

Integration of Local Wisdom of Karo Ethnic Group as a Strategy to Maintain the Spring Ecosystem in Sembahen Forest

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ARTICLE INFO	ABSTRACT
<p>Keywords: Water Ecosystem, Karo Ethnic, Local Wisdom</p> <p>DOI: http://dx.doi.org/10.22437/jssh.v9i1.38314</p> <p>Received: February 06, 2025</p> <p>Reviewed: May 16, 2025</p> <p>Accepted: May xx, 2023</p>	<p>The Karo ethnic group is one of the ethnic groups in North Sumatra that resides in the Karo Land. In Tanah Karo, there is a forest that serves as a source of life, namely Hutan Sembahen. Hutan Sembahen is a forest located in Desa Lau Solu, Kecamatan Mardinding, and it contains springs. Hutan Sembahen is protected through the local wisdom of the Karo ethnic group. This local wisdom can preserve the springs so that the water ecosystem remains unpolluted. This research aims to (1) analyze the integration of Karo ethnic local wisdom in Desa Lau, Kecamatan Mardinding as a strategy to maintain the water ecosystem in the Hutan Sembahen area and (2) examine the utilization of springs in the Hutan Sembahen area in accordance with SDG 6. This type of research uses qualitative methods that adopt an ethnographic approach. The research location is Lau Solu Village, Mardinding District, Karo Regency. Research data were collected through participatory observation, ethnographic interviews, and literature studies. The research data analysis uses Spradley's ethnographic analysis techniques, namely ethnographic interview analysis, domain analysis, and taxonomy analysis.</p>

1. Introduction

The Karo ethnic group is one of the ethnic groups in North Sumatra, most of whom live in the Taneh Karo area in Karo Regency and are surrounded by abundant natural resources. The Karo ethnic group is very close to nature, including their livelihoods and cultural ceremonies are greatly influenced by nature. The Karo ethnic group often refers to their area as "Taneh Karo" (Karo Land) and themselves as "Kalak Karo" (Karo People). In all activities, be it earning a living or carrying out cultural ceremonies, the ethnic group always pays attention to and respects nature and all forms that are part of it (Tarmizi, R, 2018). Most of the natural wealth of Taneh Karo that has fundamental value is the forest. Forests are a physical form of ecosystem that cannot be separated from human life and in it there are natural biological

resources that affect the surrounding environment. Forest areas function as a place to store carbon dioxide (CO₂), animal habitats, help store groundwater reserves, conserve soil and are one of the most important aspects of the earth's biosphere (Syaid, 2020). One of the forest areas in Tanah Karo that is still well-preserved is the Sembahen Forest located in Lau Solu Village, Mardinding District. The Sembahen Forest is one of the sources of life for the Karo ethnic community who live in Lau Solu Village and its surroundings. This can be seen from the community's dependence on the springs in the Sembahen Forest area as the only source of clean water and agricultural irrigation waters in Lau Solu Village. Therefore, the Sembahen Forest is very well maintained by the Karo ethnic community in Lau Solu Village by implementing the local wisdom of the local community.

The local wisdom possessed by the Karo ethnic community in Lau Solu Village is the prohibition on cutting down trees and entering the Sembahen Forest area. Local wisdom includes a series of values, attitudes, perceptions, behaviors, and responses possessed by the local community in interacting with the environment and nature wisely. They explained that local wisdom also includes life strategies used to manage natural resources and maintain ecological balance, both to deal with natural disasters and challenges arising from interactions between humans and the environment (Sumarmi and Amirudin, 2014). The Karo ethnic community in Lau Solu Village believes that violating the prohibition on cutting down trees and entering the Sembahen Forest area has the potential to cause mental disorders and mental illness. The consequences of this disease are believed by the local community to be caused by the presence of ancestral spirits guarding the Sembahen Forest area. This wisdom is further strengthened by the story of the ancestors of Lau Solu Village whose surnames are Sembiring Kembaren, Ginting, Karo-Karo who are believed to inhabit the Sembahen Forest area.

