

## Indigenous Eco-System Governance: The Case of the Ammatoa Kajang

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### ABSTRACT

This research examines ecosystem governance by the Ammatoa Kajang indigenous community. The main objective of this research was to understand how Ammatoa Kajang's indigenous knowledge and practices contribute to ecosystem preservation and how they face and adapt to modern environmental changes. The research used a qualitative approach, collecting data through in-depth interviews, participatory observation, and document analysis. The Results show that the Kajang indigenous community has developed a unique and sustainable ecosystem governance system, rooted in local knowledge and deep spirituality. The study concludes that Ammatoa Kajang's indigenous ecosystem governance practices provide an important example of how local knowledge can contribute to environmental sustainability and the importance of greater integration between indigenous knowledge and contemporary environmental governance strategies.

**Keywords:** Indigenous Eco-System Governance<sup>1</sup> Indigenous People<sup>2</sup> Traditional Rural Area<sup>3</sup> Governance<sup>4</sup> Kajang<sup>5</sup>

### INTRODUCTION

Natural resources are the main source of fulfillment for several countries (Khaerah & Nur, 2022; Venables, 2016), as is the case in Indonesia (Kurniawan & Managi, 2018). Forests are one of the potential natural resources in the lives of Indonesian people, especially for rural communities who depend on forest resources for their livelihoods (Dewi et al., 2005; Michon & de Foresta, 1995). Indonesia's forests play an important role in people's livelihoods and the national economy (Tsujino et al., 2016). Approximately 48.8 million Indonesians live in or near forests and depend on forest resources through agriculture, fisheries, and timber management. In addition, around 3.4 million people work in the forest processing industry (Kusmana, 2011). Indonesia is one of the countries that has the largest number of forests in the world with an area of around 126 million hectares (Ha). The large potential of forestry resources owned by Indonesia makes forest utilization a strategic sector in an effort to improve people's welfare. However, the

issue of deforestation is a threat to the sustainability of forest areas in Indonesia. Land conventions for the sake of infrastructure development, settlements, land clearing for oil palm plantations, and mining are the causes of the high rate of deforestation in Indonesia (Afelt et al., 2018; Cisneros et al., 2021; Jayathilake et al., 2021). In the five-year period 2017-2021, the quality of Indonesia's land cover was unstable or fluctuating (see Figure 1), even indicating the degradation of Indonesia's forest areas.

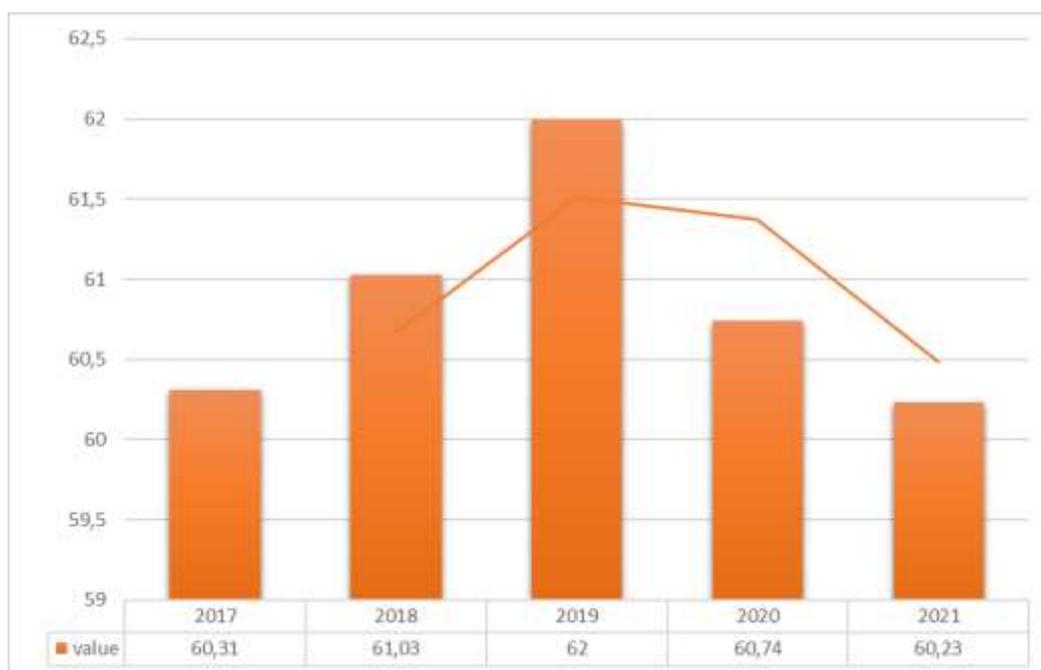


Figure 1. Indonesia Land Cover Quality Index (2017-2021)

Source: Databoks Indonesia, 2022

Deforestation presents many environmental problems (Aliyu et al., 2014; Pfaff et al., 2014), and has even become an object of global environmental governance (McGregor et al., 2015). Large-scale degradation of forest areas continues to occur, posing a significant threat to the sustainability of forest resources (Kustanto, 2022). Indonesia is one of the countries with the highest rate of forest loss (Austin et al., 2019). Deforestation is still the most massive land degradation issue in Indonesia. In fact, from 2015 to 2020, Indonesia has lost 213 million hectares of forest. This condition makes the phenomenon of deforestation in Indonesia one of the world's concerns, because it has an impact on increasing carbon emissions, loss of biodiversity, and ecosystem balance (Suwarno et al.,

2015). Deforestation raises questions about the impact of human activities on environmental stability and how to balance the interests of humans and nature (Aşıcı, 2013). Answering these questions is an absolute prerequisite for achieving sustainable development (Zou et al., 2019).

Sustainable development is the management of natural resources accompanied by the orientation of technological and institutional changes in such a way as to ensure the fulfillment of a number of needs for present and future generations (Murugesan, 2011). The issue of sustainability is a keyword for every stakeholder in understanding adequate natural resource management (Pradhan & Patra, 2020). Sustainable forest management is one of the main points contained in the SDGs (Sustainable Development Goals) agenda (Das & Das, 2019). Sustainable development requires a conservation strategy that contains three main elements: protection, sustainable use, and benefit sharing. This tactical step is further enhanced by an environmental governance approach that departs from cultural understanding or local values of the community, especially indigenous peoples who are predominantly located in forest areas.

