



How the *Sesaji Rewanda* tradition promotes sustainable development through ethnoscientific knowledge?

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ABSTRACT

Background: Global sustainability challenges demand not only technological and policy solutions but also cultural approaches rooted in local wisdom. The *Sesaji Rewanda* tradition at Kreo Cave, Semarang, embodies local ecological wisdom that reflects harmony between humans and nature, however its sustainability values have not been scientifically examined. Therefore, this study seeks to reveal the ethnoscience dimensions and sustainability principles embedded in *Sesaji Rewanda* as a culturally grounded contribution to the achievement of the Sustainable Development Goals. **Methods:** This study applies a qualitative descriptive approach through in-depth interviews, limited field observations, and literature analysis. Data were analyzed using data reduction, presentation, and conclusion drawing. **Findings:** The findings indicate that the *Sesaji Rewanda* tradition supports the achievement of several Sustainable Development Goals. Environmentally, it aligns with SDG 11 by preserving cultural and natural heritage, SDG 12 through the use of natural materials and sustainable food practices, and SDG 15 by promoting biodiversity conservation and ecosystem balance. Socially, it reflects SDG 2 and SDG 3 by strengthening community food security, nutrition, and well-being, while economically, it contributes to SDG 8 by stimulating local economic growth through cultural tourism and the use of local agricultural resources. **Conclusion:** *Sesaji Rewanda* represents an integrated model of local wisdom that strengthens the relationship between humans and nature while promoting sustainable development. It emphasizes the importance of preserving cultural traditions as living knowledge systems that can inspire future sustainability practices. **Novelty/Originality of this article:** This study uniquely explores the ethnoscientific dimensions of the *Sesaji Rewanda* tradition and links them explicitly to the Sustainable Development Goals, offering a new perspective on how local wisdom can serve as a model for culturally rooted sustainability practices.

KEYWORDS: ethnoscience; local wisdom; *Sesaji rewanda*; sustainable development.

1. Introduction

In an era of globalization and modernization characterized by rapid technological advancement, the fast flow of information, and increasing human mobility, the world has undergone major transformations in various aspects of life. Industrial development, digitalization, and global economic integration have opened new opportunities for growth and prosperity, while also reshaping how people work, interact, and meet their daily needs (Matthess & Kunkel, 2020; Yaqub & Alsabban, 2023). However, these advancements have also brought consequences for patterns of consumption, lifestyles, and the relationship between humans and the environment, which have become increasingly complex. Modernization drives efficiency and innovation, yet at the same time presents new

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challenges in maintaining a balance between material progress and social as well as ecological sustainability. Therefore, this global dynamic calls for renewed reflection on the direction of development, ensuring that the progress achieved today does not compromise the sustainability of life in the future.

Over the past few decades, the world has faced increasingly complex challenges in achieving sustainable development that encompasses environmental, social, and economic dimensions. Climate change, biodiversity loss, environmental degradation, and widening social and economic inequalities have threatened both ecosystem balance and human well-being. These challenges are not isolated phenomena but interconnected crises that influence one another in a global system, where environmental decline often exacerbates poverty and social instability, and in turn, social inequities accelerate ecological degradation. Such interdependencies highlight that the conventional development paradigm, which prioritizes economic growth while overlooking environmental and social considerations, is no longer sufficient to ensure the continuity of life on Earth. In response to these global issues, the United Nations (UN) adopted the Sustainable Development Goals (SDGs) in 2015, comprising 17 global objectives aimed at ending poverty, protecting the planet, and ensuring prosperity for all by 2030 (United Nations, 2015). This agenda underscores that sustainability depends not only on technological innovation and policy reform but also on inclusive participation, ethical governance, and a cultural transformation that fosters awareness of humanity's shared responsibility toward nature and future generations.

Amid global efforts to achieve sustainable development as outlined in the Sustainable Development Goals, local wisdom plays a crucial yet often underappreciated role in shaping community-based approaches to sustainability. While global agendas tend to emphasize universal targets and technological solutions, local wisdom offers context-specific strategies that are deeply rooted in cultural values, environmental understanding, and social cohesion. It not only preserves cultural and spiritual values but also embodies ecological knowledge derived from generations of human experience in adapting to their environment (Pratama et al., 2024). This accumulated wisdom often reflects an integrated worldview in which humans, nature, and the spiritual realm coexist in a dynamic balance, forming a moral foundation for environmental stewardship. Within local wisdom lie forms of ethnoscience, a system of scientific knowledge rooted in cultural practices and transmitted across generations through oral traditions, rituals, and everyday practices. The indigenous science embedded in local wisdom needs to be examined scientifically so that traditional knowledge can be reconstructed, validated, and contextualized within modern scientific frameworks (Setiawan et al., 2017; Suarmika et al., 2020). Such integration allows for the development of hybrid knowledge systems that are both scientifically rigorous and culturally grounded. The ethnoscience approach thus bridges the relationship between culture and science, highlighting how communities understand, explain, and maintain harmony with the natural phenomena around them, while also providing an alternative epistemology that challenges the dominance of Western-centric scientific paradigms in addressing sustainability issues.

The principles embodied in local wisdom are inherently aligned with the essence of sustainability, which emphasizes maintaining environmental balance, strengthening social cohesion, and ensuring the economic resilience of communities. In many instances, traditional practices rooted in ethnoscience have shown how local communities have naturally established harmony between humans and their environment long before the modern concept of sustainable development emerged. For example, the people of Kampung Naga in Tasikmalaya maintain a nature-based lifestyle by rejecting the use of electricity and preserving a clear boundary between the forbidden forest and residential areas, which serves as a natural conservation zone (Retnowati & Kurniasih, 2019; Qisti & Ribawati, 2025). In Kampung Cirendeu, Cimahi, food sovereignty is sustained through the tradition of processing cassava as the main source of carbohydrates, allowing the community to remain resilient amid national food crises (Fitriyani et al., 2025; Primasongko & Raihandhany, 2022). Meanwhile, the Subak system in Bali reflects solidarity and community-based governance in the sustainable management of water resources and agriculture (Ardana et

al., 2024; Zen et al., 2024). These various examples illustrate that local knowledge and ethnoscience have long served as the foundation of Indonesian communities in maintaining ecological balance, reinforcing social relations, and sustaining economic livelihoods in an integrated manner. Therefore, integrating local wisdom into global sustainability discourses and policies is not merely an act of cultural preservation but also a strategic effort to expand the knowledge base and develop more contextual, equitable, and human-centered solutions.