Thus, this local wisdom then has other benefits for the sustainability of the Sembahen Forest. The existence of norms in the community not to cut down trees and enter the Sembahen Forest area, indirectly is a useful strategy for maintaining the forest ecosystem and springs in the Sembahen Forest. The presence of springs in the Sembahen Forest area, until now, is the most important aspect for the village community as the only source of water that flows to homes and agricultural irrigation. Based on the description above, the team intends to study in more detail the Integration of Local Wisdom as a Strategy to Maintain the Spring Ecosystem in Lau Solu Village, Mardinding District. The local wisdom of the Lau Solu Village community regarding the Sembahen Forest and its springs is very much in line with Julian H. Steward's cultural ecology theory, which emphasizes that cultural patterns are formed from interactions between humans and the physical environment. Traditions of worship, prohibitions, and belief in ancestral spirits that guard the forest are cultural adaptations that aim to preserve the natural environment, especially vital water sources for life and agriculture. This cultural pattern shows how local beliefs not only strengthen community identity but also function as effective ecological mechanisms to maintain ecosystem balance, in accordance with Steward's view of the relationship between culture and the environment.

2. Literature Review

Many studies have been conducted on the forbidden forest, one of which was conducted by Prameswari, Iskandar, and Rifanjani (2019) who conducted a study on forest conservation based on local wisdom entitled "Local Wisdom of the Dayak Hibun Indigenous Community in Preserving the Teringkang Forest in Beruak Hamlet, Gunam Village, Parindu District, Sanggau Regency" there are 4 forms of local wisdom in the Gunam Village community in preserving the Teringkang Forest, namely prohibitions, beliefs, rituals and maintaining speech. If these four things are not done, it is believed that the suarak (ghost) will be angry

and cause disaster. Angin and Sunimbar (2020) entitled "Local Wisdom of the Community in Preserving Forests and Managing Springs in Watowara Village, Titehena District, East Flores Regency, East Nusa Tenggara" that the Waihilang Forest in Wotowara Village believes in local wisdom in preserving the forest in the form of prohibitions against perpetrators of forest wood thieves. The local community believes that they will be haunted by the stolen wood. Then the perpetrators who defecate around the forest springs are believed to fall ill. In addition, there is a prohibition against doing bad things because it is believed that they will get a curse from the forest guardian (*kena nitung lolong*). Furthermore, the prohibition of damaging the environment around the forest, if this is violated, the perpetrator will be confused about finding the way home and will disappear.

Ferry and Ramadani (2021) conducted a study on forest conservation based on local wisdom entitled "Local Wisdom Community in Efforts to Conserve Indigenous Forests of Nenek Lino Hiang Tinggi and Nenek Empat Betung Kuning in Kerinci District" conservation efforts for the Nenek Limo Hiang Tinggi and Nenek Empat Betung Kuning Customary Forests, Sitinjau Laut District aim to maintain the existing biodiversity. The local wisdom carried out in the Nenek Limo Hiang Tinggi and Nenek Empat Betung Kuning Customary Forests is the prohibition of exploiting the forest. If violated, sanctions will be given according to the category violated (minor, moderate, or severe violations).

Sumiadi (2022) conducted a study on forest and spring conservation based on local wisdom entitled "Environmental Care Education Based on Local Wisdom in Communities Around the Forest Environment" that local wisdom in the Bayan community has been regulated and written in the *Awiq-awiq* rules (customary rules) which contain a prohibition on taking over land functions, regulating sanctions, and the customary trial process or *gundem* (to determine sanctions for perpetrators who violate local wisdom). The protection of the Mandala Customary Forest and Bangket Bayan Customary Forest in West Nusa Tenggara (NTB) based on local wisdom can protect the forest ecosystem and springs that are used as sources of drinking water, PDAM and PAMDES, and waterfall tourist attractions. Sudipa (2023) conducted a study on forest conservation based on local wisdom entitled "Tenget Myths in Forest Environmental Conservation at Puser Saab Temple, Nusa Penida, Bali" discussing the local wisdom of *tenget* in the preservation of the Puser Saab Temple Forest. Local wisdom that is believed by forest communities is that if forest products are taken carelessly, it can cause magical disturbances because they are targeted by forest guardians called *bake*, *gamang*, *tonye*, and *banaspati*. In addition, there is also a prohibition on saying bad things in forest areas because it is considered disrespectful to forest guardians.

