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Cultural Practices as Drivers of Forest Preservation: An Ethnographic Study of the Tobelo Ethnic Group

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Abstract: The Tobelo ethnic group in North Halmahera faces increasing deforestation driven by mining activities and illegal logging, despite their longstanding cultural traditions dedicated to forest preservation. This study aims to explore the forms of local wisdom that continue to guide the Tobelo community in sustainable forest management. Using a qualitative ethnographic approach, data were collected through field observations, in-depth interviews, and document analysis. The findings reveal three traditional forest systems: jorame (abandoned cultivated forest), dumule (actively cultivated land), and ohongana (sacred, untouched forest). Within these systems, five key dimensions of local wisdom were identified: (1) environmental care through maintenance and ecological cleaning, (2) harmonious living through mutual concern and communal solidarity, (3) forest prohibitions (bubugo) to curb exploitation, (4) expressions of gratitude to God during harvests, and (5) a future-oriented approach emphasizing sustainable cultivation and forest regeneration. These practices demonstrate a deep ecological consciousness embedded in Tobelo culture. However, modern economic pressures and extractive investments are gradually undermining these traditional practices, threatening the sustainability of their conservation efforts. The study concludes that integrating indigenous knowledge into contemporary environmental strategies can provide culturally grounded solutions to current ecological challenges.

Keywords: Local Wisdom, Cultural Practices, Forest Preservation, Tobelo Ethnic Group, Bubugo

1. Introduction

Unsustainable forest exploitation has led to significant environmental degradation (Manugeran et al., 2023) and threatens the continuity of indigenous knowledge systems that sustain local livelihoods (Kupika, Chanyandura, Chinomona, & Mwera, 2025). The deterioration of forest ecosystems has adversely affected biodiversity and transformed the behaviors and responses of Indigenous communities, who are increasingly compelled to engage in ecological conservation and resist the excessive extraction of natural resources (Karhab, 2021). In North Maluku, the Tobelo ethnic group faces similar challenges, particularly due to intensive forest exploitation by international mining corporations (Asteria, Brotosusilo, Soedrajad, & Nugraha, 2021).

Traditionally reliant on the forest ecosystem, the Tobelo community is now experiencing a shift that undermines its forest-based way of life (Tamalene et al., 2014). However, forest conservation through cultural practices rooted in local wisdom has long been a core part of Tobelo traditions. Today, deforestation is steadily eroding these ecological values, posing serious threats to both environmental sustainability and cultural preservation. In the traditions of the Tobelo Dalam (O'hongana Manyawa, who live in the forest) and O'Hoberera Manyawa (who live outside the forest), the birth of a baby girl is marked by planting five tree seedlings, and that of a baby boy by planting ten. The higher number of trees for boys reflects their traditional responsibility for resource foraging. This practice exemplifies the harmonious relationship between humans and nature (Rizki & Asteria, 2023; Bobero, 2024). For the Tobelo, forests represent both ancestry and continuity, symbolizing genetic reproduction that must be sustained. This belief reflects the tribe's deep physical and emotional connection to the forest and motivates a worldview that fosters adaptive interaction with the environment, which is understood as local wisdom.

Local wisdom, often referred to as local knowledge, indigenous intelligence, or customary values, comprises noble principles that guide community life. These values, passed down through generations, provide a framework for the sustainable management and protection of natural environments (Ratnasari, Sidiq, & Saputra, 2023). As a social and cultural buffer, local wisdom fosters a stronger relationship between communities and their natural surroundings, and its significance is increasingly recognized. The Tobelo people have long held that values such as togetherness and solidarity, core tenets of their local wisdom, are essential for maintaining ecological balance and community well-being (Mawardi, 2018). Accordingly, it is imperative to study and preserve Tobelo local wisdom related to forest conservation to ensure its ongoing application and transmission.

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Previous research on Tobelo forest traditions, such as Asteria et al. (2021), observed that the forest has become increasingly industrialized and noisy due to its transformation into a mining zone. His study focused on conservation apart from cultural traditions. Bayau (2023) emphasized that the balance between ecological and economic needs is mediated by forest conservation, while Sumarmi (2015), studying local wisdom in water resource conservation in Wangongira Village, highlighted taboos and gratitude rituals. However, these studies do not directly examine the unique local wisdom embedded in the Tobelo tribe's forest practices.

Asteria et al. (2021) explored traditional practices and customary law among the Tobelo people, focusing on legal mechanisms for forest protection. However, they did not address the escalating impact of mining or engage specifically with local wisdom as a conservation mechanism. Garing et al. (2023), in the broader Maluku context, found that cultural wisdom was more effective in reducing deforestation than legal interventions. Similarly, Indrawan (2020) examined local knowledge in conflict resolution across Maluku, concluding that indigenous perspectives are instrumental in resolving cultural and linguistic disputes. Nonetheless, both studies centered on conflict management and did not explore forest conservation directly.

