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ENVIRONMENTAL CONSERVATION BASED ON MAMAR SYSTEM AS LOCAL WISDOM OF WEST TIMOR, EAST NUSA TENGGARA

Purpose. To analyze the environmental conservation practices based on the *Mamar* system as local wisdom and related social structures as a mechanism for environmental conservation in West Timor, East Nusa Tenggara.

Results: *Mamar* system has persisted since the 17th century since it is applied with mechanisms and approaches to the needs of local communities for the preservation of natural resources in the long and sustainable term. This system is applied by cultivating land for perennials, food crops, fodder crops, and livestock rearing.. Environmental conservation is implemented on the basis of the local principles such as *Bua*, *Nuni*, and *Bunu*. The local customary regulations were set and supervised by the guards called *Mataf* and *Ketiut Po'an*, in which the individuals who violated the regulations will get a sanction called *Tasane*. By adhering to the local belief system, the community naturally consider that their action in taking a use of natural resources wisely is part of maintaining the sustainability. Besides, the local community also pursue the harmonious relationship with the inhabitants of a particular forest area or spring through ritual ceremonies.

Conclusions: Practically, *Mamar* can be interpreted as an “artificial oasis: built by Amarasi local community in West Timor as a strategy to adapt in the adverse environmental conditions. *Mamar* system sustained the socio-economic and cultural life of the Amarasi community through its’ ecological, economic and social variables. The conservation based on *Mamar* system is carried out and maintained by applying the local values that are authentic, straightforward and measurable in accordance with the situation and conditions of the community

KEYWORDS: *Conservation, Environment, Local Wisdom/ mamar, natural resources*

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Introduction

Mamar can be defined as a mechanism for environmental conservation by local communities in West Timor, East Nusa Tenggara, by applying the rules and local wisdom requirements of their communities. Regarding this matter, to simplify understanding, *Mamar* can be interpreted from practical perspective as an

“artificial oasis” built by Amarasi local communities in West Timor as an adaptation strategy to overcome environmental conditions that do not provide a prosperous life. In addition, the distinction between dry and uncultivated land areas in West Timor, East Nusa Tenggara before and after the *Mamar* system treatment

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Fig. 1 – Dryland Area (Non *Mamar*) in West Timor, East Nusa Tenggara



Fig. 2 – *Mamar* Area in Amarasi, West Timor, East Nusa Tenggara



Fig. 3 – Banana Trees in the *Mamar* System in Amarasi, West Timor, East Nusa Tenggara



Fig. 4 – Livestock Rearing in the *Mamar* System in Amarasi, West Timor, East Nusa Tenggara

can be presented in Fig. 1 and Fig. 2. Furthermore, *Mamar* systems through agricultural conservation, such as banana crops, and livestock rearing in *Mamar* systems can be presented in Figure 3 and Figure 4.

In order to further understanding and reinforce the research limitations, the definition of conservation as intended in this research is an effort to maintain, manage, and use natural resources and ecosystems properly for the long-term benefit of humanity [1]. According to Ataupah (2020), *Mamar* system has existed since the 17th century, or has been applied continuously by local communities in Amarasi sub-district for hundreds of years [2]. Environmental conservation practices based on the *Mamar* system can be found in Sonraen Village, Apraen Village, Sahraen Village and Buraen Village. *Mamar* as a traditional natural resource conservation system, it can be explained that *Mamar* is a popular term among local farming communities in West Timor, East Nusa Tenggara.

Environmental conservation acts based on the *Mamar* system as local wisdom in West Timor, East Nusa Tenggara, are also practiced among other local communities in Indonesia with different names or terminologies. For example, the people of Hatam tribe in the Arfak-Manokwari mountains, Papua, have had the concept of conservation areas since ancient times, which in the local language is called *Igya Ser Hanjop*, which means that they need to preserve the environment. Based on this concept, they have established several norms and sanctions related to forest area utilization and conservation efforts [3]. Moreover, there is local wisdom among the Baduy community in West Java that serves as the basis for their acts to maintain agricultural systems that are balanced with nature and to cultivate sustainable forests. It can also be explained that conservation areas (forests) such as Leuweung Kolot, Leuweung Gede, Leuweung Tutupan, and Leuweung Titipan, especially those in the Baduy Dalam area, are conservation areas that are protected and maintained based on the applicable customary rules called *Pikukuh* [4]. Local community activities in environmental conservation are also conducted by the Banjar indigenous community and Tenganan traditional village in Bali [5]. In Tenganan traditional village in Bali, daily life rules in the community are regulated by *Awig-Awig* (customary village