Indonesia is widely recognized as a nation rich in cultural and traditional diversity, where each region possesses distinctive systems of local knowledge imbued with profound philosophical meaning. Within this context, Javanese culture holds a significant position as one of the cultural centers capable of integrating spiritual, social, and ecological values into everyday life. The Javanese people embrace a cosmological worldview that positions humans as an integral part of the universe rather than as its rulers. The principle of "*Memayu Hayuning Bawana*", for instance conveys a moral message to maintain harmony among humans, nature, and the Creator (Nabillah & Yusuf, 2025). This worldview is manifested through various cultural practices such as rituals, offerings, and traditional ceremonies that serve both ecological and social functions. One such example is the *Sesaji Rewanda* tradition at Kreo Cave, Semarang, Central Java, which is held annually as an expression of gratitude through respect for monkeys as part of the ecosystem that must be preserved in balance. This tradition not only reflects the spiritual dimension of Javanese society but also represents a system of local knowledge that has been passed down through generations, teaching the importance of harmony between humans and nature. The values embodied within this practice demonstrate an ecological awareness that arises from lived experiences and continuous interaction with the environment. Thus, *Sesaji Rewanda* can be understood as a manifestation of ethnoscience that embodies the principles of sustainability, where cultural practices are not merely rooted in spiritual beliefs but also have tangible implications for ecosystem conservation, social identity strengthening, and the intergenerational transmission of ecological values.

Research on *Sesaji Rewanda* remains very limited, both in terms of cultural documentation and in-depth scientific investigation. Most previous studies have focused primarily on its ritualistic, historical, or religious aspects without exploring the underlying system of local knowledge that informs the practice. However, behind this cultural procession lies a representation of ecological and social knowledge transmitted across generations as a form of ethnoscience, reflecting how local communities construct their scientific understanding of nature and life. This research gap presents an important opportunity for further exploration, particularly in relation to sustainability values that have become a global concern. To address this gap, the present study aims to examine the ethnoscientific dimensions and sustainability principles embedded in the *Sesaji Rewanda* tradition. The study focuses on revealing how the local knowledge of the Javanese community is reflected through this tradition as an expression of harmony between humans and nature. Furthermore, this research seeks to highlight that the local wisdom embodied in *Sesaji Rewanda* can serve as an alternative model for community-based environmental management aligned with the Sustainable Development Goals (SDGs). Through this approach, the study is expected to contribute not only to the preservation of traditional knowledge but also to the integration of local wisdom and modern science in realizing development that is culturally grounded and sustainability-oriented.

2. Methods

This study employs a descriptive qualitative method to explore the ethnoscientific dimensions and sustainability values embedded in the *Sesaji Rewanda* practice at Kreo Cave, Semarang City. Accordingly, the researcher provides a comprehensive description of the phenomenon by analyzing social events and activities obtained through observation, interviews, and documentation. Primary data were collected through in-depth interviews with key informants, including the *juru kunci*/site guardian of Kreo Cave and local

community leaders, as well as limited field observations in the monkey sanctuary area. Secondary data were gathered from scientific articles, cultural archives, local government reports, and various online sources relevant to *Sesaji Rewanda*, ethnoscience, and sustainable development.

The collected data were analyzed using the interactive analysis model proposed by Miles & Huberman (1994), which consists of three main stages: data reduction, data display, and conclusion drawing. In the data reduction stage, information obtained from interviews, observations, and literature studies was selected, categorized, and simplified to highlight key themes related to ethnoscientific dimensions and sustainability values within the *Sesaji Rewanda* practice. Data validity was ensured through source and methodological triangulation by comparing interview results, field observations, and findings from relevant literature on local knowledge and cultural practices. The data display stage involved organizing the findings into descriptive narratives that illustrate the interconnections among ethnoscientific knowledge, cultural values, and sustainability practices reflected in the tradition. In the final stage, conclusion drawing, the researcher interpreted emerging patterns and meanings and linked them to ethnoscience theories and sustainability concepts to develop a comprehensive understanding of the contribution of *Sesaji Rewanda*'s local wisdom to environmental conservation and socio-cultural balance.

3. Results and Discussion

3.1 *Sesaji Rewanda*

Sesaji Rewanda is one of the cultural traditions and expressions of local wisdom that the people of Semarang City take great pride in. As noted by Fauzia (2022), the word "*Sesaji*" refers to offerings presented to ancestral spirits or divine powers, while "*Rewanda*" originates from the Javanese term meaning "monkey" or "ape". Thus *Sesaji Rewanda* is a traditional ritual in which offerings are dedicated to the monkeys inhabiting Kreo Cave, located in Kandri Village, Gunung Pati District, Semarang City. This ceremony is held as a form of gratitude and respect for the harmony that exists between humans, animals, and nature. Amid the hustle and bustle of Semarang as the capital of Central Java, the *Sesaji Rewanda* tradition stands as a cultural marker and a reminder of the community's ancestral values that continue to be preserved despite modernization. The ritual reflects how spiritual belief and ecological awareness are intertwined in Javanese cosmology, where every element of nature is perceived as possessing life and spiritual significance. Each stage of the *Sesaji Rewanda* procession embodies deep philosophical meaning, expressing gratitude to God, reverence for nature, and acknowledgment of human dependence on the environment. As emphasized by Ekowati & Sunarto (2019), *Sesaji Rewanda* represents a symbolic act of thanksgiving to the Creator for the natural abundance and beauty of Kreo Cave. Through this annual tradition, the local community not only strengthens social solidarity but also reaffirms the importance of living in harmony with all creatures as part of a sacred ecological balance.