Ecological concerns have also been explored in literary discourse, including themes such as (1) the harmony between humans and nature (Hilmiyatun et al., 2022; Juanda, 2023), (2) the consequences of environmental degradation (Praveena & Raju, 2023), and (3) appeals for environmental protection (Sivi et al., 2022; Manugeran et al., 2023; Ghanem, 2023). Yet, none of these studies examines the role of local wisdom in the forest conservation practices of the Tobelo ethnic group.

Unlike prior research that approaches forest preservation primarily through the lens of sustainable development, this study emphasizes local wisdom as a culturally embedded driver of conservation. Its aim is to identify and interpret a model of forest preservation grounded in the values of the Tobelo ethnic group, highlighting its relevance for contemporary environmental challenges. The study contends that the Tobelo people's forestry traditions, shaped by their ecological and cultural worldview, offer practical and sustainable solutions to current environmental crises.

This paper addresses the following research question: *Which cultural practices embedded in the local wisdom of the Tobelo ethnic group promote forest preservation in North Halmahera, Indonesia?* We argue that the Tobelo people are actively reviving traditional ecological practices in response to the deforestation caused by mining investments. These practices reflect a triadic relationship among humans, nature, and the Creator. However, with the expanding influence of mining companies and unsustainable forest governance, the local wisdom central to Tobelo identity is increasingly endangered.

2. Literature Review

Research in ethnolinguistics is inherently connected to the broader study of culture and the humanities (Osipova, 2021), particularly as it pertains to the cultural life of social and ethnic groups. According to Davis, Crittenden, & Scalise Sugiyama. (2021), this field encompasses the study of conventions, customs, lifestyles, laws, arts, literature, traditions, religions, languages, and the expression of local wisdom in community life. In this context, local wisdom is defined by its regional specificity and cultural uniqueness (Bar-On, 2015). It reflects the values and insights of a community and is characterized by its resilience and adaptability in the face of changing societal conditions.

Martoredjo & Fios (2021) identify five core relational dimensions within local wisdom: the relationship between (1) humans and God, (2) humans and nature, (3) individuals and society, (4) individuals and others, and (5) individuals and the self. In the Tobelo tradition, these relationships are particularly evident in their forest-related practices. Tobelo local wisdom is regarded as timeless, preserved through the philosophy of *basudara*, which emphasizes harmony between humans and the natural world. This philosophical orientation forms the foundation of the Tobelo worldview and is embodied in sacred forest spaces such as Gosimo, Matakau, the Birth Tree, and the Death Tree, sites whose significance has been passed down across generations (Tamalene, 2014).

Local wisdom is critically linked to the issue of deforestation, which refers to the progressive loss of forest cover and the consequent destruction of biodiversity, ecological structure, and the landscape's capacity to meet basic human needs (Parrotta & Yeo-Chang, 2016; Mavhura & Mushure, 2019). Deforestation also exacerbates broader climate challenges, impacting both global and regional climate systems, and affecting agriculture and livestock, even if it does not directly contribute to climate change (Leon, 2022). The preservation of local wisdom is therefore essential, not only for maintaining cultural heritage but also for reinforcing sustainable environmental stewardship amid external pressures. As Intem et al. (2021) argue, local wisdom reflects a society's level of development and resilience. Cultural practices endure only when they are valued as acts of cultural conservation.

Conservation efforts have historically been dominated by state or institutional interventions, often sidelining the vital role of local communities. Such top-down approaches typically ignore human agency and the contributions of indigenous people to environmental governance (Abbas, Aziz, & Awang, 2022). In contrast, many traditional communities actively uphold conservation principles. For instance, the Kenyah people of North Kalimantan perceive forests not only as ecological resources but also as central to livelihood, health, culture, and spiritual identity (Anau, Njau et al., 2019). Sneed (2021) notes that the role of indigenous and local knowledge in sustaining biodiversity is often overlooked by scientists and policymakers. Even in contexts where traditional practices have been formally prohibited, as in Hungary, where cattle herding was restricted, communities continue to maintain ecological balance through customary methods.

Service et al. (2014) argue that local knowledge and culture provide vital insights into ecological change, particularly in relation to wildlife distribution. This insight stems from the historical and cultural embeddedness of local communities within their landscapes. Unlike modern systems that often dominate nature, local wisdom is grounded in reciprocal relationships that align human needs with environmental integrity. It encompasses community-based practices such as sustainable forest management, shifting cultivation, and agroforestry, all of which are still practiced in many traditional societies despite modernization pressures.

This body of Indigenous knowledge aligns with Elinor Ostrom's theory of common-pool resource management. Ostrom's framework highlights the ability of local communities to design and implement self-organized systems for managing shared resources, thus avoiding the so-called "tragedy of the commons." While her principles are widely applicable, their success

depends on contextual adaptation to local sociocultural and ecological realities. In the Black Forest Biosphere Reserve, for example, Ostrom's ideas have been employed to manage underutilized community meadows by expanding stakeholder participation and aligning governance with ecological conditions (Pio, Purwanto, & Subiantoro, 2012). These efforts have been further strengthened through multi-level governance models and inclusive stakeholder engagement.

