

# Conservation of Forest Resources Based on Local Knowledge of Indigenous Peoples

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## Abstract

The character of caring for the condition of customary forests is very important so that the preservation of forest resources remains sustainable. Therefore, this research examines the teachings of local knowledge as a system of conserving forest resources, and the role of the *Ammatoa* indigenous people in preserving forest resources as an effort to build a caring character for the environment. This type of research is qualitative research using a case study approach. This research was carried out in the *Ammatoa* Customary Forest, Bulukumba Regency. The results of the study show that the *Ammatoa* indigenous people practice local knowledge consisting of 120 articles which contain procedures for managing the environment and punishments for violators, namely pokok *babbalak* (serious offence), *tangga babbalak* (moderate offence), and *cappak babbalak* (light offence).

**Keywords:** Conservation of forest; Local knowledge; *Ammatoa*; Environmental sustainability; Customary forests

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## 1. Introduction

Forest management is currently experiencing many failures. Forest destruction in Indonesia is caused by human activities that still prioritize anthropocentric traits, humans still prioritize their own needs without regard to the natural conditions around them (Aldyan, 2020; Dewi *et al.*, 2019). Lack of guard from rangers and weak implementation of law enforcement are the main causes of forest destruction (Hidayat *et al.*, 2020). Factors causing forest destruction and expansion of critical land, namely illegal logging, forest fires, and land conversion as a result of economic pressure from the people around the forest (Austin *et al.*, 2019; Mattila *et al.*, 2020; Pujiono *et al.*, 2019). Therefore, government policy is needed as well as the handling and involvement of the community in managing forest resources.

The level of forest destruction that occurred in South Sulawesi also experienced a high increase. The Ministry of Forestry of South Sulawesi Province revealed that the level of forest destruction in 2020 had reached 30.6% - 40%. The forest area consists of 20.34% conservation forest, 50.21% protection forest, 22.06% limited production forest, 4.86% permanent production forest and 2.63% convertible production forest. Based on data released by the Makassar Forestry Research Institute, the area of forest in South Sulawesi is continuously decreasing. The reduction in forest area is caused by various factors, including: illegal logging practices, forest encroachment activities and mining activities.

The *Ammatoa* indigenous people in South Sulawesi are one of the indigenous

communities in Indonesia whose forests are still protected and sustainable. Conservation of customary forest by the *Ammatoa* indigenous people adheres to the *local knowledge* and the principle of tallase kamase-mase/simple living (Syarif et al., 2016; Syarif, 2018; Amin, 2019). The sustainability of the forest of the *Ammatoa* indigenous people in Kajang cannot be separated from the umbrella of customary law, namely local knowledge which have so far been respected and upheld.

Forest sustainability in Kajang District, Bulukumba Regency, South Sulawesi cannot be separated from the umbrella of customary law which has been respected and upheld by the *Ammatoa* indigenous people, namely local knowledge. For the *Ammatoa* indigenous people, taking care of the forest is part of the teachings of local knowledge, because the forest is part of the land given by *Tu Rie A'ra'na* (God) to the ancestors of the Kajang tribe (Widijayanti & Danial, 2021). They believe that in the forest there is a supernatural power that can prosper and at the same time bring disaster when the forest is not preserved. According to them, this power comes from the ancestral spirits of the Kajang people who always protect the forest so that it is free from evil human intentions. Through the local knowledge, the *Ammatoa* indigenous people realize that their existence is a component of a system that is systemically related God (Badewi, 2018).

The size of the area is in line with the great belief in forests so that their life cycle is an agricultural cycle. They believe that there is a supernatural power in the forest that can prosper and at the same time bring disaster when it is not preserved. So by making the forest sacred, they have played a big role in maintaining the sustainability of their forest area from intentions wicked (Fisher & van der Muur, 2020; Megawati & Mahdiannur, 2021). Currently, the forest is very sacred so that no one can explore it illegally.