The inclusion of indigenous peoples in forest management is a wise step to minimize the exploitation of natural resources, which has been regulated in the UN declaration on the rights of indigenous peoples (Renwick et al., 2020). Since the adoption of the declaration, the idea of the presence of indigenous peoples has gained a place in the idea of development (Gilbert & Lennox, 2019). The demand for indigenous peoples' involvement in governance has increased along with the recognition of participatory rights (Zurba & Papadopoulos, 2021). Recognition of indigenous expressions and standards of living is realized by including indigenous knowledge in national and international development agendas, thus representing the conception of sustainable development (Yap & Watene, 2019). Indigenous peoples are considered to have potential in efforts to save the environment amidst the massive flow of global development and massive exploration of natural resources (Etchart, 2017), so that on several occasions they are involved in decision-making. In recent years, increasing the participation of indigenous peoples has become an international policy agenda (Oguamanam, 2020).

Several countries have incorporated indigenous participation in forest management schemes, including India and Tanzania. In India, local participation in forest management has even been formalized through the concept of Joint Forest Management (JFM) which includes arrangements for community involvement (Kumar & Kant, 2016). Another example comes from Tanzania where community and stakeholder engagement strategies in forest management have been implemented through Participatory Forest Management (PFM) schemes. In practice Participatory Forest Management has been implemented in more than 900 villages with almost 442,000 ha of forest under Community Based Forest Management, and more than 396,000 ha under Joint Forest Management (Gudria & Gapor, 2013).

However, in the Indonesian context, the practice of indigenous community-based forest management is still inconsistent. In fact, indigenous peoples are often victimized by development agendas. Therefore, a forest management policy scheme is needed that incorporates indigenous values or local wisdom as a paradigm for development and resource management (Zimmerer et al., 2022; Radcliffe et al., 2022; Dupuits et al., 2020). This research aims to answer this need through the exploration of the mindset or local knowledge of the indigenous kajang community about nature-human relations. The Kajang community was chosen as the research subject because it has systematic forest governance knowledge that has been taught for generations, so that it can be applied to the construction of forest management policies based on local values. In addition, the Kajang indigenous community has a long historical experience of conflict over natural resource management. Even until 2023 the conflict still continues with the rejection of the kajang community against forest exploration carried out by PT Lonsum.

The problem of conflict-ridden natural resource management is a sign of the lack of sociographic and cultural knowledge in the process of resource governance. Therefore, there needs to be further exploration to find the right perspective in looking at the regulation and management of natural resources, in this case forest resources. This paper departs from the question of the possibility of a new perspective or approach that can be a way out of solving natural resource governance problems. Indigenous Eco-System Governance is one of the approaches

that the author offers as one of the answers in resolving forestry resource management issues and minimizing the gap or imbalance between natural and human interests that exists as a result of improper development implementation. The urgency of this research is to find a model or practice of governance that can reconcile local values with modern development schemes, so as to contribute to the achievement of sustainable development and resource management without ignoring the existence of indigenous peoples in the development discourse, especially rural development.

In reviewing the issue of resource governance in the Kajang indigenous community, the author uses the Indigenous Eco-System Governance theoretical framework, where the analytical framework. Several previous studies were analyzed, such as Stavenhagen (2013), who developed an alternative development framework that focuses on the social and cultural identities of local populations in the Latin American region who are victims of ethnocidal policies. Then Sampean & Sjaf (2021) reconstructed the concept of ethnodevelopment and criticized the practice of the Village Law in the kajang community, which was considered not to provide a place for the needs of indigenous communities on the development agenda. Furthermore, Perra (2019) observed the phenomenon of environmental protection in Andean countries which is considered to be included in the legal scheme of development based on indigenous values. According to Perra (2019), the influence of indigenous peoples' ancestral knowledge and traditions can contribute to the environmental protection system. Furthermore, research Meutia et al. (2022) also talked about indigenous values-based development in relation to tourism, especially in the dimension of gender identity of local communities. For Meutia et al, development that is integrated with indigenous values can encourage the improvement of women's social status in tourism activities.

There are several points in previous studies that have correlations with this research, including research conducted Daniel et al., (2022) which seeks to show how the social and ecological practices of the Kajang indigenous people are combined to develop indigenous territories and how Ammatoa's indigenous values contribute to achieving the UN Sustainable Development Goals (SDGs) 15 and 12.

In addition, there is also research conducted by Megawati & Mahdiannur (2021) which described the implementation of forest conservation policies based on the local wisdom of the Ammatoa Kajang indigenous community. However, previous studies have focused on the issue of *Pasang ri Kajang*. Furthermore, previous studies mostly presented descriptive reviews. There is a need for intensive studies on natural resource management, especially on the question of how local knowledge is placed in the scheme of natural resource management in the modern era, so as to be able to give birth to a new insight amid the rampant conflict over natural resource management. This research is conducted elaboratively and analytically on the local knowledge of the Kajang indigenous people to explore natural resource management strategies, forestry. As a result, this article is expected to be able to reveal and provide new perspectives related to natural resource governance, with the Kajang indigenous community used as a case study in this research.

Indigenous Eco-System Governance refers to the management and stewardship of ecosystems by indigenous peoples, who often have deep knowledge of and special relationships with their natural environments. Frameworks for "Indigenous Eco-System Governance" should take into account local wisdom, sustainable practices and the rights of indigenous peoples.