3. Research Methodology

3.1 Research Design

This study uses a qualitative research design with an ethnographic approach. The ethnographic approach was chosen because of its ability to provide in-depth insight into the social phenomena being studied, through the perspectives of the participants or communities that are the objects of research (native point of view) (Spradley, 2017). This approach allows researchers to understand culture, social interactions, and local practices holistically and contextually. Researchers chose to study the Karo community's strategy in maintaining the water ecosystem in Sembahen Forest, with a focus on local wisdom related to traditions and customary rituals. This design allows researchers to be directly involved in the lives of local communities, so that the data obtained can be richer, more relevant, and based on the existing social context. Through participatory observation and in-depth interviews, this study aims to

reveal how the Karo community integrates local wisdom in maintaining the sustainability of nature and water sources.

3.2 Participants

This study involved the Lau Solu Village community in Mardinding District, who have local knowledge and wisdom related to the preservation of the water ecosystem in the Sembahen Forest. The selection of this location was based on the customs and traditions of the Karo people who are very strong in preserving the environment, especially through the practice of ancestral beliefs and customs. Participants in this study consisted of:

1. Simatek Kuta (traditional leader) who has a deep understanding of local wisdom and its role in preserving nature.
2. The Village Head who has administrative and socio-cultural knowledge regarding policies implemented in the village related to the management of natural resources and ecosystems.
3. Local communities including individuals who are directly involved in water source conservation activities and participate in traditional rituals related to ecosystem maintenance.

The sampling technique used in this study was purposive sampling, where researchers selected informants who were considered to be able to provide in-depth and relevant information to the topic being studied. In addition, the snowball sampling technique was also used to find additional participants who had knowledge or involvement in customary activities related to water management.

3.3 Instruments

In this study, the main instruments used include participant observation, unstructured ethnographic interviews, and literature studies. Participatory observation is carried out by researchers directly involved in the lives of local communities to observe daily cultural practices related to the preservation of water ecosystems. Researchers do not interfere with the course of people's social lives, but rather blend in and become part of their activities. In this process, researchers observe traditional rituals such as offerings and respect for ancestral spirits, as well as community behavior related to the principles of environmental conservation that they believe in. In addition, unstructured ethnographic interviews were conducted with simatek kuta, village heads, and several local communities who are directly involved in traditional traditions and nature conservation. These interviews are open and flexible, providing space for informants to share their experiences and views on traditional practices related to water ecosystems. This allows researchers to gain a deeper understanding of the perspectives and values that underlie their actions. As a supporting instrument, researchers also conducted an in-depth literature review on the integration of local wisdom of the Karo ethnic group in maintaining water sources. This literature study enriches the understanding of the relationship between traditional knowledge and environmental conservation efforts, and provides a strong theoretical basis for the analysis of data obtained in the field.

3.4 Data Analysis Procedures

Data obtained from observations and interviews were analyzed using a thematic analysis approach, which aims to identify the main themes that emerge in the field data. The data analysis procedure was carried out through several steps, starting with data transcription and coding. All interviews conducted with participants were transcribed verbatim, then the

researcher identified pieces of data that were relevant to the theme of preserving aquatic ecosystems and local wisdom. These pieces of data were then coded to facilitate grouping of information. After coding, the data were grouped based on themes that emerged from the interviews and observations, such as customary practices, ritual offerings, customary prohibitions related to aquatic ecosystems, and the relationship between ancestral beliefs and environmental conservation. Each theme was further analyzed to understand how the Karo people connect their culture to the sustainability of nature. After the main themes were identified, the researcher interpreted the data to connect field information with theories in the literature review. The researcher also considered the social and cultural contexts that surround the lives of the Karo people to provide a more in-depth analysis. To ensure the validity of the data, researchers conducted triangulation by comparing information obtained from various sources, such as interviews with Simatek Kuta, village heads, and the community, as well as reviewing data obtained from literature studies. This triangulation approach helps researchers gain a more comprehensive and objective understanding of the phenomenon being studied.

