



Review article

УДК 630*2

DOI: 10.37482/0536-1036-2026-2-9-27

Management of *Repong Damar* Agroforestry in Lampung Province (Indonesia)

Indra Gumay Febryano[✉], PhD, Prof.; ResearcherID: [AAW-4454-2021](https://orcid.org/0000-0001-7242-656X),

ORCID: <https://orcid.org/0000-0001-7242-656X>

Novita Wibowo, Research Scientist; ResearcherID: [OGP-1201-2025](https://orcid.org/0009-0000-1036-8798),

ORCID: <https://orcid.org/0009-0000-1036-8798>

Sugeng Prayitno Harianto, PhD, Prof.; ORCID: <https://orcid.org/0000-0002-9152-3880>

Bainah Sari Dewi, PhD, Assoc. Prof.; ORCID: <https://orcid.org/0009-0008-0638-1138>

Universitas Lampung, Department of Forestry, Bandar Lampung, Indonesia, 35145; indra.gumay@fp.unila.ac.id[✉], wibowonovita2002@gmail.com, sugeng.prayitno@fp.unila.ac.id, bainah.saridewi@fp.unila.ac.id

Received on July 7, 2025 / Approved after reviewing on September 28, 2025 / Accepted on October 1, 2025

Abstract. Community culture in land management plays a vital role in sustainable development and the preservation of traditional agroforestry systems. This study aims to analyze the role of community culture in the management of *Repong Damar* agroforestry within the framework of Community-Based Forest Management in Lampung Province, Indonesia. A qualitative research approach was adopted, utilizing data obtained through participatory observations, in-depth interviews with key stakeholders, and comprehensive documentation studies. The results demonstrate that while Community-Based Forest Management programs aim to provide socio-economic benefits, their success is inextricably linked to the evolving cultural identity and traditional practices of the local community. Current government policies at both central and regional levels are perceived as ineffective in ensuring the long-term preservation of *Repong Damar* agroforestry systems. Consequently, the study suggests that the Regency Government of Pesisir Barat should implement dedicated cultural preservation policies, including the promotion of cultural tourism, to safeguard these unique landscapes. Integrating traditional legal principles, norms, and indigenous institutions into formal regulations is essential for developing a truly sustainable and equitable management model. Such integration ensures that cultural identity remains preserved for future generations while maintaining the ecological balance of the forest. This study concludes that the cultural values of the community are indispensable for the resilience of agroforestry systems. Future research should focus on the intersection of cultural conservation policies and climate change challenges in agroforestry management.

Keywords: agroforestry, forest management, community-based forest management, community forest management, environment, sustainable development, *Repong Damar*

For citation: Febryano I.G., Wibowo N., Harianto S.P., Dewi B.S. Management of *Repong Damar* Agroforestry in Lampung Province (Indonesia). *Lesnoy Zhurnal* = Russian Forestry Journal, 2026, no. 2, pp. 9–27. <https://doi.org/10.37482/0536-1036-2026-2-9-27>



Обзорная статья

Управление агролесоводством Репонг Дамар в провинции Лампунг (Индонезия)

Индра Гумай Февриано[✉], *д-р наук, проф.*; ResearcherID: [AAW-4454-2021](https://orcid.org/0000-0001-7242-656X),

ORCID: <https://orcid.org/0000-0001-7242-656X>

Новита Вибово, *науч. сотр.*; ResearcherID: [OGP-1201-2025](https://orcid.org/0009-0000-1036-8798),

ORCID: <https://orcid.org/0009-0000-1036-8798>

Сугенг Прайитно Харьянто, *д-р наук, проф.*;

ORCID: <https://orcid.org/0000-0002-9152-3880>

Байна Сари Деви, *д-р наук, доц.*; ORCID: <https://orcid.org/0009-0008-0638-1138>

Университет Лампунга, факультет лесного хозяйства, г. Бандар-Лампунг, провинция Лампунг, Индонезия, 35145; indra.gumay@fp.unila.ac.id[✉], wibowonovita2002@gmail.com, sugeng.prayitno@fp.unila.ac.id, bainah.saridewi@fp.unila.ac.id

Поступила в редакцию 07.07.25 / Одобрена после рецензирования 28.09.25 / Принята к печати 01.10.25

Аннотация. Управление земельными и лесными ресурсами играет важную роль в устойчивом развитии провинций Индонезии. Целью исследования является анализ управления лесами на уровне общин – агролесомелиоративная система Репонг Дамар. В основе работы лежат данные, полученные путем визуальных наблюдений, углубленных опросов и анкетирования, а также изучения документации и архивных материалов. Собранные материалы проанализированы для определения роли сообщества в управлении лесами в соответствии с принципами агролесоводства по системе Репонг Дамар. Результаты показывают, что Репонг Дамар – это программа, направленная на обеспечение социально-экономических выгод для вовлеченных в управление сообществ. Государственная политика, как на центральном, так и на региональном уровнях, считается неэффективной в плане сохранения агролесомелиорации Репонг Дамар. Кроме того, сбросить агролесомелиорацию Репонг Дамар также можно путем превращения местности в объект культурного туризма. Культурные ценности следует интегрировать в законы и нормативные акты путем принятия соответствующих правовых принципов, норм и институтов, которые важны для достижения устойчивости и справедливости контроля лесов общинами. Это гарантирует сохранение культурной самобытности сообщества и передачу ее будущим поколениям. Дальнейшие исследования могут быть направлены на изучение политики сохранения культурных ценностей при управлении агролесомелиорацией Репонг Дамар в связи с проблемой изменения климата.

Ключевые слова: агролесомелиорация, агролесомелиоративная система, управление лесами, общинное лесопользование, окружающая среда, устойчивое развитие, Репонг Дамар

Для цитирования: Февриано И.Г., Вибово Н., Харьянто С.П., Деви Б.С. Управление агролесоводством Репонг Дамар в провинции Лампунг (Индонезия) // Изв. вузов. Лесн. журн. 2026. № 2. С. 9–27. <https://doi.org/10.37482/0536-1036-2026-2-9-27>

Introduction

Culture is derived from the Sanskrit word *buddhayah*, the plural form of *budhi* meaning mind or intellect, and is universally composed of language, knowledge systems, social organizations, living tools and technologies, livelihood systems, religious systems, and art [33]. As a complex system that encompasses norms, rules, and customs that develop over the centuries [3], culture is formed from spiritual and material impulses that are essential to the social life of a community [59], and involves the development of a way of life and the cultivation of values as the foundation of society [65]. These values live in the minds of citizens as the highest code of behavior that includes rules, laws, and norms guided by cultural value systems [22], and have a close relationship with beliefs because they reflect values, beliefs, and practices inherited from generation to generation [10, 60, 61].

One of the cultures in land management by the community is agroforestry. The system includes community livelihood activities, which access various sources of income from a single plot of land, such as timber species, as well as other non-timber forest products [48]. This practice is not merely a way to meet food needs; it is an integral part of the cultural heritage that governs the relationship between humans and nature [57]. Such culture can manifest as prohibitions in land management [9]. For example, community members may be prohibited from cutting down sacred trees or opening new land without traditional ceremonies. These restrictions are believed to maintain the ecological balance and prevent potential disasters [40].