A tradition or traditional belief in local wisdom is often closely intertwined with history and the mystical things surrounding it (Prabowo & Sudrajat, 2021). The same holds true for the *Sesaji Rewanda* tradition, which cannot be separated from the legendary story surrounding the origin of Kreo Cave. The word "Kreo" derives from the Javanese term *Mangreho*, meaning "to guard" or "to take care of." This etymology reflects the community's belief that the monkeys inhabiting the area act as the guardians of the cave and its surrounding environment. Over time, the name Kreo was attached to the cave located in Kandri Village, Gunung Pati District, and the presence of the monkey population became an inseparable part of its cultural identity (Fauzia et al., 2022; Maria, 2015). *Sesaji Rewanda* is seen as a symbol of respect for the monkey ancestors who are said to have helped Sunan Kalijaga when he took teak wood to make the central pillar (*soko guru*) in constructing the Great Mosque of Demak. From this story emerged the sacred connection between the people

of Kandri and the monkeys of Kreo, symbolizing loyalty, gratitude, and mutual protection between humans and nature.



Fig. 1. *Sesaji* Rewanda parade
(Antara News, 2025)

Sesaji Rewanda has become an annual tradition carried out by the people of Talunkacang, Kandri Village, and is considered one of the most enduring cultural heritages of Semarang. Although no one can determine precisely when the ritual was first held, the community believes that it has been performed continuously since the time Kreo Cave was first discovered (Qomariyah, 2016). The ceremony takes place every third day of the month of Shawwal in the Islamic calendar, following the ancestral guidance passed down from generation to generation.

This timing reflects the community's adherence to traditional customs, symbolizing gratitude after the completion of the fasting month of Ramadan. In recent years, *Sesaji* Rewanda has also evolved in form and purpose. Recognizing its strong cultural and touristic potential, the Semarang City Government began in 2010 to elevate the event's visibility by designating an additional celebration on the seventh day of Shawwal. Consequently, the tradition is now held twice each year with different emphases. The ritual on the third day remains sacred and exclusive, attended only by traditional elders and local stakeholders, while the seventh-day event takes the form of a public festival featuring cultural performances and drawing visitors from various regions. Despite these adaptations, the essence, meaning, and ceremonial structure of *Sesaji* Rewanda remain faithful to its ancestral origins, preserving its spiritual and ecological significance.

Sesaji Rewanda begins with a carnival from Kandri Village and continues to Kreo Cave, approximately 800 meters away. In the carnival, there are four accompanying lines. The first row consisted of four people wearing red, white, black, and yellow monkey costumes and make-up. The second row is a replica of teak wood which is said to have been taken by Sunan Kalijaga for the pillars supporting the Great Mosque of Demak. The third row includes a traditional fruit mountain, secondary crops, golong rice (*sego kethek*), and traditional ketupat and lepet mountains. In the fourth row are the dancers who will complete the sequence of events. After the mayor of Semarang opened the event, it continued with performances of several traditional dances, such as the Gambyong Dance, *Semarangan* Dance, and *Wanara Parisuka* Dance (Aini, 2023). After the dance is finished, the mountains are distributed. Traditional fruit and secondary crops mountains will be placed near the cave which will then be attacked by monkeys, while the other two mountains will be fought over by the people present.

3.2 Ethnoscience of *Sesaji* Rewanda

3.2.1 Teak wood replica in carnival ceremonies

In the *Sesaji* Rewanda procession, the leading group of participants carries replicas of teak wood, symbolizing the sacred timber that Sunan Kalijaga and his disciples once

transported to build the soko guru or main pillar of the Great Mosque of Demak. This element is not merely a ritual ornament but a reflection of the community's ethnoscientific knowledge of natural materials. Teak (*Tectona grandis*) is renowned for its durability, resistance to fungal decay, and ability to withstand pest attacks and extreme weather conditions, qualities that have made it a preferred material in architecture and furniture craftsmanship for centuries (Bastian & Rahadiyanti, 2023; Fauzia et al., 2022; Hadjib et al., 2020). By selecting teak as the central symbol, the tradition reveals the Javanese people's empirical awareness of ecological suitability and material strength. Thus, the teak wood replica embodies both technological wisdom and spiritual meaning, uniting science, faith, and sustainability within a single cultural expression.



Fig. 2. Teak wood replica in *Sesaji* Rewanda procession (Antara News, 2025)

3.2.2 Traditional fruit mountain

The traditional fruit mountain (*gunungan buah*) presented in the *Sesaji* Rewanda ceremony serves as one of the central ritual offerings. It is composed of various fruits harvested by the Gunung Pati community and intentionally dedicated to the colony of long-tailed macaques inhabiting Kreo Cave. Beyond its ritualistic aspect, this offering symbolizes gratitude for the fertility of the land and the harmonious coexistence between humans and other living beings. The people of Gunung Pati regard the fruits as manifestations of natural abundance and divine blessing bestowed by the Creator. From an ethnoscientific perspective, this practice reflects a community-based understanding of biodiversity as an essential element of ecological balance. This interpretation aligns that biodiversity underpins human survival and ecosystem sustainability. Furthermore, as noted by Adom et al. (2019), the abundance of biological resources holds both intrinsic value supporting ecological harmony and anthropocentric value, contributing to human welfare and economic stability through conservation practices.



Fig. 3. Fruit mountain offered to monkeys at Kreo Cave (Antara News, 2025)

3.2.3 Traditional crops mountain

Gunung Pati farmers always cultivate secondary crops as their primary source of livelihood and additional livelihood. Crops are seasonal staple crops without waiting too long to harvest, such as nuts, tubers, corn, and so on (Fadlisyah et al., 2022; Yoanta & Yuniarini, 2022). Within the *Sesaji* Rewanda ceremony, the mountain of secondary crops (*gunungan palawija*) becomes a symbolic representation of prosperity, fertility, and human dependence on the earth's productivity (Fauzia et al., 2022). From an ethnoscientific standpoint, this practice reflects the community's empirical understanding of sustainable agriculture and adaptive land management. Secondary crops not only maintain soil fertility and prevent erosion on sloped terrains but also diversify food sources and economic resilience. Scientifically, these crops are known for their high nutritional value and potential contribution to local food industries (Fadlisyah et al., 2022; Nath et al., 2023). Hence, their inclusion in ritual offerings embodies both cultural gratitude and ecological wisdom rooted in traditional farming systems.



