

Research Paper

From Tradition to Future: Sundanese Indigenous Laws as the Vanguard of Environmental Conservation and Disaster Mitigation

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Abstract

Environmental conservation and disaster mitigation still emphasize science and technology, while the potential of the socio-cultural wealth within communities remains underutilized. This shows a substantial gap, as active community involvement, rooted in socio-cultural wealth, is essential for effective environmental conservation and disaster mitigation. To address the existing gap, this research aims to identify, analyze, and interpret the values of Sundanese Indigenous laws (*Pikukuh*) that can be utilized and relevant for these efforts. This study used a qualitative method with a case study design in Kampung Naga, Baduy, Kuta, and Cikondang. The results showed that *Pikukuh* embodied important values for environmental conservation efforts. These rules played a significant role in conserving forests, improving vegetation conditions, enhancing rainwater absorption, ensuring soil stability, preventing erosion, and maintaining the groundwater cycle. These principles are crucial for mitigating natural disasters like landslides, floods, droughts, and climate change. *Pikukuh* principles need to be incorporated more broadly and actively applied in policies and strategic initiatives to advance sustainable development, as this goes beyond romanticizing traditions and is essential for securing a sustainable future life.

Keywords: disaster mitigation; environmental conservation; local wisdom; sundanese indigenous law.

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1. Introduction

In the 21st century, environmental issues have emerged as a crucial topic in global discourse. This phenomenon cannot be separated from the escalating reality that environmental disasters pose an increasingly tangible threat to the sustainability of ecosystems and the well-being of all living beings, including humans, who are an integral part of the ecosystem. According to recent reports by [NASA \(2024\)](#) and [NOAA \(2024\)](#), 2023 witnessed the highest average global temperature in recorded history, marking a 1.4°C increase since the late 19th century. The comprehensive report from the [IPCC \(2023\)](#) emphasizes that a 1.5°C temperature rise will set off a catastrophic chain reaction, resulting in a 14% loss of biodiversity, drought affecting approximately 950 million people, an increase in the number of days with temperatures exceeding 35°C to 45-58 days per year, and a 24% rise in the global population affected by floods. Once global temperatures surpass the 1.5°C threshold, the consequences will be even more catastrophic, with widespread and severe damage. This reality will worsen if humans do not change their ways of interacting with nature. It underscores the deep connection between humans and the environment, highlighting that our positive or negative actions profoundly impact environmental conditions.

Environmental problems will undoubtedly lead to a universal disaster with far-reaching impacts on various aspects of life. In response to this pressing reality, environmental conservation and disaster mitigation become an imperative step to minimize the worsening of environmental issues and prevent them from escalating into natural disasters that could be highly damaging to society ([Asteria et al., 2022](#)). Involving the community in disaster mitigation is essential for effective prevention and risk reduction ([Pramono et al., 2020](#)). This aligns with [Kalalo \(2018\)](#) that Indigenous people still strongly uphold values related to environmental responsibility. The study reveals that Indigenous communities cherish and actively practice sustainable traditions that have stood the test of time in their daily lives. Therefore, actualizing the principle of "think globally, act locally" so that it does not just become a slogan but a concrete step for individuals is fundamental in the context of response to various environmental problems. This principle will encourage society not to ignore global problems but to actively participate in taking concrete steps to mitigate disasters, starting from the local/smallest level, because global environmental conditions influence the local environment and behavior, which has consequences for global conditions.

Indigenous people's active participation is crucial for implementing effective environmental strategies, as it supports sustainable development and disaster mitigation efforts ([Bol & van Niekerk, 2024](#); [Carson et al., 2018](#)). The Paris Agreement and the Sendai Framework for Disaster Risk Reduction 2015–2030 emphasize the importance of strengthening the role of Indigenous peoples and their wisdom in efforts to develop disaster risk reduction policies and strategies. This indicates that communities' traditional knowledge and practices are key in facing increasingly complex climate and disaster risk challenges and ensuring more effective and sustainable mitigation and adaptation efforts. The reality demonstrates that numerous policy frameworks globally have recognized and emphasized the significance of local knowledge systems and wisdom practices in addressing environmental challenges. Likewise, in the Indonesian context, [PB Bakornas \(2007\)](#) explicitly stated that the community plays a central role in disaster risk reduction efforts. Therefore, national disaster risk management must emphasize the significance of local wisdom and traditional knowledge.