Figure 2. Conceptual Framework

Indigenous Eco-System Governance starts with local wisdom that contains indigenous knowledge paradigm. This is closely related to the interdependence of nature and humans (cosmological relations). Indigenous knowledge implies that indigenous peoples are stakeholders who have the right to self-determination and indigenous resource management (Latulippe & Klenk, 2020). The terminology of indigenous knowledge contains the notion of 'governance values' for indigenous peoples whose role is to revive governance practices (land, natural resources, diplomacy) based on indigenous legal orders aimed at promoting community welfare (K. Whyte, 2018). Indigenous knowledge does not only speak of the epistemological dimension (knowing), but also various aspects such as ontology (being or existence), methodology, and axiology (ethics) which are all interrelated (Wilson, 2020). Indigenous knowledge is a manifestation of ethical relationships and human responsibility in relation to other creatures in the world (Reo & Whyte, 2012), therefore it might also be referred to as an environmental governance system rooted in local cosmology as it relates to environmental changes and challenges over several generations (K. P. Whyte, 2013). In the environmental field, indigenous knowledge continues to be treated as material to fill gaps in existing theories, datasets, methodologies and outputs, resulting in theft, misappropriation and commodification (Todd, 2016). The application of indigenous knowledge in natural resource governance is a multi-faceted process, starting with the recognition and respect of local indigenous knowledge (Meutia et al., 2022). One of the key aspects in the application of traditional knowledge is the documentation of indigenous knowledge. This process involves the systematic recording of various aspects of traditional knowledge, including agricultural techniques, forest management, and fishing and hunting practices.

Furthermore, Indigenous Eco-System Governance includes sustainable resource management practices. The adoption of sustainable management practices by indigenous peoples plays a crucial role in maintaining the sustainability of natural resources (Sampean & Sjaf, 2021). One important aspect of sustainable

management practices is the maintenance of biodiversity. This involves protecting species and habitats, as well as maintaining healthy ecosystems. Indigenous peoples often have in-depth knowledge of local species and the complex interactions within their ecosystems, making them strategic partners in conservation efforts. Indigenous peoples have also demonstrated a remarkable ability to adapt their management practices to environmental changes. They have developed a range of adaptive strategies to cope with climate change and other environmental stresses. These include the use of diverse cropping patterns, land rotation practices and sustainable management of water resources. In the broader global context, it is important to recognize and support the role of indigenous peoples in sustainable management (Laurie et al., 2005; Saefullah, 2019). Therefore, sustainable management practices adopted by indigenous peoples and enriched by traditional knowledge, not only help in maintaining biodiversity but also increase the resilience of ecosystems and communities to environmental change.

The last indicator is the recognition of Indigenous Peoples' rights in natural resource governance. Passing laws that recognize indigenous peoples' rights to land and natural resources is an important step in ensuring equitable and sustainable resource management (Anaya & Williams Jr, 2001). Such policies not only provide legal protection to traditional rights, but also affirm the importance of indigenous knowledge and practices in environmental conservation. A key aspect of passing these laws is the recognition of indigenous peoples' rights to the lands they have managed for centuries. This involves recognizing land tenure rights, the right to access and use natural resources, and the protection of indigenous lands from unauthorized exploitation or expropriation. This recognition is important not only to protect the interests of indigenous peoples, but also to maintain the sustainability of natural resources managed based on traditional knowledge. In addition, it is important to have policies that protect indigenous peoples' traditional practices. The level of participation of indigenous peoples in decision-making forums is an important indicator of how effectively these policies are implemented (Setiawan et al., 2017). Giving indigenous peoples a voice in planning and policies that affect

their lands and resources is not only an act of justice, but also enriches the decision-making process with valuable knowledge and perspectives. As such, passing laws that recognize indigenous peoples' rights and policies that protect traditional practices are important steps towards equitable and sustainable resource management

## RESEARCH METHOD

This article uses a qualitative concept study by referring to the Indigenous Eco-System Governance (IEG) analytical framework which is an elaboration of the theory conducted by the author. This study expands the understanding of environmental management from the perspective of indigenous peoples. This approach is important because it recognizes and respects indigenous peoples' traditional knowledge and practices in maintaining ecosystem balance. In addition, IEG explores offering a framework that strengthens the role and voice of indigenous communities in decision-making processes related to ecosystem management and integrates them into broader management strategies, thereby increasing ecosystem resilience (Reed et al., 2021; Tiakiwai et al., 2017). This research elaborates a model of natural resource governance, especially forestry, in the Ammatoa Kajang indigenous area. Data collection in this research was conducted in two steps. First, using the literature method obtained from various literature sources such as books, journals and articles relevant to the focus of the research study, namely forest conservation policies based on the local wisdom of the Ammatoa Kajang indigenous community. And second, continued with in-depth observation. On several occasions, the author stayed in the Kajang indigenous rural area to conduct observations and interviews with traditional leaders and Ammatoa (the highest leader of the Kajang tribe). The data that has been collected, classified, and interpreted as an effort to calibrate environmental governance in the ecological concept of the Kajang indigenous community. Furthermore, using the Nvivo tool to explore the network of policies and actors in natural resource governance in Kajang and assess the tendency of the Kajang indigenous environmental

management model, the final results are displayed in the form of graphs and visualizations.

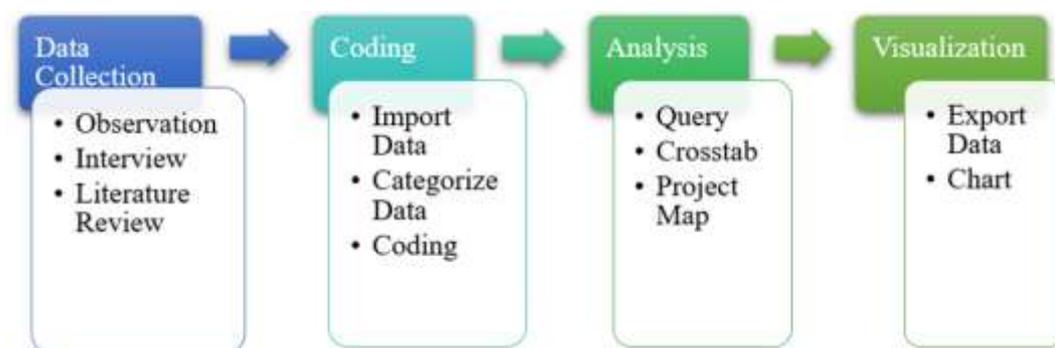


Figure 3. Data Process

## RESULT AND DISCUSSION

### Policy Integration Related to the Management of Indigenous Rural Resources of Ammatoa Kajang

The United Nations environment program mentions the need to integrate different approaches to ensure broad possibilities for conserving biodiversity (Megawati & Mahdiannur, 2021). In the process, it encourages integrative governance patterns, through institutional collaboration and recognition of local values. Juridically, forest protection in the Kajang indigenous area is supported by Law No. 41/1999 on forestry. This national regulation emphasizes the recognition of indigenous forests. Explicitly, the considerations section states that "sustainable forest management with a global outlook must accommodate the dynamics of community aspirations and participation, customs and culture, and community values based on national legal norms." These considerations catalyze democratic forest management by the government and indigenous communities. Furthermore, the presence of Bulukumba District Regulation No. 9/2015 on the Recognition and Protection of the rights of the Ammatoa Kajang indigenous law community, juridically strengthens the position of the Kajang indigenous community to manage their resources autonomously.

