

## ***Management Strategy of Wase Glee in Disaster Mitigation for Sustainable Village Economic Development***

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### **ABSTRACT**

*Forest governance in Aceh has long been supported by customary institutions such as Lembaga Adat Uteuen, yet the operational role of wase glee in disaster mitigation and sustainable village economic development remains underexplored. Previous studies have mainly emphasized the cultural and legal recognition of customary forest systems, with limited attention to how customary economic mechanisms function in disaster risk reduction and local economic governance. This study aims to analyze the management of wase glee as a customary mechanism in disaster mitigation and its potential contribution to sustainable village economic development in East Aceh Regency. This research employed a qualitative descriptive approach in Gampong Sembuang, Serbajadi Subdistrict. Data were collected through observation, semi-structured interviews, and documentation involving customary leaders, village officials, and forest-dependent community members selected through purposive sampling. The data were analyzed using thematic analysis, supported by triangulation to ensure validity. The findings reveal that wase glee has not functioned effectively because customary authority has weakened, formal village regulations are absent, and forest resource utilization has shifted from collective customary control to individual and religious-based practices. Analytically, this decline reflects an institutional transformation in which customary norms have lost their regulatory capacity over forest use, disaster prevention, and collective economic benefit distribution. As a result, forest resources remain weakly supervised, while their potential contribution to ecological risk reduction and village income is unrealized. This study positions wase glee as a potential hybrid governance mechanism integrating local wisdom, community-based disaster risk reduction, and sustainable village economic development.*

**Keywords:** *Wase Glee, Customary Governance, Disaster Mitigation, Local Wisdom, Sustainable Village Economy*

## **1. Introduction**

Aceh has a strong customary governance system that regulates social, cultural, economic, and ecological relations within local communities. The existence of customary institutions is formally recognized through Law Number 11 of 2006 concerning the Government of Aceh and Qanun Aceh Number 10 of 2008 concerning Customary Institutions. Within this framework, forests are not merely ecological resources, but also social and cultural spaces that support livelihoods, identity, and intergenerational knowledge. In Acehese society, forest management has historically been organized through the *Lembaga Adat Uteuen* or Forest Customary Institution, led by *Pawang Uteuen* or *Pawang Glee*, who are responsible for regulating forest use, enforcing customary prohibitions, collecting *wase glee*, and resolving disputes related to forest customary law (Azwir et al., 2016; Taqwaddin, 2010).

In East Aceh Regency, forest resources remain important for rural communities, particularly those whose livelihoods depend on timber and non-timber forest products. In this context, *wase glee* refers to a customary contribution or levy derived from forest resource utilization. Traditionally, *wase glee* functioned not only as an economic mechanism, but also as a customary instrument for controlling forest exploitation, maintaining ecological balance, and

supporting community welfare. Therefore, *wase glee* has the potential to connect customary forest governance, disaster mitigation, and sustainable village economic development.

Recent studies have emphasized the importance of local and indigenous knowledge in disaster risk reduction. Local knowledge is considered valuable because it is rooted in community experience, environmental interaction, and long-term adaptation to ecological risks (Hadlos et al., 2022; Hirono & Nurdin, 2024). Community-based disaster risk reduction becomes more effective when local knowledge is integrated with scientific knowledge, formal institutions, and participatory governance mechanisms (Šakić Trogrlić et al., 2022; Vasileiou et al., 2022). In forest-dependent communities, sustainable forest governance also contributes to disaster mitigation by supporting water regulation, erosion control, slope protection, biodiversity conservation, and livelihood security (Paudel et al., 2024).

Although these studies provide important insights, several gaps remain. Previous research on Acehese customary forest institutions has mainly focused on legal recognition, cultural roles, and historical functions of *Pawang Uteuen* or *Pawang Glee*. Meanwhile, the role of *wase glee* as a customary economic mechanism for disaster mitigation and village economic resilience has received limited attention. Similarly, studies on local wisdom and disaster risk reduction often discuss indigenous knowledge as cultural knowledge or adaptive practice, but rarely examine how customary levies can operate as part of community-based disaster governance. In addition, studies on forest governance in Indonesia have highlighted customary forest rights, social forestry, and institutional challenges, yet have not sufficiently integrated customary forest-based economic mechanisms with sustainable village development and disaster mitigation strategies (Iriyani et al., 2024; Myers et al., 2017; Nurhidayah et al., 2020).