Fig. 4. Crops mountain offered to monkeys at Kreo Cave (Antara News, 2025)

3.2.4 Traditional golong rice mountain

Golong rice (*sego golong* or *sego kethek*), is rice containing rice, a side dish of salted fish, tempe, tofu, and various vegetables that are boiled and served with grated coconut and then wrapped in teak leaves. This rice is not only served to monkeys, but public can enjoy golong rice by fighting over it. People believe that by participating in the fight and getting golong rice, they will be blessed when they consume it and will be blessed with good fortune in their lives. The research results of Fauzi et al. (2022) state that *golong* rice contains nutrients such as protein, fiber, vitamins, and minerals from each food ingredient so it is healthy for the body.



Fig. 5. Golong rice mountain prepared for distribution to the community and visitors (Antara News, 2025)

3.2.5 Traditional kupat lepet montain

Kupat or *ketupat* is a food made from rice and wrapped in woven coconut leaves. *Kupat* is made from rice wrapped in woven coconut leaves, while *lepet* is prepared from sticky rice mixed with grated coconut and also wrapped in coconut leaves. Although similar in appearance, the two foods carry distinct symbolic meanings in Javanese culture. The term *kupat* originates from the phrase “*ngaku lepat*”, meaning “to confess one’s mistakes,” while *lepet* derives from *silep* and *rapet*, meaning “to bury and bind tightly,” which implies reconciliation and togetherness (Fauzia et al., 2023; Wardana et al., 2023). Thus, the mountain of *kupat* and *lepet* represents both the celebration of Shawwal, coinciding with Eid al-Fitr and the spirit of purification and renewal that follows Ramadan. From a scientific standpoint, both foods contain carbohydrates that serve as primary energy sources (Rahmadi et al., 2019; Sadewo et al., 2022). The use of coconut leaves as wrapping is also ecologically meaningful, functioning as a natural barrier against contamination while promoting biodegradable, sustainable food packaging (Sari et al., 2019). Hence, the *kupat* and *lepet* mountain embodies an integration of moral reflection, ecological awareness, and nutritional knowledge, reinforcing the ethnoscientific dimension of the *Sesaji Rewanda* tradition.



Fig. 5. Kupat lepet mountain prepared for distribution to the community and visitors (Antara News, 2025)

3.2.6 Tumpeng rice

The word of *tumpeng* in Javanese culture describes rice served in a cone shape accompanied by *pitu*/seven kinds of side dishes which is meant as “*Pitulungan*” which means asking God for help. The placement of *Tumpeng* and its side dishes symbolize the mountain and the fertile land around the mountain (Krisnadi, 2020). The cone-shaped *Tumpeng* rice is associated with mountains, a place that is considered sacred by the Javanese people because it has a close connection with the sky and heaven. The people believe that this towering rice is the hope that human life will continue to improve. Meanwhile, the land around the mountain is symbolized by side dishes and several vegetables as a symbol of true prosperity. *Tumpeng* rice is served during the traditional *Sesaji Rewanda* ritual as a form of gratitude to God and respect for the “monkey” ancestors who protect the environment around Kreo Cave on the orders of Sunan Kalijaga. From a scientific perspective, when making *tumpeng* rice, one often pays attention to nutritional balance, such as rice as a source of carbohydrates, side dishes as a source of protein, and vegetables such as tomatoes, cucumbers, or lettuce which contain high levels of fiber and minerals. Apriliani et al. (2014) also stated that the use of turmeric to produce a yellow color in *tumpeng* rice contains beta-carotene which acts as a precursor for vitamin A.

3.2.7 Carnival participants in monkey costumes and make-up

In the *Sesaji Rewanda* tradition, carnival participants appear in vibrant red, white, yellow, and black monkey costumes and make-up, representing the legendary monkeys who helped Sunan Kalijaga move the teak log from the cliffs of the Kreo Cave forest. Each color carries symbolic meaning rooted in local beliefs: encountering a white monkey signifies good fortune, a yellow one symbolizes longevity, a red one warns of potential misfortune, and a black one is believed to bring bad luck. While these interpretations are mythical, they reveal how the community translates natural diversity into moral and spiritual codes. From an ethnoscientific perspective, this symbolism mirrors local awareness of species variation within primate populations. Scientifically, the monkeys correspond to several taxa such as *Presbytis melalophos* (white monkey), *Presbytis rubicunda* (red monkey), *Presbytis johnaspinalli* (yellow monkey), and *Macaca nigra* (black monkey) (Nardelli, 2015; Neumann et al., 2013; Rahmadinie et al., 2023; Smith et al., 2013). Thus, the carnival reflects a fusion of ecological observation, artistic representation, and spiritual interpretation within the community's living ethnoscience.



Fig. 6. Carnival participants in monkey costumes and make-up
(Antara News, 2025)

3.2.8 Offering to monkeys

People believe that monkeys are creatures with a special relationship with the supernatural world. So offerings are made to protect people from evil spirits. Giving offerings is considered a form of respect and gaining prosperity. If we study it scientifically, the monkeys that inhabit Kreo Cave are mostly of the *Macaca fascicularis* species. According to Farida et al. (2010) explained that to obtain its food, *Macaca fascicularis* relies on what is available in nature or given directly by humans. Thus, offering to monkeys is a form of human interaction with other living creatures. This supports Alhidayatillah & Yazid (2017), who state that the interaction between living creatures and the environment and living creatures with other living creatures is an effort to maintain a natural balance. Besides that, *Macaca fascicularis* plays a role in sowing seeds and being an indicator of environmental health (Hakim et al., 2021; Ramadhan et al., 2020). Thus, the existence of monkeys needs to be preserved because they play a significant role in the environment and human survival.