legislation). In addition, there is local wisdom in Kalimantan in which the environment (especially land and rivers) is known as *Tana Ulen Lepo* and *Ulen Lepo River* [6]. Meanwhile, in Jambi Province, Central Sumatra, the conservation area determined by the local community as a customary forest is called *Rimbo Panghulu*. Whereas in Bengkulu Province, the conservation area set by the local community in the context of environmental conservation is called *Banuang Sakti*, and in West Sumatra, there is a conservation area set by the local community called *Temedak Forest*.

Although *Mamar* as an environmental conservation system based on local wisdom is the same as other regions in Indonesia as mentioned above, the *Mamar* system in West Timor, East Nusa Tenggara has its own distinctiveness because if other natural resource conservation acts based on local wisdom are applied in areas that are relatively fertile with a wet climate, the *Mamar* system is actually applied in the opposite environmental conditions because the practice of environmental conservation based on the *Mamar* system in West Timor, East Nusa Tenggara is applied on a stretch of dry and critical land areas. Regarding environmental conservation acts, it can be stated empirically that the East Nusa Tenggara region is suffering from environmental damage and extinction threats. There were 6,582 ha of forest areas in East Nusa Tenggara that were burned in 2015-2017 due to human activities. These forest fires have further expanded the area of critical land in this region. East Nusa Tenggara has the largest critical land area in Indonesia, which is 1,773,795 ha consisting of 885,155 ha within the forest area and 888,640 ha is outside the forest area related to this matter, it is also stated that East Nusa Tenggara is the watershed area with the least groundwater supply in Indonesia. Evapotranspiration from rainwater in East Nusa Tenggara is only 250 mm/year with an estimated groundwater recharge rate of only 0.4 liters/second/km² [7].

The *Mamar* system is ecologically very important in maintaining soil fertility, water sources (springs) and animal feed consisting of *lamtoro* leaves, banana stems and various other types of animal feed. Similar to social functions, *Mamar* serves as an adhesive for the kinship system and can strengthen social status among local communities in West Timor, East Nusa Tenggara. In addition to its ecological and

social functions, *Mamar* also has an economic function for the lives of rural communities, although this function is still oriented towards a subsistence economy. This is similar to the economic function of conservation where natural resource conservation systems can provide economic incentives to local communities, even if only to fulfill their basic daily needs [8]. Environmental conservation based on the *Mamar* system is also aligned with the Triple Bottom Line concept that prioritizes sustainability and preservation of ecological, economic and social functions [9].

This research was conducted with a qualitative approach in a critical interpretive paradigm. The interpretive paradigm is an attempt to find out the explanation of socio-cultural phenomena based on the perspectives and personal experiences of the people studied [10,11, 12]. In general, the interpretive paradigm is a social system that interprets human behavior directly through observation by researchers. The interpretive paradigm perceives facts as something unique and has a special context and meaning as the core in understanding social meaning [13]. In addition, the interpretive paradigm perceives facts as fluid or non-rigid things that are attached to the meaning system and social facts that exist in the research location [14,15]. This research aims to analyze environmental conservation practices based on the *Mamar* system as local wisdom and related social structures as a mechanism for environmental conservation in West Timor, East Nusa Tenggara.