This gap is evident in East Aceh Regency, where the potential of *wase glee* has not been optimally institutionalized within village governance. The absence of written local regulations, weak customary authority, limited community awareness, and the lack of integration between forest management and disaster mitigation planning have reduced the effectiveness of *wase glee*. Consequently, forest resource utilization tends to remain informal, individually driven, and unable to contribute significantly to ecological risk reduction or collective village economic development.

Based on this problem, this study aims to analyze the management strategy of *wase glee* in disaster mitigation for sustainable village economic development in East Aceh Regency. Specifically, this study examines the current implementation of *wase glee*, identifies institutional and community-level constraints, and formulates a participatory management strategy that integrates customary governance, ecological risk reduction, and village economic strengthening.

This study contributes to the literature by positioning *wase glee* as a hybrid customary governance mechanism that links local wisdom, forest conservation, disaster mitigation, and sustainable rural development. Practically, this study provides recommendations for village governments, customary institutions, policymakers, and community stakeholders in developing locally grounded forest management policies that support disaster resilience and village economic independence.

## 2. Literature Review

### Integration of Local Wisdom and Community-Based Disaster Risk Reduction

Local wisdom has been widely recognized as an essential component in understanding how communities interact with their natural environment and sustain ecological balance over time. It reflects a set of values, norms, and practices that emerge from long-term social and environmental interactions, forming a knowledge system that is adaptive and context-specific (Markolinda et al., 2025; Sibarani, 2012). In parallel, the concept of Community-Based Disaster Risk Reduction (CBDRR) emphasizes the role of local communities as active agents in identifying

risks, managing resources, and implementing mitigation strategies that are aligned with their socio-ecological conditions (Dwiputra & Hidayat, 2024; Hadlos et al., 2022).

Recent studies have increasingly highlighted that the integration of local and scientific knowledge significantly enhances disaster resilience, strengthens adaptive capacity, and improves the effectiveness of mitigation strategies (Hadlos et al., 2022; Vasileiou et al., 2022). Furthermore, empirical evidence suggests that local knowledge systems play a crucial role in disaster preparedness, early warning, and risk reduction, particularly in rural and forest-dependent communities (Hirono & Nurdin, 2024; Šakić Trogrlić et al., 2022). However, previous research tends to treat local wisdom and CBDRR as separate domains, where local wisdom is often framed as cultural heritage, while CBDRR is approached from a technical disaster management perspective. This separation limits the understanding of how traditional governance mechanisms can function as operational tools in disaster mitigation. Therefore, a more integrative perspective is needed to bridge these two approaches, particularly in analyzing customary institutions that simultaneously regulate natural resource management and disaster risk reduction.

### **Wase Glee as Local Wisdom-Based Governance**

Within the framework of local wisdom, *wase glee* represents a form of customary governance that regulates forest resource utilization through socially embedded norms and collective responsibility. Unlike conventional economic mechanisms that emphasize profit maximization, *wase glee* reflects a balanced approach that integrates economic benefits with ecological sustainability. Existing studies on customary forest governance suggest that indigenous institutions play a significant role in maintaining ecological balance, controlling access to resources, and preventing environmental degradation (Myers et al., 2017; Iriyani et al., 2024).

In this context, *wase glee* functions not only as a source of village income but also as a social control mechanism that regulates community behavior in forest utilization. However, prior literature has predominantly focused on the legal recognition and cultural significance of customary institutions, while limited attention has been given to the transformation of such mechanisms into structured governance systems that support disaster mitigation and sustainable economic development (Nurhidayah et al., 2020). Consequently, the strategic potential of *wase glee* remains underexplored, particularly in its role as an integrative tool for ecological governance, institutional strengthening, and community resilience.

