cultural Things*. New York: Random House.
- Hawley, A. H. (1944). *Ecology and Human Ecology*. Oxford University Press, 22, 398–405.
- Hirschi, T. (2001). *Causes of Delinquency*. London: Routledge.
- Holling, C. S. (2010). Resilience And Stability Of Ecological Systems. In *Foundations Of Ecological Resilience*. Island Press.
- International Labour Organisation. (2020). Implementing the ILO Indigenous and Tribal Peoples Convention No. 169: *Towards an inclusive, Sustainable and Just Future* (pp. 1–160). International Labour Organisation (ILO).
- Kissiya, E., & Biczó, G. (2022). Human-Nature In Indonesia-Maluku: Hygera Lai: Heritage To Ecology Protect In Luang Island. *Különleges Bánásmód - Interdiszciplináris Folyóirat*, 8(1), 49–61. DOI <https://doi.org/10.18458/KB.2022.1.49>
- Kissiya, E., & Biczó, G. (2024). Understanding Nature through the Women's Perspective on Luang Island Maluku Province-Indonesia. In *Indonesia Contemporary Challenges* (pp. 57–73). Poland-Torun: Wydawnictwo Adam Marszałek.
- Leopold, A. (2020). *A Sand County Almanac: And Sketches Here and There*. Oxford: Oxford University Press.
- Marx, K. (1867). *Das Kapital: Kritik der Politischen Oekonomie*. In *Wikipedia* (Vol. 1st). Deutch: Verlag von Otto Meisner. [https://en.wikipedia.org/w/index.php?title=Das\\_Kapital&oldid=1194337637](https://en.wikipedia.org/w/index.php?title=Das_Kapital&oldid=1194337637)
- Muhamad, S. V. (2014). *Indonesia Menuju Poros Maritim Dunia*. VI(21), pp 1-8.
- Nadriana, L. (2024). *Kearifan Lokal Masyarakat Adat Baduy dalam Pelestarian Lingkungan dan Pencegahan Bencana*. 4(2), PP. 1-10.
- Naess, A. (1993). *Ecology, Community and Lifestyle: Outline of an Ecosophy*. Cambridge University Press.
- Nugroho, W. (2021). Relationship Between Environmental Management Policy and the Local Wisdom of Indigenous Peoples in the Handling of COVID-19 in Indonesia. *Oñati Socio-Legal Series*, 11(3), Article 3. DOI <https://doi.org/10.35295/osls.iisl/0000-0000-0000-1193>
- Otlet, P. (2015). *Le Traité de documentation*. Bruxelles-Belgique: Impressions Nou.
- Shannon, Claude. E., & Weaver, W. (1971). *The Mathematical Theory of Communication*. Illinois: The University of Illinois Press.
- Snyder, H. (2019). Literature Review as a Research Methodology: An Overview and Guidelines. *Journal of Business Research*, 104, 333–339. DOI <https://doi.org/10.1016/j.jbusres.2019.07.039>

- Soemarmi, A., Indarti, E., Pujiyono, P., & Diamantina, A. (2019). Konsep Negara Kepulauan Dalam Upaya Perlindungan Wilayah Pengelolaan Perikanan Indonesia. *Masalah-Masalah Hukum*, 48(3), Article 3. DOI <https://doi.org/10.14710/mmh.48.3.2019.241-248>
- Thornberry, P. (2013). *Indigenous Peoples and Human Rights*. Manchester University Press. DOI <https://doi.org/10.7765/9781847791221>
- van Leur, J. C. (2018). *Perdagangan dan Masyarakat Indonesia: Esai-esai Tentang Sejarah Sosial (Edisi kedua)*. Yogyakarta: Penerbit Ombak.
- Yuliana, E. D. (2017). SUBAK: Traditional Irrigation Organization A Cultural Representation of Agriculture in Bali. *International Journal of Contemporary Research and Review*, 08(06), 20179–20185. DOI <https://doi.org/10.15520/ijcrr/2017/8/05/180>