A comparable application of Ostrom's principles is evident in the management of Michigan's inland lakes, where cultural and behavioral dimensions were incorporated into resource governance. This integrated model enhances sustainability by aligning technical strategies with the social practices of local users (Malott & Glenn, 2019). Similarly, Ostrom's ideas have been used to regulate irrigation systems and fisheries across Asia, where they are adapted to local cultural norms and institutional frameworks (Bastakoti, Shivakoti, & Lebel, 2010).

Nonetheless, the application of Ostrom's principles is not without limitations. In shared forest regions, ecological constraints may reduce the effectiveness of governance strategies, highlighting the need for models that integrate both ecological and social dimensions (Pichancourt, 2023). Moreover, in rapidly transforming societies facing significant socio-economic transitions, governance frameworks must evolve in tandem with changing needs to ensure long-term sustainability (Korol & Korol, 2024).

3. Methodology

3.1. Method and Participants

This study employed a qualitative research approach using an ethnographic lens to explore cultural practices and behaviors through observation and interviews. It aimed to analyze and interpret the meaning of human actions within their cultural context (Atkinson & Hammersley, 1994; Brewer & Crano, 2000). This approach is well-suited to uncovering the forestry traditions and local wisdom of the Tobelo ethnic group in North Halmahera, whose forest-based way of life is deeply rooted in inherited customs. The community has sustained a forest-centric lifestyle for generations, making conservation an integral part of its cultural practices.

Participants were selected using purposive sampling, involving 12 individuals who met defined inclusion criteria: (a) belonging to the Tobelo ethnic group; (b) recognized as community leaders, cultural practitioners, or farmers; (c) aged between 40 and 65 years; (d) a balance of male and female participants; (e) proficient in either the Tobelo language or Indonesian; (f) possessing varied educational backgrounds, ranging from primary to tertiary levels; and (g) demonstrating openness, cooperation, and effective communication.

Cultural informants were chosen for their in-depth knowledge of oral traditions, rituals, customary practices, and local ecological wisdom. Farmers were included due to their direct engagement with forest ecosystems and day-to-day involvement in forestry activities. Their insights provided a practical, experience-based understanding of forest preservation. These diverse perspectives enriched the research by offering a holistic view of how traditional wisdom contributes to ecological conservation. Participant confidentiality was maintained throughout the study to protect identities and uphold ethical standards.

While this approach allowed for the collection of rich, detailed qualitative data, it also posed the risk of selection bias, particularly if participants were predominantly adherents of traditional values. To mitigate this, researchers included a broader representation of individuals within the Tobelo community, asking each participant the same set of guiding questions. While the findings are not intended for statistical generalization, they offer transferable insights applicable to similar contexts in other regions, recognizing that forest-related cultural practices are often shaped by localized social and ecological conditions.

3.2. Instrument

An interview guide was developed to facilitate open-ended, in-depth discussions with participants. The guide was designed to elicit information about the Tobelo ethnic group's forest traditions and expressions of local wisdom. Researchers and participants engaged in flexible conversations that allowed informants to speak freely and in their own words, often enriched with culturally embedded expressions (Nshom, Sadaf, & Khalimzoda, 2022).

The guide included demographic fields such as name, age, gender, education level, occupation, and language proficiency. It also offered general instructions for interviewers and customizable question sets tailored to specific field conditions. This adaptable instrument proved effective in collecting detailed ethnographic data across diverse and sometimes remote environments.

3.3. Data Collection

Data collection involved four phases: (1) direct observation of the research sites; (2) in-depth interviews with selected informants; (3) audio recordings and detailed documentation of participant responses; and (4) the gathering and examination of relevant documents. Interviews were conducted using both open and closed questions to elicit comprehensive information. Responses in the Tobelo language were translated into Indonesian.

Prior to data collection, verbal consent was obtained from all participants, following a clear explanation of the study's objectives. Additional permissions were secured from customary and religious authorities in order to respect local cultural norms. Ethical approval was granted by the Social Sciences and Humanities Ethics Committee of the National Research and Innovation Agency, Indonesia (Approval Number: 134/KE.01/SK/02/2024).

The study focused on three distinct forest categories within the Tobelo tradition: jorame (abandoned forest), dumule (cultivated forest), and ohongana (sacred forest). To ensure credibility and accuracy, triangulation techniques were employed. This involved cross-verifying data through multiple sources, interviews with different participants, direct observations, and document analysis. Preliminary conclusions were also reviewed and validated by the participants involved.

3.4. Data Analysis

Prior to formal analysis, the researchers immersed themselves in the data by reviewing interview transcripts, field notes, and relevant documents to grasp the context and nuances of Tobelo forestry practices. Any information originally presented in the Tobelo language was translated into Indonesian for consistent analysis.