This research was conducted in Amarasi District, Kupang, East Nusa Tenggara. Amarasi sub-district was chosen as the research location with the consideration that this area is still implementing effective environmental conservation based on the *Mamar* system as local wisdom implemented by the local community in a traditional way and guided by related local structures, and has been practiced from generation to generation. This research was conducted within one year, from March 2020 to February 2021. Based on the method mentioned above, the procedures applied by the researcher in this research are described as follows (a) selecting a sample of the first informants, named Mr. Ataupah and Mr. Neno Siki. Mr. Ataupah is a local Amarasi community leader from Oekabiti Village who understands *Mamar* as a natural resource conservation system in Amarasi. Meanwhile, Mr. Neno Siki is a customary chief or informal leader among the

local community in Amarasi who understands the local structures related to *Mamar* as a natural resource conservation system; (b) subsequent informants were selected based on information from the first informants by following snowball sampling. Depending on their information, the researcher then visits and conducts in-depth interviews to obtain information in accordance with the focus of the research to the next informant; (c) furthermore, to determine the next informant, it continues until a condition where in the process of data collection, the researcher no longer finds variations in information. From a technical perspective, it can be stated that the types of questions asked to each group are different, but the types of questions are the same for the same group. It is intended that the different questions allow researchers to obtain wide-ranging explanations, and various elements and sources about the description of local community behavior in committing natural resource conservation acts using the *Mamar* system and local structures related to the traditional conservation system in Amarasi.

The researcher had to meet Mr. Nenobais as a *Fetor* (descendant of the king) who is concerned with the traditional conservation of natural resources through the *Mamar* system in Amarasi. Furthermore, the data collected can be used as information in explaining phenomena in accordance with the research focus. In order to support and complement the information completely and thoroughly, the researcher continued by visiting other informants. The intended informants are those who come from non-local community elements, such as village government elements and sub-district level government. The detailed informants who will be used as sources for in-depth interviews are 15 people consisting of five groups as follows (a) a group of community leaders consisting of 3 people, including Mr. Ataupah, Mr. Nubatonis, and Mr. Bisingslasi; (b) a group of traditional leaders consisting of 3 people, such as Mr. Neno Siki, Mr. Amanuban, and Mr. Tinenti; (c) 3 young generation groups, that is, Mr. Melkior, Mr. Rahabeam and Mr. Eduardus; (d) 3 village/sub-district government groups, that is, Mr. Dolof, Mr. Wilhelmus and Mr. Nicolaus; (e) 3 *To Tafa* (ordinary people) groups, that is, Mr. Abineneo, Mr. Amtiran and Mr. Natanael. In addition to data obtained from resource persons through in-depth interviews

with 15 respondents, data collection was also obtained through group discussion activities, which were divided into 3 groups, with each group consisting of 5 members. Therefore, there

were 15 respondents for the group discussion. Therefore, the total number of sources for this research was 30 people.

Results and Discussion

Formation Process of Mamar System.

Mamar is a popular term among Amarasi farmers in West Timor, East Nusa Tenggara. The term *Mamar* is derived from the Rote language “mamme” and the Helong language “maman” and after modification it became “Mamar” which means eating betel [2]. This term was chosen because the dominant plants in *Mamar* are areca nut and betel (besides lime), which are the basic ingredients for the tradition of eating betel. *Mamar* in the Dawan language is known as “Po’an.” In the research, it was explained that among Dawan farmers, the term of wet *po’an* is associated with water; and the dominant types of plants are betel nut, areca nut, coconut, banana, jackfruit, and so on. The process of forming *Mamar* occurred over a long period of time through several successions of climax vegetation as it exists today. According to Ataupah (2020), *Mamar* existed around the 17th century or between 100 and 200 years old, especially in the villages of Amarasi. The characteristics of *Mamar* are the existence of certain plants such as Banyan trees (*Ficus* sp.), *Albesia* (*Albezia chinensia.*), cottonwood (*Gessampinus heptaphylia.*), and various other old trees [2]. *Mamar* system can also be referred to as agroforestry system in the farming context. This system is one form of farming that has been implemented for a long time in East Nusa Tenggara, especially in Amarasi. This system is applied by cultivating land for perennials, food crops, fodder crops, and livestock rearing. According to Manafe et al, agroforestry is defined as a permanent land use system. Seasonal and annual crops are planted together or in rotation to form a multi-layered crop structure. This system can provide ecological and economic benefits [16].