However, conservation and mitigation efforts in Indonesia thus far have primarily focused on scientific and technological aspects, while socio-cultural approaches have not received sufficient attention ([Indriana et al., 2021](#)). [MacAfee et al. \(2024\)](#) reveal that local wisdom in Indonesia plays an essential role in disaster risk management, but in reality, it is rarely used as the primary basis for identifying disaster risk factors. It is important to acknowledge that socio-cultural factors are frequently overlooked in conservation and mitigation efforts, leading to diminished efficacy and long-term viability of these initiatives ([Simarmata & Indrawati, 2022](#)). In line with this, the 2020-2024 National Disaster Management Plan report also indicates that utilizing local wisdom in disaster risk reduction remains not optimal ([Badan Nasional Penanggulangan Bencana, 2020](#)). This reality is unfortunate because the neglect of local wisdom prevents the great potential of traditional knowledge from being utilized optimally in overcoming various problems. Environmental conservation and mitigation efforts rooted in local wisdom are more aligned with the needs and realities of the local community.

Involving local wisdom and contextual understanding of Indigenous communities can improve their preparedness in disaster risk reduction and play an important role in protecting the diversity and health of ecosystems (Von der Porten et al., 2019). This reality highlights that internalizing local wisdom for individuals is crucial and cannot be ignored. Local wisdom is a set of beliefs, actions, and practices passed down through generations, serving as a trusted guide for individuals in facing life's challenges (Uge et al., 2019). This indicates that local wisdom does not just appear but has undergone a long development process from generation to generation. This long development produces positive values relevant to society's conditions, manifesting through knowledge, attitudes, and wise actions. Therefore, by enhancing the internalization of local wisdom within individuals, their behavior can be aligned with positive values. When individuals are imbued with local wisdom emphasizing environmental conservation, their actions will harmonize with efforts to conserve the environment and mitigate disasters.

Pikukuh is one form of local wisdom of the Sundanese people that has great potential to be optimized as a strategy for environmental conservation and disaster mitigation. It contains rules believed to have the value of truth and sacredness, serving as guidelines for individuals and society in their behavior. These rules encompass taboos, prohibitions, beliefs, and restrictions, all aimed at protecting and preserving sacred things (Asteria et al., 2022). A'la et al. (2023) affirm that *pikukuh* is not merely a norm but also a philosophy of life. The belief in *Pikukuh* significantly influences the adherence of the Sundanese Indigenous people to regulations, making it the fundamental basis for daily activities. *Pikukuh* is a system of customary norms governing behavior and social interactions and a foundation for behavior that ensures a harmonious life within the natural environment. Adopting an attitude towards life rooted in *Pikukuh* is crucial in establishing a harmonious existence within the social and natural environments.

In specific circumstances, *Pikukuh* does encompass beneficial values for fostering a harmonious relationship between humans and nature. However, it is worth noting that *Pikukuh's* scope extends beyond solely environmental conservation and disaster mitigation. Therefore, additional research is needed to explore pertinent facets of these endeavors. In addition, research that explicitly examines *Pikukuh's* relevance in responding to environmental problems is still limited. This reality highlights a significant gap in research, indicating that the potential of *Pikukuh* in environmental conservation and disaster mitigation has not been thoroughly explored. Therefore, the primary objective of this study is to identify, analyze, and interpret information about *Pikukuh* that can be effectively utilized in addressing environmental issues, particularly in environmental conservation and disaster mitigation. Consequently, this research aims to acquire a comprehensive understanding of *Pikukuh*, both theoretically and practically, by leveraging indigenous wisdom to enhance community resilience in the face of disaster threats. To streamline and guide the process of identification and analysis, this study will refer to the following research question:

- 1) How does the *Pikukuh* Sundanese indigenous community contribute to environmental conservation efforts?
- 2) What is the relevance of the *Pikukuh* of the Sundanese indigenous community to disaster mitigation efforts?