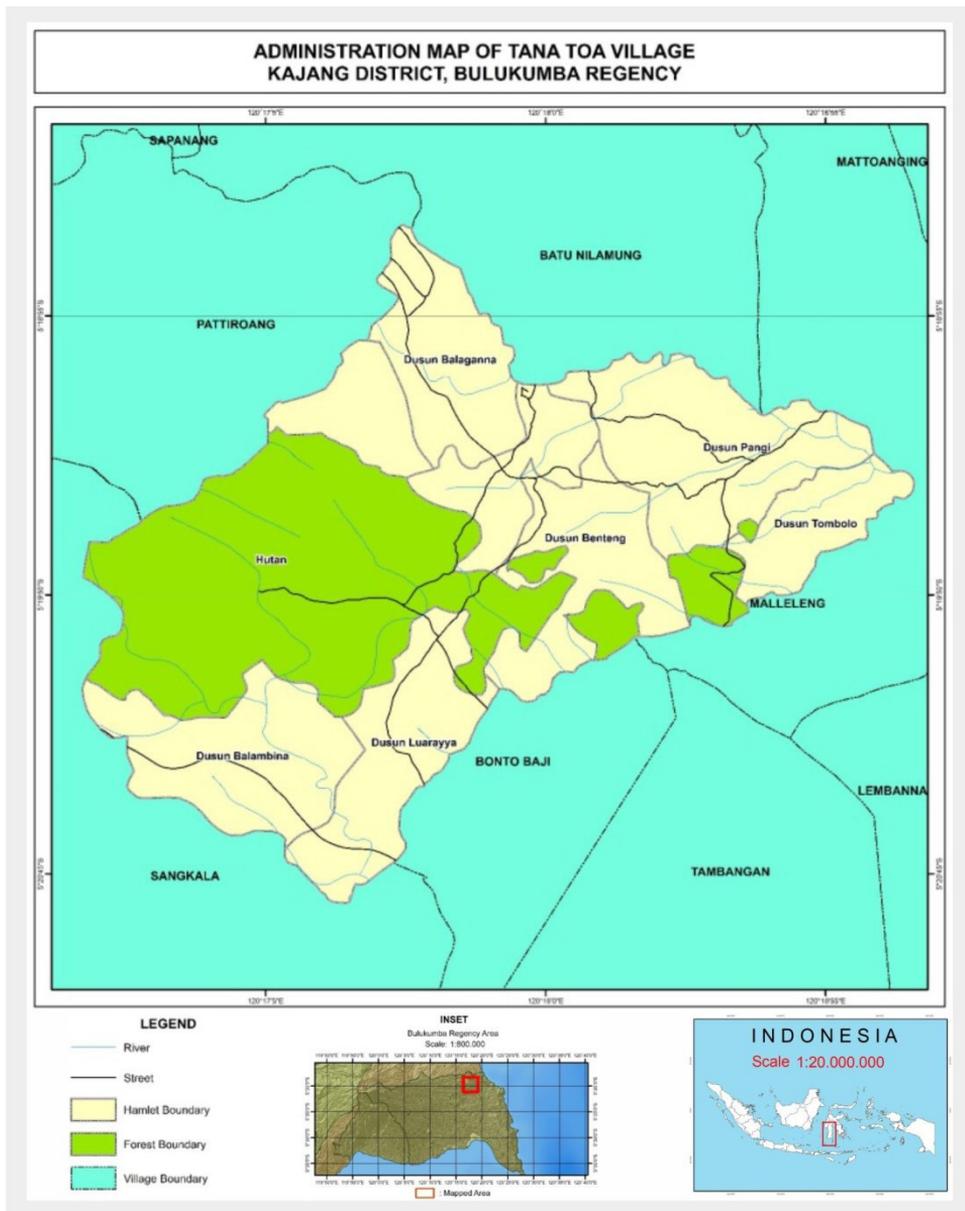
The interesting things about the *Ammatoa* indigenous people are: 1) they still have obedience in upholding customs that have been passed down from generation to generation, as is the case in forest management based on

the teachings of local knowledge, 2) in forest management, the intervention of traditional institutions is needed as controllers or controllers in forest management so that there are no deviations that are caused or that can cause disputes or conflicts among community members.

The purpose of this research is to present information about local wisdom as a forest resource conservation system, and the role of the *Ammatoa* indigenous community in preserving forest resources in the Tana Toa Village area of Bulukumba Regency. The novelty of this research is finding a way to conserve forest resources by integrating the local wisdom of the *Ammatoa* indigenous community in Kajang. The local wisdom possessed by the *Ammatoa* indigenous community was able to foster the role of the *Ammatoa* indigenous community in preserving forest resources. The form of local wisdom of the *Ammatoa* indigenous people in Kajang Bulukumba South Sulawesi contributes ideas to solve the problem of forest destruction in Indonesia, especially in South Sulawesi. The results of this study can be input for the House of Representatives, especially Commission IV in charge of the environment and forestry in formulating the Draft Law on forest resource conservation in Indonesia.