### **Wase Glee in Disaster Mitigation Perspective**

From a disaster mitigation perspective, forests play a critical role in reducing environmental risks, including floods, landslides, and soil erosion, by maintaining hydrological functions and stabilizing ecosystems. In the Indonesian disaster management context, mitigation refers to efforts to reduce disaster risk through physical development, awareness raising, and capacity building (Dede et al., 2024). The concept of ecosystem-based disaster risk reduction further highlights the importance of sustainable forest management in minimizing disaster impacts and enhancing environmental resilience (Paudel et al., 2024). In this regard, *wase glee* can be interpreted as a locally embedded governance mechanism that contributes to disaster mitigation by regulating forest utilization and preventing uncontrolled exploitation.

Practices such as restricting excessive logging, regulating access to forest resources, and encouraging sustainable harvesting are consistent with the principles of CBDRR. Empirical studies have shown that community-based natural resource management can strengthen disaster resilience when supported by effective institutional arrangements, participatory governance, and integration with formal systems (MacAfee et al., 2024; Hirono & Nurdin, 2024). However, in many cases, including in the Aceh context, the effectiveness of such customary systems is constrained by the lack of formal recognition, weak institutional authority, and limited

integration with formal disaster management frameworks (Šakić Trogrlić et al., 2022). As a result, *wase glee* has not yet functioned optimally as a disaster mitigation instrument, despite its inherent potential.

### Conceptual Framework of the Study

This study develops a conceptual framework by integrating Local Wisdom Theory and Community-Based Disaster Risk Reduction to position *wase glee* as a hybrid governance mechanism. The framework explains the relationship among four main concepts: customary institutions, forest resource management, disaster mitigation, and sustainable village economic development.

First, local wisdom embodied in *wase glee* strengthens customary institutions through the role of *pawang uteuen*, customary norms, and collective rules governing forest use. These customary institutions are expected to regulate community access to forest resources and prevent uncontrolled exploitation. In this relationship, *wase glee* serves as the normative and institutional foundation for managing forest resources.

Second, effective customary institutions influence forest resource management. When the authority of *pawang uteuen* and customary rules are functioning properly, forest utilization can be controlled through permission mechanisms, harvesting limits, and collective responsibility. This contributes to more sustainable forest management by maintaining ecological balance and reducing environmental degradation.

Third, sustainable forest resource management contributes to disaster mitigation. Forests that are managed properly can reduce the risk of floods, landslides, erosion, and other ecological disturbances. This relationship is consistent with ecosystem-based disaster risk reduction, which emphasizes that natural ecosystems can serve as protective systems against disaster risks (Paudel et al., 2024).

Fourth, *wase glee* also has an economic function. When forest resources are managed collectively and transparently, *wase glee* can generate village income, support livelihood diversification, and finance community-based development programs. This means that disaster mitigation and economic development are not separate outcomes, but interconnected results of effective customary forest governance.

Fifth, sustainable village economic development can reinforce community participation in forest governance. When communities perceive direct benefits from *wase glee*, they are more likely to support customary rules, participate in forest protection, and strengthen collective responsibility. Thus, the framework shows a reciprocal relationship between customary governance, ecological protection, disaster resilience, and village economic development.

Overall, Figure 1 illustrates that *wase glee* functions as a connecting mechanism between local wisdom and CBDRR. It links customary norms with institutional authority, forest resource management, disaster mitigation, and sustainable village economy. Therefore, *wase glee* is not only understood as a cultural tradition, but also as a practical governance instrument that can support ecological sustainability, disaster resilience, and rural economic development.

