

# Folklore myths and environmental conservation in Karo regency



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**Abstract** This study discusses the role of Karo's myths contributing to environmental conservation and promoting sustainable ecological practices in the Karo Regency. By the use of qualitative descriptive approach, data were collected through in-depth interviews, observations, and recordings with informants, such as, traditional leaders and community members from different ages. From the perspectives of literary sociology and ecological literature the myths serve as a guiding system of values fostering environmental awareness through respect for nature, sustainable agricultural practices, and forest preservation. Rituals such as offerings to Beraspati Taneh symbolize efforts to maintain fertility and harmonious human-nature relationships. The findings indicate that older generations maintain belief in these values, while younger, more educated individuals tend to view the myths with skepticism. Integrating traditional knowledge with scientific approaches ensures the continued relevance of these values. For instance, rituals focused on agricultural productivity can align with modern farming techniques for enhanced outcomes. Additionally, educational programs combining local wisdom and scientific insights are vital for engaging younger generations in conservation efforts. It is concluded that Karo's myths not only serve as moral guidance but also offer practical solutions for sustainable environmental management. Revitalizing their values through education, cultural communication, and scientific integration can foster collective participation in preserving the ecosystems and cultural heritages for future generations.

**Keywords:** local culture, ecological conservation, traditional values, community wisdom, literary sociology

## 1. Introduction

Sustainable environmental conservation is a crucial issue in maintaining ecosystem balance and natural resources and requires not only formal policies but also active involvement of local communities. The sustainability of conservation areas heavily depends on the communities that rely on natural resources for their livelihoods. In Indonesia, environmental protection and management is important to preserve environmental carrying capacity and ecological balance (Law Number 32, 2009). Environmental carrying capacity refers to an ecosystem's ability to support human life and other living beings sustainably. Thus, success in the conservation efforts cannot be separated from well-beings and their active participation in the conservation areas. However, current conservation approaches still face numerous challenges in addressing the increasingly severe environmental degradation. Tarigan (2010) reveals that critical ecosystems such as mangroves and freshwater swamps have shrunk by over 60%, while natural disasters like floods, landslides, and droughts become more frequent across various regions. This phenomenon underscores the urgent need for more holistic and community-based conservation strategies. Community-based conservation approaches not only rely on formal government policies but also integrate local cultural values as a foundation for environmental preservation.

Local cultural values, as explained by Brondízio et al. (2021) and de Fretes et al. (2023), play a significant role in fostering harmony between humans and nature. Local cultures often contain wisdom passed down through generations and teach the importance of maintaining ecological balance. One cultural element with great potential is folklore, which, through its narratives, can inspire communities to conserve their environment. Osemeobo (1994) argues that folklore, with its ecological messages, can complement and enrich modern conservation strategies. In the Karo community, for instance, the folklores such as batu renggang, batu umang, and kak tangkau bunga convey messages to emphasize the importance of natural protection and to avoid environmental destruction.

Myths, as a part of folklore, hold significant cultural value and are considered symbolic narratives depicting the origins of the world, natural transformations, and interactions between humans and supernatural forces (Brondízio et al., 2021). By local myths, we can understand how communities perceive and maintain ecological balance through stories. Lessa (1959) categorizes myths on content and purpose, such as creating and originating myths which offer profound insights into the relationship between communities and nature. Myths are categorized into oral folklore, partly oral folklore, and non-oral folklore (Oring, 1973; Richmond, 1969) and serve as a medium for transmitting local wisdom. In this context, understanding myths helps us comprehend how environmental values are passed down across generations. Myths are often considered



fictional stories; however, in many cases, they are inspired by historical events or natural phenomena experienced by communities. Chaudhry et al. (2014) highlight that, while folklore may be perceived as fictional, myths often reflect collective experiences of communities in addressing environmental challenges, making it highly relevant to conservation efforts.

In literary sociology, myths might refer to expressions of individual and collective identity, which foster a sense of ownership and responsibility toward the environment. Kolzow et al. (2021) and Maspul and Almalki (2024) emphasize that revitalizing local cultures can enhance community engagement in environmental conservation. Since myths and folklore are integral to cultural identity, communities are expected to become more aware and responsible in preserving their natural surroundings. This approach is particularly relevant for understanding the social dynamics underpinning community-based conservation which is held in Nageri village, where locally cultural narratives shape conservation practices and promote ecological awareness. This study aims to explore the role of Karo folklore, particularly through folktales, as a tool for culturally based conservation in Nageri village. With the growing awareness of the importance of conservation involving local communities, culturally based approaches that integrate local values are believed to be more effective than top-down policies. This aligns with the arguments of Balthazar and Machado (2020) and Feldmeyer et al. (2020), who suggest that community-based conservation efforts are more successful in engaging communities and fostering sustainable ecological awareness.