Agroforestry is a type of land use by mixing forestry crops (woody plants) with plantation, agricultural or livestock crops [17]. Its role is to maintain the sustainability of natural resources in an area that has benefits for ecological, economic and social aspects [13, 26]. Agroforestry planting patterns are part of Community-Based Forest Management (CBFM). The concept of CBFM places the community as the main actor, while the government and the private sector function as supporters [23]. The government provides necessary regulations and policies while increasing community capacity to strengthen social capital [4, 25]. Meanwhile, the private sector contributes through financial support and technical expertise [44].

CBFM has become a key policy for addressing forest area problems in developing countries [18]. Community involvement not only promotes environmental sustainability but also creates livelihood opportunities [21]. CBFM aims to promote the empowerment of sustainable communities, ecological balance, and recognition of indigenous peoples' rights to their ancestral territories [11]. Forest management must remain within the framework of sustainable principles: economic, social, and environmental functions [37]. CBFM policies have been widely discussed and developed by various parties [8]. CBFM policies empower local communities to manage forest resources and provide tenure rights [66].

One example of CBFM applying traditional agroforestry patterns is *Repong Damar*. The community in Pesisir Barat Regency, Lampung Province, Indonesia, has practiced this system since the 19th century. The term *Repong Damar* refers to dry land overgrown with various productive plants, dominated by *damar* (*Shorea javanica*) from the *Dipterocarpaceae* family. In addition to fruit and timber species of high economic value, various wild plants are preserved within the system. *Damar* trees produce resin that is exported globally [15].

The *Repong Damar* agroforestry system is considered one of the successful sustainable forest management models, because its management pays attention to the sustainability and sustainability of forest resources. This system is participatory and pays more attention to the proportional role of the community around the forest. Its preservation is closely related to the culture of the community in land management, especially in supporting the existence of CBFM. The preservation of community culture in the management of *Repong Damar* agroforestry is very important in sustainable development. Therefore, this study aims to analyze the role of community culture in the management of *Repong Damar* agroforestry within the CBFM framework.

Objects and Methods of Research

Study Area. This research was carried out from March to October 2024 in Pahmungan Village, Pesisir Tengah District, Pesisir Barat Regency, Lampung Province, Indonesia (Fig. 1).

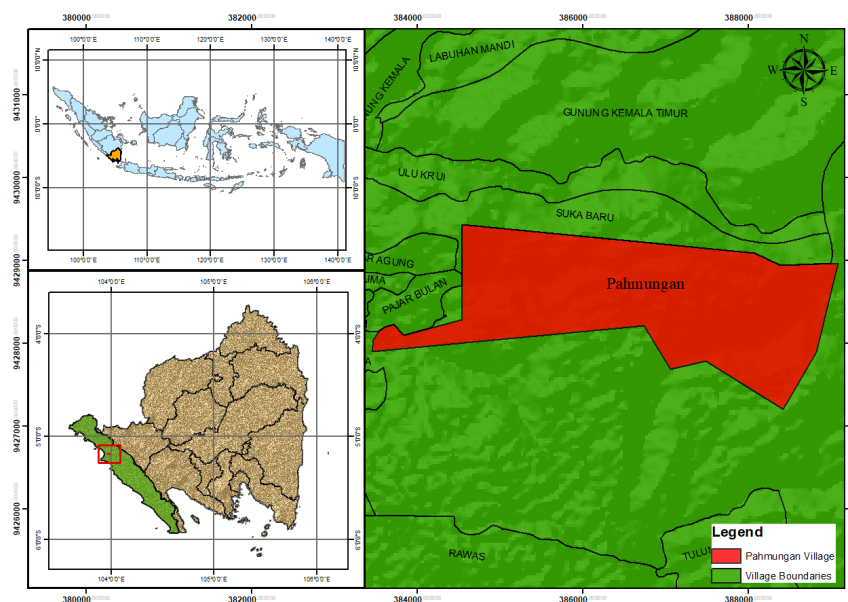


Fig. 1. Map of the research location

Research Approach. The study utilized a qualitative approach, as the research object is specific to the case and unique, focusing on the community-based management of *Repong Damar* agroforestry. These management practices are deeply intertwined with community culture that has persisted for generations. A qualitative framework allows for a profound understanding of the motivations and mechanisms through which communities maintain these agroforestry systems.

Data Collection. Primary data was collected through in-depth interviews and engaged observations, while secondary data was obtained through documentation studies. In-depth interviews were conducted with key informants from local villages to gather factual data regarding the management of *Repong Damar* agroforestry in the village. Participant observation was carried out with the direct involvement of researchers during *Repong Damar* management activities carried out by the local community. Documentation studies included gathering village profile data, activity reports, and information from various media sources (scientific journals, books, and

regulations) to establish a theoretical overview of the research area and its socio-cultural conditions. This method is used to collect data and information related to theory which includes an overview of the research area, population and socio-cultural conditions of the community, as well as data on the farming system at the research site.

Sampling. The selection of sample/key informant in this in-depth interview was performed using purposive sampling, based on their knowledge, experience, and involvement in *Repong Damar* management. Informants included the village head (1 person), community leaders (1 person), and farmers (7 people). The village head provided insights into general conditions and policies, while community leaders represented socio-cultural views. The farmers were selected as direct stakeholders who own and manage *Repong Damar*. These informants are considered representative, because of their involvement in the direct management of the *Repong Damar* land, providing comprehensive information on management practices and practical challenges.

Data Analysis. Data were analyzed qualitatively to explain the cultural elements of *Repong Damar* management based on the framework including language, knowledge systems, social organizations, technology, livelihoods, and religious systems [33]. The analysis process followed several stages:

- a. Collection of raw data from interviews, observations, and documents;
- b. Data transcription of interview recordings;
- c. Coding to identify key thematic elements;
- d. Data categorization to simplify and conceptualize findings;
- e. Drawing temporary conclusions;
- f. Triangulation to verify data validity and obtain objective results;
- g. Final conclusion through qualitative descriptive inference.

Research Limitations. The research focused on a single village with a specific group of key informants. As a qualitative study, it prioritizes in-depth case analysis over broad statistical generalization. Generalizations are made by identifying similarities with related studies rather than through sample-to-population inference. While potential subjectivity may exist in data interpretation, triangulation efforts were implemented to enhance the validity of the findings and strengthen the resulting conclusions.

Results and Discussion

Community Culture in the Management of Repong Damar Agroforestry. The practice of Community-Based Forest Management (CBFM) in the *Repong Damar* agroforestry system reflects the local culture of Pahlungan Village. Its elements consist of knowledge systems, social organization, living tools and technology, livelihoods, and religious systems. According to Pearson et al. (2023), various local and indigenous communities manage their forests using methods passed down from generation to generation to maintain their culture without compromising resources for future generations [49].

Repong Damar agroforestry consists of *damar* (*Shorea javanica*), *duku* (*Lansium domesticum*), *durian* (*Durio zibethinus*), *petai* (*Parkia speciosa*), *jengkol* (*Archidendron pauciflorum*), *tangkil* (*Gnetum gnemon*), *nangka* (*Artocarpus heterophyllus*), etc. The dominant species is *damar*. These plants provide seasonal crops that are the main source of income for the community. The diversity of plant types allows the population to obtain products such as fruits, grains, and wood, enabling a single plot to provide multiple economic benefits. The outputs of this agroforestry system

contribute greatly to improving the welfare of the community. Income is earned sustainably because the harvest period of each type of crop is different, creating a continuous income stream throughout the year. All activities in society usually have aspects of binding values and norms [27, 56], which serve as guidelines for behavior and interaction with nature [45]. Culture is a complex whole comprising knowledge, beliefs, art, morals, and customary laws [72].