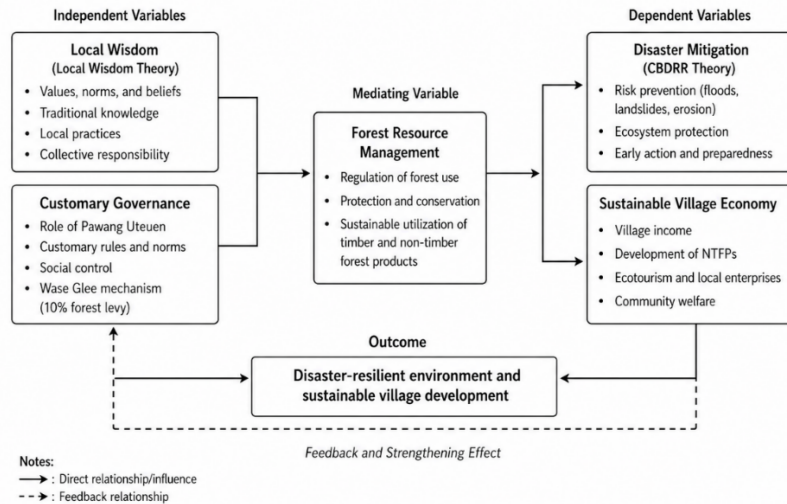


Figure 1. Conceptual Model

### Research Gap and Contribution

Despite the growing body of literature on local wisdom, customary forest governance, and community-based disaster risk reduction, several gaps remain evident. First, there is limited integration between local wisdom frameworks and disaster risk reduction approaches, resulting in fragmented analyses that do not fully capture the multifunctional role of customary institutions (Vasileiou et al., 2022). Second, existing studies rarely examine customary economic mechanisms, such as forest-based levies, as part of disaster mitigation strategies. Third, there is insufficient attention to how customary forest governance can be transformed into a structured mechanism that supports sustainable village economic development (Nurhidayah et al., 2020).

This study addresses these gaps by integrating Local Wisdom Theory and CBDRR into a unified analytical framework and by positioning *wase glee* as a hybrid governance mechanism that simultaneously supports ecological sustainability, disaster mitigation, and rural economic resilience. Therefore, this research contributes to both theoretical development and practical policy formulation by providing a more comprehensive understanding of the role of customary institutions in sustainable development and disaster risk management.

### 3. Methods

This study employed a qualitative descriptive research design to explore the management of *wase glee* in disaster mitigation and sustainable village economic development. A qualitative approach was selected because this study aims to understand social phenomena, institutional practices, and community perceptions within their natural context, particularly those related to customary forest governance systems. Qualitative research is considered appropriate for examining complex socio-cultural systems such as *wase glee*, which are embedded in local knowledge, values, and ecological interactions (Creswell & Creswell, 2018). A qualitative descriptive approach was used to describe social phenomena systematically based on empirical data collected in natural settings (Sugiyono, 2018). The descriptive design allows the researcher to present an in-depth and systematic account of empirical conditions without manipulating variables, thereby enabling a comprehensive understanding of how *wase glee* operates in practice and its potential role in disaster mitigation and village economic development.

#### Research Location

The research was conducted in Gampong Sembuang, Serbajadi Subdistrict, East Aceh Regency, Indonesia. The selection of this location was based on purposive considerations,

particularly the presence of extensive forest resources and the strong dependence of local communities on forest-based livelihoods. In addition, the village represents a relevant case where customary forest governance practices such as *wase glee* exist but have not been optimally implemented. Therefore, this location provides an appropriate setting for examining the relationship between customary institutions, disaster mitigation, and sustainable village economic development.

### **Research Informants and Sampling Technique**

The informants in this study were selected using purposive sampling, which involves choosing participants based on specific criteria relevant to the research objectives (Etikan et al., 2016). This technique was applied because it allows researchers to select information-rich participants who have direct knowledge and experience related to the phenomenon under investigation (Patton, 2015). The selection criteria included individuals who had knowledge of *wase glee* practices, members of the *pawang uteuen* customary institution, community members who depend on forest resources for their livelihoods, and village officials or community leaders involved in forest governance. Informants were also required to have lived in the research area for a sufficient period of time to ensure their familiarity with local social, ecological, and customary conditions.

The total number of informants in this study was 15 individuals, consisting of representatives from customary institutions, village officials, and local community members. The number of informants was determined based on the principle of data saturation, meaning that data collection was continued until no new themes or information emerged from the interviews and observations (Guest et al., 2006).