3.3 The dimensions of sustainability reflected in *Sesaji Rewanda*

3.3.1 Environmental aspect

The *Sesaji Rewanda* tradition reflects a profound form of environmental awareness that aligns with several goals of the United Nations Sustainable Development Goals, particularly those emphasizing the protection of cultural heritage and natural ecosystems.

This tradition strongly supports SDG 11(sustainable cities and communities), especially target 11.4, which aims to strengthen efforts to protect and safeguard the world's cultural and natural heritage. As a local practice that has been preserved for centuries, *Sesaji Rewanda* embodies an integrated form of cultural and natural conservation. Through this annual ritual, the Javanese community of Gunung Pati not only sustains its ancestral values but also maintains the natural environment of Kreo Cave and its surrounding forest ecosystem. The preservation of such cultural landscapes illustrates how intangible heritage can serve as a medium for promoting ecological balance and sustainable interaction between humans and nature.

Sesaji Rewanda contributes significantly to SDG 15 (Life on Land), particularly target 15.4, which by 2030 aims to ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits essential for sustainable development. The core of the ritual of offering food to long-tailed macaques (*Macaca fascicularis*) represents a living model of in-situ biodiversity conservation. The local community's belief that monkeys are protectors of the forest has indirectly preserved the population of *Macaca fascicularis* in Kreo Cave for generations. From a scientific standpoint, these macaques play vital ecological roles as seed dispersers and bioindicators of forest health, ensuring the regeneration and stability of the mountain ecosystem (Hakim et al., 2021). Thus, what began as a spiritual act of gratitude has evolved into a traditional mechanism that supports biodiversity preservation and ecosystem resilience.

In addition the *Sesaji Rewanda* tradition encourages environmentally friendly consumption patterns that align with SDG 12 (responsible consumption and production), particularly target 12.5, which promotes waste reduction through prevention, recycling, and reuse. The community's continued use of biodegradable natural materials, such as teak leaves for sego kethek and coconut leaves for ketupat and lepet, demonstrates sustainable consumption practices deeply rooted in local wisdom. These traditional methods reduce plastic waste and help mitigate climate impacts, representing a practical example of how cultural customs can contribute to sustainable lifestyles. Thus, the *Sesaji Rewanda* tradition stands as a living example of how indigenous ethnoscientific knowledge can bridge cultural preservation and environmental sustainability. By intertwining ecological awareness with ritual expression, this local practice contributes directly to achieving global environmental goals through culturally grounded actions.

3.3.2 Social aspect

The *Sesaji Rewanda* tradition plays an important social role in supporting community well-being and local food security, directly contributing to SDG 2 (zero hunger) and SDG 3 (good health and well-being). This tradition strengthens the local food system by relying on community-based food production and shared consumption (Hazley et al., 2024), ensuring that the availability of food reflects both cultural and ecological sustainability. The inclusion of offerings such as tumpeng rice, golong rice, kupat, lepet, and mountains of fruits and secondary crops demonstrates how local communities manage food diversity through seasonal and locally available ingredients. This model supports food sovereignty, where people control their own food systems based on traditional knowledge, rather than depending on industrialized production chains. In this sense, *Sesaji Rewanda* functions as a mechanism that sustains the community's capacity to produce, distribute, and consume food in ways that are both socially equitable and environmentally sound.

From an ethnoscientific standpoint, *Sesaji Rewanda* illustrates the application of indigenous knowledge in maintaining nutritional balance and sustainable food consumption. Each element of the food offerings embodies a practical understanding of nutrition: tumpeng and kupat provide complex carbohydrates as an energy source, tempe and tofu offer plant-based proteins, while vegetables and fruits supply vitamins, minerals, and fibers essential for health. The use of natural ingredients and traditional cooking methods minimizes chemical preservatives and promotes organic dietary habits aligned with modern health science (Munekata et al., 2023; Shi et al., 2024). This reflects a local form

of food ethnoscience, where empirical knowledge of food composition and preparation has been transmitted through generations to ensure a balanced and sustainable diet. Thus, the ritual becomes a living laboratory of nutritional wisdom that supports SDG target 2.1, ensuring access to safe, nutritious, and sufficient food for all people year-round.

Beyond its nutritional aspects, *Sesaji Rewanda* contributes significantly to SDG 3: Good Health and Well-being, particularly target 3.4, which aims to promote well-being and reduce non-communicable diseases through prevention and community engagement. The communal nature of the ritual fosters both physical and psychological health by strengthening social bonds and providing spaces for joy, reflection, and collective identity. The act of preparing, sharing, and consuming food together reduces social isolation and nurtures empathy, creating a sense of social cohesion that supports mental resilience. Research by Asatsa et al. (2025) and Pohan et al. (2025) has shown that such collective cultural participation enhances subjective well-being, promotes social trust, and reinforces local solidarity, which are factors that are vital for the long-term health of communities.

Furthermore, *Sesaji Rewanda* embodies the principles of social sustainability through the intergenerational transmission of values and knowledge. The ritual teaches younger generations about mutual respect, gratitude toward nature, and collective responsibility for sustaining both culture and life. By involving families, elders, and youth in its preparation, *Sesaji Rewanda* functions as an informal educational institution that integrates moral, cultural, and ecological learning. This process strengthens community resilience by embedding social norms of cooperation, care, and reciprocity into everyday life. Consequently, *Sesaji Rewanda* not only preserves cultural continuity but also cultivates socially cohesive and health-conscious communities. It stands as a vivid example of how indigenous ethnoscientific traditions bridge cultural identity, nutrition, and public health in the pursuit of sustainable human development.

3.3.3 Economic aspect

The *Sesaji Rewanda* tradition plays a pivotal role in driving local economic development by transforming cultural heritage into a sustainable source of livelihood. This annual ritual attracts large numbers of visitors and tourists to the Kreo Cave area, stimulating the growth of community-based tourism enterprises. The event's festive atmosphere creates seasonal economic opportunities for residents, from food vendors to transport providers and local guides. The influx of visitors directly boosts the informal economy while generating a multiplier effect on supporting industries such as hospitality, transportation, and creative services. In this way, *Sesaji Rewanda* acts as an economic catalyst that empowers the local community to participate actively in the tourism value chain.