Agroforestry is a biological production system that deliberately combines trees and shrubs with crops, livestock and other production factors. In addition, agroforestry encompasses both traditional forms of land use that rely on trees and shrubs as part of crop and livestock production systems, and technologies that have only been developed with the intention of integrating woody perennial crops in various land use systems in order to make these systems more productive and sustainable. One form of agroforestry system that has been

cultivated among farmers in mainland Timor, especially in Amarasi is the *Mamar* business system. *Mamar* is a form of traditional agroforestry which is generally found along water sources (springs) and rivers that are always watery throughout the year and relatively close to farmer settlements. The form of agroforestry that is cultivated is planting a mixture of annual crops (perennials) such as coconut, areca nut, banana, betel nut, mango, jackfruit, orange, and so on with food crops (sweet potatoes), fodder crops or fish, and forest plants as an additional type of farming on the same land.

These farming activities are generally conducted using traditional techniques with maintenance and management based on local structures that have been adhered to for generations with a very strict supervision system. However, there are only a few areas where a more advanced management system has been implemented. The sequence of planting and the structure of crops grown in *Mamar* do not follow a particular cropping scheme. The density of plants varies from one *Mamar* to another. Some experts have identified *Mamar* as having very important ecological, sociological and economic functions, such as creating a microclimate (cool temperature), a source of germplasm, soil and water conservation, a source of food and feed, a source of energy (firewood), a source of income for farmers, a place of communication and so on. From the ecological wisdom of local communities, it is clear that the formation of *Mamar* is a strategy to conserve natural resources in a traditional way based on relevant local structures, especially related to the conservation of water, land, forest and wildlife resources. Furthermore, *Mamar* serves economically as a source of food and trade commodities with high economic value.

Based on ecological wisdom and prompted by economic necessity, the formation of *Mamar* began with farming on non-forest land or shrubs that were usually located around very limited water sources. Farmers begin to leave this farming land without significant maintenance, and leave its management to the *Mataf* or *Mamar* guards. The development and maintenance at this phase began to be controlled

strictly through local rules, allowing the *Mamar* system to survive successfully to this day. Some information sources indicate that if there is no disturbance from nature and humans, then from the time a land is cultivated for moorland until the formation of a stable *Mamar*, it generally needs about 15 to 25 years.

Mamar System as Local Wisdom. The *Mamar* system as local wisdom in environmental conservation is applied both individually and collectively based on local community rules [17]. Environmental conservation is implemented on the basis of the principle of cooperation between community members in Amarasi, West Timor. When conducting environmental conservation activities in the *Mamar* system, it is always practiced through a mechanism of cooperation between community members in Amarasi. Related to environmental conservation in the *Mamar* system is a local wisdom system called *Bua*. *Bua* literally means finger gathering. It can be realized as a gathering of energy, thoughts, and food when doing an activity. *Bua* is often referred to as *Bua Nukuf*.

In addition, there is another wisdom called *Fiti*, which means mutual cooperation to help the older or weaker ones. *Fiti* literally means cooperation to ease the work. In Indonesian, *Fiti* means “carry.” *Ma Fiti* means working together to complete something. *Ma Fiti* can be interpreted as “Many hands make light work.” *Fiti* or *Ma Fiti* has a very deep psychological meaning because there is a reciprocal satisfaction in doing these activities, where those who are helped feel satisfied and those who help feel relieved because they have helped others. In addition, there is a local wisdom called *Feineka*, in which this activity helps others, but not in a physical form, but mentally opens the minds of others. For example, the appearance of someone to encourage others to work. His appearance is not to work, but to provide mental support to others. All of these activities have an impact on environmental preservation, that is, an effort to maintain the values of unity in the community.