## 2. Materials and Methods

This type of research is qualitative research using a case study approach. Qualitative research aims to find, develop, and test a truth of knowledge in scientific ways (Rijali, 2018). Qualitative research aims to describe and analyze phenomena, events, beliefs, attitudes, and social activities individually and in groups (Gunawan, 2022). Therefore, qualitative research is able to reveal phenomena on a subject that you want to examine in depth. This research was conducted in Kajang Le'leng, Tana Toa Village, Kajang Bulukumba District, South Sulawesi, Indonesia as shown in Figure 1 which shows that Tana Toa Village is a residential area for the Kajang tribe. This research was conducted from June to August 2022.



**Figure 1.** Administrative map of Tana Toa Village, Kajang District

Figure 1 shows Tana Toa Village, Kajang District as the research location. Sources of data in this study were key informants and supporting informants. Key informants namely *Ammatoa* (tribal chief), *Galla Puto* (Chief Advisor). Supporting informants namely the Head of Tana Toa Village, Kajang District Head, Kajang Le'leng community.

The qualitative method is essentially an effort to interpret research on data or ideas through the process of explanation, through in-depth interview techniques (Bogdan &

Bikien, 1992). To obtain the credibility of the research results, the researcher took several steps, as suggested by (Moleong Lexy, 2016) as follows: (1) repeated observations, namely conducting research by visiting the location back and forth; (2) triangulation: that data collection is carried out in several ways, in addition to in-depth interviews with informants, both key informants and supporting informants. (3) Researcher input, that all conclusions as a result of this research will be confirmed back to the informants to

prevent misinterpretation. Data collection techniques in this study were observation, interview, and documentation.

The observation used is non-participant observation, where the researcher is only an audience to the events that are the topic of research (Gunawan, 2022). Researchers observed the *Ammatoa* indigenous community to see the daily activities carried out in the customary area. The interview technique is an open-ended interview with reference to the interview guidelines that have been prepared in advance. In this case, informants in answering questions are not limited in their answers. Through interviews, researchers extracted information from informants both key informants and supporting informants related to local wisdom as a forest resource conservation system, and the role of the community in preserving forest resources in the *Ammatoa* customary area. Meanwhile, documentation studies were conducted to complement data from interviews and observations. Documentation data is in the form of archives, books, journals and photographs of research results.

The data analysis technique used in this research is an interactive model qualitative analysis as proposed by (Miles et al., 2020). The data obtained in the study were analyzed through several stages: 1) data reduction, namely the process of selecting, focusing on simplifying, abstracting, and transforming rough data that emerges from written notes in the field, both from

interviews, observations, or documentation studies, 2) data display, namely an activity when a set of information is organized, either in the form of narrative text or in various types of matrices, graphs, or charts. All are designed to assemble information that is arranged in an integrated and practical manner, 3) drawing conclusions, namely analyzing and looking for meaning from the data collected and then poured in the form of conclusions.

The image of the data analysis model in qualitative research is as follows:

Figure 2 above shows that data reduction is a summary by selecting the main things by focusing on important things related to the local knowledge of the Kajang indigenous people on customary forest conservation. The next stage is to perform data presentation (data display). The final stage of this analysis is drawing conclusions/verification in the form of descriptions or descriptions related to the local knowledge of the Kajang indigenous people on customary forest conservation.

### 3. Results and Discussion

#### 3.1 Local knowledges as a system of conserving forest resources

Based on the results of interviews with *Ammatoa* traditional leaders, local knowledge regulates the forest environmental management system in the *Ammatoa* customary area:

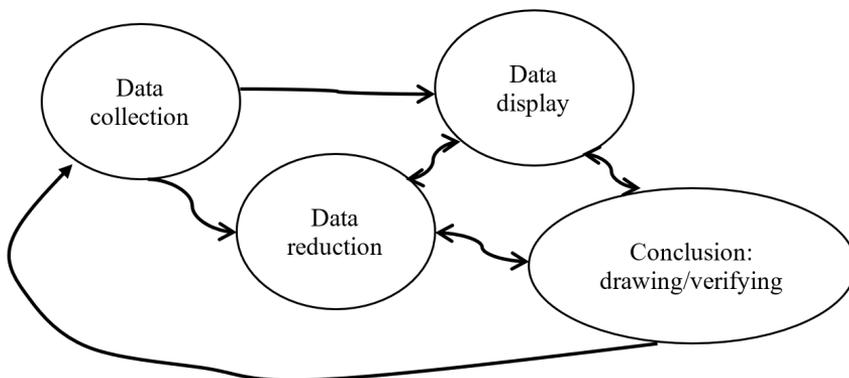


Figure 2. Data analysis components chart

**Table 1.** Local Knowledge of the *Ammatoa* Indigenous People in Conservation of Forest Resources

| No | Local Knowledge   |
|----|---|
| 1  | Preserve the earth and its contents, as well as the heavens, man and the forest.  |
| 2  | It is the forest that invites rain because there is no irrigation here, so it is the forest that functions as irrigation because it brings rain.  |
| 3  | If the wood in the forest is cut down, the rain will decrease and the spring water will disappear (dry out)   |
| 4  | The existence of a river from the forest, the existence of springs comes from the trees.  |
| 5  | Forests need to be conserved because water comes from small rivers.   |
| 6  | It is he (the forest) that brings rain so that it can be used to grow rice, corn and become a spring.   |
| 7  | The duty of an <i>Ammatoa</i> is to prohibit logging in the forest. Such is the law that applies here.  |
| 8  | Forests are our heritage.   |
| 9  | It is not permissible to change the type of wood in customary forests, that's all the wood that grows naturally, cannot be added or subtracted, planting activities in customary forests is prohibited, because one day there will be recognition of plant ownership rights in customary forests. |
| 10 | The forest should not be damaged, if you destroy it, it is the same as destroying yourself.   |
| 11 | It is forbidden (taboo) to destroy the forest.  |
| 12 | It is strictly forbidden to cut wood (trees), burn bees, catch shrimp and cut rattan.   |
| 13 | The forest is our heritage, it is the forest that brings the rain, the roots of the wood enlarge the springs.   |
| 14 | Wood and forest are interrelated, if the wood in the forest is destroyed it will damage itself and all its descendants.   |
| 15 | The naturalness of the customary forest must be maintained and in the forest should not be cultivated, because one day it will be recognized as property rights.  |
| 16 | <i>Ammatoa</i> indigenous people must have an attitude of honesty, patience, assertiveness, simplicity and submission in their lives.   |

Source: Results of interviews, 2022

The forest has three main functions within the scope of life of the *Ammatoa* indigenous people. According to Mansyur Embas, namely:

a) The economic function is to provide economic benefits to the community and to meet the needs of people's lives.

b) The function of the ritual is as part of a belief system that views the protected forest as a place for ceremonies..

c) The ecological function is as a regulator of the water system. (interview in Benteng, 24 April 2022).

The protected forest in figure 3 is an area protected forest must be preserved because this area has two functions, namely a ritual function and an ecological function. This concept is similar to a protected forest in terms of forest area division which is usually applied to various forest areas managed by the state. Protected forests have a very vital role for life because they function as regulators of water systems, providers of oxygen and other

materials needed by humans, it can be said that protected forests are life support areas. protected forest according to the forbidden local knowledge to enter, or disturb the flora and fauna in it. Protected forest may only be entered by *Ammatoa* and customary members when there is a traditional ceremony.

Based on the results of an interview with Mansyur Embas, it was said that it was said that if someone from outside entered this zone, that person could not get out. Even if he could get out, the person died. Likewise with dogs, if they manage to get out they can no longer bark (in the Benteng, April 23, 2022). The protected forest area (in figure 3) is a forbidden area for anyone to use it. Based on the results of an interview with Puto Hadi that the protected forest area is a forbidden forest, because the community believes that the place where God descended was in the middle of protected forest. It is because of this belief that the place is used as a place to ask permission, a place for put an offering to God and a place for set

intentions. For that reason, it is not permissible to enter into activities within the protected forest area, even planting trees is prohibited. The place can only be visited during every ritual ceremony (interview at the Benteng, April 12, 2022). Galla Puto (Chief Advisor) further explained taboo in protected forest:

“protected forest is very sacred and holy because (1) it is in this forest that the election and inauguration of *Ammatoa* candidates to become *Ammatoa ri Kajang* are carried out, (2) this forest area is considered a

place where their ancestral spirits reside, (3) this forest area is considered a sacred place always visited by the *Tu Rie A'ra'na* (God) because God always comes to every Tribal chief inauguration ceremony, and (4) this place is a place that is always visited by the Tribal chief indigenous people who have finished carrying out ceremony or celebration party followed by a pilgrimage to one of their ancestral graves (interview with Andi Sudirman in Benteng, 7 April 2022).”