The Knowledge System in the Management of Repong Damar Agroforestry. The knowledge system in the management of *Repong Damar* agroforestry is fundamental to human life in small communities, especially where agriculture is the primary livelihood [34]. This system plays a key role in shaping the cultural characteristics of ethnic groups [30] and includes aspects such as understanding nature, traditional technology, and social rules [67]. Each ethnic group possesses distinct knowledge regarding the flora and fauna in its environment [14]. Local knowledge is acquired by the community through interaction with humans and natural resources and is often passed down from generation to generation [31, 41, 62]. This knowledge is a critical factor in natural resource management and ecosystem sustainability [19, 43, 70], often communicated through oral traditions and learning within families [35]. In the management of *Repong Damar* agroforestry, this system is applied during land clearing, nurseries, planting, maintenance, and the enforcement of prohibitions.

The Formation Stages of Repong Damar Agroforestry. Based on the knowledge of the local community, *Repong Damar* agroforestry was formed through several stages:

- *Darak phase* represents the initial stage in establishing a *damar* plantation. This phase begins with clearing the land of shrubs and bushes. During this stage, crop management activities are carried out to provide food supplies for farmers, particularly during the intensive maintenance required in the subsequent garden phase. During this stage, crop management activities, such as cultivating rice and other staple crops, are carried out. These activities not only support land preparation but also serve to provide food supplies for farmers, particularly during the intensive plant care required in the subsequent garden phase. *Rice* (*Oryza sativa*) and staple crops are generally planted only once or twice on the same land. Afterward, farmers shift their focus to managing commercial crops like *pepper* (*Piper nigrum*), *coffee* (*Coffea* sp.), or *cloves* (*Syzygium aromaticum*). The *darak phase* serves as a foundational buffer for the more productive stages that follow. Rooted in ancestral knowledge, local communities hold a strong belief that land in the *darak phase* retains high fertility, ensuring an abundant yield of sap in the future. This belief reflects deeply ingrained traditional values and continues to underpin the management of *Repong Damar* agroforestry systems.

- *Kebun phase* begins when *pepper* (*Piper nigrum*), *coffee* (*Coffea* sp.), or *cloves* (*Syzygium aromaticum*) have dominated the stands. This phase is conceptualized by farmers as a high-productivity phase, because they gain significant opportunities to improve their socio-economic well-being. *Kebun* products are usually not used for subsistence needs but are directed toward significant expenditures such as building houses, financing children's weddings, or buying additional agroforestry land. The community believes that if planting various types of plants on the sidelines of resin with a tight distance, it can increase resin fertility and produce quality sap.

- *Repong phase* is the final phase where the cleared forest land resembles a natural forest. Ecologically, this phase provides soil protection and improves the micro-

climate. This phase begins when the cleared forest land (both primary and secondary forests) will resemble natural forests. Ecologically, this phase has advantages such as soil protection, microclimate evolution, and so on. People begin to name their agricultural land with *repong* when the elements of diversity of perennial crops growing on it have been met; for example, *damar*, *duku*, *durian*, *petai*, *jengkol*, *melinjo*, *jack-fruit*, and so on. The community has the belief that the lush the existing vegetation, the more yield will be obtained, so that in its care, the community only cleans part of it and still leaves the main plant covered by shrubs.

Nursery and Planting of Repong Damar Agroforestry. *Damar* propagation can be done naturally or via the shoot cuttings technique. In natural nurseries, seeds that have reached optimal maturity are carefully selected. Some farmers choose the shoot cuttings method to achieve faster and more uniform results. Once the seeds have developed well, the seedlings are placed in the shade. According to Rivero et al., this shade is important to protect young seedlings from extreme temperature changes [54]. Additionally, shade helps maintain humidity and the microclimate around the seedlings [46]. Farmers adjust the planting distance according to the size of the canopy. Implementation of this system increases land productivity [55, 58], and planting distance is a key factor affecting plant production [74]. While spacing is not strictly fixed, the community believes that planting at a higher density will produce quality resin.

Repong Damar Agroforestry Care and Prohibitions. Maintenance involves weeding activities known as *Ngejukuk*, which is the cleaning of bushes around the *damar* trees. This knowledge comes from society's interaction with nature. After the seeds are planted, the next activity is maintenance. Usually, if the seeds planted are good, then within a week the seeds have begun to grow. This stage is also different from other agricultural systems, in other agricultural systems there are other treatments, such as fertilization and pesticide application. However, in this system, these activities are not carried out. If there is a pest attack, such as leafhopper pests, farmers usually know early because they always observe the growth of resin plants that have grown. The use of herbicides to eradicate weeds has been carried out since the beginning before planting, so that when the resin has grown, farmers usually carry out weeding activities or *Ngejukuk*. *Ngejukuk* is an activity involving cleaning the bushes around the *damar* trees. This knowledge comes from society which comes from interaction with nature [5]. Society has a clear and thorough conception of the characteristics of a plant and of the way in which these plants should be treated in agriculture.

There are strict prohibitions aimed at maintaining environmental balance:

- Prohibition of *Damar* Tree Felling

The community believes that cutting down trees indiscriminately brings misfortune. If a tree is cut accidentally, the owner must replace it by replanting at least ten trees on the same land.

- Prohibition of Selling *Damar* Plantations

A *damar* garden is an important heritage. It can only be sold under exceptional conditions, such as urgent health emergencies. Even then, customary rules stipulate that the original owner should buy the garden back in the future to maintain sustainability.

- Prohibition of Harvesting Immature *Damar* Resin

Tapping trees that have not reached productive age (under 15 years) is prohibited, as it damages the tree trunks and makes them susceptible to disease.

Equipment in Damar Resin Harvesting. The process of harvesting damar resin begins by injuring the resin stem using an axe, then letting the resin come out and harden in a few days (Fig. 2). After the resin hardens, farmers begin to harvest it by dredging the resin notches. *Damar* plants have about 5–15 notches in one tree. Farmers can harvest the resin in small quantities or called *nyukuk*. *Nyukuk* is a resin harvesting activity by taking one to four notches in one tree. The goal is to meet daily needs in small quantities. Furthermore, the dredged resin can be placed into an existing basket or bucket.









Fig. 2. *Damar* resin harvesting

Picking up resin in the upper notch can be done using an *ambon* tool. *Ambon* is shaped like a belt formed from rattan with a length of about 6 meters. This tool functions to help resin farmers climb trees so that they can reach higher places. After the damar resin is collected, farmers can carry it with a *bebalang*. Its function is to accommodate resin as well as to transport damar resin. This is made of rattan of different sizes, ranging from 25 to 100 kg. Its size is adjusted based on the needs of farmers.

In *damar* resin harvesting activities, farmers use various traditional tools, such as: *kapak*, *bakul*, *ambon*, dan *bebalang* (see table). These tools have an important role in the harvesting process, as they help farmers work more efficiently and maintain the quality of *damar* resin. People in farming need technology and tools that can facilitate daily activities. According to [50], the tool in question can be interpreted as technology, namely all instruments used by humans or a society to be able to live. These instruments can be in the form of production tools, means of transportation, weapons, jewelry, and so on.

Equipment and technology are always found in people's lives in helping their daily activities. This results from the natural products of the surrounding environment and is related to the level of knowledge or insight of the creator and its users. According to [53], the wider the community's knowledge, the more complex the living and technological system will be, and the higher the cultural civilization [51] stated the tools and utensils of human life are also influenced by the natural conditions in which they live. This need requires humans to always be creative in creating the system, so that humans are used to cultivating nature by using various tools in daily life.