Meanwhile, if someone in Amarasi is more active in conserving the environment through the *Mamar* system, it will have a good and positive impact and contribution to community life and environmental sustainability. Therefore, the community members concerned receive an abundance of appreciation and high social status among the community in Amarasi. Among local communities in Amarasi, the terms *no'ah bonaki*, which means silver-rooted coconut, and *pu'ah bonaki*, which means silver-

rooted areca nut. Both terms illustrate that only rich people (rich in spirit) who are wise and honorable own *Mamar* as a hereditary treasure. Local people in Amarasi, West Timor who own *Mamar* are referred to as people who own coconut husks, areca nut husks, where deer sleep and birds nest.

Then, regarding environmental sustainability, people who own *Mamar* will protect and nurture the springs and rivers within *Mamar*; try to maintain the fertility of the soil and protect the trees and plants within *Mamar*. It means that as Atoin Meto people, they are wise wealthy people because in addition to having wealth, they also use this wealth to protect and maintain the environment and natural resources around them. These natural resources include coconuts, areca nuts, bananas, breadfruit and various other types of trees, and springs and rivers in *Mamar*. Furthermore, the fertility of the soil and wildlife such as deer and birds in *Mamar*. There is a local rules in the *Mamar* system called *Nuni*, which is an obligation for everyone to maintain and preserve soil fertility in *Mamar*; and maintaining and preserving water sources in *Mamar*, besides a rule called *Bunu*. *Bunu* is a rule or prohibition not to cut any kind of tree in *Mamar*. In addition, there is a *Mamar* guard called *Mataf* or spy who is assigned to guard and catch people who infringe on the rules of the *Mamar* conservation system, such as cutting down trees and hunting or catching wildlife in the *Mamar*. Another guard called *Ketiut po'an* who applies *Hake*, which is a rule that sets and prohibits anyone from taking; harvesting or picking coconuts or areca nuts; and collecting non-timber forest products in the *Mamar* before the harvest time. *Hake* rules stipulate that the harvesting of crops in the *Mamar* such as coconuts, areca nuts, bananas and other non-timber forest products can only be conducted once every three months. *Ketiut po'an* and *Mataf* impose taboos or *Meo* that cannot be violated by anyone.

If a person violates the regulations set by *Mataf* and *Ketiut po'an*, they will receive a fine or sanction called *Tasane*. The person who receives *Tasane* is called *Musanab*. A *Musanab* receives *Tasane* which includes a cow, a buffalo or several pigs. These sanctions are indeed very severe, allowing local communities in Amarasi to avoid violating the rules that have been established in order to preserve natural resources through the *Mamar* system.

Rituals and Taboos in the Mamar Conservation System. As described earlier, a rural community that conserves natural

resources is often based on their social and cultural system [18, 19, 20]. One form of controlling is the system of beliefs, rituals and taboos in managing and exploiting certain natural resources such as forest, land and water resources [21]. Moreover, a rural community's belief system is not compatible with the belief system of modern society, but it serves a very important function in preserving their natural resources. By adhering that belief system, rural communities always consider their action in exploiting natural resources wisely in order to maintain their sustainability. In addition, rural communities also seek to maintain and develop harmonious relationships with the inhabitants of a particular forest area or spring through ritual ceremonies.

The rituals performed by Amarasi community members can not only be interpreted as a form of human devotion to the *Uis Neno* deity, but can also be related to the preservation of natural resources in the *Mamar* system. However, through these rituals, people are reminded of the fact that in the *Mamar* area resides the *Uis Neno* deity who must be obeyed and respected. People are reminded of this in every ritual in the *Mamar* area. They not only continue to believe that the *Uis Neno* deity resides in the *Mamar* area, but also cultivate a constant awareness to obey his desires, which includes the ability to obey his rules to avoid destroying natural resources in the *Mamar* area. The socio-cultural life of local communities in Amarasi, West Timor is also characterized by various rituals. These ceremonies for farming and *Mamar* cultivation as a traditional conservation system are one of the most important rituals in Amarasi's community life. The first ceremony begins to find land for a new farm. Before clearing forest land to be used as cultivated land, they first ask the shaman or *mnane*. This question is intended to ascertain which land is suitable for cultivation. The *Mnane* will determine the prospective land for the new farm based on the premonition of a dream. Related to this matter, an offering will be held to the *Uis Neno* deity. The ceremony will be held with the following procedure: (1) a piece of bamboo is picked up and split into four or eight pieces called *pepe*; (2) the split bamboo is stuck in the land to be cleared; (3) then the *mnane* will pray by reciting incantations addressed to the gods. The *mnane* asks for fertility and the avoidance of various disasters in his spell,

then the *mnane* sprinkles rice; (4) after praying the *mnane* instructs the people to cultivate, and sacrifices a pig before the land is cleared.