### **Data Collection Techniques**

Data were collected through observation, semi-structured interviews, and documentation. Observation was conducted to directly examine social conditions, forest utilization practices, customary activities, and community interactions with forest resources in their natural setting. Semi-structured interviews were carried out with selected informants to explore their perspectives on *wase glee*, customary governance, forest resource utilization, disaster risks, and village economic practices. This type of interview was chosen because it allows flexibility in probing deeper into relevant issues while maintaining alignment with the research objectives (Kallio et al., 2016).

Documentation was also employed to obtain secondary data from relevant sources, including village records, customary documents, institutional reports, and other documents related to forest governance, disaster mitigation, and village economic development. The use of multiple data collection techniques enabled the researcher to obtain rich and comprehensive qualitative data while maintaining methodological consistency with the descriptive qualitative design of the study.

### **Data Analysis**

The data in this study were analyzed using thematic analysis, which is a qualitative method used to identify, analyze, and interpret patterns or themes within data (Braun & Clarke, 2006). Thematic analysis was conducted through systematic stages of familiarization, coding, theme development, theme review, and interpretation, as suggested by Braun and Clarke (2006) and Nowell et al. (2017). The analysis process began with data familiarization, in which interview transcripts, observation notes, and documents were read repeatedly to gain a comprehensive understanding of the data. This was followed by coding, where meaningful segments of data were labeled to identify key concepts and recurring patterns. The coded data were then grouped into broader categories and themes, such as customary governance, institutional authority, forest resource management, disaster mitigation practices, and village economic development.

After the themes were developed, the researcher reviewed and refined them to ensure that they accurately represented the empirical findings. The final stage involved interpreting the relationships among the themes and linking them to the theoretical framework of Local Wisdom Theory and Community-Based Disaster Risk Reduction. This process provided a comprehensive understanding of how *wase glee* operates in practice and how it can contribute to disaster mitigation and sustainable village economic development. Thematic analysis was also strengthened by following systematic qualitative procedures as suggested by Braun and Clarke (2006) and Nowell et al. (2017).

### **Validity and Trustworthiness**

To ensure the validity and trustworthiness of the findings, several qualitative validation techniques were applied in this study. Data triangulation was conducted by comparing information obtained from different sources, including customary leaders, village officials, and community members, as well as through different methods such as interviews, observations, and documentation. This approach helps ensure the consistency and credibility of the data (Creswell & Creswell, 2018).

In addition, member checking was carried out by confirming key findings with selected informants to ensure that the interpretations accurately reflected their perspectives. The researcher also engaged in prolonged interaction within the research setting to gain a deeper understanding of the social context and to minimize potential bias. Furthermore, peer debriefing was conducted by discussing the findings with colleagues or experts to enhance analytical rigor. These strategies collectively contributed to improving the credibility, dependability, and confirmability of the research (Lincoln & Guba, 1985).

## **4. Result and Discussion**

### **Institutional Weakness of Wase Glee Implementation**

The findings indicate that the implementation of *wase glee* as a customary mechanism for forest management and disaster mitigation in Serbajadi Subdistrict has not yet been effectively realized. This condition is mainly related to the absence of formal written regulations that provide legal authority and institutional clarity regarding *wase glee*. Without written rules, the implementation of *wase glee* depends largely on informal practices and community understanding.

The role of *pawang uteuen* has also become weaker in practice. Although *pawang uteuen* is traditionally known as the customary figure responsible for regulating forest utilization and collecting *wase glee*, the findings show that this role is no longer carried out effectively. The *pawang uteuen* does not actively control forest access, monitor resource extraction, or enforce customary rules related to forest use.

This situation is reflected in the statements of informants:

“There are no formal written regulations governing *wase glee*. Because of that, people are free to extract forest resources without seeking permission from the *pawang uteuen*.” (Informant 1)

Another informant stated:

“The role of the *pawang uteuen* today is mostly symbolic. There is no real authority being exercised to regulate forest use.” (Informant 2)

These statements show that the institutional role of *wase glee* has weakened. The absence of written regulations and the declining authority of *pawang uteuen* have made customary forest governance difficult to implement in a consistent and binding manner.

