

## **Environmental Preservation Based on Local Wisdom (A Case Study at Kajang, Bulukumba, South Sulawesi, Indonesia)**

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**Abstract:** This study was conducted in the village of Tanatoa, Kajang District, Bulukumba Regency, South Sulawesi Province, Indonesia. It was conducted for 6 months, i.e., from July until December 2015. This study aimed to: determine the existence condition of the forest in Kajang both of the customary forest area and outside customary forest area, determine the stakeholder's structure and their role in the forest preservation and its ecosystems, analyze the local wisdom system that is applied in forest preservation and analyze the forest management model. The results of the study are as follows: the existence condition of the forest in Kajang in term of the quantity covers 1.070 ha and in term of the quality, it has still high biodiversity, institutions that manage and protect the forests in the structure of limayacustom consist of Galla Ganta, Galla Sangkala, Galla Bantalan and Galla Sapaya for the forest in customary forest area, while for the customary forest area is directly coordinated by ammatoa who is as the chairman of customary stakeholder in forest preservation, there are two local wisdoms that are applied, namely four prohibitions and three punishments for offender. The prohibitions consist of Tabbang Kaju (cutting tree), TattaUhe (cutting rattan), Tinibani (burning bee) and Rawo Dowang (catching shrimp). Meanwhile, the three sanctions consist of Pokok Babbala (low sanction), Attangnga Babbala (moderate sanction) and Accappa Babbala (high sanction) and the forest management model based on the local wisdom had been successfully applied but economically it needs for new models, i.e., replacing system with the conversion of 1:3 and selective logging.

**Key words:** Environmental preservation and local wisdom, sanctions, consist, prohibitions, structure, Limaya custom

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### **INTRODUCTION**

The rapidly increasing the world's population every year must be coupled by the provision of human needs in various life dimensions from primary needs such as clothing, food and shelter. To fulfill these needs, the only one alternative is the use of the natural and environmental resources both in the ocean and on the mainland; perhaps this is what is revealed by Allah SWT (Almighty God) in one of his words in the Holy Qur'an of Surat Ar-Rum Verse 41 which means that there has been damage in the oceans and on land caused by human actions.

The ocean's damages have taken place in the form of physical and habitat damage such as mangrove forests, sea grass beds and coral reefs as the results of various acts of fishermen who catch the fish and other aquatic organisms that are not environmentally friendly such as fishing by using fishing gear such as bombings with

various chemicals as well as the fishing gear specifications that are not selective, consequently these cause not only catching young fish and other aquatic organisms that do not meet the consumption size but also damage the marine ecosystems (Sambu, 2004).

On the other hand, the damage on land is in the form of agricultural activities both of extending and intensification, these activities have affected environmental degradation. The extending or expanding agricultural areas have caused the land conservation on a large scale, including some forest areas have been converted into agricultural land. While, the intensification activities with the use of various chemicals have undermined the quality of soil and water as well as the decline of biodiversity of flora and fauna (Sambu, 2013).

One way to maintain the existence of ecosystems forest in Indonesia in order to save rescue the flora and

fauna and their ecosystem is a based community management. One example of forest management based on local wisdom is the forest management in Tanatoa Kajang, hereditary conditions are maintained both in quantity in the form of forest areas and in quality in the form of their biodiversity. Genetically, the preservation of customary forests in Kajang in term of their ecological benefits is as the center of biodiversity of flora and fauna all species that ever existed are still found today in the forests.

The observation results for several animal species, such as deer, wild boar, civet, partridge, snake, bee and some fish and shrimp species and other aquatic organisms that inhabit some of the expanse of water in the forests, such as rivers, lakes and pools are still surviving. These were happened because of the local wisdom which is set by the amma to a community, i.e., there are four things that cannot be preserved with four prohibition, namely: tabbang kayu which means that it was not allowed to cut all kinds of wood, tattaunhe which means that, it is forbidden to cut rattan, tunibani which means that, it is forbidden to burn the bees and rawodowang which means that, it is forbidden to catch shrimp (Nyonyok, 1992; Palasa, 2014).