4. Findings

4.1. Integration of Local Wisdom of Karo Ethnic Group as a Strategy to Maintain the Water Spring Ecosystem in the Sembahen Forest Area

The origin of the word Lau Solu is Lau Erdeso Ulu which means the roar of water coming from the spring of the Sembahen forest which is sacred to the people of Lau Solu Village. The presence of the spring and Sembahen Forest plays an important role in the lives of the people of Lau Solu Village, including as a source of water for daily needs, agricultural irrigation (lalah), and local cultural practices. Sembahen Forest is believed to be inhabited by the spirits of ancestors who first discovered Lau Solu Village during the Dutch colonial era. The ancestral spirits come from five Karo ethnic clans, namely Ginting, Sembiring, Karo-karo, Perangin-angin, and Tarigan. An interview with Simantek Kuta explained that the offerings in Sembahen Forest have existed since the era of pemena, the local religion of the Karo ethnic group in ancient times. The location of the forest that is sacred to the village community is a large tree that has now fallen and grown back through shoots from its roots. This tree is fenced by Simantek Kuta and is a place for the village community to carry out cultural practices such as praying and giving offerings. The offerings given are in the form of betel complete with lime and gambir, cigarettes, rice, or eating together in the Sembahen Forest. This cultural practice has recently been carried out again by villagers who have suffered losses due to rat attacks on their lalah. In four days, the rice in the lalah was eaten up by rats around four to five hectares, causing unrest among the villagers.

Until one of the villagers had a dream, where the content of the dream was that someone from the Sembahen Forest told the villagers to immediately make an offering in the form of a goat for the Sembahen Forest. The villagers initially did not believe it, until in the following period the lalah was increasingly attacked by rats until it reached eight hectares. Feeling that they had no other choice, the villagers finally collected Rp. 50,000.00 per head of family to buy a goat.

At that time, the villagers cooked goat, rice and other traditional foods together. After that, the villagers took the goat offering into the forest. This activity was guided by a guru sibaso or shaman to summon ancestral spirits and pray to help protect the lalah from rat attacks. However, the guru sibaso could not summon ancestral spirits so the villagers were confused. Not at a loss, the villagers called on Simantek Kuta to help summon the ancestral spirits. Simantek Kuta claimed not to have an inner eye or similar supernatural knowledge, Simantek

Kuta knew the presence of spirits when he felt goosebumps while praying or summoning the ancestral spirits in his heart. The contents of the prayer recited by Simantek Kuta were "o Nini, reh kam enda nggo pulung kami kempu ndu. Ate kami ngerana ras kam, e maka asa kai kam si ringan i bas Hutan Sembahen enda reh kam". This means, "O our ancestors, come. We, your descendants, have gathered. We want to talk to you. Therefore, all our ancestors in this forest, come." Simantek Kuta also explained that the method or prayer performed to the ancestors in the Hutan Sembahen is done differently for each person. As in the past parents called the ancestral spirits with the prayer "teruh man kam Dibata si datas, nangkih kam Dibata si toruh, kundul kam Dibata si tongah, amen". It means, "God above comes down, God below rises, God sits in the middle, amen."