Beyond tourism, the economic potential of *Sesaji Rewanda* lies in its ability to promote local agricultural and craft-based industries. The fruit mountains and secondary crop mountains featured in the ritual are sourced from the surrounding Gunung Pati area, which is known for its fertile agricultural land. This not only showcases the richness of local biodiversity but also strengthens local commodity circulation and food security. Farmers gain direct economic benefits from selling their produce for ritual purposes and festival consumption. Moreover, the use of local agricultural products emphasizes sustainable resource management and supports the vision of "local product for local prosperity," aligning with the economic dimensions of SDG 8 (decent work and economic growth).

Another economic dimension of *Sesaji Rewanda* emerges from the growth of micro, small, and medium enterprises that utilize cultural symbols and narratives as creative assets. Artisans, souvenir makers, and culinary entrepreneurs capitalize on the festival's popularity by developing unique products inspired by the tradition, such as monkey-shaped crafts, local snacks, and eco-friendly merchandise. These activities foster a creative economy rooted in local identity and cultural continuity. The participation of youth and women in enterprises also reflects a growing trend toward inclusive entrepreneurship, providing decent work and economic empowerment for marginalized groups (OECD, 2025). This

phenomenon aligns with target 8.3 of the SDG 8, which promotes development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, as well as encourage the formalization and growth of micro, small, and medium-sized enterprises, including through improved access to financial services.

In a broader perspective, *Sesaji* Rewanda exemplifies how traditional culture can serve as an engine of sustainable economic resilience. Its integration of agriculture, tourism, and creative industry promotes circular economic practices while maintaining ecological and cultural integrity. The continuity of this tradition ensures not only cultural preservation but also economic adaptability in the face of modernization and urban expansion. Thus, *Sesaji* Rewanda contributes meaningfully to the realization of SDG 8 by fostering community welfare, promoting inclusive growth, and embedding economic sustainability within the framework of local wisdom.

4. Conclusions

The *Sesaji* Rewanda tradition illustrates how ethnoscientific knowledge embedded in Javanese local wisdom serves as a living model of sustainability that harmonizes human, cultural, and ecological systems. Through its symbolic elements from agricultural produce, traditional food, to wildlife conservation, this practice reflects a deep scientific understanding of nature and community interdependence. It bridges ancestral wisdom with modern sustainability principles, proving that traditional knowledge can play a vital role in addressing today's global environmental and social challenges.

The findings reveal that *Sesaji* Rewanda contributes to the realization of several Sustainable Development Goals particularly SDG 11 on safeguarding cultural and natural heritage, SDG 15 on conserving mountain ecosystems and biodiversity, SDG 2 and 3 on food security and community well-being, and SDG 8 on promoting sustainable economic growth through cultural-based tourism. In light of these insights, this study recommends that policymakers and educators integrate ethnoscientific perspectives into environmental education, cultural preservation programs, and sustainable tourism development, ensuring that local traditions become active agents of sustainability rather than passive cultural artifacts. For future researchers, further interdisciplinary studies, combining ethnography, ecology, and sustainability science are encouraged to deepen the understanding of how indigenous practices like *Sesaji* Rewanda can inform broader sustainability frameworks in Indonesia and beyond.

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Author Contribution

Ghurrotul Bariroh was responsible for the conceptualization of the study, preparation of research instruments, data collection through interviews and field observations, literature review, qualitative data analysis, and drafting of the manuscript. Siti Sriyati contributed by validating the research instruments, guiding the interpretation and analysis of the ethnoscientific findings, providing expert input on the theoretical framework, and offering critical revisions to improve the final manuscript.

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During the preparation of this work, the author used Grammarly to assist in checking grammar accuracy and maintaining academic writing style. After using this tool, the author thoroughly reviewed and edited the manuscript and takes full responsibility for the final content of this publication.

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References

- Adom, J., Umachandran, K., Ziarati, P., Sawicka, B. & Sekyere, P. (2019). The concept of biodiversity and its relevance to mankind: A short review. *Journal of Agriculture and Sustainability*, 12(2): 219-231. <https://infinitypress.info/index.php/jas/article/view/1801>
- Aini, A. N. (2023). Menjaga harmoni alam dan budaya kearifan lokal dalam tradisi *sesaji* rewanda Kecamatan Gunungpati. *CaLLs*, 2(3): 237-242. <https://doi.org/10.30872/calls.v9i2.7808>
- Alhidayatillah, N. & Yazid, Y. (2017). Partisipasi masyarakat dalam pemberdayaan lingkungan. *Jurnal RISALAH*, 28(1), 1-9. <https://doi.org/10.24014/jdr.v28i1.5538>
- Antara News. (2025). *Tradisi sesaji rewanda, pelestarian budaya berbalut wisata*. ANTARA News.
- Apriliansi, A., Sukarasa & Hidayah, H. A. (2014). Kajian etnobotani tumbuhan sebagai bahan tambahan pangan secara tradisional oleh masyarakat di Kecamatan Pekuncen Kabupaten Banyumas. *Scripta Biologica*, 1(1): 76-84. <https://doi.org/10.20884/1.sb.2014.1.1.30>
- Ardana, P. D. H., Suparwata, D. O., Sudrajat, A., Chatun, S. & Harsono, I. (2024). The role of Bali's traditional subak farming system in the preservation of natural and cultural resources. *West Science Nature and Technology*, 2(01), 31-38. <https://doi.org/10.58812/wsnt.v2i04.754>
- Asatsa, S., Ringen, E., Kapitany, R., Ngaari, S.M., Makunda, J., Wangari Gichimu, E., & Lew-Levy, S. (2025). Mourning ritual participation, subjective well-being and prosocial behaviour among the Luhya people of Kenya. *Proceedings Biological sciences*, 292. <https://doi.org/10.1098/rspb.2025.0213>
- Bastian, F. & Rahadiyanti, M. (2023). Kajian pengaruh penggunaan kayu jati sebagai material pembuatan furnitur di era Modern. *Kreasi*, 6(1): 59-62. <https://doi.org/10.37715/kreasi.v6i1.3727>