### Unregulated Forest Resource Utilization

The study also reveals that forest resource utilization in Serbajadi Subdistrict is largely unregulated and driven by individual needs rather than collective governance mechanisms. Community members utilize both timber and non-timber forest products, including resin, *beringin sentang*, *meudang jeumpa*, *tualang*, *cerlas*, *jernang*, honey, and durian. However, these activities are generally carried out without formal permission, monitoring, or customary approval.

The findings show that customary rules such as *adab meugle*, which traditionally regulate forest use, are no longer strongly applied in daily practice. Community members do not have to seek approval from the *pawang uteuen* before entering the forest or extracting forest products. As a result, forest utilization is carried out based on individual needs and personal decisions.

This condition is reflected in the following statements:

“We take forest products based on our daily needs. There is no need to ask for permission because there are no clear rules governing it.” (*Informant 3*)

Another informant added:

“Everyone is free to enter the forest and take whatever they need. There is no supervision or restriction in place.” (*Informant 4*)

These findings indicate that forest resource utilization has shifted from a regulated communal system to a more individual-based pattern. The absence of supervision and restriction has made forest use more open and less controlled by customary institutions.

### Transformation of Customary System into Religious-Based Obligation

Another important finding is the shift from customary-based forest governance to religious-based obligations, particularly the payment of zakat. In practice, *wase glee* is no longer collected as a customary levy. Instead, community members usually pay zakat when their forest-based harvest reaches the *nisab* threshold, which is commonly understood by informants as equivalent to ten containers or *kaleng*.

This indicates that the obligation associated with forest resource utilization has changed. Previously, *wase glee* was understood as part of customary governance and collective responsibility. At present, the obligation is more commonly understood as a religious duty. Community members tend to view forest resources as blessings from God and consider zakat as the main obligation after obtaining forest products.

This shift is reflected in informants' statements:

“There is no longer any *wase glee* collection. When our harvest reaches a certain level, we only pay zakat according to religious obligations.” (*Informant 5*)

Another informant explained:

“Forest resources are considered a blessing from God, so people feel they have the right to use them. The only obligation is to pay zakat once the harvest is sufficient.” (*Informant 6*)

These statements show that religious-based obligations have become more dominant than customary-based obligations in regulating forest resource use. While zakat continues to function as an important moral and religious practice, *wase glee* as a customary levy is no longer implemented in an organized manner.

### Implications for Disaster Mitigation and Village Economy

The absence of effective *wase glee* implementation has implications for disaster mitigation and village economic development. In relation to disaster mitigation, the lack of structured forest governance reduces community control over forest resource utilization. Forest use is not connected to a clear system of conservation, monitoring, or risk prevention. As a

result, forest management practices have not been systematically directed toward reducing ecological risks.

From the village economic perspective, the absence of *wase glee* as a collective resource management mechanism limits the potential contribution of forest resources to village income. Forest products are mostly used for individual benefit, while their contribution to collective development remains limited. The findings show that forest resources have not yet been managed as a source of village revenue, community-based enterprise development, or disaster preparedness funding.

An informant emphasized this missed opportunity:

“If *wase glee* were properly managed, forest resources could become a source of village income, not just individual benefit.” (Informant 7)

Another informant stated:

“There needs to be clear regulation so that forest resources are not only exploited but also managed sustainably for the benefit of the entire community.” (Informant 8)

These findings indicate that *wase glee* has not yet been transformed into an effective mechanism for supporting disaster mitigation and sustainable village economic development. However, informants’ statements also show that the community recognizes the potential of *wase glee* if it is supported by clear regulations, stronger institutional roles, and collective management.

## Discussion

The findings of this study reveal that the implementation of *wase glee* in Serbajadi Subdistrict has not functioned effectively due to institutional weakness, the absence of formal regulations, unregulated forest resource utilization, and the transformation of community practices from customary governance to individual and religious-based obligations. These findings indicate that *wase glee* still exists as a cultural memory and normative concept, but it has not yet operated as an effective governance mechanism for disaster mitigation and sustainable village economic development. Therefore, the strategic recommendations proposed in this study are grounded in the empirical conditions identified in the field rather than being merely normative policy suggestions.