Additionally, this study examines factors such as age, education level, and community understanding of myths in determining the effectiveness of culturally based conservation. These factors significantly influence how communities respond to conservation efforts rooted in local wisdom. A better understanding of myths and folktales can enhance community participation in environmental preservation programs and strengthen their connection with their surrounding environment. This study not only highlights folklore's potential as a cultural heritage but also as a moral foundation for ecosystem preservation. Karo folktales, such as batu renggang, batu umang, and kak tangkau bunga, can serve as highly effective tools for fostering ecological awareness in communities. Through these stories, communities are expected to gain a deeper understanding of the importance of protecting nature, ultimately encouraging them to become more actively involved in environmental conservation.

Culturally based conservation approach in Nageri village is expected to serve as models that can be applied in other regions, particularly areas with strong traditions and local wisdom. The approach can complement modern conservation policies by integrating local values into environmental preservation strategies. It is hoped that by linking conservation efforts with local cultures, communities will develop greater appreciation and commitment to preserving their natural environment. Moreover, this study provides critical insights into the relationship between culture, society, and the environment. By incorporating cultural values into conservation policies, a more holistic approach can be achieved, addressing not only environmental aspects but also the social and cultural well-being of communities. The approach can strengthen conservation efforts and reduce conflicts that often arise between conservation policies and the interests of local communities.

This study demonstrates that Karo folklore has significant potential in supporting culturally based conservation. Through folktales, communities can be taught on the importance of maintaining ecological balance and valuing the natural resources they possess. This is vital for encouraging active community participation in environmental preservation, which will ultimately ensure the sustainability of ecosystems and community well-being in the future.

## 2. Materials and Methods

This study was conducted from July to August 2024 in Nageri village, Juhar District, Karo Regency, North Sumatra, Indonesia. The village was purposively selected due to its community's high regard for local traditions and wisdom, as reflected in batu renggang, batu umang, and kak tangkau bunga folklores. It is also known for its sustainability practices passed down through generations, highlighting the close relationship between the community and the environment (Government of Karo Regency, 2022). The method employed was a descriptive qualitative approach to explore how folklore functions as a value system supporting environmental conservation. This research also examined intergenerational differences in ecological perceptions on folklores between the older and younger generations in the village.

Primary data were collected through in-depth interviews and direct observation. Interviews were conducted with traditional leaders, older and younger generation. Traditional leaders were selected based on their roles as custodians of tradition and local knowledge. The older included residents aged over 50 years with a profound understanding of folklore and its values, while the younger comprised respondents aged 20–35 years with at least having a high school education. Twenty respondents were purposively selected, consisting of 10 participants from the older and 10 from the younger. The interviews focused on ecological values and their applications in the community's daily life. Direct observations were carried out during traditional rituals, conservation practices linked to folklore, and community interactions with the natural environment to understand the practical application of ecological values in everyday life.

The data analysis process involved data reduction, data presentation, and conclusion drawing. During data reduction, information from interviews and observations was systematically organized by identifying key themes such as conservation values, intergenerational perception differences, and the relationship between folklore and the environment. The data were then presented narratively to clarify the main findings. Conclusions were drawn based on the analysis results, and validation

was performed through source triangulation by comparing data from interviews and observations and by discussing findings with cultural ecology experts to ensure consistency and credibility (Miles & Huberman, 1994).

The analytical framework in this study is based on the theory of Robbins et al. (2000), which posits that myths can serve as guidelines for sustainable practices. Folklore was analyzed as texts reflecting socio-cultural values that support environmental conservation. A sociological literature approach was employed to connect the content of these stories to ecological and social contexts. Additionally, the study adopted Maspul and Almalki (2024), who emphasized that integrating local wisdom with modern science can enhance ecological awareness and support sustainable environmental conservation efforts.

The analysis of folklore in this study involved extracting ecological elements embedded in the Karo traditional narratives. These elements were then compared to actual practices implemented by the community in environmental stewardship. This approach aimed to identify the relationship between folklore and conservation behavior while illustrating the effectiveness of traditional values as an intergenerationally relevant environmental education tool. The results of this study are expected to provide new insights into culturally based conservation strategies that are contextually relevant. By integrating local values into modern conservation approaches, this research not only strengthens the connection between communities and the environment but also offers a model that can be adapted for other contexts with similar characteristics.