- Ekowati, Y. & Sunarto (2019). Mitos dalam pertunjukan tari wanara parisuka dalam ritual *sesaji* rewanda di Goa Kreo Semarang. *Imaji*, 17(1): 1-12. <https://doi.org/10.21831/imaji.v17i1.24901>
- Fadlisyah, Abdullah, D., Barus, M. F. A., Riansyah, M. (2022). Forecasting palawija harvest results In North Aceh using multiple linear regression method. *International Journal of Artificial Intelligence Research*, 69(1). <https://doi.org/10.29099/ijair.v6i1.425>
- Farida, H., Farajallah, D. P., Tjitrosoedirdjo, S. S. (2010). Feeding activities of long-tailed Macaques (*Macaca fascicularis*) in Bumi Perkemahan Pramuka, Cibubur, Jakarta. *Biota*, 15(1), 24-30. <https://doi.org/10.24002/biota.v15i1.2642>
- Fauzi, A. R., Rais, W. A. & Wibowo, P. A. W. (2023). The names of asahan as prayer media in the neloni traditional ceremony in Ponorogo Regency (ethnolinguistic study). *Haluan Sastra Budaya*, 7(1): 1-17. <https://doi.org/10.20961/hsb.v7i1.69387>
- Fauzia, S. D., Abdullah, W., & Purnanto, D. (2022). Tradition of *sesaji* rewanda at Goa Kreo as local wisdom. *Indonesian Journal of Applied Linguistics*, 12(1): 255–265. <https://doi.org/10.17509/ijal.v12i1.46537>
- Fitriyani, A., Sundawa, D. & Nur, M. (2025). Sustainable diet of people of Cireundeu Village as social studies learning resource. *JIPSINDO (Jurnal Pendidikan Ilmu Pengetahuan Indonesia)*, 12(1), 77-100. <https://doi.org/10.21831/jipsindo.v11i1.78007>
- Hadjib, Muslich & Sumarni. (2006). Sifat fisis dan mekanis kayu jati super dan jati lokal dari beberapa daerah penanaman. *Jurnal Penelitian Hasil Hutan*, 24 (4): 359-369. <https://doi.org/10.20886/jphh.2006.24.4.359-369>
- Hakim, R.R.A., Rihaldi, Nasution, E. K. & Rukayah, S. (2021). Short communication: First report of long-tailed Macaque (*Macaca fascicularis*) at Logending Beach, Indonesia. *Prosiding Biologi Achieving the Sustainable Development Goals with Biodiversity in Confronting Climate Change*. 285-290. <https://doi.org/10.24252/psb.v7i1.24409>
- Hazley, D., Stack, M. & Kearney, J. M. (2024). Perceptions of healthy and sustainable eating: A qualitative study of Irish adults. *Appetite*, 192. <https://doi.org/10.1016/j.appet.2023.107096>
- Krisnadi, A. R. (2020). Tumpeng dalam kehidupan era globalisasi. *Jurnal Hospitality dan Pariwisata*, 1(2): 38-50. <http://dx.doi.org/10.30813/jhp.v1i2.2462>
- Maria , Christina R. T. & Pawon, A. (2015.) *Sesaji Rewanda, upacara unik bersama monyet*. Semarang: Direktorat Jendral Kebudayaan. <https://share.google/yufzVU7m2mN8mHjC>
- Matthess, M., & Kunkel, S. (2020). Structural change and digitalization in developing countries: Conceptually linking the two transformations. *Technology in Society*, 63. <https://doi.org/10.1016/j.techsoc.2020.101428>
- Miles, M. B., & Huberman, A. M. (1994). *An expanded sourcebook: Qualitative data analysis*. London: Sage Publications.
- Munekata, P., Pateiro, M., Domínguez, R., Nieto, G., Kumar, M., Dhama, K., & Lorenzo, J. (2023). Bioactive compounds from fruits as preservatives. *Foods*, 12. <https://doi.org/10.3390/foods12020343>.
- Nabillah, A. S. & Yusuf, K. (2025). Teofani lingkungan sebagai etika kosmologis: Dialektika prinsip filosofis memayu hayuning bawana dan ekosufisme. *Al-Mada: Jurnal Agama, Sosial, dan Budaya*, 8(3), 534-550. <https://doi.org/10.31538/almada.v8i3.7685>
- Nardelli, F. (2015). A new Colobinae from the Sundiac region: The golden-crowned langur *presbytis johnaspinalli*, sp. Nov. *International Zoo News*, 62(5): 323-336.
- Nath, C. P., Kumar, N., Dutta, A., Hazra, K. K., Praharaj, C. S., Singh, S. S. & Das, K. (2023). Pulse crop and organic amendments in cropping system improve soil quality in rice ecology: Evidence from a long-term experiment of 16 years. *Geoderma*, 430: 1-14. <https://doi.org/10.1016/j.geoderma.2023.116334>
- Neumann, C., Agil, M., Widdig, A. & Engelhardt, A. (2013). Personality of wild male crested Macaques (*Macaca nigra*). *PLOS ONE*, 8(8), 1-10. <https://doi.org/10.1371/journal.pone.0069383>
- OECD. (2025). *Women entrepreneurship in remote areas in Indonesia and the Philippines*. Organisation for Economic Co-operation and Development.