First, the need to strengthen customary governance and develop a hybrid regulatory system is directly supported by the finding that the role of *pawang uteuen* has become largely symbolic. Informants stated that there are no formal written regulations governing *wase glee*, and that community members can extract forest resources without seeking permission from the *pawang uteuen*. This empirical evidence shows that customary authority has lost its regulatory function because it is not supported by formal institutional arrangements. This finding is consistent with studies showing that customary institutions often weaken when they are not formally recognized or integrated into broader governance systems (Myers et al., 2017; Nurhidayah et al., 2020). From the perspective of Local Wisdom Theory, *wase glee* represents a socially embedded governance mechanism; however, its values cannot be translated into practical rules without institutional reinforcement. Therefore, formalizing *wase glee* through *qanun gampong* is not only an administrative recommendation, but a response to the empirical problem of weak authority, unclear rules, and the absence of enforceable customary mechanisms.

Second, the recommendation to conduct ecological mapping and develop forest utilization zones is supported by the finding that forest resource utilization is largely unregulated and driven by individual needs. Informants reported that community members freely enter the forest and take timber or non-timber forest products without supervision, permission, or restriction. This condition indicates that there is no clear distinction between areas that should be protected, areas that may be used for economic purposes, and areas that are vulnerable to ecological degradation. In the perspective of Community-Based Disaster Risk Reduction

(CBDRR), such uncontrolled forest use can weaken the community's capacity to reduce environmental risks. Ecosystem-based disaster risk reduction emphasizes that forest management, ecological zoning, and spatial planning are important for reducing floods, landslides, erosion, and other ecological hazards (Paudel et al., 2024). Therefore, ecological mapping is not simply a technical recommendation, but an evidence-based response to the observed absence of monitoring and regulation in forest resource utilization.

Third, transforming *wase glee* into a village economic instrument is strongly justified by the finding that forest resources are currently used mainly for individual benefit and have not contributed significantly to collective village income. One informant stated that if *wase glee* were properly managed, forest resources could become a source of village income rather than merely individual benefit. This statement shows that local actors themselves recognize the economic potential of *wase glee*. Previous studies have shown that community-based natural resource management can improve ecological sustainability and socio-economic resilience when supported by clear institutional frameworks (Iriyani et al., 2024; Nopriyasman et al., 2024). In this context, *wase glee* can be repositioned as a mechanism for collecting and redistributing forest-based benefits to support village development, reforestation, disaster preparedness, and community-based economic activities. Thus, the economic recommendation is directly connected to the empirical finding that the existing system has failed to convert forest resource utilization into collective welfare.

Fourth, the shift from customary levy to zakat indicates that religious obligations have partly replaced customary governance in regulating forest resource use. Informants explained that *wase glee* is no longer collected and that community members only pay zakat when their harvest reaches the *nisab* threshold. This finding shows that zakat remains socially and religiously important, but it does not perform the same regulatory function as *wase glee*. Zakat is primarily a moral and redistributive obligation, while *wase glee* has the potential to regulate forest access, control extraction, and allocate resources for collective ecological and economic purposes. Therefore, strengthening *wase glee* should not be understood as replacing religious obligations, but as restoring the customary governance function that is currently absent. This distinction is important to avoid overlap between religious practice and customary forest regulation.

Fifth, the need for capacity building is supported by the finding that both customary leaders and community members lack structured mechanisms for managing *wase glee*. The findings show that the *pawang uteuen* does not actively monitor forest use, while community members do not follow formal permission or reporting procedures. This condition suggests that institutional revitalization requires more than regulation; it also requires improved capacity in forest governance, financial accountability, ecological monitoring, and disaster preparedness. Studies on disaster risk reduction emphasize that institutional capacity is a key determinant of community resilience (Hadlos et al., 2022; Saunders et al., 201). Therefore, training for *pawang uteuen*, village officials, and forest-dependent communities should be directed toward practical skills, including recording forest product utilization, managing *wase glee* revenues transparently, identifying disaster-prone areas, and developing community-based mitigation programs.