### 3. Results and Discussion

This study aims to explore the relationship between myths in Karo folklore and environmental conservation and to understand how the ecological values embedded in Karo folklore can contribute to environmental preservation. The results indicate that Karo myths play a crucial role as cultural heritage containing ecological messages relevant to current conservation contexts. These myths not only function as entertainment but also serve as mediums for conveying the importance of maintaining ecological balance and ensuring the sustainability of natural resources. However, the utilization of folklore as an environmental conservation tool remains limited, particularly in terms of documentation and institutionalization. Previous studies by Darr (2007) and Swarup and Rastogi (2023) emphasize that to optimize folklore's contribution to conservation, more systematic documentation and integration of folklore into broader conservation policies are needed.

There are perceptual differences between the older and younger generations regarding understanding and preserving these myths. The older, who are more familiar with and value folklore passed down through generations, tends to view myths as an integral part of their daily lives, including in environmental preservation. On the other hand, the younger, more exposed to modern culture and technology, tends to have less understanding and appreciation for the ecological messages contained within the folklore. This indicates a gap in the transmission of cultural values between the older and the younger. Similar findings were highlighted by Kolzow et al. (2021), who emphasized the importance of revitalizing folklore as a means to bridge generational gaps in understanding ecological values embedded in folklore.

Scientific approaches to involving communities in folklore preservation and environmental conservation demonstrate significant potential in blending local wisdom with modern knowledge. Integrating the ecological values embedded in myths with scientific approaches can enhance the effectiveness of community-based conservation programs. Studies by Balthazar and Machado (2020) and Feldmeyer et al. (2020) support the importance of collaboration between local cultural approaches and scientific methods in implementing environmental preservation policies. By utilizing a scientific approach that respects local cultural values, communities can more easily access ecological knowledge relevant to their lives, thereby strengthening their engagement in environmental preservation efforts.

#### 3.1. Exploration of conservation values in folklore

Mapping folklore in Nageri village is indeed an important initial step, but it is insufficient to support holistic environmental conservation. Folklore holds great potential as a guide for conservation values, particularly in the context of indigenous communities that are highly dependent on nature. Therefore, documentation is an urgent necessity to optimize the use of these stories in environmental preservation efforts.

The folk tales play significant roles in supporting environmental conservation through the ecological messages they convey. For example, an interview with Tarpim Kaban (57 years old), a resident of Nageri village, revealed that these stories contain moral values emphasizing the importance of maintaining harmony with nature. Batu renggang illustrates the ecological consequences of violating nature, making it an effective tool for social control. This aligns with the views of Turner (1969) who argues that myths can help maintain ecological balance through culture-based social control. Moreover, these folk tales introduce the concept of sacred forests, which play a significant role in environmental preservation. For instance, batu umang describes sacred forests as sanctuaries that must be protected from exploitation.

The mapping of these folk tales highlights that folklore is not only a part of the community's cultural identity but also serves a practical function in maintaining ecosystem balance. The identification of 22 folk tales in the village, including batu renggang and kak tangkau bunga, underscores the importance of local traditions as a medium for ecological education. In this context, the community views forests as inseparable elements of their spiritual lives, demonstrating the reciprocal relationship

between humans and nature. Kolzow et al. (2021) explain that cultural symbols such as myths can strengthen community identity while preserving the human-nature relationship. The moral values embedded in these stories can be used to raise young people’s awareness of the importance of environmental preservation. However, as noted by Dawson et al. (2021), community-based approaches and cross-sectoral engagement are the key to ensuring the sustainability of these values.

Table 1 shows the names of 15 folk tales identified in Nageri village, including batu renggang and kak tangkau bunga. These stories are not only entertaining but also rich in moral and ecological values. Documenting these tales is an important step in ensuring that conservation messages can be passed on to future generations (Roisah, 2017).