A ritual is held to clean the spring once a year to preserve and maintain the water sources in *Mamar*. In *Mamar* there are water sources that are used for consumption by both humans and animals, but there are also sacred springs. This spring is called *Oe Hae*, which is a spring specifically used for offerings at traditional ceremonies. During the ritual ceremony to clean the spring in *Mamar*, besides reciting mantras, offerings are also provided to the "water lord" or "guardian of the spring." This guardian is a subtle spirit that inhabits the large trees around the spring inside *Mamar*. These spirits often transform into animals, such as big snakes, eels, fish or shrimps. Therefore, catching fish, shrimp or eels in *Mamar*'s spring is strictly prohibited. The researcher argues that this restriction is logic because the eels, fish and shrimp in the spring are natural cleaners of the spring's groundwater channels. If the eels and fish are caught, the channels will become clogged and water discharge will automatically decrease.

Besides the ceremony to maintain and preserve the fertility of the land in *Mamar*, there is also a ceremony to harvest in *Mamar* after the *Bunu* and *Hake* period ends. The harvest ceremony in *Mamar* is held twice a year. This ceremony is usually held around December or January and June or July. The ceremony is attended by the local village government along with the entire family of *Mamar* owners and is led by *Mataf* and *Ketiut po'an*. The ceremonial spot is usually held at the entrance of *Mamar*, with the ceremonial procedure as follows: (1) the owners of *Mamar* prepare rice and animals to be consumed together, including sacrificial animals such as pigs or buffaloes; (2) then, time and place are determined, and the invitation is distributed to the community; (3) after all the invitees are present and gathered, ritual prayers are held, such as prayers of thanksgiving and prayers asking for fertility for an abundant harvest; (4) after the prayers, *Mataf* or *Ketiut Po'an* announces and reaffirms the taboos or prohibitions that must be obeyed; (5) furthermore, they also announce the time, the schedule for the joint harvest, the schedule for repairing the fence and the schedule for cleaning *Mamar*.

Conclusion

Based on the discussion that has been conducted in this research, it can be concluded that *Mamar* can be interpreted from practical

perspective as an "artificial oasis" built by Amarasi local communities in West Timor as an adaptation strategy to overcome environmental

conditions that do not provide a prosperous life. The response of the local community of Amarasi, West Timor is manifested in the process of life adaptation through environ-mental conservation acts towards the natural resources of land, water, flora and fauna which are the source of life needs of local communities in Amarasi, West Timor. Environmental conservation based on the *Mamar* system in Amarasi, West Timor is conducted by applying local structures that are authentic, straight-forward and measurable in accordance with the situation and conditions of the community in West Timor. The *Mamar* system has persisted since the 17th century because it is applied with mechanisms and approaches to the needs of local communities for the preservation of natural resources in the long and sustainable term.

The strength of *Mamar*'s system in sustaining the socio-economic and cultural life of the Amarasi local community in West Timor is supported by the ecological, economic and social variables of the *Mamar* system itself. Social behavior of the local community in Amarasi, West Timor. The local rules in the *Mamar* system such as *Nuni*, is an obligation for everyone to maintain and preserve soil fertility in *Mamar*; and maintaining and preserving water sources in *Mamar*. The other rule called

Bunu is a rule or prohibition not to cut any kind of tree in *Mamar*. In addition, *Bunu* also stipulates a strict prohibition on clearing *Mamar* by burning anything in *Mamar*. In addition, there is a *Mamar* guard called *Mataf* or spy who is assigned to guard and catch people who infringe on the rules of the *Mamar* conservation system, such as cutting down trees and hunting or catching wildlife in the *Mamar*. Another guard called *Ketiut po'an* who applies *Hake*, which is a rule that sets and prohibits anyone from taking; harvesting or picking coconuts or areca nuts; and collecting non-timber forest products in the *Mamar* before the harvest time. *Hake* rules stipulate that the harvesting of crops in the *Mamar* such as coconuts, areca nuts, bananas and other non-timber forest products can only be conducted once every three months.