Damar resin harvesting tools

<i>Damar resin harvesting tools</i>	Appearance	Description
<i>Kapak</i>		<i>Kapak</i> is a <i>damar</i> resin harvesting tool that functions to injure resin stems. Its blade is made of metal such as iron or steel, while the handle is made of wood
Basket/ <i>Bakul</i>	 	<i>Bakul</i> is a traditional container made of rattan weaving, which serves to hold <i>damar</i> resin that has been dredged from tree trunks. Most farmers have now replaced <i>bakul</i> with buckets for practical reasons
<i>Ambon</i>	 	<i>Ambon</i> is a traditional climbing rope made of rattan and has a length of about 6 meters. It serves to help farmers climb <i>damar</i> trees
<i>Bebalang</i>		<i>Bebalang</i> is a traditional tool made of rattan weaving, serving as a container to collect and store resin obtained in large quantities

Repong Damar Agroforestry Livelihood System. The community generates income by harvesting and selling damar resin. Resin sales typically take place at garden-level collectors. The selling process includes weighing, quality checking, and payment. Collectors offer prices ranging from Rp 26,000 to Rp 30,000 (USD 1.61 to USD 1.86) per kilogram, depending on the type and quality of the resin. High-quality resin can be priced as high as Rp 30,000 (USD 1.61) per kilogram, whereas lower-quality resin is valued at approximately Rp 16,000 (USD 0.99). Agroforestry acts as a primary source of livelihood for the community, offering economic benefits through commodities produced from the integration of agricultural crops, trees, and livestock [20, 64, 69].

The resin that has been sold, will then be sorted out. This activity is carried out to separate the resin according to its quality and quality. The results of resin sorting in Pahmungan Village are known to have five qualities consisting of quality A, B, AB, AC and dust. Quality A, which is resin that has a clear yellow color and is large. Quality B, is a resin that is clear yellow in color and has a relatively small chunk size. AB quality, is a resin that is slightly blackish and has a small size. AC quality, which is resin that is black and in the form of small granules. The quality of dust is a resin that has turned into powder. According to Zas et al. [73], the quality of resin can be affected by the quality and way of tapping.

Damar resin harvesting has been proven to provide economic benefits to the community [38]. In addition, the existence of fruit trees, which account for almost a quarter of the entire tree community, also plays a role in contributing additional income, although it is not generated on a monthly basis. In order to increase the income of the surrounding communities who have dependence on forest resources, it is necessary to plan well and consider socio-economic factors and the condition of the forest [1, 47].

Social Organizations in the Management of Repong Damar Agroforestry. *Repong damar* agroforestry can continue to develop in the community, because its management is regulated by customary rules. The regulation stipulates that *Repong Damar* land is generally inherited by the eldest son, based on the belief that the eldest son is believed to have full responsibility for distributing and managing the results of *Repong Damar* to his younger brother and family. According to Brondizio et al. [7], if the right of inheritance is given to the daughter, later they will get married, have a family and follow the husband, where their husband will get the property from his family. To be fairer, the parents distribute their inheritance to the eldest son of the man who is believed to have full responsibility for his family and also his younger siblings. However, if a family does not have the eldest male child, it can be inherited to his grandchildren or the next descendants.

In addition, in its management activities, the community establishes strong social rules in the sale of *Repong Damar* through a kinship system. This rule states that resin must not be sold directly to collectors. In this process, farmers are required to offer their harvest first to nuclear family or close relatives, before making transactions with outside parties. The goal is to strengthen social bonds and ensure that the benefits of produce can be felt by those closest to them. In addition, another reason is that the sales process is easy and the price can be adjusted. This social rule is in line with the research of [39], which explains that the closest and most intimate people are those who belong to the kinship unit, namely nuclear family or close relatives. Thus, this rule not only helps to maintain solidarity in the community but also

strengthens the relationship between members and preserves the tradition of kinship in the community.

Religious System in Repong Damar Agroforestry Management. The community sees *damar* forests as a gift of nature that must be cared for responsibly. In the management of *Repong Damar* agroforestry, the community carries out various religious traditions, including making offerings, praying, and sharing a blessed meal of food [2]. The religious system has an important role in the management of *Repong Damar* agroforestry by the community. This system is related to nature which helps maintain a balance between resource utilization and environmental sustainability [29]. According to [6], in religious systems there is a belief that trees have guardians or spirits that must be respected. Therefore, before clearing forests or planting new ones, people usually perform traditional rituals or ceremonies. The activity aims to ask for permission and protection from ancestors or forest guard spirits.

Beliefs and traditions play a driving role in ecosystem management. This is because it contains values, beliefs, and norms embraced by the community. These values influence how people utilize goods and services from ecosystems, so they are more likely to take actions that take into account sustainability and environmental balance [24, 68]. This practice shows their respect for the forest, while maintaining a spiritual connection with nature [16]. These activities are outlined in the *ngababali* and *ngumbai* traditions as follows:

1. The *ngababali* tradition is a sacred tradition carried out by indigenous peoples before clearing agricultural land or forests. This tradition aims to drive away evil spirits that are believed to inhabit the land. In addition, it is also done to ask permission from the waiters or guardian spirits in the area. Through *ngababali*, the community also asks for protection from dangers, both physical and supernatural, that can arise during the process of land clearing or forest management. Rituals not only serve as a way to maintain safety, but also as a form of respect for nature and spiritual forces that are believed to play a role in maintaining the balance of the ecosystem around the forest. According to [12], each land has a waiter that must be respected so that land clearing can take place without interruption.

2. The *ngumbai* tradition is a traditional ceremony carried out by the community, especially in the context of forest land management such as *Repong Damar* agroforestry. This ritual aims to strengthen the spiritual connection between humans and nature and to ask for blessings from the spirits of forest guards and ancestors. *Ngumbai* is usually carried out before the harvest season or when there are important activities involving land, such as planting or harvesting resin. In this ceremony, the community holds offerings and prayers. They would bring some food and fruits as an offering to nature, and eat together on the mountain. The tradition is carried out to ask for safety, smooth sustenance, and protection from bad things that may happen during activities in the forest. *Ngumbai* is also a form of respect for nature and supernatural forces that are believed to control the balance of the forest ecosystem; so that this practice strengthens beliefs and culture in maintaining the sustainability of natural resources in harmony.

Community Cultural Sustainability in the Management of Repong Damar Agroforestry. The Ministry of Forestry has published Decree of the Minister of Forestry Number 47/Kpts-II/1995 concerning *Kawasan Hutan dengan Tujuan Istimewa* (Forest Areas with Special Purposes). The policy has principles that contain: (1) recognition of the existence of *Repong Damar* which is the result of independent

cultivation by the Krui community and the forest is proven to be able to function as a forest, (2) people who have managed *Repong Damar* can bequeath *Repong Damar* to their children and grandchildren, (3) the community has full rights to *Repong Damar* which is located outside the state forest area. The Lampung Provincial Government regulates the management of *damar* by issuing Instruction of Lampung Governor Number 522/400/04/2006 concerning Preservation of *Damar* Trees, which then becomes a reference for Circular Letter from the Regent of Lampung Barat Number 522/450/ IV.05.3/2006 concerning Restrictions on *Damar* Logging. This was followed by the enactment of Law Number 15 of 2001 concerning *Merek Mengenai Indikasi Geografis*, which was later elaborated in Government Regulation Number 5 of 2007 concerning Geographical Indications. After that, it is enforced Decree of the Regent of West Pesisir Number B/278/KPTS/V.04/HK-PSB/2021 concerning Formation of the Geographical Indication Protection Society for *Damar* (*Shorea javanica*) Pesisir Barat Regency.