Sixth, the importance of multi-stakeholder collaboration is also supported by the finding that *wase glee* currently operates without sufficient support from formal institutions. The absence of written regulations, weak monitoring, and limited integration with disaster mitigation planning indicate that village-level customary governance cannot work effectively in isolation. Collaboration with local government, disaster management agencies, academic institutions, environmental organizations, and community groups can provide technical assistance, legal support, ecological data, and institutional mentoring. For example, geospatial mapping and community-based monitoring systems may help the village identify high-risk forest areas and design appropriate mitigation strategies. This aligns with studies showing that technological support and local knowledge can strengthen environmental governance and

disaster preparedness when applied through participatory mechanisms (MacAfee et al., 2024; Vasileiou et al., 2022).

From a theoretical perspective, this study contributes to the integration of Local Wisdom Theory and CBDRR by demonstrating that *wase glee* can be understood as a hybrid governance mechanism. The findings show that *wase glee* is not merely a cultural tradition or customary levy, but a potential institutional bridge between local norms, forest resource governance, disaster mitigation, and sustainable village economic development. Unlike previous studies that tend to treat local wisdom mainly as cultural knowledge, this study highlights the operational potential of local wisdom as a practical governance tool when supported by formal regulation, institutional capacity, and community participation.

This study also extends the CBDRR framework by showing that disaster resilience in forest-dependent communities is closely related to the governance of local economic mechanisms. The case of *wase glee* demonstrates that disaster mitigation is not only about emergency response or physical infrastructure, but also about how communities regulate natural resource use, distribute benefits, and maintain ecological balance. Therefore, customary economic mechanisms can become part of community-based disaster governance when they are institutionalized and linked to collective risk reduction.

In comparison with previous research, this study provides a more integrative perspective by linking customary forest governance with disaster mitigation and village economic development. Earlier studies have largely focused on the legal recognition of customary forests, the cultural role of indigenous knowledge, or the importance of community participation in disaster resilience. This study adds a more specific contribution by showing how a customary levy such as *wase glee* can be transformed into a multifunctional governance instrument. The transformation requires formal village regulation, ecological mapping, transparent revenue management, strengthened customary authority, and multi-stakeholder collaboration.

Overall, the discussion shows that the proposed strategies are directly derived from empirical findings. The absence of written regulations justifies the need for *qanun gampong*; the symbolic role of *pawang uteuen* justifies institutional strengthening; unregulated forest use justifies ecological zoning and monitoring; the lack of collective economic benefits justifies transparent *wase glee* revenue management; and the limited integration with disaster planning justifies collaboration with formal institutions. Through these strategies, *wase glee* can be repositioned as a key mechanism for ecological protection, disaster mitigation, and sustainable village economic development in East Aceh Regency.

## 5. Conclusions

This study concludes that *wase glee* has not functioned effectively as a customary mechanism for disaster mitigation and sustainable village economic development in Serbajadi Subdistrict. The main constraints include the absence of formal written regulations, the weakened authority of *pawang uteuen*, unregulated forest resource utilization, and the shift from customary-based obligations to religious-based practices such as *zakat*. These conditions have reduced the role of *wase glee* from an operational customary governance mechanism into a symbolic practice with limited ecological and economic functions.

Theoretically, this study contributes to the integration of Local Wisdom Theory and Community-Based Disaster Risk Reduction by positioning *wase glee* as a potential hybrid governance mechanism. The findings show that customary economic mechanisms can support ecological management, disaster risk reduction, and sustainable village economic development when strengthened through formal regulation, institutional authority, and community participation. From a policy perspective, local governments and village authorities should formalize *wase glee* through *qanun gampong*, strengthen the role of *pawang uteuen*, develop

ecological zoning, and allocate waste revenues to reforestation, disaster preparedness, and community-based economic programs. This study is limited to a single case study and relies mainly on qualitative data; therefore, future research should compare waste practices across different regions and include quantitative assessments of its ecological and economic impacts.

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