The four prohibitions should not be done for any reason, except it is as Amma to a command as the Customary Chairman of Kajang community. Ammatoas the chairman of customary stakeholder sometimes orders to do four prohibitions at any time if there is pa'nganroceremony or ritual ceremony to ask for something to Allah SWT (Almighty God) or the Kajang's people called Tau RieaA`ra'na which means that goodwill and if there are people who do them without Ammatoa's confirmation, then they will be given sanctions, namely: low sanction or pokok babbala, moderate sanction or attangnga babbala and serious sanction or accappa babbala (Embas, 2015).

**Research objectives:** This study aims to: determine the existence conditions of forests in Kajang both in the forest of customary area and outside the customary area, analyze the structure and function of limayya custom that handles the forest's preservation and their ecosystems, analyze the local wisdom system that is applied in forest's preservation and analyze the forest management model that is sustainable economically and ecologically.

## **MATERIALS AND METHODS**

**Research site and time:** This research was conducted in the District of Kajang which the six villages have

customary forest areas include: Tanatoa village, Malleleng village, Tambangan village, Sangkala village, Bontobaji village and Pattiroang village. This research was conducted for 6 months, i.e., from July to December 2015. The research location can be seen in Fig. 1.

**Research instruments:** The research instruments consisted of tools and materials used in this study, i.e., tools consists of pen, ruler, radio as the recording tool, camera for photographing, a laptop unit, a printer unit, a compass to determine the direction and roller meter. While, the materials used were a ream of paper, printing inks and questionnaire.

**Types and sources of data:** The types of data in this research consisted of primary and secondary data. The secondary data were obtained from various writings in book form as well as in the form of journals and other written materials. Meanwhile, the primary data were directly obtained from all stakeholders through direct interview by asking structure questions. The stakeholders were government apparatus, custom's stakeholders chaired by Ammatoa and public figures.

**Scope of the research:** This research was conducted in 6 villages associated with the customary forest management of Kajang and however, the customary forest area were mostly located in the village area of Tanatoa but other villages bordering the customary forest areas were also included as part of the environmental maintaining and preserving. The related rural areas to the customary forest areas, namely: Malleleng Village, Tambangan Village, Sangkala Village, Bontobaji Village and Pattiroang Village.

Respondents in this study were selected based on the relevance to the preservation of customary forest areas both for individual and for the positions of village's officials as traditional stakeholder chaired by Ammatoa. The participation of all stakeholders was needed in the preservation of forest areas in Kajang and how the system was implemented in controlling the sustainability of forest preservation.

**Data analysis:** The data analysis method in this study was descriptive qualitative approach. The descriptive qualitative analysis was used to illustrate and describe any perceptions of all stakeholders about the importance of preservation forest of Ammatoa. The data that have been obtained from interview were analyzed by using descriptive qualitative analysis.