The *Repong Damar* agroforestry in Pesisir Barat Regency, Indonesia was recorded to have an area of 99,693 ha in 2018 [36]. Some *damar* trees have been cut down, especially over the past 15 years, due to the low and declining price of *damar* resin. This condition threatens the sustainability of resin-producing crops and triggers people to switch to other commodities, such as palm oil, which are more economically promising. Until now, the above government policies, both at the central and regional government levels, are considered ineffective in the implementation of *Repong Damar* agroforestry conservation [71].

The government, especially Regency Government of Pesisir Barat, can preserve *Repong Damar* agroforestry through a cultural preservation approach. This is considering that if the culture of the community is eroded, even lost, then the identity of the local community will also be lost. A study conducted by [63] shows how the loss of cultural systems in society, such as traditional skills, local ecological knowledge, and social ties, makes culture in a community erode.

Regency Government of Pesisir Barat has not explicitly stated that *Repong Damar* agroforestry is part of the culture of the local community. This is seen in Regulation of the Pesisir Barat Regency Number 9 of 2020 concerning Preservation of Traditional Culture and Promotion of Culture. The regulation states that the preservation of traditional culture in Pesisir Barat Regency is aimed at the following aspects: a) art, b) archaeology, museums and history, c) language and literature, d) traditional clothing, e) makeup, fashion and traditional ceremonies of the Pesisir Barat bride, f) building architecture, g) ancient literature and manuscripts, and h) culinary/typical food. In addition to discussing the preservation of traditional culture, the regional regulation also explains the promotion of culture aimed at the following aspects: a) oral traditions, b) manuscripts, c) customs, d) rites, e) traditional knowledge, f) traditional technology, g) art, h) language, i) folk games, and j) traditional sports. Based on aspects of cultural advancement, *Repong Damar* agroforestry is part of: customs, rites, traditional knowledge and traditional technology.

The preservation of *Repong Damar* agroforestry can also be done by making it an object of cultural tourism. To achieve optimal development results in the tourism sector, a clear vision and mission are needed as a basis for reference for the preparation of policies and strategies, in addition to coordination and integrated cooperation between government, private and community agencies [42]. The development of regional tourism needs to continue to preserve the environment of cultural values and

encourage efforts to improve the quality of the environment, strengthen identity, and still pay attention to the degree of humanity, morality and religion [75]. Through this preservation, the culture of the local community, especially in the management of *Repong Damar* agroforestry, is maintained and can be recognized by the government, so that the identity of the community is preserved [28].

Based on Regulation of the Pesisir Barat Regency Number 3 of 2017 concerning the Pesisir Barat Regency Regional Tourism Development Master Plan, cultural tourism is everything related to tourism, including the exploitation of tourist objects and attractions as well as related businesses in the field that utilize and develop selectively, planned and programmatically, cultural assets of the indigenous people of Pesisir Barat Regency, both values, customs, and physical cultural products as tourist objects and attractions. This regional regulation is an integral part and the development of national tourism and regional development is based on: a) Benefits, namely the optimal utilization of regional potential for tourism activities in the region so that it is effective and effective; b) Preservation, namely preserving regional culture and the richness of *alam* (nature) as a tourist attraction; c) Integration, which is creating arrangements for all tourism interests for the sake of harmony, harmony and balance; d) Sustainable, which is an effort to uphold the preservation and state of nature, culture and resources that are utilized so that the interests of tourism life can be carried out in a sufficiently adequate forum; and e) Science and Technology, which is the application of appropriate science and technology to be able to support tourism development in the region.

The integration of culture into laws and regulations can be done by adopting relevant principles, norms, and legal institutions. For example, the concept of customary rights and customary forests can be accommodated in government policies, by providing space for CBFM, so that its management can be used as a model for sustainable and equitable natural resource management [52]. Therefore, government policies are not only administrative, but also operational and actively involve the community [32]. Thus, the cultural identity of the community can remain alive and be inherited to future generations and indirectly the sustainability of *Repong Damar* agroforestry can be guaranteed. These systems have also proven to be important in maintaining ecological balance, such as maintaining catchment areas and preventing land degradation. Overall, the *Repong Damar* agroforestry system in Pahmungan Village is a clear example of sustainable forest management based on local culture that is able to combine economic, ecological, and social benefits for the local community.

Conclusion

Community-based forest management is a vital component of sustainable development. It focuses not only on land management but is also deeply intertwined with the cultural system of the local community, especially regarding *Repong Damar* agroforestry. This culture is embedded in traditional knowledge systems, social organization, technological tools, livelihoods, and religious systems. To date, government policies at both central and regional levels remain ineffective in ensuring the long-term preservation of this system. The Regency Government of Pesisir Barat should apply a cultural preservation approach to land management to ensure its sustainability. Furthermore, the preservation of *Repong Damar* agroforestry can be enhanced by

promoting it as a cultural tourism object. The integration of cultural values into laws and regulations through the adoption of relevant principles, norms, and legal institutions is essential for providing space for community-based forest management, thereby creating a sustainable and equitable management model. Cultural preservation is critical for maintaining the identity of the community and ensuring its inheritance by future generations. By implementing these policies, the sustainability of *Repong Damar* agroforestry can be secured, providing significant social and economic benefits to local communities. Future research should focus on the analysis of cultural preservation policies in the management of *Repong Damar* agroforestry in the context of climate change.

REFERENCES

1. Adalina Y., Sawitri R. Vegetation Analysis, Physico-Chemical Properties and Economic Potential of Damar (*Agathis dammara*) in Mount Halimun Salak National Park, West Java, Indonesia. *Biodiversitas Journal of Biological Diversity*, 2020, no. 21(3), pp. 1122–1129. <https://doi.org/10.13057/biodiv/d210336>
2. Anderson D., De Souza J. The Importance and Meaning of Prayer Rituals at the End of Life. *British Journal of Nursing*, 2021, no. 30(1), pp. 34–39. <https://doi.org/10.12968/bjon.2021.30.1.34>
3. Asteria D., Alvernia P., Kholila B.N., Husein S.I., Asrofani F.W. Forest Conservation by the Indigenous Baduy Community in the Form of Customary Law. *Journal of Cultural Heritage Management and Sustainable Development*, 2024, no. 14(2), pp. 175–189. <https://doi.org/10.1108/jchmsd-12-2020-0171>
4. Baynes J., Herbohn J., Smith C., Fisher R., Bray D. Key Factors Which Influence the Success of Community Forestry in Developing Countries. *Global Environmental Change*, 2015, no. 35(4), pp. 226–238. <https://doi.org/10.1016/j.gloenvcha.2015.09.011>
5. Berhane A.T. Indigenous Knowledge of Me'en Community Toward Natural Resource Conservation: A Socio-Philosophical Analysis. *An International Journal of Indigenous Peoples*, 2024, no. 20(1), pp. 55–66. <https://doi.org/10.1177/11771801241231638>
6. Boupapanya S., Hongsuwan P. Trees in Lao Myths and Beliefs: Roles and Symbolic Ecological Meanings Through the Aspects of Folklore. *Journal of Ecohumanism*, 2024, no. 3(4), pp. 834–845. <https://doi.org/10.62754/joe.v3i4.3590>
7. Brondizio E.S., Aumeeruddy-Thomas Y., Bates P., Carino J., Fernández-Llamazares Á., Ferrari M.F., Shrestha U.B. Locally Based, Regionally Manifested, and Globally Relevant: Indigenous and Local Knowledge, Values, and Practices for Nature. *Annual Review of Environment and Resources*, 2021, no. 46(1), pp. 481–509. <https://doi.org/10.1146/annurev-environ-012220-012127>
8. Cadman T., Maraseni T., Koju U.A., Shrestha A., Karki S. Forest Governance in Nepal Concerning Sustainable Community Forest Management and Red Panda Conservation. *Land*, 2023, no. 12(2), p. 493. <https://doi.org/10.3390/land12020493>
9. Candiottio L.Z.P., Leite M.D.C. Agroforestry Systems on Brazilian Legal Protected Lands: Permanent Preservation Areas (PPA) and Legal Reservation Areas (LRA). *Asian Journal of Geographical Research*, 2023, no. 6(1), pp. 15–34. <https://doi.org/10.9734/ajgr/2023/v6i1172>
10. Causadias J.M. What Is Culture, Systems of People, Places, and Practices. *Developmental Science*, 2020, no. 24(4), pp. 310–322. <https://doi.org/10.1080/10888691.2020.1789360>
11. Christmas S.K., Hardiyanti M., Prawira S.A. Role in the Forest Village Community-Based Forest Management Sustainable Development. *Journal of Judicial Review*, 2021, no. 23(1), pp. 115–128. <https://doi.org/10.37253/jjr.v23i1.4387>