Data analysis followed an inductive thematic approach, Proudfoot, Kevin. (2023), which involved identifying patterns and themes through the systematic coding and categorization of data. Key themes such as forest protection, human–nature relations, and cultural principles were extracted and grouped accordingly. For example, traditional restrictions on forest use (*babugo*) were categorized under environmental protection.

Coding was carried out by marking text segments that aligned with emerging themes, such as solidarity, stewardship, and spiritual gratitude, before sorting them into broader analytical categories. The interrelationships among these categories were examined to construct a conceptual model of forest conservation rooted in Tobelo local wisdom.

To ensure validity, triangulation techniques as outlined by Denzin (2009) were applied. These included comparing data across sources (e.g., interviews, field observations, and documents) and checking the consistency of findings. This process led to the identification of five core elements of Tobelo local wisdom relevant to forest preservation: (a) environmental stewardship, (b) harmony with life, (c) customary restrictions, (d) spiritual appreciation, and (e) a future-oriented ecological perspective. This analytic process enabled a deeper understanding of the cultural mechanisms that support ecological sustainability in the Tobelo community.

4. Results

4.1. The Tobelo Ethnic Group and Forest Traditions

The Tobelo people, an Austronesian ethnic group residing in North Halmahera, North Maluku, Indonesia, rely primarily on farming, fishing, and hunting for their livelihoods. Their connection to the forest extends beyond economic sustenance; it represents a sacred space and a core element of their cultural identity. Customary practices such as *bubugo*, ritual-based forest restrictions, reflect their indigenous ecological knowledge and serve as traditional mechanisms for regulating access to natural resources.

The Tobelo people's spiritual landscape encompasses elements of traditional animism, Christianity, and Islam, all of which influence their environmental ethics and forest conservation values. Communities that adhere closely to ancestral belief systems, such as the *Tobelo Dalam*, who reside within the forest, tend to enforce conservation practices more rigorously (Tamalene, 2014). In contrast, coastal Tobelo communities, shaped by greater exposure to external influences, exhibit a gradual shift in ecological attitudes and management practices. These intra-group differences highlight the dynamic nature of Tobelo environmental traditions and emphasize the need for conservation strategies that are culturally inclusive and context-sensitive.

Recognized as an Indigenous community, the Tobelo people are spread across six sub-districts in North Halmahera, with a total population of 26,611. This includes 11,900 residents in Tobelo, 4,300 in East Tobelo, 4,700 in Central Tobelo, 5,900 in South Tobelo, 1,350 in West Tobelo, and 461 in North Kao. For the Tobelo community, the forest is not merely a source of material resources but a vital arena for social interaction, cultural expression, and spiritual rituals, an embodiment of their deep-rooted relationship with the natural world.



Figure 1: Map of Maluku Utara **Figure 2:** Map of North Halmahera Regency **Figure 3:** Map of Research Location (Source: <https://earth.google.com/web/search/Maluku+Utara>)

Historically, the Tobelo have developed a maritime and agrarian culture, renowned for their navigation skills and participation in inter-island trade across North Maluku. Their communal social structure is built on strong kinship bonds and collective values, which underpin their approaches to resource management and environmental stewardship.



Figure 4: Jorame Forest



Figure 5: Dumule Forest



Figure 6: Ohongana Forest

(Source: researcher results)

The geographical maps (Figures 1, 2, and 3) provide visual context for understanding the demographic, environmental, and cultural dimensions of the Tobelo people and their forest conservation practices. Figure 1 situates Halmahera Island within the eastern Indonesian archipelago. Figure 2 highlights North Halmahera Regency, home to Tobelo settlements where forest traditions are still practiced. Figure 3 pinpoints the specific study area and details the communities involved in the research.

A distinctive cultural tradition among the Tobelo involves planting trees at the birth of a child: ten trees for a boy and five for a girl. This gender-based ritual reflects community expectations, with males traditionally bearing greater responsibility for providing for the family (Tamalene, 2014). It also symbolizes the interdependence of human life and the natural environment. Trees are regarded as embodiments of new life and lineage continuity, reinforcing a philosophy of regeneration and sustainability.

The Tobelo conceptualize the landscape through three culturally defined forest categories: *jorame*, *dumule*, and *ohongana* (Yakub, Leksono, & Batoro, 2019). *Jorame* refers to previously cultivated forest areas left fallow after harvest, allowing natural regeneration. *Dumule* denotes active cultivation zones used for planting staple crops, reflecting the community's agricultural engagement. *Ohongana* represents a primary or sacred forest, untouched by human intervention and protected for both spiritual and ecological reasons.