**Table 1** List of folk tales in Nageri Village, Juhar District, Karo Regency.

No	Names of folk tales	No	Names of folk tales
1	Batu Renggang (Loose Stone)	9	Batu Umang (Umang Stone)
2	Kak Tangkau Bunga	10	Asal Usul Desa Nageri (The Origin of Nageri Village)
3	Patung Pulu Balang (Pulu Balang Statue)	11	Guru Diden
4	Si Beru Dayang	12	Lau Kawar
5	Si Ilang Ilang	13	Guru Kandibata
6	Legenda Gua Kemang (The Legend of Kemang Cave)	14	Cincin Pinta-Pinta (The Ring of Pinta-Pinta)
7	Gundala-Gundala	15	Asal Mula Gunung Sibayak (The Origin of Mount Sibayak)
8	Palas Si Pitu Ruang		

However, one of the main challenges faced is the lack of formal documentation. Without systematic recording, the values in these stories are difficult to translate into conservation policies. Oral traditions are also vulnerable to losing relevance over time. Dawson et al. (2021) and Thomsen et al. (2022) emphasize the importance of integrating local values into community-based approaches to enhance ecosystem sustainability. By incorporating folklore into community-based conservation policies and formal education systems, communities can not only preserve their cultural heritage but also strengthen their commitment to environmental preservation.

The potential of folklore as a guide for culture-based conservation becomes increasingly relevant when integrated with modern strategies. This approach offers a significant opportunity to combine traditional values with modern scientific principles, as emphasized by Maspul and Almalki (2024), in efforts to create sustainable ecosystems. Through community involvement in preserving these stories, environmental conservation can become more effective. Additionally, this approach can strengthen the community’s commitment to safeguarding their local ecosystems. Systematic documentation and the integration of local values into modern policies can ensure ecosystem sustainability while preserving valuable cultural heritage.

### 3.2. Generational perceptions of folklore: a comparative analysis

Generational perceptions of folklore present an intriguing issue in the context of cultural and ecological preservation. The shift in values and perspectives between older and younger reflects not only the impact of modernization but also the challenges of maintaining the relevance of oral traditions in the globalized era. This study focuses on how folk tales like batu renggang, batu umang, and kak tangkau bunga are perceived by two generations. The findings reveal not only differences in perception but also explore potential efforts to bridge the gap through cultural revitalization and education. The research findings indicate significant differences in how the older and younger generations view folklore. The older sees the folklores such as batu renggang, batu umang, and kak tangkau bunga as moral and ecological guides for life. These stories are not merely considered entertainment but also lessons about the importance of maintaining harmony with nature, which is believed to prevent ecological disasters. This perspective aligns with Moenig and Minho (2016), who emphasize that traditions and symbols in folklore help communities understand their relationship with the environment.

In contrast, the younger tends to hold a skeptical view of folklore and perceive the folk tales as legends of the past that are no longer relevant to modern life. For them, the tales are seen as symbolic rather than practical. This view is reinforced by their greater exposure to technology-based information and formal education, which often exclude local values. Subramanian (2023) highlights that modernization and technology frequently erode the sustainability of oral traditions, distancing younger generations from the traditional values embedded in folklore. Observations of traditional practices also reveal differences in participation levels between the older and younger generations. The older actively engages in traditional rituals such as merdang and offerings to beraspati tanah as a method of maintaining a harmonious relationship with nature. The rituals are not only spiritual but also reflect respect for ecosystems as a source of life. For the older, the practices serve as reminders of their environmental responsibilities, as supported by Moenig and Minho (2016), who stress the importance of rituals in environmental conservation. Conversely, the younger rarely participates in traditional practices, with minimal involvement due to a lack of understanding of the ecological aspects embedded in these rituals. Das et al. (2023) note that insufficient documentation and dissemination of oral traditions are the major factors causing young people to feel disconnected from traditional values. Consequently, folk tales like batu renggang and batu umang lose their relevance as conservation guides for them.



The absence of formal documentation is also a primary reason for the cultural identity crisis among the younger and without adequate documentation, the conservation values embedded in folklore are difficult to preserve. Roisah (2017) emphasizes the importance of documentation in safeguarding traditions and cultural symbols. If folklore remains undocumented, there is a high risk that its ecological messages will be lost, ultimately weakening the cultural identity of local communities (consider Table 2 for knowing ecological messages).

Figure 1 illustrates the relationship between Karo folklore and ecological values through three main folk tales: batu renggang, batu umang, and kak tangkau bunga. These stories convey critical environmental messages, with batu renggang highlighting the balance of nature and the consequences of violating environmental rules, while batu umang portrays the adverse effects of actions that harm nature, emphasizing the importance of living in harmony with the environment. The folk tales serve as cultural reflections, teaching valuable lessons about environmental preservation and ecological sustainability. Cultural revitalization through folklore is crucial to bridging the perception gap between the older and younger generations. This can be achieved by integrating folklore into educational curricula. de Fretes et al. (2023) recommend the incorporation of local values into formal education systems to enhance ecological awareness among the younger generation while strengthening their sense of ownership of local culture.