2. Methods

This study employed a qualitative approach with a case study design. This research used a case study design to enable the researcher to uncover a wide array of facts and information about the case or event under examination. This approach prioritizes efforts to comprehend, describe, analyze, and present a case, program, event, or activity with unique characteristics that may not be replicated in other settings (Morgan et al., 2017). This study aims to identify, analyze, and interpret the values of Sundanese Indigenous laws (*Pikukuh*) that are relevant to environmental conservation and disaster mitigation.

The research was conducted from December 2023 to March 2024 in four Sundanese traditional villages, namely (a) Naga Village, (b) Kanekes Village (Baduy), (c) Kuta Village, and (d) Cikondang Village. These villages were selected due to their consistent adherence to and implementation of *Pikukuh* in their daily practices. The selection aims to provide a comprehensive and in-depth understanding of the role and relevance of these traditional values in environmental conservation and disaster mitigation efforts. This research utilized two main types of data sources, namely primary data and secondary data, as a basis for comprehensive information.

Primary data were collected from observations and interviews. In the observation, the observer acted as a participant to observe the activities and environment of the research subjects. Meanwhile, the interview technique used semi-structured interviews conducted face-to-face with traditional leaders from each Traditional Village. Although the researcher had prepared a list of questions in advance, the interview process was designed to be dynamic, allowing questions to develop according to the context of the conversation and new information that emerged. Meanwhile, secondary data were obtained from various sources in a comprehensive literature study. Both primary and secondary data were analyzed using three stages, namely data reduction, data presentation, and conclusion (Miles et al., 2014). In the data reduction stage, relevant data were sorted, selected, and focused on to address research questions. Data presentation involves organizing the data in a format that allows for further analysis, such as tables, graphs, or descriptive narratives. Conclusion covered interpreting the presented data to address the research objectives and provide recommendations.

3. Results and Discussion

3.1 Results

In every community, including the Sundanese Indigenous people, Indigenous laws are essential for guiding individuals in their activities and behavior, both towards fellow humans and their environment. The Indigenous laws in this research are focused on the *Pikukuh* of the Sundanese Indigenous people, which are relevant to environmental conservation and disaster mitigation. *Pikukuh* is often conveyed through proverbs or parables. These expressions are not just slogans but carry deep philosophical meanings translated into tangible rules guiding people's actions in everyday life. The existence of *Pikukuh* can still be found in several traditional Sundanese communities that still hold it tightly and apply it consistently. However, it cannot be denied that its existence is currently limited to traditional community groups within a limited scope. More fully, the results of identifying several *Pikukuh* that still exist and are relevant to the context of environmental conservation and disaster mitigation in Sundanese Indigenous people are presented in Table 1.

Table 1. The Values of the Sundanese Indigenous Laws Regarding the Environment

<i>Pikukuh</i> Sentence	Philosophical Meaning and Rationality	Actualization in Community Activities
<i>Gunung teu meunang dilebur, Lebak teu meunang dirusak</i> (The mountain may not be destroyed; the valley may not be damaged)	Maintaining the conservation of mountains and valleys is crucial to prevent damage and overexploitation that can lead to various disasters such as floods, landslides, and droughts.	<ul style="list-style-type: none"> • Don't cut down trees in valleys or mountains. • Don't dredge mountains and valleys for living needs.
<i>Lojor teu meunang dipotong, Pondok teu meunang disambung</i> (What is long may not be cut off; what is short may not be lengthened)	Things created and passed down from generation to generation in society need to be protected. In an environmental context, this principle reflects the importance of preserving nature by not interfering with or destroying existing natural structures so that the sustainability of the ecosystem and the life of its living creatures can be guaranteed.	<ul style="list-style-type: none"> • They follow their ancestors' teachings regarding environmental protection. • Constructing a house should follow natural contours/topography. • Don't change the available water pathways or drainage. • Don't close the surrounding area of the settlement with walls or concrete.
<i>Leuweung lain ruksakkeun, tapi rawateun jeung rumateun</i> (Forests are not to be destroyed, but to be cared for and preserved)	The presence of forests in human proximity should not be destroyed but rather nurtured and safeguarded. Forests play a vital role in sustaining all life forms by providing oxygen, water, food, and numerous other benefits.	<ul style="list-style-type: none"> • When cutting down trees for specific purposes, at least ten trees should be replanted. • Forests are divided into forbidden forests, sacred forests, and cultivated forests. • Forests cannot be converted into settlements or plantations.