**Figure 3.** *Borong Karamaka* (protected forest)



**Figure 4.** *Borong Batasayya* (border forest)

Border forest area (in Figure 4) which is defined as boundary forest or boundary forest. Border forest is a forest where timber is allowed to be taken as long as the supply of wood is still available and with permission from *Ammatoa* as the customary leader. Even the wood in this forest is only allowed to build public facilities, and for the *Ammatoa* indigenous people who cannot afford to build houses. Apart from that purpose, it is not permitted. Only a few types of wood can be cut down, namely asa, nyatoh and pangi wood. The amount requested must be in accordance with their needs. So it is not uncommon for *Ammatoa* to reduce the requested wood. Then the size of the wood was determined by *Ammatoa* herself.

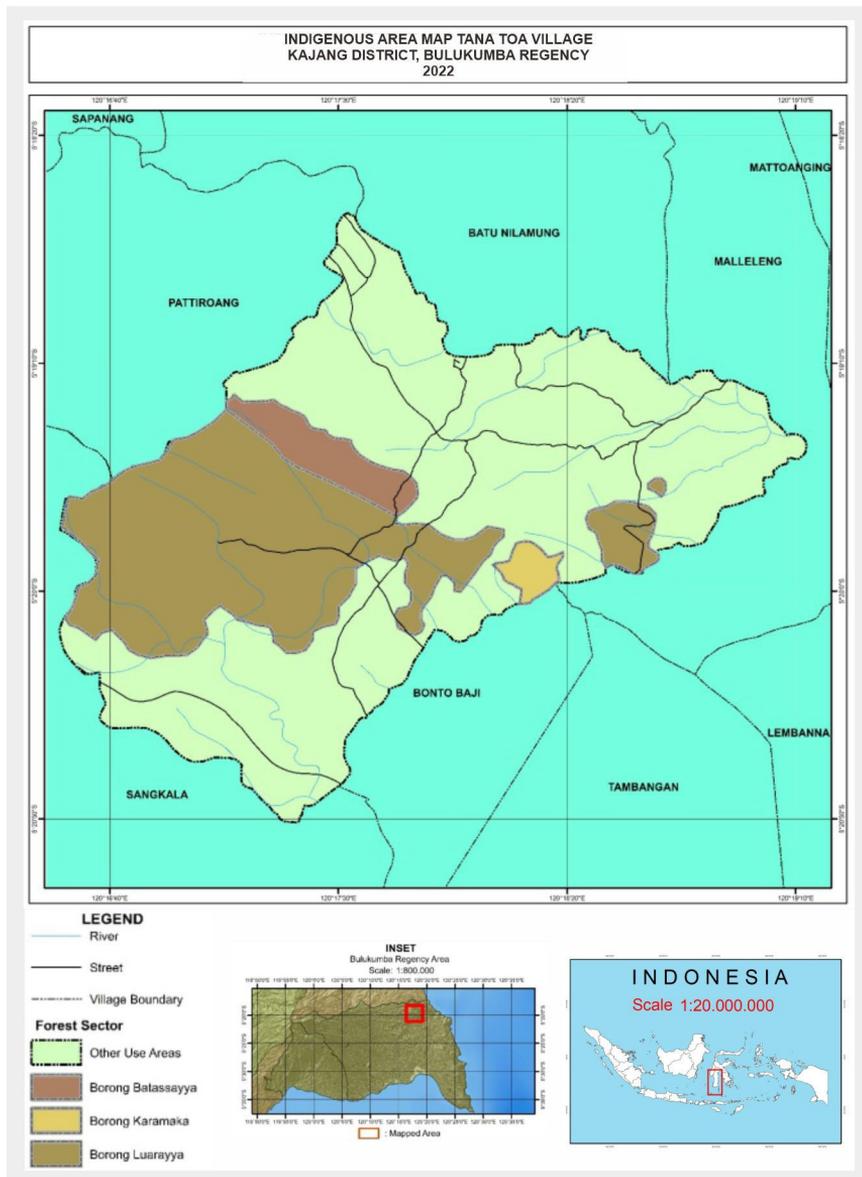
The extraction of wood in the wholesale limit is not carried out freely and haphazardly, but there are various requirements that must be met. According to *Galla Puto* (Chief Advisor), these conditions are (1) must obtain permission from *Ammatoa*, (2) the number of trees to be cut is determined by *Ammatoa*, (3) before cutting a tree according to the permit granted by *Ammatoa*, two trees of the same