Bulukumba District Regulation No. 9/2015 states that the Kajang indigenous community has the right to manage and distribute resources among

indigenous community members by taking into account the balance of functions and ensuring equality for beneficiaries. The position of the Kajang indigenous community is getting stronger in natural resource management after the issuance of the Decree of the Minister of Environment and Forestry of the Republic of Indonesia No. 6746 of 2016 concerning the Determination of Ammatoa Kajang Indigenous Forest. The decree explains that forest management and utilization by the Kajang community is based on *Pasang ri Kajang*. It also states that the government must respect this principle. *Pasang ri Kajang* is a source of values that governs the entire life of the Ammatoa Kajang Indigenous Law Community. Normatively, *Pasang ri Kajang* is closely related to the system of conservation and protection of existing resources in Indonesia. The principle is sustainable with the national resource management system, as stipulated in the 1945 Indonesian Constitution Article 33 Paragraph 3 and Paragraph 4. The Constitution of the Republic of Indonesia states that Indonesia's natural resources are to be used as best as possible for the prosperity of the community in a sustainable and environmentally sound manner.

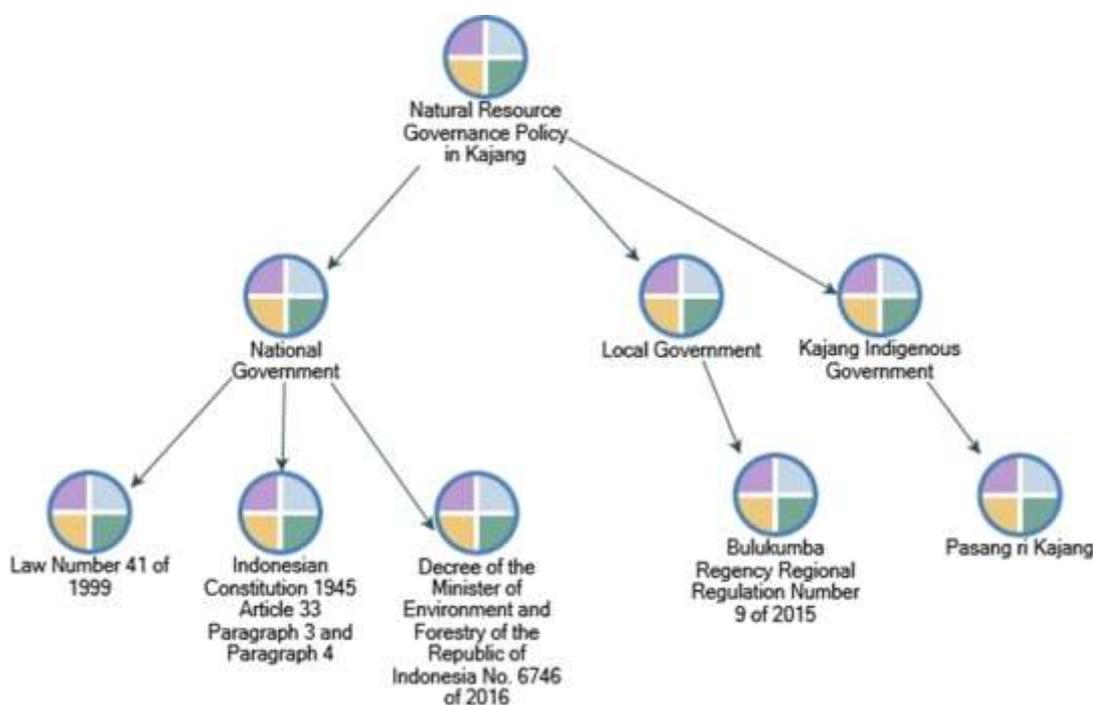


Figure 4. Natural Resource Governance Policy Network in Kajang

Source: Processed By Authors Using Nvivo 12 Plus, 2023

The Kajang Indigenous Forest Policy provides greater opportunities for village/indigenous communities to access and manage their rights with legal certainty. This is supported by the Regional Regulation of Bulukumba Regency No. 9/2015 on the Stipulation, Recognition and Protection of Community rights and indigenous law of Ammatoa Kajang. Furthermore, institutionally, Ammatoa Kajang has a key role in indigenous institutions for the preservation of Indigenous Forests, including guarding the forest, supervising the utilization of forest products, sanctioning violations of indigenous rules, and supervising and protecting forest blankets and buffer forests.

Ammatoa Kajang, as the supreme leader of the indigenous institution, has a key role in carrying out important tasks in the preservation of the Indigenous Forest. Amidst the complexity of environmental challenges and natural resource utilization, Ammatoa is central in preserving forest sustainability and managing ecosystems that are a cultural and natural heritage for local communities. First of all, Ammatoa Kajang plays a major role in preserving the forest. The Ammatoa, along with other indigenous leaders, institutionally implement policies that support sustainable forest management, ensuring that the exploitation of natural resources does not harm environmental sustainability. Concrete measures such as regulating land clearing, wise use of natural resources, and controlling human activities that can damage the ecosystem are the focus of Ammatoa Kajang. Furthermore, Ammatoa Kajang is also responsible for overseeing the utilization of forest products. The Ammatoa and other indigenous leaders play a role in managing and controlling economic activities related to forest resources, ensuring that the collection of forest products is carried out responsibly and does not harm the sustainability of the ecosystem.