Pikukuh Sentence	Philosophical Meaning and Rationality	Actualization in Community Activities
Gunung tetep lestari kaian, lahan lamping awian, lahan rata datar imahan, lahan legok balongan, lahan lebak sengkedan sawahan, jeung piara jalan cai solokan (Mountains remain sustainable with trees/wood; sloping land is planted with bamboo; flat land is made into houses; hollow land is made into ponds; valley land is made into swales for rice fields; and water channels must be maintained)	Land use and spatial planning must be carefully designed to suit each area's topography, natural characteristics, and specific purposes. Each region serves a unique function. Neglecting the proper maintenance of mountains, slopes, and water irrigation can lead to catastrophic events, such as floods.	<ul style="list-style-type: none"> • Don't build settlements in areas that are not intended for them. • The area is divided into three zones (top/holy, middle/clean, and bottom/dirty) according to their respective functions. • Forests are divided into forbidden forests, sacred forests, and cultivated forests. • Carrying out water rituals by working together to clean irrigation and areas around springs.
Leuweung mah imah kai, kai mah imah cai. (Forest is the house of wood/trees; wood/trees are the house of water)	Forests provide a crucial habitat for the growth of trees; when trees grow well, water becomes abundant because they are the source of water. Protecting forests and their trees is essential for preventing natural disasters such as floods, landslides, and droughts, as they serve as water absorbers, soil binders, and regulators of water circulation.	<ul style="list-style-type: none"> • It is forbidden to take or exploit prohibited forests/sacred forests. • Replanting after cutting down trees. • Cut down trees by paying attention to age and size first. • Trees in the forest are not permitted to be cut down until they are gone.
Mipit kudu amit, ngala kudu menta (Picking requires permission; taking requires asking)	The utilization of natural resources requires permission from various related parties, including god as the creator. This step is crucial in ensuring that the utilization of natural resources is not solely focused on personal gain but also considers long-term well-being and minimizes the likelihood of conflict.	<ul style="list-style-type: none"> • Asking permission to perform the traditional ceremony before opening the fields and during harvest. • Traditional rules must be obeyed when farming or gardening.
Teu meunang subat-sabet lamun lain sabeuteunana (It is not permissible to trim or cut down unless it is intended for use)	Cutting or trimming plants and trees must carefully consider the needs, the amount, and the age of the plants or trees. This is necessary to maintain the sustainability of the natural ecosystem.	<ul style="list-style-type: none"> • It is forbidden to take or exploit prohibited forests/sacred forests. • Cutting must consider the age, size, and type of plant.
Teu meunang ka leuweung Karamat dina poe Salasa, Juma'ah jeung Sabtu (It is not allowed to enter the sacred forest on Tuesdays, Fridays and Saturdays)	It is important to allow the ecosystem time to carry out its natural processes and develop without human interference. Additionally, restricting access helps minimize the risk of disturbance or harm to the forest's plant and animal life.	<ul style="list-style-type: none"> • Entering forest areas at certain times is prohibited.
Nu lain kudu dilainkeun, Nu ulah kudu diulahkeun, Nu enya kudu dienyakeun (What is 'not' should be considered 'not', what is prohibited should remain prohibited, and what is right should be justified)	In life, there are always laws and rules. Individuals need to understand what is right and wrong and what is permissible and not permissible so that their actions do not cause problems for themselves or their environment.	<ul style="list-style-type: none"> • Obeying the rules that have been passed down from generation to generation.
Melak cabe jadi cabe, melak bonteng jadi bonteng, melak hade jadi hade, melak goreng jadi goreng (Planting chilies and getting chilies, planting cucumbers and getting cucumbers, planting good and getting good, planting bad and getting bad)	Humans' treatment of nature will have an impact on themselves. When humans treat nature well, the results will also be good for them, and vice versa	<ul style="list-style-type: none"> • Avoiding any activities that can potentially harm or endanger the natural environment.