type must first be planted. until they grow well, and (4) tree planting does not need to be done at the logging site, which is clearly in a customary area, or whether the location for planting trees is normally determined by *Ammatoa* (interview in Benteng on 13 April 2022).

The wholesaler outside area (community forest/permanent production forest) or extensive forest. People's forest (in figure 5) is a forest that can be managed by the community. Even though people's forest is controlled by the people, customary rules/sanctions in this area are still valid and arbitrary practices are not allowed in utilizing the natural resources found in people's forest. This forest area is used by the *Ammatoa* indigenous people to fulfill their daily needs. People's forest is actually a community forest in which various types of plants are planted, both estate crops and timber. Community forests are owned by the community privately or are inherited from their ancestors. Even though the gardens and rice fields are sufficient, the *Ammatoa* indigenous people still maintain the tallasa kamase masea principle.



Figure 5. Borong Luarayya (People's forest)



**Figure 6.** Map of the customary area of Tana Toa Village, Kajang district, Bulukumba Regency 2022

Figure 6 and 7 above shows the spatial distribution of forests as shown in Figures 3, 4 and 5. Forests are a medium for mutual relations between humans and other living things and natural factors that are formed from ecological processes. Forests have various benefits for life. The benefits of the forest are obtained if the existence of the forest is guaranteed so that it can function optimally. The ecological, economic and social functions of forests provide a real role if the management of natural resources in the form of forests is maintained. Given the importance of the forest

for society, it is appropriate for us to protect and preserve the forest.

The forest for the *Ammatoa* indigenous people sees that the forest has three functions, namely: (1) the economic function, namely to provide economic benefits to the community and to fulfill the needs of the community's life, (2) the ritual function, which is part of the belief system, which views the protected forest as a place for ceremonies, (3) ecological function, namely as a regulator of water management. The *Ammatoa* indigenous people really respect their environment by



**Figure 7.** Condition of Indigenous Forests

keeping their forests sustainable. The local wisdom of the *Ammatoa* indigenous people which is based on local wisdom and belief systems has taught us a lesson, that forest management is very influential for human life as a whole. Local knowledge based forest management still exists and is upheld by the Kajang people, considered very useful in realizing community forestry development.

### 3.2 The Role of the Community in Maintaining the Conservation of Forest Resources

Indigenous peoples really care for the forest, because they regard the forest as a source of life. Because with the forest, thank God, until today in the village of Tana Toa, the dry season can be regular as well as the rainy season is also regular. Because according to the people with the existence of a forest, the leaves that are owned by the tree itself can attract rainwater, then the roots that are owned by the tree can store rainwater. Therefore, stored rainwater can irrigate the surrounding rice fields. Because almost all the rice fields around the forest do not have irrigation where the water comes from the forest itself. (Results of interview with Mr. Salam on 27 February 2022).

In taking forest products, you have to get a permit from *Ammatoa* and not everyone will be given it, say what can be given because they have been burnt out or maybe there are people who are very poor and have no family who can afford to help them. So we went to *Ammatoa* to ask for the wood that was inside. However, asking for it takes a long process, so if you give it, don't give it more. Say one or two don't take three. Even so, the logging process is regulated by the customary leaders, in this case they don't cut down indiscriminately, they can't use a sawing machine, then after it's been cut down, they can't be processed on the spot using a sawing machine either. So we take it out, we lift it together, we usually lift one stem up to fifty or maybe more than that. (Results of interview with Mr. Kahar on 27 February 2022).