The folk tales like batu renggang and batu umang can be utilized as educational modules that combine traditional elements with modern scientific principles. This approach ensures that the values contained in folklore remain relevant amidst changing times, while also strengthening the younger's connection to their local culture. The older regards these myths as life guides that help them maintain ecological balance, believing that violations of the norms in these folk tales can lead to ecological disasters. Robbins et al. (2000) argue that conservation values in local traditions are often more effective than formal policies that disregard local culture.

The community demonstrates a strong commitment to their traditions, particularly in maintaining sacred forests as part of ecological balance. Conversely, the younger tends to view folklore with skepticism due to the influence of formal education. Ritter (2023) asserts that modernization and formal education often separate the young from local traditions that play a vital role in environmental conservation. To address this issue, Fabiano et al. (2021) recommend formal education that integrates local values with scientific knowledge. This approach not only helps preserve local culture but also enhances conservation awareness, creating a bridge between tradition and modern practices.

### 3.3. Local values with a scientific approach

The utilization of local values as an approach to environmental conservation offers unique potential that is often overlooked in formal policies. Indigenous traditions, as reflected in folklore and cultural practices, contain conservation values relevant to maintaining ecological balance. This discussion presents research findings on how local values can be integrated with modern scientific approaches to create effective conservation strategies. The presentation also emphasizes the importance of harmonizing local traditions with scientific principles to support ecosystem sustainability while preserving the cultural identity of the community. A culture-based conservation approach requires integration with scientific methods to ensure long-term sustainability. This research found that practices such as rituals to beraspati tanah and reverence for sacred forests indirectly contribute to ecosystem preservation. However, these practices lack support from a systematic scientific framework. Breithoff and Harrison (2020) highlight that integrating local values into formal policies can create more effective conservation strategies.

The batu umang tale, which teaches the negative impacts of greed, can be developed into an educational module based on local values. This module could combine folklore with modern ecological principles to teach the importance of maintaining natural balance. The research recommends a bottom-up approach, involving community in designing environmental conservation policies. Such an approach not only enhances community participation but also strengthens their sense of ownership over implemented policies, as suggested by Li et al. (2022). The community has several traditions aimed at preserving nature, albeit without directly employing scientific approaches. One such tradition is the ritual offering to beraspati tanah, the earth deity believed to protect the environment and soil fertility. This offering is conducted to enhance soil fertility and maintain overall natural balance, ensuring abundant agricultural yields. The belief in the power of nature encourages the community to maintain harmonious relations with their environment and avoid actions that disrupt ecological harmony.

In addition to rituals, the community also reveres sacred forests believed to harbor mystical powers. These forests are thought to be the dwelling places of spirits or entities capable of causing harm if disturbed. Prohibitions against violations in these areas are observed as part of efforts to preserve the ecological balance of the forest and protect natural resources. This aligns with Welbourn (1971) findings that myths and taboos in traditional societies often function as effective forms of social regulation, guiding communities to adhere to rules that support environmental sustainability. This research found that these traditional practices have significant relevance in the context of modern conservation. For example, by respecting sacred forests, the community indirectly protects biodiversity within them and prevents overexploitation of natural resources. Although local communities may not label these actions as conservation, they contribute to maintaining ecological balance. Breithoff and Harrison (2020) emphasize that local values in conservation practices are often more effective than formal policies that disregard community traditions and beliefs.