The Sundanese Indigenous laws (*Pikukuh*) identified in Table 1 indicate that Sundanese communities have ecological wisdom that equips them to adapt, interact, and establish harmonious relationships with the natural environment. Based on the results of the interviews and analysis of each sentence presented, *Pikukuh* is full of philosophical meaning and deep rationality, which is then translated into real actions as rules that apply in everyday life. The values and principles embodied in *Pikukuh* emphasize the significance of upholding the equilibrium of nature and respecting the harmonious relationship between human

beings and their environment. These values function as guiding principles and serve as a constant reminder of society's collective responsibility to preserve nature. Hence, *Pikukuh*, passed down across generations, not only acts as a guide to individual behavior in society but also as a strong foundation for collective endeavors to preserve the environment as a preventive measure in dealing with potential local, national, or global environmental hazards.

3.2 Discussion

The Contribution of Sundanese Indigenous Laws in Environmental Conservation

Both written and unwritten indigenous laws serve as guidelines for all members of a community group (Hang et al., 2023). As a legal system that continues to evolve and is based on the values of a society, indigenous laws play a crucial role in addressing various issues, particularly the values of truth and justice (Suryawati & Syaputri, 2021). Some Sundanese Indigenous people consider this law as *Pikukuh*, while others refer to them as expressions of wisdom, philosophy of life, taboos, or *pamali*. However, they all essentially signify the same thing, namely, to guide the behavior of society members. The concept of *Pikukuh* is closely tied to traditional ethics (*patikrama*), originating from the *Sanghyang siksa kendang karesian* manuscript or the heritage of Sundanese ancestors (*Panujungria Sya Seda*) (Garna, 1987). Its contents guide moral norms that apply in social life, including important knowledge for wise daily life. This indicates that *Pikukuh* was not formed in a short time but was the result of the accumulation of thoughts and behavioral patterns of the Sundanese people over a long period.

Table 1 shows the results of the identification and classification of the indigenous laws found in the Baduy, Cikondang, Kuta, and Kampung Naga. These four indigenous communities are real examples of traditional Sundanese communities who still uphold and actualize *Pikukuh*, which has been passed down from generation to generation in their daily activities. Rooted in the Sundanese Indigenous law, *Pikukuh* encompasses a range of positive values influencing community behaviors, such as conservation, sustainability, environmental consciousness, respect, discipline, and cultural appreciation (Faridah et al., 2020). Belief in these values significantly impacts the Sundanese traditional community's adherence to norms or *Pikukuh*, which then becomes the primary basis or guide in carrying out their daily activities.

As reflected in Table 1, *Pikukuh* is a system of customary norms that regulate behavior and social interactions and a framework for behavior that guarantees harmony with the surrounding environment. Furthermore, Faridah et al. (2020) stated that *Pikukuh* has a broader role than just guiding individuals or Sundanese people in their behavior because *Pikukuh* also functions as a social control mechanism for this behavior. In other words, *Pikukuh* is not only a set of cultural norms that guide people's behavior and life but also plays a role in monitoring and influencing behavior. As depicted in Figure 1, *Pikukuh* serves as the main foundation in environmental conservation efforts, which are a concrete manifestation of the actualization of *Pikukuh* in community life. Thus, environmental conservation can be understood as an inherent result of the actualization of *Pikukuh* by the community, which integrates local wisdom values into actions by maintaining ecosystem balance and reducing the risk of natural disasters.