In carrying out its functions, Ammatoa has the authority to impose sanctions on violations of indigenous rules related to forest conservation. These sanctions can take the form of reprimands, fines, or other actions appropriate to the level of offense. This shows their commitment to maintaining the integrity of indigenous policies and involving the community in the conservation process. Not only that, Ammatoa also have the responsibility to oversee and protect forest blankets and

buffer forests. They are the guardians of overall ecosystem sustainability, including maintaining the balance of ecosystems around indigenous forests. This includes efforts in biodiversity monitoring, protection of threatened species, and maintaining water quality in the region. Through this key role, Ammatoa Kajang is not only the manager of indigenous policies, but also the guardian of environmental sustainability. As such, they have inherited the cultural values associated with indigenous forests, while proactively adapting policies to suit the times to ensure this natural heritage can be enjoyed by future generations.

Another effort made by the Kajang indigenous community in preserving forests in the indigenous area is to establish forest guards or in the local language called "Tau Limayya". This is a strategic step by appointing five forest guards, each of whom is responsible for a certain area according to the cardinal directions plus one person who specifically guards the indigenous forest. The appointment of Tau Limayya by the Ammatoa is carried out in their respective residential areas, and they serve in accordance with the directions and guidelines of *Pasang ri Kajang*. Their main task is to monitor and prevent individuals or groups from attempting to damage the forest and its ecosystem.

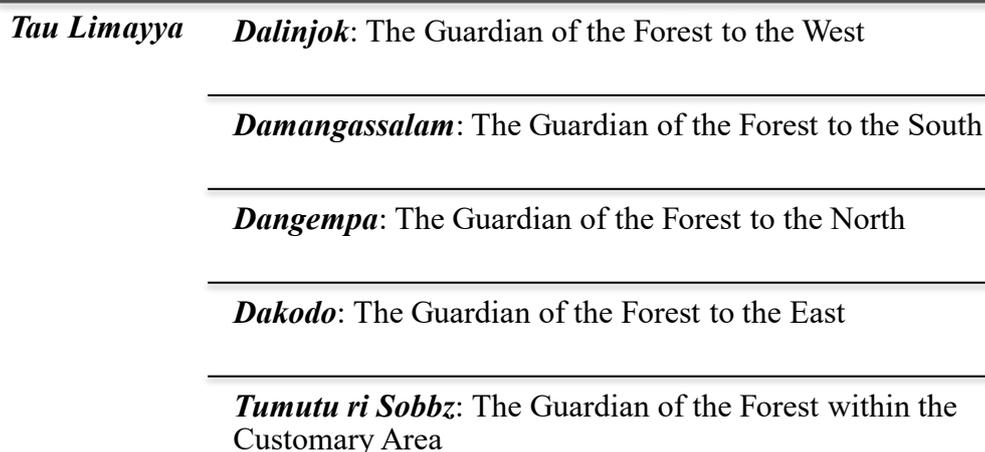


Figure 5. Structure of *Tau Limayya* (Forest Guardian of the Kajang Tribe)

Furthermore, in formal institutional terms, a bottom-up approach involving the coordination of the Regional People's Representative Council with Ammatoa Kajang's indigenous institutions has played a key role in maintaining the sustainability of indigenous forests. Such collaboration reflects a participatory

spirit, where policy making involves the direct contribution and approval of the local community. This process builds a strong foundation for environmental sustainability, along with recognizing the importance of involving key stakeholders in decision-making regarding indigenous forests. While the scheme has yielded positive results, it is recognized that there is still room for improvement. Concrete steps are needed to improve the unity of action between the local government and Ammatoa Kajang's indigenous institutions. Increased dialogue, joint policy discussions and the formation of joint strategies are key to improving the effectiveness of indigenous forest conservation. The importance of harmonisation between government policies and indigenous norms is recognised as an underlying foundation for positive change in natural resource management (Daniel et al., 2022). Strengthening synergies between local councils and indigenous institutions can therefore strengthen the foundations of sustainability, engage the wider community and create sustainable solutions to complex environmental challenges. Such measures lead to a solid framework, where policies and indigenous norms not only coexist, but support each other. Thus, the Kajang community can continue to safeguard the sustainability of Ammatoa Kajang's indigenous forest as a precious legacy that is not only dedicated to the current generation, but also to future generations. By understanding these aspects, forest policies can be designed to support the principles of ecosystem sustainability, which involves efforts to maintain ecosystem functions, prevent unrequited damage, and ensure that forest ecosystems can adapt to natural or anthropogenic changes.

### **Ecosystem Governance Practices in the Kajang Indigenous Area**

The Kajang people uphold their social norms, which are reflected in their adherence to “*Pasang ri Kajang*” as a concept of forest conservation that is inseparable from the identity and values of the Kajang community. The existence of the Kajang indigenous forest is not just an ecological asset, but also a cultural heritage that is guarded with pride by the local community. In the dynamics of daily life, these social norms become a strong guide for individuals in the Kajang community. The local wisdom of the Kajang indigenous people can be an invaluable foundation in the formulation of effective, efficient and equitable forestry policies. The Kajang

indigenous community has a deep understanding of the harmonious relationship between humans and nature, as well as traditional ways of utilising and maintaining forest sustainability.

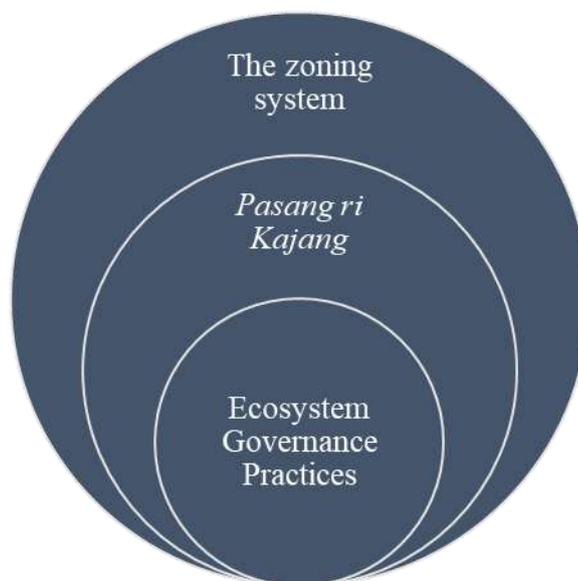


Figure 6. Kajang Indigenous Forest Governance Scheme

In an effort to conserve the forest, the Kajang indigenous community applies a highly organised concept of forest management by adopting land zoning. Each zone has a specific role and function that has been carefully determined based on hereditary knowledge and experience in interacting with the natural environment. The zones include: Conservation Zone (Sacred Zone); Restricted Utilisation Zone; and Public Utilisation Zone.