**Table 2** Narrative summary and ecological message.

No.	Folk tales	Narrative Summary	Ecological Message
1	Asal Usul Desa Juhar (The Origin of Juhar Village)	The Tarigan clan established a village on fertile land with traditional rituals and cutting down the juhar tree as a symbol of nature's blessing.	The construction of houses and villages must be based on good land selection to foster peace.
2	Patung Pulu Balang (Pulu Balang Statue)	The village's guardian statue was vandalized, and a flood occurred, which ultimately returned the stolen livestock. The villagers realized their mistake and returned to honoring the statue.	There is a relationship between human actions toward sacred objects and nature's response.
3	Palas Sipitu Ruang	A spirit man built a luxurious home for his human wife. A broken promise caused the house and its contents to vanish, and his child was turned to stone.	Breaking promises or betrayal can lead to dire consequences, symbolized by turning into stone.
4	Legenda Gua Kemang (The Legend of Kemang Cave)	The farmers were assisted by the spirit Umang to cultivate the land, but a secret condition was broken. The land returned to its original state, leaving only large boulders.	The importance of keeping promises to nature (spirits) in order to reap their benefits.
5	Guru Diden	Guru Diden, a powerful man, uses the power of nature. He can make coconut water last forever or create seven springs during a magical duel.	Natural elements (water and coconut trees) possess power that can be harnessed, but they can also be hostile.
6	Beru Dayang dan Awal Mula Padi (Beru Dayang and the Beginning of Rice)	The gods sent Beru Dayang to create rice as a staple food. Beru Dayang transformed into a large pumpkin that had to be cut and planted to produce rice.	Rice is considered a divine creation or a gift from nature that must be nurtured to produce results.
7	Si Ilang-Ilang	A giant named Si Ilang-Ilang was looking for pumpkin leaf shoots for his mother. Due to his large size, the leaf he gave him fell on and killed his mother.	This story alludes to an ecological myth about plants, namely the pumpkin leaf.
8	Gundala-Gundala	This rain-summoning attraction is based on the story of the giant bird Gurda Gurdi. Gurda Gurdi's death caused heavy rain, which was considered a sign of mourning from nature.	The rain-calling ceremony demonstrates the community's relationship with nature. The hero's death is greeted with a torrential downpour by nature.
9	Cincin Pinta-Pinta (The Ring of Pinta-Pinta)	A snake gives a magical ring to an orphaned boy in the forest. The snake advises him to always be kind to others.	Nature (represented by the snake) can provide relief to suffering humans, but only on the condition that humans maintain their morality.
10	Lau Kawar	Prosperous villagers throw a party and ignore a sick grandmother. The grandmother cursed them. As a result, the village sank into a crater which is now called Lau Kawar.	This story conveys a moral message about being grateful for blessings, not being disobedient to parents, and demonstrates the consequences of natural disasters resulting from immoral human actions.
11	Batu Umang (Umang Stone)	The story of spirits (bunian) who inhabit the Umang Cave, a large rock which is believed to be their home.	Menunjukkan kepercayaan masyarakat terhadap benda-benda alam (batu) sebagai tempat tinggal makhluk halus.
12	Batu Renggang (Loose Stone)	A stone that is said to be able to walk and eat people's livestock.	Describes the belief that natural objects (stones and trees) possess spirits or supernatural powers.
13	Kak Tangkau Bunga	The story of seeking help is not just based on compassion.	The ecological message in this story summary is respect for the environment.
14	Asal Mula Gunung Sibayak (The Origin of Mount Sibayak)	Two orphans search for fertile land on the slopes of Mount Sibayak to plant rice.	Indirectly, this story demonstrates humanity's dependence on nature (mountains and fertile land) for survival.
15	Asal Usul Desa Nageri (The Origin of Nageri Village)	The story about the origins of Nageri Village which was founded on fertile land.	The ecological message in this story summary is the motivation to learn about the origins of a region.

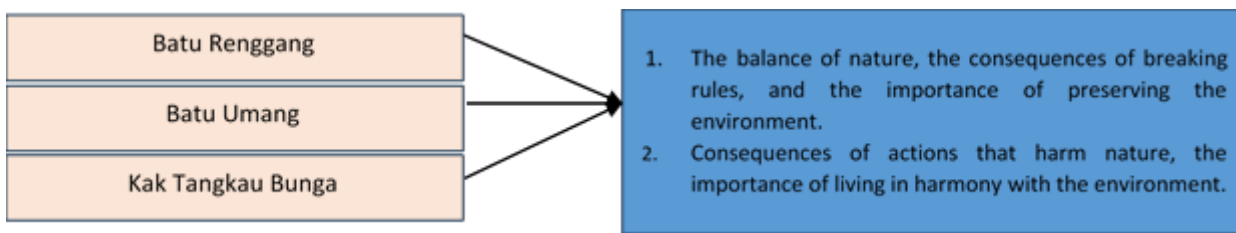


Figure 1 Relationship between myths, balance ecology, and human action.