These three forest types encapsulate the Tobelo's ecological intelligence and their commitment to sustainable forest management. They form the foundation of both cultural resilience and environmental survival. The following figures illustrate these classifications. Figure 4 (*Jorame*) shows that depicts a landscape in ecological recovery after cultivation, offering insights into sustainable shifting agriculture. Figure 5 (*Dumule*) shows a presently cultivated area, emphasizing communal farming practices and harmonious coexistence with nature, and Figure 6 (*Ohongana*) displays a spiritually protected forest, highlighting the role of belief systems and *bubugo* in preserving untouched ecosystems. Together, these categories embody the Tobelo forest management system, grounded in productivity (*dumule*), regeneration (*jorame*), and sacred protection (*ohongana*). Their designation and use carry significant implications for forest conservation, supporting both environmental integrity and the socio-economic well-being of the Tobelo people.

4.2. Local Wisdom in Forest Preservation

Local wisdom within the Tobelo ethnic culture serves as the foundation for sustainable forest conservation. It ensures the fulfillment of basic human needs for forest-dependent communities while simultaneously safeguarding the natural environment. The Tobelo people's deep connection to nature fosters a balanced and enduring relationship with their surroundings. This adaptive interaction, manifested in behavior, rituals, and ecological practices, is recognized as a core expression of local wisdom (Drebot et al., 2023). It also reflects a broader body of indigenous ecological knowledge and cultural heritage, essential for effective forest governance and environmental stewardship (Weningtyas & Widuri, 2022).

The three customary forest systems, *jorame* (abandoned forest), *dumule* (cultivated forest), and *ohongana* (sacred forest), are each underpinned by distinct cultural principles that continue to shape the Tobelo people's environmental ethics and land-use practices. These systems embody traditional knowledge systems that regulate how forests are accessed, used, and conserved.

The table below (Table 1) presents five core elements of local wisdom embedded in Tobelo forest traditions. Each contributes meaningfully to ecological sustainability and long-term forest productivity.

Table 1: Local Wisdom, Forest Preservation, and Impact

No	Local Wisdom	Description	Cultural Practices in Forest Preservation			Impact
			Process	Action	Product	
1	Environmental care	Refers to cultural knowledge, cultural practices, and ethical values to maintain and preserve the environment, such as forest ecosystems. For example, the prohibition of cutting down large trees is a form of forest preservation and a means for sustainability for future generations.	Conservation Movement Cleaning	Protecting land/forest Leaving land/forest Burning land/forest	Soil and plant fertility Biodiversity Understanding oneself as a human being	Preserving forests as a place for farming and living Increasing forest product production (farming) for living needs
2	Life alignment	Refers to the alignment of life with the natural environment, including forests, by maintaining the balance of nature. This concept illustrates that the Tobelo ethnic group depends on natural resources to meet their daily needs. Therefore, the sustainability of the ecosystem continues to run and prevents forest damage	Concerning Solidarity Cleaning	Protecting and preserving the forest Helping and cooperating in the forest Burning the bushes		
3	Prohibition in forest	Refers to cultural practices and customary rules developed to limit or regulate forestry activities. These practices often	Maintenance Coercion	Taking care of the trees Not forcing continuous		

No	Local Wisdom	Description	Cultural Practices in Forest Preservation			Impact
			Process	Action	Product	
		include taboos or regulations that restrict certain actions in designated forest areas, helping to prevent ecological damage and ensure the long-term preservation of natural resources.	Greedy	forest management Not taking excessive forest products		
4	Gratitude to God	Refers to a deep appreciation for God, who has bestowed nature, including forests and natural resources. Therefore, forests must be cared for and preserved. This is expressed in certain rituals, such as prayers in land clearing.	Harvesting Solidarity	Reaping the rewards Working together to protect the forest		
5	Future-oriented life	Refers to forest conservation through long-term management and planning. The goal is for the benefit of future generations. For example, planning shifting cultivation to keep the land fertile. In Tobelo ethnic customs, the emphasis is not only on meeting current needs but also on protecting natural resources for the welfare of future generations.	Movement Rescue Cultivation	Leaving the land/forest Maintaining the forest Production		

(Source: analysis results from the author)

These five dimensions of local wisdom contribute to effective forest conservation and sustainable livelihoods for the Tobelo community. For instance, environmental care is demonstrated through practices such as protecting large trees from illegal logging, leaving previously cultivated land fallow to allow ecological regeneration, and clearing fields by burning underbrush to create natural fertilizers from ash. These actions reflect an understanding of ecological cycles and resource limits.

The concept of harmony with nature is embodied in forest maintenance activities, cooperative labor (solidarity), and restorative land practices. The Tobelo people engage in collaborative efforts such as group farming and mutual assistance during planting and harvesting seasons, reinforcing community cohesion while ensuring sustainable land use.

Expressions of gratitude toward God are woven into forest-based livelihoods. Harvesting rituals and ceremonies reflect a spiritual acknowledgment of divine providence. This gratitude is also practiced through the equitable distribution of forest products among community members, reinforcing social bonds and the ethical use of shared resources.