- Pohan, R. A., Ramli, M., Atmoko, A., akbar, S. & Hanurawan, F. (2025). Unveiling gratitude in Javanese Muslim hajatan traditions: Cultural wisdom and social cohesion in the midst of modernization. *Social Sciences & Humanities Open*, 11. <https://doi.org/10.1016/j.ssaho.2025.101321>
- Prabowo, Y. B. & Sudrajat. (2021). Kasepuhan Ciptagelar: Pertanian sebagai simbol budaya & keselarasan alam. *Jurnal Adat dan Budaya*, 3(1), 6-16. <https://doi.org/10.23887/jabi.v3i1.31102>
- Pratama, A., Wahyudin, U., Hatimah, I., Sulistiono, E., Fuadi, D., Ferianti, F., Hidayat, T., Haryanto, H. & Sardin, S. (2024). From tradition to action: The potential of community empowerment through local wisdom for sustainable environmental protection practices. *The Eurasia Proceedings of Educational and Social Sciences*, 271–282. <https://doi.org/10.55549/epess.820>
- Primasongko, A. & Raihandhany, R. (2022). Ethnoagriculture of Cirendeu traditional village, Cimahi, West Java: Local knowledge implementation on agricultural practices. *Genbinesia: Journal of Biology*, 2(1), 23-34. <https://doi.org/10.55655/genbinesia.v2i1.24>
- Qisti, H. M. A. & Ribawati, E. (2025). Praktik konservasi hutan melalui pembagian zona berbasis kearifan lokal oleh masyarakat adat Kampung Naga. *Jurnal Bima : Pusat Publikasi Ilmu Pendidikan Bahasa dan Sastra*, 3(3), 216-227. <https://doi.org/10.61132/bima.v3i3.2718>
- Qomariyah, R. (2016). The philosophical values in Rewanda offerings in Kreo Cave Semarang. *Thesis*. UIN Walisongo Semarang.
- Rahmadi, I., Sugiyono. & Suyatma, N. E. (2019). Processing technology of ketupat: Change of physicochemical and microbiological properties during processing and storage. *PANGAN*, 28(2), 161-170. <https://doi.org/110.3390/app13105900>
- Rahmadinie, S., Rizwar, Darmi, Jarulis & Sipriyadi. (2023). Struktur umur dan sex rasio sub-sub populasi Simpai (*Presbytis Melalophos Melalophos*) pada lanskap campuran dalam kawasan hutan lindung Bukit Daun. *Bioedusains: Jurnal Pendidikan Biologi dan Sains*, 6(2), 645-656. <https://doi.org/10.31539/bioedusains.v6i2.7969>
- Ramadhan, H., Kamal, S., & Ahadi, R. (2020). Karakteristik monyet ekor panjang (*Macaca Fascicularis*) berdasarkan tingkat umur di Tahura Pocut Meurah Intan. *Prosiding Seminar Nasional Biotik*, 22-24. <https://doi.org/10.22373/pbio.v8i1.9423>
- Retnowati., & Kurniasih, E. (2019). Local wisdom is an identity of Kampung Naga (research about potential local wisdom education tourism destination at Kampung Naga, West Java). *Advances in Social Sciences Research Journal*, 6(8), 319-342. <https://doi.org/10.14738/assrj.68.6828>
- Sadewo, F. R., Legowo, M., Listyani, R. H. & Utami, D. (2022). Ketupat tradition in sustainable development goals (SDGs): Local wisdom for improvement of infant's and maternal health quality on Mataraman Javanese peoples at Surabaya. *Metafora: Education, Social Sciences and Humanities Journal*, 6(1), 50-62. <https://doi.org/10.26740/metafora.v6n1.p50-62>
- Sari, Y., Afriyansyah, B. & Juairiah, L. (2019). Pemanfaatan daun sebagai bahan pembungkus makanan di Kabupaten Bangka Tengah. *Ekotonia: Jurnal Penelitian Biologi, Botani, Zoologi dan Mikrobiologi*, 4(2), 48-56. <https://doi.org/10.33019/ekotonia.v4i2.1686>
- Setiawan B., Innatesari D. K., Sabtiawan W. B & Sudarmin. (2017). The development of local wisdom-based natural science module to improve science literacy of students. *Jurnal Pendidikan IPA Indonesia*, 6 (1), 49-54. <https://doi.org/10.15294/jpii.v6i1.9595>
- Shi, J., Xu, J., Liu, X., Goda, A., Salem, S., Deabes, M., Ibrahim, M., Naguib, K., & Mohamed, S. (2024). Evaluation of some artificial food preservatives and natural plant extracts as antimicrobial agents for safety. *Discover Food*. <https://doi.org/10.1007/s44187-024-00162-z>
- Smith, D. A. E., Ehlers, Y. C. & Cheyne, S. M. (2013). Range use and activity patterns of the Red Langur (*Presbytis rubicunda*) in Sabangau tropical peat-swamp forest, Central Kalimantan, Indonesian Borneo. *International Journal of Primatology*, 34, 957-972. <https://doi.org/10.1007/s10764-013-9715-7>

- Suarmika, P., Arnyana, I., Suarni, N. & Marhaeni, A. (2020). Indigenous science: What we can learn? (the exploration of balinese local wisdom for science learning). *Journal of Physics: Conference Series*, 1567. <https://doi.org/10.1088/1742-6596/1567/4/042016>
- United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*. United Nations. <https://sdgs.un.org/2030agenda>
- Wardana, A. A., Setiarto, R. H. B. & Wigati, L. P. (2023). "Lepet": Indonesian traditional food for Eid Al-Fitr celebrations. *Journal of Ethnic Foods*, 10(1), 1-12. <https://doi.org/10.21834/e-bpj.v8iSI16.5244>
- Yaqub, M., & Alsabban, A. (2023). Industry-4.0-enabled digital transformation: prospects, instruments, challenges, and implications for business strategies. *Sustainability*. 15(11). <https://doi.org/10.3390/su15118553>
- Yoanta, A., & Yunitarini, R. (2017). Application of land grouping using self organizing map (Som) in Sumenep Regency. *International Journal of Science Engineering and Information Technology*, 2(1), 56-60. <https://doi.org/10.21107/ijseit.v2i1.6804>
- Zen, I. S., Surata, S. P. K., Titisari, P. W., Rahman, S. A. A. & Zen, S. (2024). Sustaining subak, the balinese traditional ecological knowledge in the contemporary context of Bali. *International Interdisciplinary Conference on Green Development in Tropical Regions*, 1306. 1-12. <https://doi.org/10.1088/1755-1315/1306/1/012034>

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