Figure 2 illustrates the process of exploring the ecological values from batu renggang, batu umang, and kak tangkau bunga folklores. The first step involves analyzing how the community responds to and perceives these myths. The second step focuses on how these perceptions encourage practices of caring for, maintaining, and conserving the environment. This framework underscores the vital role of local folklore in shaping cultural attitudes toward environmental management and sustainability, strengthening the bond between the community and their natural surroundings. The research also highlights the importance of education that integrates local values with modern scientific knowledge. Through such educational programs, younger generations can learn the importance of environmental conservation, not only as a form of respect for their ancestors but also as a scientific effort to support ecosystems. The batu umang, which teaches the consequences of greed, can serve as lessons for the younger generation to avoid environmental damage for personal gain.

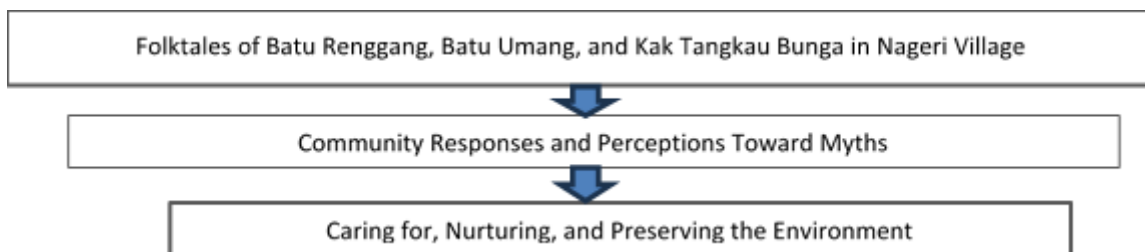


Figure 2 Relationship between folktale elements and environmental conservation efforts.

By understanding these tales, the younger will become increasingly aware of conservation values and the negative impacts of uncontrolled exploitation of nature. These educational programs can strengthen ecological awareness while preserving their connection to the local culture that forms an integral part of the identity. Integrating local values into environmental conservation through myths like batu renggang, batu umang, and kak tangkau bunga offers a unique approach to preserving nature. Various traditional practices carried out by the community, such as offerings to beraspatis tanah and reverence for sacred forests, demonstrate that the relationship between humans and nature can be effectively managed through cultural beliefs. Robbins et al. (2000) describe local traditions as powerful mechanisms for conservation, especially in societies that rely on customary practices to maintain their ecological balance. By integrating myths into formal policies, conservation values can be preserved while safeguarding the cultural heritage. Local traditions and beliefs can serve as a foundation for enhancing long-term ecological awareness. This approach emphasizes that nature conservation aims not only to protect the physical environment but also to preserve the cultural identity of local communities. Integrating culture and ecology into formal policies will enrich the cultural foundation of communities in addressing complex environmental challenges in the future.

3.4. Research implications

The implications of this research highlight the importance of applying conservation values contained in folk tales, such as batu renggang and batu umang, in culturally-based environmental preservation efforts. The findings of this study confirm that folklore can serve as an effective ecological education tool, as the conservation messages embedded in folk tales can help local communities understand the importance of maintaining ecosystem balance. This supports the view of Robbins et al. (2000), who argue that local traditions often have greater potential than formal policies in promoting environmental sustainability, especially in contexts that directly involve communities. Moreover, the generational differences in perceptions of folklore emphasize the need for cultural revitalization to bridge these gaps. The older, who view folk tales as life guidelines, tend to be more active in conservation practices, while younger generations, who are more skeptical, require a more relevant and engaging educational approach. Integrating folklore into formal education, as suggested by de Fretes et al. (2023), can help raise ecological awareness among the younger while also strengthening their sense of ownership over local culture. Thus, this research opens opportunities to develop more inclusive and relevant culture-based conservation policies for all societal layers.

Based on the results, five implications emerge in the context of culture-based environmental conservation. First, the exploration of conservation values in folk tales such as batu renggang and batu umang shows that folklore can function as an



effective ecological education tool. By utilizing folk tales that contain conservation messages, local communities can understand the importance of maintaining ecosystem balance. This implication supports the view of Robbins et al. (2000), who state that local traditions often have greater potential than formal policies in promoting environmental sustainability. Second, the generational differences in perceptions of folklore emphasize the need for cultural revitalization to bridge these gaps. The older, who view folk tales as life guides, are more active in conservation practices, while younger, more skeptical generations require a more relevant educational approach. Integrating folklore into formal education systems, as recommended by de Fretes et al. (2023), can help increase ecological awareness among younger generations while strengthening their connection to local culture.