A future-oriented perspective is another critical dimension of Tobelo forest wisdom. This is evident in their rotational farming system, which avoids continuous cultivation on the same land to prevent soil exhaustion. Instead, land is periodically left to recover, ensuring fertility for future generations. Practices such as selective clearing and organic soil enrichment demonstrate long-term ecological thinking and intergenerational responsibility.

Overall, these five elements of local wisdom, (1) environmental stewardship, (2) harmony with nature, (3) customary restrictions, (4) spiritual gratitude, and (5) future-oriented planning, form the basis of Tobelo forest conservation. They not only enhance forest productivity but also fulfill the essential subsistence needs of the Tobelo people while preserving the cultural values that guide their environmental interactions.

5. Discussion

5.1. Environmental Care

The Tobelo people's commitment to forest sustainability is clearly reflected in their efforts to prevent illegal logging and preserve forest resources. They believe that water availability for plants is sustained when large trees are left untouched, as these trees are considered both sacred and essential sources of water (Bar-On, 2015). Consequently, land selected for cultivation is typically free of large trees; if such trees are present, farmers are forbidden from cutting them down in order to maintain the surrounding moisture levels. When clearing land, the Tobelo practice a ritual known as *deburu* (land cleaning), which includes the recitation of the following mantra:

Ino Korehara, Ino Koremie (Come north wind, come south wind)
Ino wange mahiwara (Come east wind)
Ino wange madumunu (Unite with the west wind)
Rima puturungu (Give strength so the large trees remain unharmed)
Nihi wango majore-jore (So that the seeds germinate)
Nihi kuwata mangutuku (And grow into water-bearing trees)

(Source: Research of interview with Banari, respondent, 2024)

This chant expresses a plea to God, invoking the four cardinal winds as spiritual agents of ecological growth. It emphasizes the sacredness of large trees and the community's responsibility to protect them for the sake of water preservation and seed fertility. Another expression of environmental care is the Tobelo practice of shifting cultivation, wherein land is cultivated for three to four harvest cycles before being left fallow for eight to ten years. This approach allows ecological regeneration and helps maintain soil fertility. The custom is also accompanied by a mantra:

Owange nena toni hidoaka (Today I give what is mine)
Owange nena tongohi gena tongohi (Still mine)
Tongo gena tongona (Yours is still yours)
Una wogi nehe ngona nodiyai (Because of you, I do. But he also listens)

(Source: Research of interview with Banari, respondent, 2024)

This verse affirms communal respect for land ownership, reminding others that fallow land is not abandoned but temporarily set aside. The repeated message underscores honesty and community recognition of rightful land claims. To promote soil fertility, the Tobelo burn bushes previously cleared from the land, an example of ecologically informed land preparation. Forest conservation is also practiced by harvesting resources only as needed. Trees, for example, are felled solely for constructing houses, while other plants are utilized for food, medicine, and other subsistence purposes. These practices reflect a sustainable and restrained approach to resource use. Similar findings were reported by Asteria et al. (2021) in their study of the Togutil community, who also preserve the forest through oral traditions and inherited ecological values. These traditions, passed down across generations, must be actively implemented to prevent forest degradation and ensure long-term environmental resilience.

5.2. Life Alignment

The concept of life alignment in Tobelo local wisdom reflects a philosophical and practical integration of human life with natural systems. Forests are not merely seen as resources but as integral to the community's spiritual, social, and ecological existence. This worldview fosters a strong sense of responsibility toward preserving the natural environment. The Tobelo people consider themselves an inseparable part of nature. This belief is expressed through cooperative forest management practices and a commitment to environmental balance. The forest serves not only as a source of food and shelter but also as a site for cultural rituals and spiritual connection. Their actions reflect a deliberate effort to maintain harmony between humans, nature, and God.

For example, during land clearing, fires are carefully managed. Burning is conducted at the center of the plot to avoid spreading flames. After the fire is extinguished, the community returns to ensure that no residual embers remain, thus preventing unintended forest fires. This aligns with the findings of Daeli et al., (2021), who noted that farmers in similar communities revisit burned land to clean up and safely finalize the clearing process. Solidarity is a central value in Tobelo forestry practices. Community members participate in tasks such as digging, planting holes, and harvesting crops, often working side by side. This is symbolized in another ritual mantra:

Ino nimakaturung (Come on, you strong one)
Ino horimoi (Let us be together)
Hobi mateko nanga galapi (We collect sweat together)
Imaddi komatimoi (We build dignity together)

(Source: Research of interview with Banari, respondent, 2024)

This chant encourages communal labor and reinforces the values of unity, mutual support, and shared dignity. Such collaboration strengthens both the social fabric and the ecological knowledge base of the community. Abbas & Awang (2022), Sneed. (2021), and Service et al. (2014) have similarly emphasized that indigenous local wisdom rests on a tripartite relationship between humans, nature, and the divine. In the Tobelo context, this relationship is actualized through equitable forest use, respect for ecological limits, and rituals that affirm spiritual connection to the land. Importantly, the Tobelo recognize that overexploitation of the forest can lead to ecological collapse and social conflict. Therefore, their forest management approach, rooted in cultural values and collective decision-making, seeks to maintain sustainability for both present and future generations..