After the simantek kuta calls and feels the presence of the ancestral spirits, then the simatek kuta prays for the lalah to be free from attacks and brings offerings in the form of goats to the ancestral spirits. The event is continued with eating together with goats and other foods that have been brought. Also not to forget, the villagers give some to the sacred tree, some people also give betel, cigarettes, and others as a form of respect. After giving offerings and praying to the Sembahen Forest, a few days later a change was seen in the form of a decrease in rats. According to AS, the rats were led by genies to damage the village community's rice crops. Therefore, offerings need to be made to the Sembahen Forest so that the ancestral spirits help drive away the rats. The villagers even saw footprints of a group of rats crossing the cassava fields towards the forest. This increases the community's belief in the ancestral spirits in the Sembahen Forest, so that the forest becomes sacred to the village community. There are several prohibitions believed by the villagers when entering the Sembahen Forest, namely: 1) Pregnant women are prohibited from entering the forest, 2) Mothers who have just given birth and their children have not yet grown teeth are prohibited from entering, 3) Babies who do not yet have teeth are prohibited from entering the forest area, 4) Cutting down trees in the Sembahen Forest area is prohibited and 5) Saying dirty words is prohibited. This prohibition was apparently violated by one of the people of Lau Solu Village who did not believe in the existence of ancestral spirits that control the Sembahen Forest and cut down a tree in the Sembahen Forest. After cutting down the tree, a few days later the person fell ill and was insane. These prohibitions and taboos are the local wisdom of the Karo people in Lau Solu Village which apparently have an impact on the sustainability of the springs located in the forest area. The existence of this local wisdom makes the villagers very careful in behaving in the Sembahen Forest area. The villagers greatly respect the rules that have been set by their ancestors, so that actions such as tree felling, water pollution, and poaching can be minimized. In addition, the belief in the guardian spirits of the forest and springs believed in by the Karo people also strengthens these prohibitions, so that people are reluctant to violate existing customs. Thus, the existence of this local wisdom not only functions as a guideline for life, but also as an important mechanism in maintaining the sustainability of the natural environment around the village, especially the springs that are a source of life for the local community.

Thus, the local wisdom of the Karo ethnic group in Lau Solu Village is real evidence of the integration between culture and environmental conservation. Through prohibitions and taboos that have been passed down from generation to generation, the community has succeeded in maintaining the sustainability of the springs in Sembahen Forest. Respect for customs and belief in the guardian spirits of the forest not only strengthen cultural identity but also play an important role in protecting important natural ecosystems. This local wisdom is not only an ethical guideline, but also an effective natural solution in efforts to preserve natural resources, showing that culture and the environment can go hand in hand in sustainable harmony.

4.2. Pemanfaatan Mata Air di Kawasan Hutan Sembahen di Desa Lau Solu

The springs in the Sembahen Forest area play a very important role in the lives of the people of Lau Solu Village and its surroundings. As one of the fastest flowing springs in Mardinding District, this spring is used to meet daily needs such as bathing, drinking, cooking, and other household needs. The availability of water that is stable throughout the year is certainly one of the resources that has extensive benefits. Lau Solu Village has four public baths, including two public bathrooms located in the lowlands of Lau Solu Village, this bathroom is located in the village which is located further across the highway. This bathroom was made by the village to make it easier for people to get access to water, especially since most of the villagers work as farmers. Of course, it would be very tiring to have to bathe and wash in the spring. Water is channeled to the public bathroom with a hose which is done by placing an iron or plastic drum in the spring flow, then the drum is perforated according to the size of the hose to be inserted. Then automatically, the water will flow into the hose, then the pipe is inserted into the underpass to channel the water to the Lau Solu Village area across the street.

Another bathing place is located not far from the Sembahen Forest spring and does not cross the highway. This bathing place also has a public bathroom and a place to wash clothes and dishes. Usually girls bathe here and change clothes in the public bathroom, because the flowing spring is like a small river so many people prefer to wash in this bathroom. Finally, the bathing place which is the center of piping to residents' homes. This bathing place is also called a tub, which is like a large tub that is often used as a bathing place for boys.

The Sembahen Forest spring, which is the strongest spring in Mardinding District, with its large water discharge is often used as a bathing and washing place for residents from neighboring villages. In fact, when there is a wedding party, death and others, both the people of Lau Solu Village or the surrounding villages wash cooking utensils in the Sembahen Forest spring. This phenomenon shows that this spring has a high social value, is a center of interaction between residents from various villages, and strengthens community ties and solidarity between residents.

However, the use of the Sembahen Forest spring has long been used to meet daily needs. Even some people use the Sembahen Forest spring for drinking water and some drink it directly without cooking it first. Until now, no community has been affected by consuming the Sembahen Forest spring directly without cooking it. The condition of the water that looks clear and cold makes some villagers interested in consuming water from the spring. The presence of this spring which is carried out through a hose that is inserted into the private and public bathrooms of the community can certainly also reduce electricity usage. Because the water that flows not into the community's bathroom is very abundant and does not stop, so that the water that flows into the bathroom spills from the water reservoir or tub.