Next, integrating local values with scientific approaches opens opportunities to develop more inclusive, community-based conservation policies. Traditions like respecting sacred forests and rituals dedicated to *beraspati tanah* reflect conservation practices that have naturally evolved within the community. If these values are documented and aligned with modern ecological principles, a more effective and sustainable conservation approach can be created. Breithoff and Harrison (2020) emphasize the importance of integrating cultural values with formal policies to achieve long-term sustainability. The fourth, the practical implication of these findings is the importance of systematic documentation to prevent the loss of ecological messages embedded in folk tales. Documentation can serve as a foundation for developing educational modules and conservation policies based on local values. As noted by Roisah (2017), without adequate documentation, the oral traditions are vulnerable to losing relevance and continuity. Finally, these findings also highlight the need for cross-sector collaboration between local communities, governments, and academics to develop culturally-based conservation strategies. Involving communities in policy design will enhance their participation, while academic support can provide the scientific framework that strengthens these policies. Thus, the integration of traditional values with scientific approaches not only preserves culture but also provides innovative solutions in addressing global environmental challenges.

The Table 3 shows a qualitative comparison between the older and younger generations based on five key aspects of the interview results. The scale of 1–5 indicates low to high intensity. Based on their level of knowledge about myths, the older generation has a high level of knowledge about folklore and myths that have been passed down orally and are still preserved. The Younger Generation demonstrates low to limited knowledge due to the lack of storytelling practices and the influence of modern culture. Based on participation in traditional rituals, the Older Generation often actively participates in traditional ceremonies. Meanwhile, the Younger Generation tends to rarely participate or only attend passively without symbolic understanding. Based on perceptions of ecological values in myths, the Older Generation has a strong perception that myths contain environmental conservation values. Conversely, the Younger Generation views them as weak and sees them merely as traditional stories without ecological relevance.

**Table 3** Qualitative comparison between the old and young generations.

Aspects	Old Generation	Young Generation
Level of knowledge about myths	5	1
Participation in traditional rituals	4	2
Perception of the ecological value of myths	4	2
Level of engagement with conservation practices	4	2
Openness to integration between traditional knowledge and science	2	5

Based on their involvement in traditional conservation practices, the older generation is still actively protecting sacred areas and carrying out traditional ecological practices. The younger generation tends to be passive and unfamiliar with forms of conservation based on local wisdom. Based on their openness to the integration of traditional knowledge and science, the older generation tends to be limited and sceptical of scientific approaches, while the younger generation is more open to the integration of traditional knowledge and science for environmental conservation. Therefore, there is a significant generational contrast in terms of understanding, involvement, and perception of ecological values in folklore. This highlights the need for a cross-generational approach and the strengthening of cultural value transfer through education and active participation.

**4. Conclusions and Recommendations**

This study highlights the significant potential of Karo folklore, such as *batu renggang*, *batu umang*, and *kak tangkau bunga*, as a value system that supports environmental preservation. These folk tales are more than just entertainment; they contain ecological messages that remain relevant in a modern context. Through these stories, the community is taught the importance of maintaining harmony with nature, which is embedded in their daily lives. They play a crucial role in promoting environmental awareness, especially in communities that still uphold their traditional values. We find that the folklore documentation is still limited, which restricts its integration into modern environmental preservation policies. The lack of documentation has resulted in the younger generation being less exposed to the preservation values contained within them, thus threatening their continuity. This gap in preservation poses a serious threat to the sustainability of both the traditions and the ecological messages they convey. Therefore, documenting and making these folk tales more accessible is crucial to passing



on the wisdom they hold to future generations. Integrating folklores into formal education and environmental policies is a critical strategy for preserving these cultural values. A culturally-based approach, involving active participation from local communities, has proven to be more effective and strategic than top-down policies that may not fully recognize the richness of local culture. This approach can foster a deeper connection between communities and the environmental issues they face, ensuring that cultural heritage and environmental preservation go hand in hand. This study also underscores the importance of developing a concrete framework that links local values with scientific approaches in environmental preservation. For example, the batu umang myth, which teaches the negative impact of human greed on nature, can serve as a valuable resource for environmental education. By incorporating stories like this into educational modules, not only can cultural heritage be preserved, but ecological awareness can also be cultivated among the younger, bridging the gap between traditional wisdom and modern environmental science.

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### Ethical Considerations

The authors of this study confirm that they followed all necessary ethical standards, including using questionnaires.

### Conflict of Interest

The authors declare no conflict of interest.

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