5.3. Prohibition in the forest

The Tobelo ethnic group upholds a unique system of ecological governance through the practice of *bubugo*, a traditional form of prohibition aimed at protecting forests, *jorame* (abandoned forest), *dumule* (cultivated forest), and *ohongana* (sacred forest), as well as agricultural lands. *Bubugo* communicates clear restrictions, including prohibitions against harvesting forest products that do not belong to the individual, excessive collection of both timber and non-timber forest products, destruction of forest areas for carbohydrate-producing crops, and indiscriminate or simultaneous tree-cutting activities.



Figure 7: Bubugo. (Source: research team)

The physical representation of *bubugo* takes the form of a symbolic marker. It may be a small wooden structure approximately 50 x 50 cm in size or a bamboo cross measuring 75–100 cm in height. The bamboo ends are tipped with sharp spear-like heads, symbolizing divine or ancestral punishment for violations. These markers are further adorned with moringa leaves (symbolizing vegetation and fertility), red cloth (representing courage and communal strength), and black cloth (symbolizing death and serious consequences).

The installation of *bubugo* is led by traditional elders, who are respected figures within the community. During the ritual, they wear black garments, a symbol of spiritual purity, and chant sacred mantras to sanctify the space and reinforce the seriousness of the prohibition. One such mantra is as follows:

Ngorana yatamunu (The door is closed)
Ngekomo yatatoko (The road is blocked)
Uha nia tobiko (Do not trespass)
Done nibura biki (Your feet will be ensnared)

(Source: Research of interview with Banari, respondent, 2024)

This chant serves not only as a spiritual invocation but also as a deterrent, warning potential violators of the dire consequences, spiritual, physical, or social, that may befall those who disregard the sanctity of the forest. It emphasizes respect for ecological balance and the community's spiritual relationship with the land. Traditionally, severe violations, particularly by individuals outside the Tobelo community, were punishable by death according to customary law. Over time, however, these penalties have evolved, and violators are now typically subject to fines determined by the tribal chief in accordance with customary norms. The *bubugo* also governs agricultural harvesting practices, forbidding the simultaneous harvesting of crops and forest products to ensure that food supplies remain stable and accessible throughout the year. Similar practices are observed among neighboring groups, such as the Togutil tribe, who implement prohibitions and traditional medicinal practices as expressions of their ecological wisdom (Bayau, 2023). Such traditions reflect a broader regional commitment to sustainable land management rooted in cultural values.

5.4. Gratitude to God

Expressions of gratitude to God form a central part of Tobelo forest-related cultural practices. Local wisdom holds that the forest is a divine gift, entrusted to humans not only for sustenance but also for stewardship. Protecting the forest is therefore understood as both a spiritual obligation and a cultural imperative. This worldview establishes a triadic relationship among humans (farmers), nature, and God, and guides sustainable forest use within the community. Gratitude is especially visible during harvests. When the land yields abundant results, the Tobelo people share their bounty with fellow community members, especially those who contributed labor or support, reinforcing values of togetherness and social harmony. This is reflected in a ritual mantra often recited during the harvest:

Ilo buku nomi himatoko (All have supported)
Oli buku nomi higerini (All have brought results)
Oli buku nomi hidoako (All have accompanied)
Oli buku nomi hogogere (All shall partake in the end)

(Source: Research of interview with Banari, respondent, 2024)

The verse embodies a deep sense of gratitude not only to God for the harvest but also to the community for its collective effort. It reflects the interconnectedness of spiritual devotion, ecological care, and social responsibility. Among Tobelo communities that continue to practice traditional beliefs, such gratitude is expressed through rituals and harvest festivals, where nature's bounty is celebrated as a sacred gift. However, Tobelo people who have adopted Islam or Christianity express their gratitude through religious prayers and thanksgiving ceremonies. Despite these differences in form, the underlying spiritual connection between humans, nature, and the Creator remains consistent. This spiritual-ecological link aligns with Zabadi et al. (2025) findings, which assert that the traditions of Halmahera's Indigenous groups, including the Tobelo, are deeply rooted in reverence for the divine. These cultural practices represent a form of spiritual ecology, wherein faith and environmental ethics are harmoniously intertwined.