Participation of the *Ammatoa* indigenous people in an effort to preserve forest resources: 1) planting replacement trees 2) Providing information to the government about forest destruction 3). Obey the customary rules made by *Ammatoa*. There are three levels of customary law that apply within the *Ammatoa* customary area for any violations that occur within the customary area (*passala*/ punishment). The customary law which consists of three levels includes

the *pokok babbalak* (serious offence), *tangnga babbalak* (moderate offence), *cappak babbalak* (light offence). The highest punishment in *Ammatoa* customary law is the *pokok babbalak* (serious offence) in the form of a material fine of 12 *real* (in *Ammatoa* customary rules) which is equivalent to 80.07 USD or IDR 1,200,000. *Tangnga babbalak* (moderate offence) a fine of 8 *real* or the equivalent of 53.38 USD or IDR 800,000. As well as the lightest punishment, namely *cappak babbalak* (light offence), the fine is around 4 *real* or the equivalent of 26.69 USD or IDR 400,000. This ecological intelligence is formed from people's awareness to be wise towards the environment. With this wise attitude, the community exists through a continuous process of interaction and adaptation to the environment and to natural resources.

In addition to the sanctions mentioned above, in the *Ammatoa* customary area, a law called *tunu panroltik* (crowbar burning) and *tunu passau* (incense burning) also applies. Crowbar burning is usually carried out to find the perpetrators of theft that occurred in customary areas. The process involved collecting all of the *Ammatoa* indigenous people and having to hold a burning crowbar, usually the perpetrators would feel the heat of the crowbar while the others did not feel the heat from the crowbar. Incense burning is carried out when the perpetrators of customary law violations run away from the punishment process given, usually leaving the *Ammatoa* customary area. The method is in the form of *Ammatoa* will burn incense and recite a spell aimed at the perpetrator so that he falls ill or dies unnaturally. The existence of customary law and a leader who is very strict in enforcing the law makes the people in the *Ammatoa* customary area able to comply with all existing regulations. All violations that occurred in the *Ammatoa* customary area were decided through a customary court called *Akborong Adak* (Traditional convention). The same is true for perpetrators of environmental destruction such as destroying forest areas which are categorized as serious violations. This also proves that customary law enforcement plays an important role in the governance system of

the *Ammatoa* customary forest. In the effort to protect the forest from disturbances that could damage the *Ammatoa*, each officer shall serve as a forest guard.

The *Ammatoa* customary community's forest management system has proven to have maintained their customary forest area to this day. The forest for the *Ammatoa* indigenous people has a special meaning. The *Ammatoa* indigenous people believe that (1) the forest is a place where the human spirit ascends and descends from heaven to earth and from earth to sky, (2) they believe that the so-called first human descends from heaven to earth in the forest areas, (3) they believe that the earth that was first made by God is located in a forest area. It is this belief that causes the harmonious relationship between God, the forest and the community and the reason why the community places the forest as part of their belief structure. Because of their belief in the forest, they think that the forest is a sacred area and is full of supernatural powers that can both bring prosperity and bring disaster if it is not preserved.

Environmental problems receive great attention in almost all countries. One of the problems that occur is the change in environmental functions. Changes in environmental function is a real problem faced by humans at this time. Changes in environmental functions occur because of human behavior that is not in harmony with the environment. One of the impacts of environmental change that has occurred in Indonesia is the occurrence of forest and peatland fires which have resulted in very poor air quality due to haze and a significant increase in carbon emissions (Sumarga, 2017). According to (Börner et al., 2020; Walker et al., 2020) states that, forest conservation is the practice of planting and maintaining forests for the benefit and sustainability of future generations. The strategy for sustainable management of forest resources can be carried out properly through the active participation of the community in planning, implementing and monitoring forests which aims to help stop the degradation and loss of forest areas (Awaliyah et al., 2020; Kumar et al., 2020).

## 4. Conclusion

The local knowledge of the *Ammatoa* indigenous people in forest management is the basis for forming community knowledge, especially how to make the forest a part of their lives. Their actions in forest management are always based on local knowledge. This understanding process cannot be separated from the influence of the social system that surrounds people's lives. Local knowledge on forest management is very complex because it provides an understanding and philosophy of forest functions, regulates uses and prohibitions, and emphasizes the main function of *Ammatoa* to regulate, utilize, and maintain forest sustainability. There is a need for continuous follow-up research related to the latest information about the condition of customary forests in the Kajang Tribe. So that it becomes input for all stakeholders in preserving customary forests in the *Ammatoa* customary forest area.

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