If a person violates the regulations set by *Mataf* and *Ketiut po'an*, they will receive a fine or sanction called *Tasane*. The person who receives *Tasane* is called *Musanab*. A *Musanab* receives *Tasane* which includes a cow, a buffalo or several pigs. These sanctions are indeed very severe, allowing local communities in Amarasi to avoid violating the rules that have been established in order to preserve natural resources through the *Mamar* system.

Conflict of Interest

The authors declare that there is no conflict of interest.

References

1. James, R., Gibbs, B., Whitford, L., Leisher, C., Konia, R., & Butt, N. (2021). Conservation and Natural Resource Management: Where are All the Women? *Oryx*, 55(6), 860–867. <https://doi.org/10.1017/S0030605320001349>
2. Ataupah, H. (2020). *Ekologi dan Masyarakat, Kajian dan Refleksi Atoin Meto Di Timor Barat*, NTT ((G. Neonba). CV Sejahtera Mandiri Teknik Indonesia.
3. Putra, L. M. (2021). *Igya Ser Hanjop, Pengelolaan Ruang Ekologi Suku Arfak*. ECONUSA Nature Culture Conservation. <https://econusa.id/id/ecoblog/igya-ser-hanjop-pengelolaan-ruang-ekologi-suku-arfak/>
4. Habiaryemye, A., & Korina, L. (2021). Indigenous Knowledge Systems in Ecological Pest Control and Post-Harvest Rice Conservation Techniques: Sustainability Lessons from Baduy Communities. *Sustainability*, 13(16). <https://doi.org/10.3390/su13169148>
5. Purnamawati, I. G. A. (2021). Strengthening Local Institutional Identity Through Traditional Village Management. *Target: Jurnal Manajemen Bisnis*, 3(1). <https://doi.org/10.30812/target.v3i1.1101>
6. Eghenter, C., Widodo, K., Bawan, Y., Jalung, S., & Salo, A. (2021). *Tana' ulen A Vital Conservation Tradition for the Recognition of Territories of Life*.
7. Bansard, J., & Schroder, M. (2021). *The Sustainable Use of Natural Resources: The Governance Challenge*.
8. Pörtner, H. O., Scholes, R. J., Agard, J., Archer, E., Arneth, A., Bai, X., & Ngo, H. (2021). *Scientific outcome of the IPBES-IPCC co-sponsored workshop on biodiversity and climate change*. IPBES-IPCC co-sponsored workshop.
9. Godoi, M., & Pacheco, J. (2016). Sustentabilidade e Abordagem Sistemica: Reconsiderando o Triple Bottom Line. *Conference: 12o Congresso Brasileiro de Sistemas*, 1–29.
10. Bogdan, R., & Biklen, S. K. (2007). *Qualitative Research for Education*. Pearson A & B.
11. Bungin, B. (2020). *Post-qualitative social research methods: kuantitatif-kualitatif-mix methods positivism-post-positivism-phenomenology-postmodern : filsafat, paradigma, teori, metode dan laporan* (1st ed.). Kencana.