5.5. Future-Oriented Life

The local wisdom of the Tobelo ethnic group reflects a future-oriented philosophy of life, particularly evident in their practice of shifting cultivation. Rather than cultivating the same land continuously, they allow the soil to regenerate by leaving it fallow for several years before returning. This approach helps to preserve soil fertility and ensures that agricultural practices do not degrade the environment. Before relocating to a new plot, a ritual mantra is recited to signify the transition and the spiritual continuity of the land:

Mira manarama mio wowango (Our work is our life)
Imadadi olilikomoi (I become the rope)
Wange nenanga mumatingaka (We walk from this place)
Yarehe midiringi mia nomako (And we come back to this place again)

(Source: Research of interview with Banari, respondent, 2024)

The mantra conveys a profound message: the land is integral to life, and the people are spiritually and physically tied to it. Even as they move away temporarily, the bond with the land remains intact, with the expectation of eventual return. This practice, deeply rooted in ancestral traditions, highlights the Tobelo people's sustainable relationship with the natural world, shaped by the rhythm of regeneration and return. The Tobelo have historically lived in close harmony with their environment, forests, rivers, and waters, sustaining not only their livelihoods but also their cultural identity. Their view of the forest is not short-term or exploitative but centered on long-term ecological stewardship. This future-oriented mindset is further reflected

in their plant cultivation activities, which aim to produce food and renewable raw materials for industry and energy, without the use of harmful chemicals (Mawardi, 2018). Such practices reinforce the sustainability of the forest and ensure its benefits for generations to come.

Importantly, this ecological foresight is rooted in spiritual values. Before undertaking forest-related activities or farming, the Tobelo people offer prayers to God, seeking guidance and blessings. Their commitment to forest preservation is seen as a moral duty to protect God's creation and to ensure that it continues to provide sustenance and shelter for their descendants.

The Tobelo community collectively upholds these values, treating the forest as a sacred trust, a gift from God that must be used wisely, not only for present needs but also with consideration for future generations. This collective practice of local wisdom serves as a powerful model for environmental sustainability and natural resource conservation. By preserving wildlife, maintaining ecological balance, and sustaining agricultural resources, the Tobelo demonstrate that cultural heritage can coexist with, and indeed strengthen, environmental stewardship.

5.6. Theoretical Discussion

The five cultural principles identified in this study reflect the diverse methods and ecological knowledge employed by the Tobelo people to sustain their environment in the face of growing extractive pressures. These findings affirm the significance of indigenous knowledge, which encompasses accumulated practices, beliefs, and ecological insights that guide local communities in regulating access to and managing their natural resources (Service et al., 2014). This study strengthens the concept of local wisdom as an essential tool in combating deforestation, curbing environmental degradation, and preserving access to biodiversity within Indigenous populations (Parrotta et al., 2016; Mavhura & Mushure, 2019). It highlights the importance of protecting indigenous knowledge systems to support sustainable development and ensure long-term ecological stability, especially in the context of climate change (Zarivnij & West, 2019; Leon, 2022; Intem et al., 2021).

Furthermore, the study aligns with Elinor Ostrom's theory of community-based resource management. The Tobelo people's cultural practices provide a clear example of a decentralized, collective, and context-sensitive approach to natural resource governance. Their forest management strategies demonstrate an effective, culturally embedded system of rules that fosters resource sustainability. Had government institutions and private companies respected and integrated these traditional systems, the scale of deforestation in North Halmahera could have been significantly reduced. The current ecological crisis, including the displacement of the Hana Manganyawa people, is a consequence of the failure to acknowledge and incorporate such indigenous knowledge.

The marginalization of the Tobelo community's forest governance systems stems from two main factors. First is the dominance of economic imperatives over cultural and environmental values. The rise of a monetized economy, paired with a government focus on extractive industries, has eroded the cultural underpinnings of traditional forest management. Although material expressions of culture (such as art and crafts) are still recognized, the deeper environmental philosophies of the Tobelo are neglected. Second is the state's extensive exploitation of natural resources, which has dispossessed Indigenous peoples of their ancestral lands. Development initiatives, particularly in mining, agriculture, and urban expansion, have restricted their access to forests needed for farming, hunting, and conducting sacred rites. This has severely limited the Tobelo's rights to engage in traditional practices such as shifting cultivation, resulting in the erosion of their ecological identity.

6. Conclusion

The Tobelo ethnic group's indigenous forest knowledge plays a central role in forest preservation. It combines ancestral wisdom, ritual practices, and adaptive land management strategies that have been passed down through generations. Despite ongoing forest degradation, segments of the Tobelo population continue to preserve and apply these time-tested traditions. Their local wisdom not only governs ecological sustainability but also enhances agricultural productivity and community welfare. For the Tobelo, forests are not just economic assets; they are integrated spaces where religion, agriculture, kinship, and cultural rituals intersect to promote a balanced and holistic way of life. Nevertheless, this knowledge system faces mounting threats from the state and private industries, particularly due to expanding nickel mining operations. Over the past five years, the Tobelo region has seen a significant influx of migrant laborers and the forced relocation of Indigenous populations into government-sponsored settlements.

In response to the economic pressures driven by profit-centric agendas, some Tobelo residents have resorted to logging, further distancing themselves from their ecological traditions. To preserve these cultural and ecological systems, future studies should investigate: (1) the impact of nickel mining on the revitalization and transmission of Tobelo forest knowledge, and (2) how indigenous ecological practices influence the evolving social fabric of Tobelo communities, especially among those relocated to centralized settlements.

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