Figure 7. Division of Forest Types of Kajang Indigenous People Based on Their Functions

Forests in the Kajang indigenous community are classified into three types. The division is based on its function, including *Borong Karama/Borong Lompoa* (The Sacred Forest), which is an area that is considered sacred and prohibited from being touched. The function of this zone is to maintain the sustainability of the ecosystem and protect biodiversity. Human activities in this zone are limited and regulated according to indigenous rules. Second, *Borong Battasayya* (The Border Forest), which is an area that can be utilised by the community, but with certain restrictions. The use of natural resources in this zone is regulated in such a way as to ensure that human activities do not harm the sustainability of the forest. And finally, *Borong Luarayya* (The Community Forest), which is an area where communities can carry out natural resource utilisation activities more freely, but still under indigenous supervision and control. Activities allowed in this zone must be in accordance with the values of sustainability and ecosystem balance.

*Borong Karama/Borong Lompoa* (The Sacred Forest) has a special position in the rules of the Kajang indigenous community. Based on the rules of *Pasang ri Kajang*, *Borong Lompoa* is a forest area that cannot be accessed by the public. Only *Ammatoa* and members of the indigenous community are allowed to access *Borong Lompoa*, and even then under certain conditions or conditions such as the interests of traditional ceremonies (*Pa'nganroang*) (Rahman et al., 2019). There should be no human activity in *Borong Lompoa*. This is explicitly stated in *Pasang ri Kajang* that *Ta'bang Kaju* (logging), *Rao Doang* (shrimp catching), *Tatta' Uhe* (rattan logging), and *Tunu Bani* (bee burning) are serious offences. The *Ammatoa* indigenous justice system regulates sanctions for people who break these rules. If the violator is a member of the Kajang indigenous community, they will be expelled from the indigenous territory. In addition, any violators, whether indigenous people or people outside the community, will also be subject to sanctions in the form of flogging and a sum of money and asked to return what has been taken from *Borong Lompoa*. Furthermore, *Borong Lompoa* is also regulated in the Regional Regulation of Bulukumba Regency No. 9/2015, in articles 11, 12 and 13, which states that

*Borong Lompoa* is an indigenous forest or land owned by the Kajang indigenous community whose status of control and utilisation cannot be changed. When juxtaposed with the division of forest types in the national forestry system, *Borong Lompoa* is a type of protected forest. This is due to its function as a support for the ecological sustainability of the Kajang indigenous community. The existence of *Borong Lompoa* is part of the product of the dedication of the Kajang indigenous community in maintaining the balance between human needs and the sustainability of nature.

The next type is *Borong Battasayya* (The Border Forest). It is called the border forest because the area borders *Borong Karama*. *Borong Battasayya* is an area where the Community is allowed to carry out timber collection activities. However, the collection is limited. Wood collection can be done with the approval of the Ammatoa (indigenous leader). Although allowed, the purpose of wood collection is only for the purpose of building public facilities or for people who want to build a house. As the indigenous leader, Ammatoa has the prerogative right to determine the type of wood that can be taken or how much and how big the wood to be cut down. The interesting thing in the regulation of logging in *Borong Battasayya* is that when someone wants to cut down a tree, the person is first asked to plant at least two trees with the same type of tree or wood that he wants to cut down (Samad et al., 2021). Technically, this is done to avoid a timber deficit in the *Borong Battasayya* area and also as a strategy to balance the amount of logging and the ratio of available trees in the forest area. Furthermore, logging is done traditionally using simple tools such as axes or machetes and the wood must be removed from the forest by lifting it so as not to damage other plants. These two methods can be a strategy to suppress a person's desire to cut wood on a large scale because it requires considerable labour and effort in the process. By indigenous rules, violations of the utilisation of *Borong Battasayya* will be sanctioned in the form of fines.

The last forest type is *Borong Luarayya* (The Community Forest). The forest covers an area of  $\pm 100$  hectares. From the forest, the community can obtain a source of daily needs. *Borong Luarayya* is a forest area that has characteristics

that reflect the nature of a production forest. Within this area, the local community is actively involved in the management of forest resources with the main objective of producing timber and other forest products in a sustainable manner. The principles of economics and sustainability are fundamental to the utilisation of this forest, with maximum efforts made to meet the demand for timber and other forest materials. As a result, *Borong Luarayya* can be considered a production forest, where economic activities and forest resource management are conducted with long-term sustainability and the welfare of the local community in mind. Furthermore, *Borong Luarayya* is a clear example of a community forest, an area of forest that is collectively managed by the local community. In this context, the active role of the kajang indigenous people in forest resource management is a striking feature. The residents of the Kajang indigenous community are not only users, but also direct managers of *Borong Luarayya*. The management of the forest is based on the active participation of the Kajang community in determining policies and carrying out daily activities related to the utilisation of forest resources.

The principles of sustainability and environmental conservation remain the main focus in the management of this community forest. The selection of sustainable harvesting methods and environmental protection policies remain an integral part of the forest management strategy in the Kajang Indigenous Area. *Borong Luarayya*, as a production forest managed by the local community, remains subject to regulatory principles that lead to sustainability and ecosystem balance. In the management of this forest, there is a main rule, which is that the management must be in line with recognised and accommodated needs. This rule signifies that the utilisation of forest resources must consider the needs of local communities and adhere to the boundaries set to ensure the sustainability of the natural environment. In other words, although *Borong Luarayya* is oriented as a consumption interest to meet the living needs of the Kajang indigenous people, the rule "must be in line with needs" emphasises the importance of a sustainable approach. This means that the utilisation of forest resources must be done wisely, taking into account the regenerative capacity of nature and keeping human needs from exceeding the limits of what the ecosystem can renew. With this rule in place, the management of

*Borong Luarayya* reflects a commitment to achieving a balance between meeting human needs and the sustainable preservation of the natural environment.