12. Maxwell, J. A. (2012). *Qualitative Research Design: An Interactive Approach* (3rd Edition). SAGE Publications, Inc.
13. Elmusharaf, D. K. (2012). 3) *Qualitative Data Collection Techniques*.
14. Kirk, S., & Hinton, D. (2019). "I'm not what I used to be": A qualitative study exploring how young people experience being diagnosed with a chronic illness. *Child Care Health Dev*, 45(2), 216–226. <https://doi.org/10.1111/cch.12638>
15. Schwartz-Shea, P. (2012). *Interpretive Research Design Concepts and Processes* (1st ed.). Routledge. <https://doi.org/10.4324/9780203854907>
16. Manafe, John, A. D., & Notohadiprawiro, P. D. I. T. (1990). *Ekosistem "mamar" sebagai suatu bentuk wanatani tradisional di Kabupaten Kupang, Nusa Tenggara Timur*. Universitas Gadjah Mada.
17. Dawson, N., Coolsaet, B., Sterling, E., Loveridge, R., D, N., Gross-Camp, Wongbusarakum, S., Sangha, K., Scheri, L., Phan, H. P., Zafra-Calvo, N., Lavey, W., Byalagaba, P., Idrobo, C. J., Chenet, A., Bennett, N., Mansourian, S., & Rosado-May, F. (2021). The role of Indigenous peoples and local communities in effective and equitable conservation. *Ecology and Society*, 26(3). <https://doi.org/10.5751/ES-12625-260319>
18. Baines, G. (1982). Traditional conservation practices and environmental management: the international scene. In *In Traditional Conservation in Papua New Guinea: Implications for Today* (pp. 45–57). Institute of Applied Social and Economic Research.
19. Pernetta, J. C., & Hill, L. (1984). Traditional Use and Conservation of Resources in the Pacific Basin. *The South Pacific*, 13(5/6), 359–364.
20. Shackeroff, J. M., & Campbell, L. (2007). Traditional Ecological Knowledge in Conservation Research: Problems and Prospects for their Constructive Engagement. *Conservation and Society*, 5(3), 343–360.
21. AS, E., Aliyudin, M., Laksana, M. W., Nurdin, F. S., Muslimah, S. R., & Azis, W. D. I. (2020). Sunda Wiwitan: The Belief System of Baduy Indigenous Community, Banten, Indonesia. *Wawasan: Jurnal Ilmiah Agama Dan Sosial Budaya*, 5(1), 77–95. <https://doi.org/10.15575/jw.v5i1.8069>

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ЗБЕРЕЖЕННЯ НАВКОЛИШНЬОГО СЕРЕДОВИЩА НА ОСНОВІ СИСТЕМИ МАМАР ЯК МІСЦЕВОЇ МУДРОСТІ ЗАХІДНОГО ТИМОРУ, СХІДНОГО НУСА-ТЕНГГАРА

Мета. Проаналізувати практику збереження навколишнього середовища на основі системи Мамар як місцевої мудрості, як механізму збереження навколишнього середовища в Західному Тиморі, Східній Нуса-Тенгарі.

Результати. Система Мамар зберігається з 17 століття, оскільки вона застосована з механізмами та підходами до потреб місцевих громад для збереження природних ресурсів у довгостроковій та стійкій перспективі. Система застосовується шляхом обробітку землі під багаторічні насадження, продовольчі культури, кормові культури та розведення худоби. Охорона навколишнього середовища реалізується на основі місцевих принципів, таких як Буа, Нуні та Буну. Місцеві звичаєві правила встановлювали та контролювали охоронці на ім'я Матаф і Кетіут Поан, у яких особи, які порушили правила, отримують санкцію під назвою Тасане. Дотримуючись місцевої системи переконань, громада природно вважає, що їхні дії щодо розумного використання природних ресурсів є частиною підтримки сталого розвитку. Крім того, місцева громада також підтримує гармонійні стосунки з мешканцями певної лісової ділянки чи джерела через ритуальні обряди.

Висновки: Практично Мамар можна інтерпретувати як «штучний оазис, побудований місцевою громадою Амарасі в Західному Тиморі як стратегію адаптації до несприятливих умов навколишнього середовища. Система Мамар підтримувала соціально-економічне та культурне життя громади Амарасі через свої екологічні, економічні та соціальні змінні. Збереження на основі системи Мамар здійснюється та підтримується шляхом застосування місцевих цінностей, які є автентичними, простими та вимірними відповідно до ситуації та умов громади.

КЛЮЧОВІ СЛОВА: охорона природи, довкілля, природні ресурси, місцева мудрість, татар

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