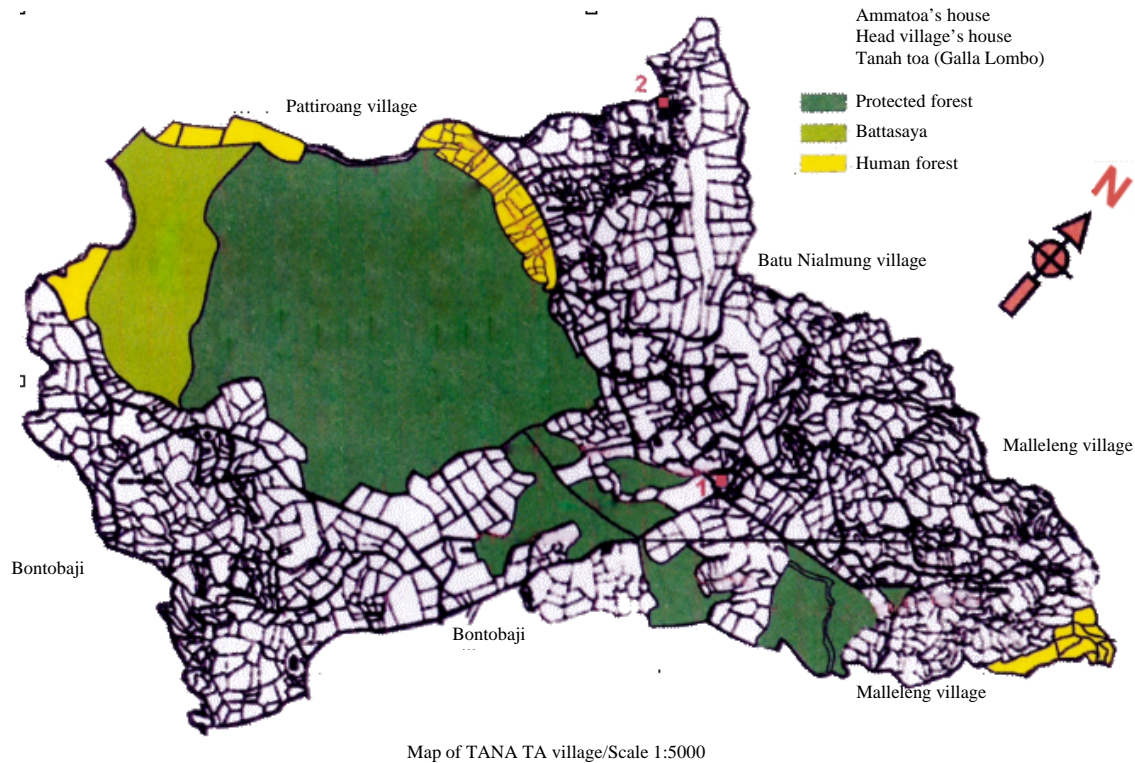


Fig. 1: The map of research site at Tanatoa Village, Kajang District, Bulukumba Regency, South Sulawesi Province, Indonesia

## RESULTS AND DISCUSSION

**The site's description:** Kajang is one of the districts in Bulukumba that still has natural forests spreading in several villages such as: Tanatoa village as the regional center of customary forest, Malleleng village, Tambangan village, Sangkala village, Bontobaji village, Sapaya village, Batunilamung village and Lembanna village. The forest area in the overall of Kajang District is 1.070 ha. The forests in Kajang were maintained well because most of the customary forest management system was controlled by Ammatoa Kajang's community based on local wisdom or known as the based community term.

Historically, there are several forest areas in the district of Kajang which are as the state forests located in the outside area of customary forest, namely: Bongoa forest which is located in Bontobiraeng village, Dampu forest which is located in Sangkala village, Cempagapuang forest which is located in Bontobaji village and Binuang forest which is located between Sapaya and Pattiroang villages which is partially included in Bulukumba District. The expanse of these forests is still as memories because they have been converted into plantations and other uses.

Deforestation in Kajang was initially caused by two things, namely: at the end of 1970, the price of cloves,

both domestic and overseas continues to rise, therefore it encourages the people to cut down forests indiscriminately to be converted into plantations clove and at late 1970's, the infrastructure development including construction of office buildings, schools and other buildings need a lot of wood, it also triggered forest clearance on a large scale without considering the ecological functions. The forests that have been survived until now are included in the customary forest areas as shown in Fig. 2.

Long time ago, before the arrival of Dutch colonized in Indonesia, there was already formed a government system that was expected to precede the formation of the large kingdoms in South Sulawesi, i.e., Luwu kingdom, Gowa kingdom and Bone kingdom, the three kingdoms were called Tellu Boccea kingdom. The structure of Karaeng Tallua and limayya custom at the beginning were as based community and only consisted of limayya custom which was led by Ammatoas the patron or protector. After Kajang's government system was changed form limayya custom which was as based community to be Karaengtallua system and limayya custom which adhered the government system of Tellu Bocceakingdom as presented in Fig. 2.