Through the implementation of this land zoning system, the Kajang indigenous community creates a balance between human needs and nature conservation. They practice nature governance that utilises local knowledge and traditional wisdom to care for their indigenous forests. This system not only focuses on ecological sustainability, but also takes into account the spiritual and cultural values associated with the forest as a living entity that must be respected and guarded responsibly. As a result, the Kajang indigenous community has become a pioneer in environmental conservation efforts, demonstrating that local wisdom can be a strong foundation for sustainable forest management. Furthermore, through an indigenous rules-based management model, the forests of the Kajang indigenous community are not only a resource for the local community, but also reflect a collaborative spirit in maintaining and caring for the natural environment together. The local wisdom of the Kajang indigenous community can be used as a reference in the formulation of effective and effective and equitable forestry policies. This condition makes Kajang unique and has its own characteristics to be learnt in developing equitable and sustainable forestry.

### ***Pasang ri Kajang: Sustainable Governance Practices by the Kajang Indigenous Community***

Kajang indigenous people tend to have deep knowledge about the sustainability of forest ecosystems. The principles of their local wisdom in maintaining the balance of nature can help in the formulation of policies that prioritise the preservation of natural resources. The local wisdom of the Kajang indigenous people in the context of ecosystem sustainability includes a deep understanding of the dynamic relationship between humans and their environment. The Kajang indigenous people have traditions and values that encourage them to maintain the natural sustainability of forest ecosystems. *Pasang ri Kajang* is the cosmological concept of the Kajang community, which contains a series of rules that seek to harmonise the relationship between nature-humanity-and the Creator. As a guide to life, *Pasang ri Kajang* is taught from generation to generation and has

become a universal knowledge for the Kajang people. Local wisdom and knowledge in *Pasang ri Kajang* form the basis of the indigenous people's relationship with nature so that the forest remains sustainable (Dassir, 2022).

The message contained in *Pasang ri Kajang*, "*Jagai linoa lollong bonena kammayya tompa langika siagang rupa taua siagang boronga*" (Ensure the well-being and preservation of the earth, including its natural environment, atmosphere, fellow humans, and forests), provides an explicit description of the responsibility that the Kajang indigenous people have in maintaining the balance of the universe. This message reflects their deep understanding of the complex relationship between humans and the environment, as well as their moral responsibility for the sustainability of nature. It calls for 'guarding' or '*jagai*' which encompasses the concepts of care and protection of *linoa* (earth), *lollong bonena* (natural resources), *tompo langika* (layers of earth), *siagang rupa tau* (fellow humans), and *boronga* (forest). This message embraces a holistic understanding that well-being and sustainability are inseparable from these elements.

Explicitly, this message leads the Kajang indigenous people to understand that maintaining the balance of the universe involves concrete actions in protecting the natural environment, protecting the air, respecting and caring for fellow humans, and preserving the biodiversity in the forest. The zones in their natural governance discussed earlier are concrete implementations of this message, where every aspect of life and nature has a respected place and role. This message also reflects local wisdom values that teach a sense of responsibility and active involvement in caring for the earth. The Kajang indigenous people understand that the sustainability of human life is closely linked to the sustainability of nature, and therefore, they take on the role of responsible custodians and caretakers. In a modern context where environmental challenges are increasingly pressing, this message is a call to integrate local values and sustainable policies. It brings inspiration to engage communities in environmental conservation and management efforts, while still understanding and respecting the local wisdom that has been acquired over generations. Thus, the indigenous people of Kajang continue to be

the guardians and protectors who play a key role in maintaining the balance of the universe for the sustainability of life together.

The traditional model of the Kajang indigenous people in utilising forest resources sustainably is an outstanding example in relation to environmental management and natural resource conservation. One important aspect of this model is the concept of "*Pamali*", which means something that should not be done because it will cause disharmony between humans, nature and their spiritual beliefs. In this context, *Pamali* serves as a guide for indigenous communities to utilise forest resources without damaging them. For example, the logging of certain trees or the taking of excessive amounts of resources are considered actions that violate the *Pamali* principle. The kajang indigenous people believe that forest resources should be used in such a way that does not reduce the ability of future generations to fulfil their needs. This means practices such as over-hunting or deforestation for agriculture are not allowed. Instead, they apply methods such as crop rotation and restrictions on the number of trees that can be cut down in a given period. Education and knowledge transmission is an important part of this model. Knowledge of sustainable practices is passed down from generation to generation through stories, rituals and daily practices. This ensures that sustainable values and techniques are maintained and continue to evolve.

There are several important points that can be observed from the process or form of natural resource management of indigenous peoples that has been practised for a long time based on ancestral teachings and indigenous law.

Forms of Resource Governance	Governance Practices
<b>Land Type and Tenure</b>	<ol style="list-style-type: none"> <li>1. Tanah gilirang, belonging to a clan of descendants where the land is managed in turn by descendants of the clan of the indigenous community.</li> <li>2. Kalompoan (Greatness) land where the land is managed by those who serve as indigenous leaders (Land</li> </ol>

	<p>minority) for each elected indigenous leader</p> <ol style="list-style-type: none"> <li>3. Indigenous land is land that the indigenous community has the right to manage as long as they are able to manage it unless they leave it for 3 (three years).</li> <li>4. Individual (private) land is a type of land that is handed over from a family clan based on the needs of the family clan concerned.</li> </ol>
<b>Plantation Land</b>	<ol style="list-style-type: none"> <li>1. Rice fields are managed once a year for the purpose of resting.</li> <li>2. Opening gardens and rice fields traditionally</li> <li>3. The type and timing of farming is based on mutual agreement or deliberation (<i>abborong</i>) that refers to <i>Pasang</i></li> <li>4. Main commodities Rice and corn</li> </ol>
<b>Use of Land Processing Equipment</b>	Traditional Equipment
<b>Utilisation of Yard Plants</b>	Dominated by local plant species mainly for medicinal plants and for food and spice needs
<b>Land utilisation for houses</b>	<ol style="list-style-type: none"> <li>1. Traditional House: Wooden house of the na'nasa' (Bitti/Vitex cofassus) species.</li> <li>2. Uniform house size max 8 m x 9 m</li> <li>3. Uniform house direction facing West</li> </ol>

Source: Larekeng et al., (2022)

Indigenous peoples' long-standing practices of natural resource management based on ancestral teachings and indigenous laws reflect deep local wisdom. While adhering to tradition, indigenous peoples are also able to adapt to environmental and social changes, changing their practices according to new needs.