In addition to being a place to bathe and meet the daily needs of the village community, the spring in the Sembahen Forest area also has an important role as irrigation for agricultural land and rice fields in Lau Solu Village. Most of the fields are planted with rice, corn, onions, chilies and others. Farmers in Lau Solu Village and its surroundings, utilize the flow from the Sembahen Forest spring to irrigate the fields. Where, in the dry season, the fields are very dependent on the Sembahen Forest spring because the water supply is very limited. With this spring, agricultural productivity can increase and of course support the economy of the local community which is mostly dependent on the agricultural sector.

Various prohibitions and taboos that have been passed down from generation to generation make people very careful in behaving in the Sembahen forest area. Belief in the guardian spirits of the forest and springs strengthens these prohibitions, so that people are reluctant to violate existing customs. Thus, the existence of this local wisdom not only functions as a guideline for life but also as an important mechanism in maintaining the sustainability of the natural environment. The use of springs in the Sembahen Forest has broad social and economic implications for the community. The availability of clean water improves public health and reduces the financial burden of diseases caused by contaminated water. Support for agriculture through adequate irrigation encourages local economic growth and community welfare. In addition, social interactions around the springs strengthen community ties and solidarity between villagers. By maintaining local wisdom and strengthening efforts to preserve springs in the Sembahen Forest, they will continue to be a source of sustainable life for future generations. These springs are not only valuable natural assets but also symbols of harmony between humans and the environment in maintaining the balance of a very important ecosystem.

5. Discussion

This study reveals how the local wisdom of the Karo ethnic community in Lau Solu Village, especially in preserving the spring ecosystem in Sembahen Forest, functions as an effective strategy to maintain environmental sustainability. One of the prominent aspects of this study is the influence of culture and beliefs on environmental protection, which is closely related to theories that connect culture, religion, and natural ecosystems. Sembahen Forest, as an area that is sacred to the local community, not only functions as a source of life in the form of springs that meet daily needs, but also as a place that is respected because it is believed to be inhabited by ancestral spirits. This belief is the main foundation in various prohibitions and taboos that have been passed down from generation to generation, and its influence on the sustainability of the surrounding ecosystem can be seen in various practices carried out by the community. The Lau Solu Village community maintains the sustainability of Sembahen Forest through traditional rituals that involve offerings to ancestral spirits. The existence of ancestral spirits, who are believed to be the rulers of the forest and guardians of springs, leads to the implementation of special rituals that aim to ask for protection and smoothness in their agricultural efforts. In this context, rituals become a kind of social mechanism that binds people to nature and their ancestors, and becomes a means to ensure the sustainability of the natural resources they utilize. This is closely related to conservation theories that see the relationship between spirituality and ecological sustainability, as explained by Angin and Sunimbar (2020) in their study on forest conservation based on local beliefs in East Flores. In this case, the people of Lau Solu Village consider that damage to the environment, such as logging or pollution, can bring disaster, which relates back to the concept that the environment is an entity that has life and the power to influence human life. In further analysis, it was found that the implementation of the offerings was not only intended to strengthen social relations between villagers, but also to strengthen the community's ties with their surrounding environment. For example, when there was an attack of rats that damaged their agricultural land, the community tried to solve the problem by returning to the Sembahen Forest, where they believed that the spirits of their ancestors could help overcome the disaster that occurred. The decision to hold a ritual with goat offerings and traditional food shows that this local wisdom contains aspects of pragmatism that adapt to the daily needs of the community, where solutions to environmental problems can be found in the unity of culture, beliefs, and practical actions. The researcher connects this finding with the view of Sumiadi (2022) who explains that in a society that adheres to local wisdom, environmental

preservation is carried out through a customary law system that also contains social norms that are highly respected and accepted by the community. One important characteristic of this local wisdom is the application of prohibitions and taboos that are accepted with collective awareness (Santoso & Adha, 2019; Santoso & Wuryandani, 2020). Several prohibitions recorded in the practices of the Lau Solu Village community, such as the prohibition of pregnant women and babies who have not yet grown teeth from entering the Sembahen Forest, are examples of regulations that are highly respected by the community. In their analysis, theories regarding social and cultural regulation, such as those proposed by Ferry and Ramadani (2021), can be applied to understand how local communities create very strong social control mechanisms through customary beliefs and norms. This prohibition not only reflects spiritual beliefs in forest guardian spirits, but also serves to preserve nature by preventing actions that could damage the balance of the ecosystem, such as tree felling or activities that damage water quality.