12. Claridge L., Kobei D. Protected Areas Indigenous Rights and Land Restitution: The Ogiek Judgment of the African Court of Human and Peoples' Rights and Community Land Protection in Kenya. *Орух*, 2023, no. 57(3), pp. 313–324.

<https://doi.org/10.1017/s0030605322000989>

13. Cogné M., Lescuyer G. The Role of Agroforestry in Farmers' Strategies and Its Contribution to the Well-Being of Rural People in Timor-Leste. *Forests, Trees and Livelihoods*, 2024, no. 33(1), pp. 42–67. <https://doi.org/10.1080/14728028.2023.2298986>

14. Cottet M., François A., Moreau C., Lecaude C., Vukelic S., Rivière H.A., Evette A. Knowledge Influences Perceptions and Values of Nature-Based Solutions: The Example of Soil and Water Bioengineering Techniques Applied to Urban Rivers. *Anthropocene*, 2024, no. 45(22), pp. 1–13. <https://doi.org/10.1016/j.ancene.2024.100424>

15. De Foresta H., Kusworo A., Michon G., Djatmiko A. *When a Garden Looks Like a Forest: Typical Indonesian Agroforest – Society Contribution for Sustainable Development*. Bogor, International Center for Research in Agroforestry; Paris, Institut de Recherche pour le Développement, Jakarta, Ford Foundation, 2000.

16. De Pater C., Verschuuren B., Elands B., van Hal I., Turnhout E. Spiritual Values in Forest Management Plans in British Columbia and the Netherlands. *Forest Policy and Economics*, 2023, no. 51(2), p. 102955. <https://doi.org/10.1016/j.forpol.2023.102955>

17. Dmuchowski W., Baczevska-Dąbrowska A.H., Gworek B. The Role of Temperate Agroforestry in Mitigating Climate Change: A Review. *Forest Policy and Economics*, 2024, no. 159, pp. 1–11. <https://doi.org/10.1016/j.forpol.2023.103136>

18. Erbaugh J.T. Responsibilization and Social Forestry in Indonesia. *Forest Policy and Economics*, 2019, no. 109, pp. 1–9. <https://doi.org/10.1016/j.forpol.2019.102019>

19. Fa J.E., Watson J.E.M., Leiper I. Importance of Indigenous Peoples' Lands for the Conservation of Intact Forest Landscapes. *Frontiers in Ecology and the Environment*, 2020, no. 18, pp. 135–140. <https://doi.org/10.1002/fec.2148>

20. Febryano I.G., Sari Y.P., Herwanti S., Bintoro A. Planting Patterns in Rubber Agroforestry (*Hevea brasiliensis*) Developed by the Communities of Menggala Mas Village, Lampung Province, Indonesia. *Folia Forestalia Polonica*, 2024, no. 66(1), pp. 33–45. <https://doi.org/10.2478/ffp-2024-0004>

21. Haggard J., Pons D., Saenz L., Vides M. Contribution of Agroforestry Systems to Sustaining Biodiversity in Fragmented Forest Landscapes. *Agriculture, Ecosystems & Environment*, 2019, no. 283, pp. 1–8. <https://doi.org/10.1016/j.agee.2019.06.006>

22. Gould R.K., Soares T.M., Arias-Arévalo P., Cantú-Fernandez M., Baker D., Eyster H.N., Kwon R., Prox L., Rode J., Suarez A., Vatn A., Zúñiga-Barragán J. The Role of Value(s) in Theories of Human Behavior. *Current Opinion in Environmental Sustainability*, 2023, no. 64. <https://doi.org/10.1016/j.cosust.2023.101355>

23. Gunawan R., Febryano I.G., Bantara I., Yuwono S.B. Social Engineering in the Implementation of Forest and Land Rehabilitation in Girimulyo Village, Lampung Province. *Jurnal Belantara*, 2024, no. 7(1), pp. 111–125. <https://doi.org/10.29303/jbl.v7i1.969>

24. Harakan A., Pelizzo R., Kuzenbayev N. Traditional Beliefs and Electoral Behavior in Indonesia. *World Affairs*, 2023, no. 186(4), pp. 896–924. <https://doi.org/10.1177/00438200231203005>

25. Harly L.N.B. Sustainable Forest Management from the Perspective of Customary Law in Indonesia: A Case Study in the Bayan Community. *International Journal of Social Sciences and Humanities*, 2023, no. 1(1), pp. 32–42. <https://doi.org/10.55681/ijssh.v1i1.324>

26. Herwanti S., Febryano I.G., Zulfiani D. Economic Value Analysis of Community Forest Food Products in Ngarip Village, Ulu Belu Subdistrict, Tanggamus Regency (A Case from Indonesia). *Forestry Ideas*, 2019, no. 25(2), pp. 314–328.

<https://doi.org/10.30598/jhppk.2016.1.2.105>

27. Huang L., Jin C., Pan Y., Zhou L., Hu S., Guo Y., Lindenmayer D.B. Human Activities and Species Biological Traits Drive the Long-Term Persistence of Old Trees in Human-Dominated Landscapes. *Nature Plants*, 2023, no. 9(6), pp. 898–907.

<https://doi.org/10.1038/s41477-023-01412-1>

28. Istiawati N.F., Susilo S., Ruja I.N., Widodo S. Construction of Krui Community Knowledge on Repong Damar Culture in Lampung's West Coast. *IOP Conference Series: Earth and Environmental Science*, 2020, no. 412(1), p. 012005.

<https://doi.org/10.1088/1755-1315/412/1/012005>

29. Janaki M., Pandit R., Sharma R.K. The Role of Traditional Belief Systems in Conserving Biological Diversity in the Eastern Himalaya Eco-region of India. *Human Dimensions of Wildlife*, 2021, no. 26(1), pp. 13–30. <https://doi.org/10.1080/10871209.2020.1781982>

30. Jiao W., Yang X., Li Y. Traditional Knowledge's Impact on Soil and Water Conservation in Mountain Agricultural Systems: A Case Study of Shexian Dryland Stone Terraced System, China. *Ecological Indicators*, 2024, no. 159, p. 111742.