The government's structure in Kajang after being formed Karaeng Tallua and limayya custom consisted

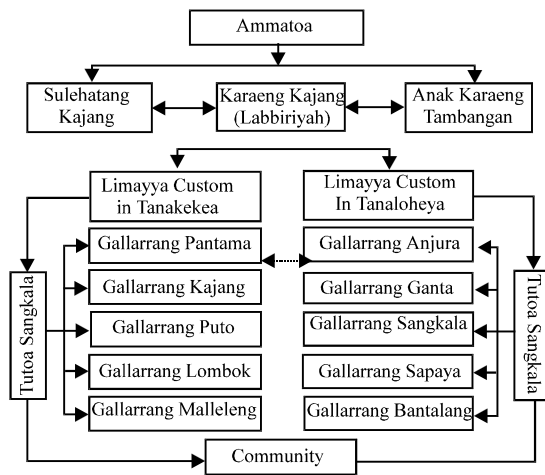


Fig. 2: The structure of Karaeng Tallua and Limayya custom in Kajang, Bulukumba Regency, South Sulawesi Province, Indonesia

of limayya custom in tanakekea or limayya custom in tanaloheya. Limayya custom in tanakekea included: Gallarrang Pantama, Gallarrang Kajang, Gallarrang Puyo, Gallarrang Lombok and Gallarrang Malleleng. Meanwhile, limayya custom in tanaloheya included: Gallarrang Anjuru, Gallarrang Ganta, Gallarrang Sangkala, Gallarrang Sapaya, and Gallarrang Bantalang. In addition to limayya custom, there was also buttayya custom. Both institutions have each assigned to assist Ammatoa as the chairman or pa'lalangan of limayya and buttayya custom.

Ammatoa in Kajang, who is as the chairman of limayya custom both in Tanakekea and Tanaloheya are not only assigned as the government aspect in his region, but also assigned other tasks to preserve the environment in the form of rivers and forest, for example, Gallarrang Malleleng was given the task in the fishery aspect to keep rivers and their ecosystems, Gallarrang Ganta maintained Bongoa forest, Gallarrang Sangkala maintained Dumpun and Campagapung forest and Gallarrang Sapaya and Gallarrang Bantalang protected Binuang forest and the surrounding. These are limayya custom's stakeholders who have the task to maintain and protect the forests in order to be sustainable.

**Forest functions:** Forests have various functions as stated by Palasa (2014), he said that essentially the forests must be preserved because of some reasons, namely: the roots store water where the tree's roots in the soil can slow the hydrological cycle on Earth, leaves help the cloudy process or angngontakbesi, the trees in the forest

produce litter, flowers, fruits, twigs, stems, roots and rods as the natural fertilizer after going through the decomposition process and the existence of trees can protect the village from the tornado threat. These were the premise of Kajang's people, so, they maintained and preserved the forests for generations, substantially, Kajang's people adhere to the belief that the forests have been a part of their life. The forest's functions based on the sciences, the forest has three main functions, namely: ecological, economic and social functions. The three main functions of the forest are same with the principle that was stated by Ammatoa Puto Palasaas the chairman of community.

**Ecological function:** Ecologically, the forest has many functions including: climate regulator, producing oxygen, absorbing carbon dioxide, the center of biodiversity of flora and fauna, water catchment areas, a provider of various nutrients through the decomposition process, protect the settlements from the tornado threat. The forest is one of life's indicators of a community, if a country's forests were preserved, so, the people's welfare is good. As an example, Finland is the first country that implements the free education and health because Finland concerns about the forest preservation.

**Economic function:** Economically, the forest has several functions either directly or indirectly such as building materials, firewood and as the industrial raw materials. But the forest's function in customary Tanatoa Kajang area is not utilized either directly or almost nothing because the local wisdom applied by Ammatoa's community managed about the customary forest management, i.e., regarding to the use or utilization is not justified except by Ammatoa's permission for a particular allotment. This model should need to be revised, so that, the ecological and economic aspects are balanced.