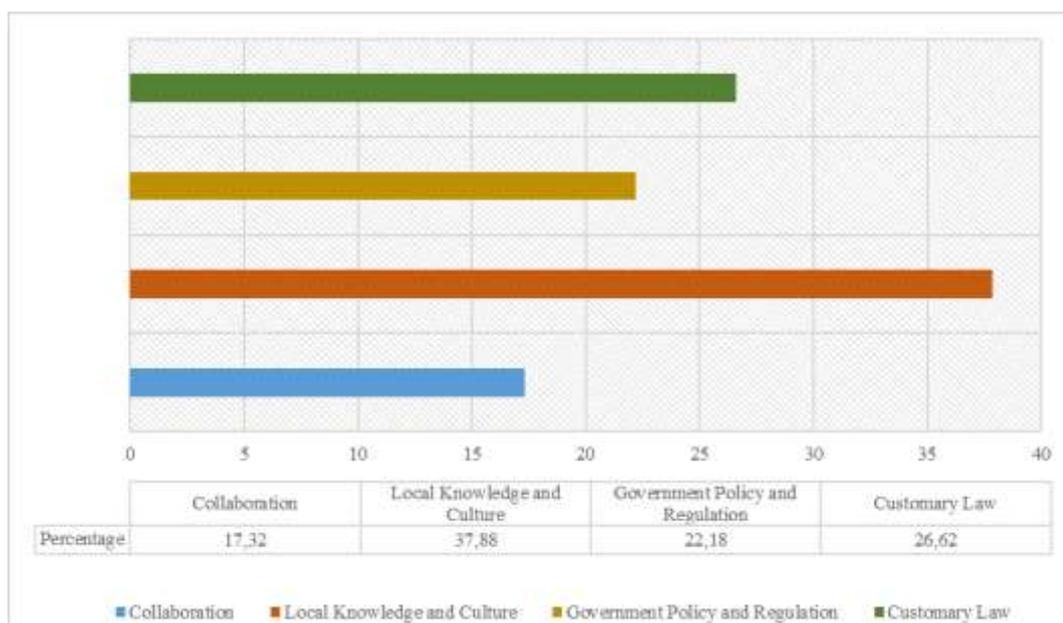


Figure 8. Trends in Ecosystem Governance in the Kajang Indigenous Area

Source: Processed by Nvivo, 2023

Figure 8 shows the percentage breakdown of the various models contributing to the environmental governance of Kajang traditional communities. Local Knowledge and Culture (37.88%) is the most significant model in Kajang community environmental governance, indicating that traditional practices and indigenous knowledge play a central role. This significant percentage emphasises the important role of local wisdom and cultural heritage in shaping environmental management by the Kajang community. This knowledge, passed down from generation to generation, includes a deep understanding of ecosystems that includes cosmological relationships between humans and nature, zoning systems, and various messages in *Pasang ri Kajang*. Communities rely on this body of knowledge to make decisions that ensure the long-term health and productivity of natural resources. It is a symbiotic relationship where respect for nature is embedded in cultural rituals, spiritual beliefs and daily practices, demonstrating a life intertwined with the natural world in a respectful and sustainable manner.

Moreover, Government Policies and Regulations (22.18%). Although local knowledge is favoured, there is still significant integration of government policies in community environmental management. This can involve compliance with national laws relating to land use, forest conservation and wildlife protection. The interaction between community practices and government regulation can be complex. On the one hand, it indicates recognition of the sovereignty of the state and its legal framework; on the other hand, it also reflects a process of negotiation in which communities adjust to or influence the formulation of policies that impact their environment. This percentage demonstrates the careful balance that communities strive for between maintaining their autonomy and complying with the broader legal context in which they exist.

Indigenous Law (26.62%) also plays an important role, slightly more influential than government policies. This could imply that communities have established their own rules and practices that are respected and adhered to, likely in line with their cultural beliefs and practices. These are legal systems that are not formally codified but are recognised and respected within the community. Indigenous law likely dictates how resources are allocated, how land should be used, and how to resolve disputes, reflecting an internally-driven governance structure. It indicates a community with a strong identity and self-governance, where collective decisions are made in the spirit of preserving community values, environmental ethics and social cohesiveness. The latter constitutes collaboration (17.32%). Collaboration is the least practised governance model, which may reflect the level of engagement between Kajang communities and external entities such as NGOs, other communities or government agencies in managing their environment. Although the least influential but still significant, collaboration shows that communities do engage with outside organisations and communities, but not as much as their local knowledge and laws. This could include partnerships with environmental NGOs, academic institutions, or other indigenous communities. These collaborations may be project-based, such as reforestation initiatives, or involve sharing knowledge and strategies for environmental management. However, this relatively lower percentage implies that while open to collaboration,

communities tend to prioritise independence in their decision-making processes, choosing to collaborate in ways that respect their cultural norms and sovereignty

## CONCLUSION

This research has examined in depth the indigenous ecosystem governance in the traditional rural area of Ammatoa Kajang. Through a qualitative approach and data collection conducted directly in the field, this study succeeded in revealing several important aspects, including that the Ammatoa Kajang community has a unique system in maintaining its ecosystem, which not only focuses on nature conservation, but also on spiritual and cultural aspects. This shows the importance of understanding and valuing local knowledge in environmental conservation practices. In addition, the social structure and leadership within the Ammatoa Kajang community play an important role in natural resource management. Strong and respected indigenous leadership provides the foundation for sustainable governance practices. The transmission of indigenous knowledge from generation to generation is a key element in the preservation of indigenous governance practices. Furthermore, indigenous peoples are also able to adapt to environmental and social changes, changing their practices according to new needs and collaborating with the government. The findings of this research can provide insight for policymakers in designing policies that support the preservation of indigenous ecosystems and recognise the rights of indigenous peoples, especially how regulations made by the government must be in accordance with the interests of indigenous peoples

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