<https://doi.org/10.1016/j.ecolind.2024.111742>

31. Kapelari S., Alexopoulos G., Moussouri T., Sagmeister K.J., Stampfer F. Food Heritage Makes a Difference: The Importance of Cultural Knowledge for Improving Education for Sustainable Food Choices. *Sustainability*, 2020, no. 12(4), p. 1509.

<https://doi.org/10.3390/su12041509>

32. Kiss B., Sekulova F., Hörschelmann K., Salk C.F., Takahashi W., Wamsler C. Citizen Participation in the Governance of Nature Based Solutions. *Environmental Policy and Governance*, 2022, no. 32(3), pp. 247–272. <https://doi.org/10.1002/et.1987>

33. Koentjaraningrat. *Pengantar Ilmu Antropologi*. Jakarta, Rineka Cipta Publ., 2015. 391 p. (In Indonesian).

34. Kuang F., Jin J., He R., Ning J., Wan X. Farmers' Livelihood Risks, Livelihood Assets and Adaptation Strategies in Rugao City, China. *Journal of Environmental Management*, 2020, no. 264, p. 110463. <https://doi.org/10.1016/j.jenvman.2020.110463>

35. Lam D.P., Hinz E., Lang D.J., Tengö M., von Wehrden H., Martín-López B. Indigenous and Local Knowledge in Sustainability Transformations Research: A Literature Review. *Ecology & Society*, 2020, no. 25(1). <https://doi.org/10.5751/ES-11305-250103>

36. Laura C.T., Darmawan A., Hilmanto R. Repong Damar Cover Detection in the Pesisir Barat of Lampung Using Satellite Remote Sensing Imagery. *Jurnal Hutan Tropis*, 2019, no. 7(3), pp. 247–260. <https://dx.doi.org/10.20527/jht.v7i3.7511>

37. Leduc G., Hansson H. Behavioural Factors for Farmers' Adoption of Agroforestry Practices in Sweden. *Sustainable Production and Consumption*, 2024, no. 47, pp. 178–189. <https://doi.org/10.1016/j.spc.2024.03.023>

38. Lee S.M., Kim Y.S., Jaung W., Latifah S., Afifi M., Fisher L.A. Forests, Fuelwood and Livelihoods: Energy Transition Patterns in Eastern Indonesia. *Energy Policy*, 2015, no. 85, pp. 61–70. <https://doi.org/10.1016/j.enpol.2015.04.030>

39. Luo Y., Li Y., Li C., Wu Q. Influence of the Kinship Networks on Farmers' Willingness to Revitalize Idle Houses. *Sustainability*, 2023, no. 15(13), p. 10285.

<https://doi.org/10.3390/su151310285>

40. Marini G.V., Healey J.R., Wong J.L., Stara K., Tsiakiris R., Halley J.M. When Nature Meets the Divine: Effect of Prohibition Regimes on the Structure and Tree Species Composition of Sacred Forests in Northern Greece. *Web Ecology*, 2020, no. 20(2), pp. 53–86.

<https://doi.org/10.5194/we-20-53-2020>

41. Maura M.C.B.P., Iswandaru D., Kuswandono, Fitriana Y.R., Rohman F. Analysis of Community Knowledge on the Conservation of White-Winged Duck (*Asarcornis scutulata*) in Way Kambas National Park. *Jurnal Belantara*, 2024, no. 7(1), pp. 27–40.

<https://doi.org/10.29303/jbl.v7i1.1035>

42. Mir M.A.M., Shelley B., Ooi C.S. Uses of Tourism Resources for Educational and Community Development: A Systematic Literature Review and Lessons. *Tourism Management Perspectives*, 2024, no. 53, p. 101278. <https://doi.org/10.1016/j.tmp.2024.101278>

43. Maulidyna A., Hartawan B.S., Agustin H.N., Irfan A.N., Septiasari A., Utina R., Setyawan A.D. The Role of Local Belief and Wisdom of the Bajo Community in Marine Conservation Efforts. *International Journal of Bonorowo Wetlands*, 2021, no. 11(1), pp. 50–63. <https://doi.org/10.13057/bonorowo/w110105>

44. McGrath D.G., Castello L., Almeida O.T., Estupinan G.M.B. Market Formalization, Governance, and the Integration of Community Fisheries in the Brazilian Amazon. *Society & Natural Resources*, 2015, no. 28, pp. 513–529. <https://doi.org/10.1080/08941920.2015.1014607>

45. Megeirhi H.A., Woosnam K.M., Ribeiro M.A., Ramkissoon H., Denley T.J. Employing a Value-Belief-Norm Framework to Gauge Carthage Residents' Intentions to Support Sustainable Cultural Heritage Tourism. *Journal of Sustainable Tourism*, 2020, no. 28(9), pp. 1351–1370. <https://doi.org/10.1080/09669582.2020.1738444>

46. Noor M., Fan J.B., Zhang J.X., Zhang C.J., Sun S.N., Gan L., Yan X.B. Effects of Shade Stress on Growth and Responsive Mechanisms of Bermudagrass (*Cynodon dactylon* L.). *Journal of Plant Growth Regulation*, 2023, no. 42(7), pp. 4037–4047. <https://doi.org/10.1007/s00344-023-10920-5>

47. Nugraha L.M., Hakim L., Abdoellah O.S., Darmawan A., Winarno B. Socio-Ecological Effect of Transition Landscape Dynamics From Agroforests to Monoculture Plantation in Upper Citarum Watershed. *Jurnal Sylva Lestari*, 2024, no. 12(2), pp. 279–295. <https://doi.org/10.23960/jsl.v12i2.813>

48. Panda L.R., Uniyal A., Kukreti J., Singh N. The Role of Non-Timber Forest Products for Livelihood Diversification in Bundelkhand Region of Uttar Pradesh. *International Journal of Economic Plants*, 2024, no. 11(1), pp. 70–78. <https://doi.org/10.23910/2/2024.5005>

49. Pearson J., Jackson G., McNamara K.E. Climate-Driven Losses to Knowledge Systems and Cultural Heritage: A Literature Review Exploring the Impacts on Indigenous and Local Cultures. *The Anthropocene Review*, 2023, no. 10(2), pp. 343–366. <https://doi.org/10.1177/20530196211005482>

50. Pieper M. Technology as a Strategy of the Human? A Comparison Between the Extension Concept and the Fetish Concept of Technology. *Philosophy & Technology*, 2024, no. 37(1), p. 6. <https://doi.org/10.1007/s13347-024-00697-0>

51. Prigioniero A., Zuzolo D., Niinemets Ü., Guarino C. Nature-Based Solutions as Tools for Air Phytoremediation: A Review of the Current Knowledge and Gaps. *Environmental Pollution*, 2021, no. 277, p. 116817. <https://doi.org/10.1016/j.envpol.2021.116817>

52. Rahayu S., Laraswati D., Permadi D.B., Sahide M.A.K., Maryudi A. Only a Noise? The Role of Non-Governmental Organizations in the Policy Processes of a New Social Forestry Model in Indonesia. *Small-Scale Forestry*, 2022, no. 22(2), pp. 253–270. <https://doi.org/10.1007/s11842-022-09525-9>