The findings on the impact of violating this prohibition further clarify how local beliefs and culture play an important role in maintaining the sustainability of the ecosystem. The people of Lau Solu Village have a strong belief that violating existing rules will bring disaster or disease, such as that experienced by someone who cuts down a tree in Sembahen Forest and then falls ill. This leads to the understanding that local wisdom functions as a reminder and controller of individual behavior in society, as well as creating a collective awareness that encourages people to preserve nature for the common good. This finding strengthens the theory expressed by Prameswari, Iskandar, and Rifanjani (2019) about the local wisdom of the Dayak Hibun community which links forest conservation with interrelated spiritual and social aspects. More broadly, this finding also shows that the culture and beliefs of the Lau Solu Village community not only function as a moral regulator, but also as a very effective environmental conservation tool. The knowledge and practices passed down from generation to generation are a form of community adaptation to their environmental conditions, allowing them to continue to live in harmony with nature. With this local wisdom, the sustainability of natural resources in the Sembahen Forest area can be maintained, as expressed by Sumiadi (2022) regarding the importance of environmental education based on local wisdom in maintaining the sustainability of forests and springs. In this case, local wisdom functions as a system that integrates culture, beliefs, and conservation practices that support each other to achieve greater goals, namely ecosystem sustainability and community welfare. The importance of the role of the Sembahen Forest spring in the lives of the Lau Solu Village community is also reflected in its very vital use for daily needs, such as bathing, cooking, and agricultural irrigation. This spring is not only an essential natural resource, but also functions as an important element in the social and economic life of the community. Through irrigation channels that flow water from the Sembahen Forest spring, agricultural productivity in this village can be maintained even in dry season conditions. Thus, the Sembahen Forest spring becomes the center of village community life that affects almost every aspect of their lives, from health to the economy. The efficient and sustainable use of springs reflects the application of conservation principles that are closely related to social ecology theories that emphasize the importance of maintaining a balanced relationship between humans and nature.

In addition, the presence of the fast-flowing Sembahen Forest spring provides significant social benefits for the people of Lau Solu Village and the surrounding villages. For example, this spring is used by the community to meet their bathing and washing needs, as well as for other social interests, such as during weddings or funeral ceremonies. This spring is a point of social interaction that strengthens relationships between villagers and strengthens community solidarity. This phenomenon shows that natural resources not only have economic value, but

also social value that is very important in maintaining community harmony. This finding connects with theories that examine the relationship between natural and social resources, which state that community-based natural resource management can create social justice and strengthen social cohesion in society.

Overall, the local wisdom applied by the Lau Solu Village community in maintaining the spring ecosystem in Sembahen Forest is a real example of how culture and the environment can go hand in hand to create sustainable ecosystem sustainability. Through customary prohibitions and beliefs in forest guardian spirits, communities not only maintain the sustainability of natural resources, but also build a social system that supports and strengthens each other. In this case, environmental sustainability is not only driven by policy or technology, but also by the value and belief systems that exist within the community itself, which are reflected in the preservation of the Sembahen Forest and the springs that are their source of life.

6. Conclusion

Based on the results of the research that has been conducted, it can be concluded that the integration of local wisdom of the Karo ethnic group in Lau Solu Village as a strategy to maintain the ecosystem of springs in Sembahen Forest shows synergy between traditional beliefs and environmental conservation, where the forest which is considered sacred because it is inhabited by ancestral spirits is protected through customary prohibitions that have a positive impact on maintaining its sustainability. This spring plays an important role for the community, not only meeting daily needs, but also supporting agricultural irrigation that supports the local economy. Local wisdom such as taboos around the forest helps maintain the sustainability of water sources, strengthens social solidarity, and becomes a mechanism for preserving the ecosystem in line with customs and ancestral beliefs.

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