**Social function:** Socially, the forest has several functions including: as the ecotourism location as the location of field practice for students as research site as the location to perform the ritual. There were some important rituals carried out inside the customary forest including the election and inauguration of Ammatoa as the leader or chairman of limayya custom and buttayya custom. Likewise, many research activities were conducted in the forest both researchers from country and foreign researchers. The biodiversity of the customary forest area in Tanatoa Kajang community were still high both flora and fauna.

**Local wisdom in preservation:** The hereditary pasang(request) in Kajang as a way of life for Kajang's community, since, long before the structured government like Karaeng Tallua and Limayya custom already established four prohibitions related to forest conservation, namely: it is not allowed to cut trees, it is prohibited to cut the rattan, it is not allowed to burn bees, and it is forbidden to catch shrimp.

**Cutting wood or Tabbang Kaju:** One of Pasang's articles in Kajang as a source of local wisdom and as a way of life is that not allowed to cut wood of all types of forests contained in customary areas with any reasons and purposes, except for designation associated with the rituals. The results of interview with some community leaders about what is prohibited felled timber on a case that forests have economic and social function. Generally, they answered that it was based on pasangor request as a local wisdom that is upheld by ancestors for heredity generations.

Although, respondents generally could not be explained by using science but from the respondent's fragmentary information were combined mixed between local wisdom and knowledge on the same principle. However, the explanations that come from the local wisdom were less when they were compared with the modern sciences. Both are similar regarding to the forest's functions universally, namely to maintain the biodiversity of flora and fauna. When we cut a three species, it means that we have reduced one species of wood and hopefully, it is elsewhere.

**Cutting rattan or Tatta Uhe:** Cutting rattan or Tatta Uhe is also one of flora types that are prohibited to cut with any reasons and purposes which is similar with the cutting tree or tabbangkaju. The results of the study by using science with the ecological approach revealed that the existence of rattan in the forest areas of Kajang has an important role in the forest preservation, where rattan plants were not only grow up by standing but also by spreading anywhere, so, rattan plant is as the plant that makes the forest area is difficult to intake because rattan is barbed making it is difficult for people to carry out illegal activities in forest such as illegal logging, hunting animals like deer and partridge, fishing in the rivers.

Rattan with plant system that is crisscross makes people difficult to enter the forest. Perhaps, this is one reason of Tanatoa Kajang's community to concern to the forest preservation. For animals, it can save them from hunter and animal predation that is cannibalistic, so, the existence of rattan in the forest ecological system has

function for the fauna preservation. The rattan with the spreading and thorny system can maintain the biodiversity of flora and fauna.

**Burning bee or Tunibani:** Burning bee in the customary area is also one of the prohibitions that must be respected by the members of Ammatoa's community because bee is considered as one of the fauna species that must be protected. Bee is not only as a wild animal, so, the human are more cautions to commit illegal activities in the forest, but also produce honey which can be a cure for human diseases as well as has the function in the mating process of various plant types.

**Catching shrimp or Rawo Dowang:** Catching shrimp in the river in the forest area is also one type of prohibitions in Kajang because the shrimp is one type of aquatic organisms that is delicious to be consumed by human. Based on the traditional belief of Kajang's community, eating the delicious food in the world is considered as the excessive act. Therefore, catching shrimp was only allowed for rituals ceremony by Ammatoa's permission as the protector chairman of limayy custom. The shrimp was also considered to be one type of aquatic organisms, which can protect other organisms from organism predators that are cannibalism.

When the four prohibitions are reviewed from the science's perspective on the ecological context in accordance to Regulation Law No., 5 in 1990 about the protection of biodiversity both flora and fauna and their ecosystems (Supriharyono, 2005). The environmental preservation based on local wisdom was applied by Tanatoa Kajang's community should be become an international environmental management model.

**Local wisdom model:** The model of local wisdom that is applied by Tanatoa Kajang's community in the preservation of customary forest areas is the law that consists of three categories, namely: pokokbabbala, attangngah babbala, and accappa babbala. These three law categories are applied in enforcing sanctions for forest destruction, either directly or indirectly.