53. Redding G. Societal Knowledge Quality as Catalyst for the Competitive Productivity of Technology: One in a Set of Several Universal Processes in Trajectories of Societal Progress. *International Business Review*, 2023, no. 32(6), p. 102096. <https://doi.org/10.1016/j.ibusrev.2022.102096>

54. Rivero R.M., Mittler R., Blumwald E., Zandalinas S.I. Developing Climate-Resilient Crops: Improving Plant Tolerance to Stress Combination. *The Plant Journal*, 2022, no. 109(2), pp. 373–389. <https://doi.org/10.1111/tpj.15483>

55. Roslinda E., Prisila F.W., Mariani Y. The Patterns of Agroforestry and Its Contribution to the Community Income. *Jurnal Sylva Lestari*, 2023, no. 11(3), pp. 543–557. <https://doi.org/10.23960/jsl.v11i3.749>

56. Roux J.L., Konczal A.A., Bernasconi A., Bhagwat S.A., De Vreese R., Doimo I., Winkel G. Exploring Evolving Spiritual Values of Forests in Europe and Asia: A Transition Hypothesis Toward Re-spiritualizing Forests. *Ecology & Society*, 2022, no. 27(4), pp. 1–20. <https://doi.org/10.5751/es-13509-270420>

57. Rozaki Z., Rejeki T.M., Rahayu L., Ramli M.F. Farmers' Food Security in Forest and Peatland Fires Prone Areas of South Kalimantan, Indonesia. *Jurnal Sylva Lestari*, 2023, no. 11(3), pp. 527–542. <https://doi.org/10.23960/jsl.v11i3.770>

58. Samrin S., Millang S., Ridwan Daud M. Land productivity and land equivalent ratio of agroforestry system in Marena Customary Forest, Enrekang Regency, South Sulawesi Province, Indonesia. *Jurnal Sylva Lestari*, 2024, no. 12(2), pp. 532–548. <https://doi.org/10.23960/jsl.v12i2.877>

59. Shiferaw A., Hebo M., Senishaw G. The spiritual ecology of sacred landscapes: Evidence from sacred forests of the Sebat Bête Gurage, Central-South Ethiopia. *Cogent Social Sciences*, 2023, no. 9(1), pp. 1–22. <https://doi.org/10.1080/23311886.2023.2210900>

60. Sharma A., Thakur D., Uniyal S.K. Taboos: aboos: Traditional beliefs and customs for resource management in the Western Himalaya. *Indian Journal of Traditional Knowledge*, 2021, no. 20(2), pp. 575–581. <https://doi.org/10.56042/ijtk.v20i2.29346>

61. Singh H.B., Yaipharembi N., Huidrom E., Devi C.A. Traditional Knowledge, Beliefs, and Practices Associated with Ethnic People of Manipur, North East India in Conservation of Biodiversity. *Traditional Ecological Knowledge of Resource Management in Asia*. Cham, Springer International Publ., 2023, pp. 61–75.

62. Sinthumule N.I. Traditional Ecological Knowledge and Its Role in Biodiversity Conservation: A Systematic Review. *Frontiers in Environmental Science*, 2023, no. 11, p. 1164900. <https://doi.org/10.3389/fenvs.2023.1164900>

63. Sinthumule N.I. Challenges Facing Traditional Ecological Knowledge in the Vhembe District Municipality in Limpopo Province, South Africa. *Social Sciences & Humanities Open*, 2024, no. 10, p. 101027. <https://doi.org/10.1016/j.ssaho.2024.101027>

64. Song B., Robinson G.M., Bardsley D.K., Xue Y., Wang B. Multifunctional Agriculture in a Peri-Urban Fringe: Chinese Farmers' Responses to Shifts in Policy and Changing Socio-Economic Conditions. *Land Use Policy*, 2023, no. 133, p. 106869. <https://doi.org/10.1016/j.landusepol.2023.106869>

65. Suyitno I., Pratiwi Y., Andajani K., Arista H.D. The Cultural Meaning in Ritual Traditions for the Character of Osing People Banyuwangi, Indonesia. *Qualitative Report*, 2023, no. 28(7), pp. 1–18. <https://doi.org/10.46743/2160-3715/2023.6156>

66. Tarun M.T.G., Gumiran I.G., Peñafior B.L. Cultivating Multifaceted Participation in the Community-Based Forest Management (CBFM) Program in Communities of Northern Isabela. *American Journal of Environment and Climate*, 2024, no. 3(2), pp. 91–105. <https://doi.org/10.54536/ajec.v3i2.3262>

67. Varghese J., Crawford S.S. A Cultural Framework for Indigenous, Local, and Science Knowledge Systems in Ecology and Natural Resource Management. *Ecological Monographs*, 2020, no. 91(1). <https://doi.org/10.1002/ecm.1431>

68. Yeshey P., Ford R.M., Keenan R.J., Nitschke C.R. Religious Beliefs and Wildlife Value Orientations Influence Tolerance of Wildlife Impacts in Bhutan. *Human Dimensions of Wildlife*, 2024, no. 29(3), pp. 300–318. <https://doi.org/10.1080/10871209.2023.2234389>

69. Wibowo N., Harianto S.P., Dewi B.S., Febryano I.G. Integration of Local Technology in Damar Damar Harvesting: Case Study of Harvesting Culture in Pahlungan Village, Lampung. *Makila*, 2024, no. 18(2), pp. 325–337. <https://doi.org/10.30598/makila.v18i2.15410>

70. Williams P.A., Sikutshwa L., Shackleton S. Acknowledging Indigenous and Local Knowledge to Facilitate Collaboration in Landscape Approaches – Lessons From a Systematic Review. *Land*, 2020, no. 9(33), pp. 1–17. <https://doi.org/10.3390/LAND9090331>

71. Wulandari C., Rahmawaty, Putra E.T.S., Isnurdiansyah, Rahayu S. Agroforestri Damar Mata Kucing di Lampung dan Agroforestri Kemenyan di Sumatra Utara: Kearifan lokal yang mendukung keberlanjutan kehidupan masyarakat dan lingkungan. *Agroforestri Nusantara*, 2023, vol. 1. Bogor, World Agroforestry (ICRAF). 180 p. (In Indonesian).

72. Yudistira R., Nurcaya N., Julhadi J., Pattiasina P.P.J. The Role of Linguistics and Local Wisdom on Knowing Harmony Between Religions at Tana Toraja. *Muslim Heritage*, 2022, no. 7(2), pp. 409–431. <https://doi.org/10.21154/muslimheritage.v7i2.5023>

73. Zas R., Quiroga R., Touza R., Vázquez-González C., Sampedro L., Lema M. Damar Tapping Potential of Atlantic Maritime Pine Forests Depends on Tree Age and Timing of Tapping. *Industrial Crops and Products*, 2020, no. 157, p. 112940. <https://doi.org/10.1016/j.indcrop.2020.112940>

74. Zhang J., Basso B., Price R.F., Putman G., Shuai G. Estimating Plant Distance in Maize Using Unmanned Aerial Vehicle (UAV). *PLOS ONE*, 2018, no. 13(4). <https://doi.org/10.1371/journal.pone.0195223>

75. Zhao X., Elahi E., Wang F., Xing H., Khalid Z. Sustainable Tourism Development for Traditional Chinese Drama's Intangible Cultural Heritage. *Heliyon*, 2024, no. 10(3), e25483. <https://doi.org/10.1016/j.heliyon.2024.e25483>

Конфликт интересов: Авторы заявляют об отсутствии конфликта интересов
Conflict of interest: The authors declare that there is no conflict of interest