**The base whip or Pokok Babbala:** The law of the base whip, or in Konjola language called a'pokokba bbala for Kajang Hitam community is the law level that is still in low category. Its sanction is still in the form of warning from the customary stakeholders to not commit the similar offenses. The law of a'pokok babbala or the base whip is imposed for offenders who are not directly and there is no solid evidence or testifier, so, his/her status of the alleged offense is still as presumption that is called hypothesis in the research's language.

The four prohibitions in maintaining the forest sustainability and its ecosystems are tabbangkajuor cutting wood, tattauehor cutting rattan, tunibanior burning bee and rawodowangor catching shrimp. These four natural resources are the flora and fauna resources that are maintained preserved for generations. If one of these natural resources is destructed by someone and if the perpetrator is not found, it will be conducting the ritual of attune Passau or burning incense which is usually done by Ammatoas the customary chairman to find out the perpetrator.

**The middle whip or Attangnga Babbala:** The law of the middle whip or attangngahabbalais the medium legal type or medium or medium sanction for wrongdoers, whoits offense is proven by evidence in the form of the object protected. However, the testifier is not yet complete but it leads to certain elements, the form of sanction is not only warned but also usually imposed with isolation law or social law, i.e., the offenders are no longer regarded as human beings, hence, their daily activity does not get along with other people.

The application form of social law in the area of Kajang is the offenders are given social sanction for the community, on form of social laws is if the offenders hold events or parties, they will not attended by custom stakeholders, thus offenders feel disappointed and devastated. Therefore, they are immediately willing and determined not to do any offenses.

In the customary area of Kajang, there are three kinds of ceremony parties, namely katimboan tau or wedding party, attangnga tau, i.e., kalombaparty for sons and daughters and kalabbusanumuru, i.e., the funeral ceremony, consisting of addangan, alajo-lajoand addampo. If these parties do not attended by custom's stakeholders, they are deemed invalid or not sacred. Therefore, this is one reason that Kajang's people are afraid to commit the prohibitions because the offenders get hard to accept the social law.

**The bottom whip or Accappa Babbala:** The laws for the bottom whip or accappababbala is the highest legal level for wrongdoers in the Kajang's area. The offense's event is proven by evidence and there are testifiers. Therefore, the sanction form is not only social punishment in the form of social isolation but also given the fine in the form of cash amounting IDR 12,000,000 (Palasa, 2014). This model is heredity applied to conserve forests and their ecosystem based on the local wisdom and this model can be adopted elsewhere to maintain the forest sustainability both at the national and international level.

For the forestry management in Kajang area in the future, institutional strengthening is needed to be improved and the role of custom's stakeholders as the administrator and guard of the forest must be empowered. Natural resources that are to be useless, for example, wood that has reached old age can be taken by agreement of all custom's stakeholders for institutional strengthening, so, the forest management should be balanced among the ecological function that ensure environmental sustainability, economic function that attempts to give the prosperity to community in the customary forest areas, either directly or indirectly and social function that can guarantee a social system in the forest for generations (Nyonyok, 1992).

**Forest management model:** Based on the study results in terms of ecological, economic and social, the forest management in Kajang's areas should be conducted integrally, optimally and sustainably. These three principles can be conducted and utilized in the customary forest areas without forbidding the local wisdom and also it does not be useless (Dahuri *et al.*, 1996).

First, the integrated forest management refers to integrated ecologically which means that forest management is based on the ecological aspect. It is integrally for all aspects that the activities and things must be conducted by involving all custom's stakeholders, so that, the resulting decisions are binding both individually and collectively or in group and it is integrally by sciences, i.e., involving all people who have competence both individually and in group.

Second, the forest management should be economically optimal to provide the welfare of the community. For long time, the customary forest area in Kajang did not give economical benefits to its community either directly or indirectly. Due if there are trees that are already old and meet the size of the processed wood, they should be cut, so, the results should be utilized collectively and also used to maintain and preserve the forests, for example, seedling and fencing forest areas.

Third, the forest management should be sustainable which means that any form of utilization of a resource should not be exceeded the carrying capacity to recover naturally. This means that any use or resource extractions can be recovered as before, for example, cutting certain tree species should be provided by the replacement process of the same type before the conversion of 1:3, which means that if one tree is cut, it should be planted the three same tree species before cutting it. Regarding to this principle, the forest will always be long-lasting and it must be arranged based on the local wisdom.

If young men who later getting married will build a house with the number of poles are 16 bars for each house, the floor and wall and other parts also need about 32 wooden rods that needs a decent house inhabited entirely by 48 trees. The total of 48 trees is not heavy for a young man if previously it was programmed, for example, three years before getting married he is required to plant 16 trees per year, so that, after getting married he has been allowed to cut down the number of trees for a livable house.

### CONCLUSION

Based on the results of this study regarding to the forest management in customary area of Tanatoa Kajang, the conclusions reveal that: the existence conditions of forests in Kajang both in customary area and outside the customary area in term of quantity consisted of 1.070 ha, and in term of quality aspect, these forests have still good condition because the degree of biodiversity is still high, the institutional that manage and protect these forests in the structure of limayya custom are namely Galla Ganta, Galla Sangkala, Galla Bantalan and Galla Sapaya for the areas outside the customary forests but especially inside the customary forest area, it is directly controlled by Ammatoato all custom's stakeholders, the local wisdom in the forest's preservation consist of two things, namely four prohibitions and three sanctions. The four prohibitions consist of Tabbang Kaju (cutting tree), Tatta Uhe (cutting rattan), Tinibani (burning bee) and Rawo Dowang (catching shrimp). Meanwhile, the three sanctions consist of Pokok Babbala (low sanction), Attangnga Babbala (moderate sanction) and Accappa Babbala (high sanction) and the forest management model based on the local wisdom has been successful applied but economically it is needed to provide the new models, i.e., replacing system with a conversion of 1:3 and selective logging.

### RECOMMENDATIONS

Based on the study results on the environmental preservation based on local wisdom in Tanatoa Kajang's community, it can be suggested that: four protected natural resources, i.e., wood, rattan, bee and shrimp

should be balanced between utilization and conservation, which means that the natural resources are not only be protected ecologically but also should be used based on qualified requirements such as eligible for age and size, the forest management model should not only provide the ecological aspect that is oriented to preservation but also provide the economic aspect which is oriented to the welfare of community around the forest, the forest management should be conducted in an integrated manner that involves all stakeholders and the forest management model of customary area of Tanatoa Kajang should be the pillars to the forest management both locally, regionally, nationally and internationally.

### REFERENCES

- Dahuri, R., J. Rais, S.P. Ginting and M.J. Sitepu, 1996. [Coastal and Marine Resource Management Integrated]. Publisher P.T. Pradnya Paramita, Jakarta, Indonesia, (in Indonesia).
- Embas, M., 2015. [Vice Chairman of South Sulawesi Peoples Alliance of the Archipelago, Village Bontobaji Kecamatan Kajang]. Kabupaten Bulukumba, Sulawesi Selatan, Indonesia, (in Indonesia).
- Nyonyok, P., 1992. [Ammatoa Heights, Desa Tanatoa: District Heights]. Kabupaten Bulukumba, Sulawesi Selatan, Indonesia, (in Indonesia).
- Palasa, P., 2014. [Ammatoa Heights, Desa Tanatoa, District Heights]. Kabupaten Bulukumba, Sulawesi Selatan, Indonesia, (in Indonesia).
- Sambu, A.H., 2004. [Study of mangrove forest management policy aspects in bulukumba, South Sulawesi, Indonesia]. Ph.D Thesis, University of Makassar, South Sulawesi, Indonesia. (in Indonesia)
- Sambu, A.H., 2013. [Optimization-Based mangrove forest management environmental carrying case and feasibility study coastal water Sinjai, South Sulawesi, Indonesia]. Ph.D Thesis, Bogor Agricultural University, Bogor, Indonesia. (in Indonesia)
- Supriharyono, 2005. [Conservation of Biological Resources in Coastal and Marine Tropical]. Pusataka Belajars, Yogyakarta, Indonesia, (in Indonesia).