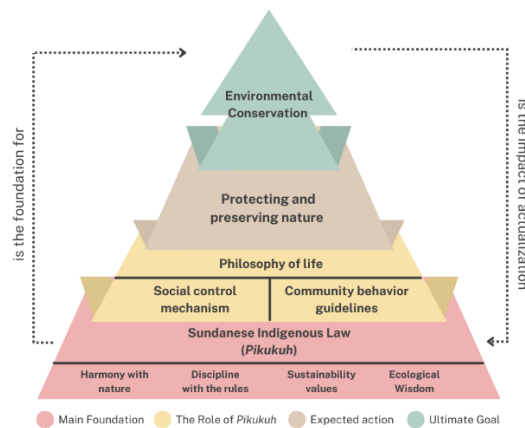


Figure 1. Contribution of *Pikukuh* to environmental conservation

The wisdom contained in *Pikukuh* is evident in the behavior of Sundanese traditional people, who avoid excessive logging or forest exploitation. Additionally, the prohibitions outlined in *Pikukuh* are demonstrated through the classification of forests into forbidden areas, which may not be exploited or entered, and cultivated forests, which may be utilized while adhering to indigenous laws (Asteria et al., 2022; Rohman et al., 2022). Forbidden forests, with their rich mythologies and deeply rooted indigenous laws, have been proven to be an effective way of conserving their biodiversity, thus having a positive impact on overall environmental stability in the surrounding area (Sullivan et al., 2024). Beyond the classification of forest types, forest conservation practices by Sundanese indigenous people include restrictions on cutting down trees. Individuals are permitted to cut down trees that meet specific size and age criteria, and those who cut down a tree are required to plant ten trees as a replacement. This policy anticipates the potential failure of some trees to grow, ensuring that at least one tree will successfully thrive and replace the one that was cut down. This measure is crucial for maintaining forest sustainability and protecting the overall ecosystem. Thus, the manifestation of the *Pikukuh* in protecting forests not only prevents soil erosion and reduces the risk of disasters such as landslides but also strengthens environmental conservation efforts as a whole.

Another manifestation of *Pikukuh* in the lives of Sundanese Indigenous people is reflected in their decision not to close off the surrounding area in their residence with walls or concrete. This action is based on the belief "*Lojor teu meunang dipotong, Pondok teu meunang disambung* (what is long might not be cut off, what is short might not be connected)," which means that humans must accept and appreciate what comes from nature, without adding or reducing what is already provided (Asteria et al., 2022; Hasanah et al., 2021). This action reflects the public's awareness of the importance of maintaining the natural cycle of groundwater and ecosystem balance. When open land is covered with materials such as walls or concrete, the soil's ability to absorb water is disrupted, causing water to flow over the surface and increasing the risk of flooding (Dwisaputra et al., 2023). Indirectly, the actions of the Sundanese indigenous people who do not change groundwater infiltration by using walls or concrete not only contribute to maintaining adequate groundwater availability to meet daily living needs and maintain the stability of the local ecosystem but also have a positive impact in reducing the risk of flooding and drought.

The manifestation of *Pikukuh* in the lives goes beyond the mere conservation of local wisdom values. It represents a genuine form of environmental conservation with local and far-reaching benefits. *Pikukuh* not only plays a role in conceptual environmental conservation but also has a lasting, positive impact on the sustainability of ecosystems, biodiversity, and human well-being. Behaving appropriately to *Pikukuh* when dealing with the natural environment effectively enables Sundanese indigenous people to carry out practices that support ecological balance. This reality demonstrates that the Sundanese indigenous people implement *Pikukuh* not only to safeguard their ancestral traditions but also as a mechanism for society to actively participate in environmental conservation. In doing so, their objective is to establish a sustainable environment that guarantees the preservation of future generations. Moreover, this approach has significant potential for the broader public to achieve comparable outcomes, provided they are appropriately informed about and comprehend the principles of *Pikukuh*.

The Relevance of Sundanese Indigenous Laws for Disaster Mitigation

The Sundanese Indigenous people hold a positive view of the natural environment. They firmly believe that the natural environment should be respected, cared for, and preserved rather than exploited (Hasanah et al., 2021). This insightful perspective is rooted in the proverb that has evolved for a long time, "*melak cabe jadi cabe, melak bonteng jadi bonteng, melak hade jadi hade, melak goreng jadi goreng* (Planting chilies and getting chilies, planting cucumbers and getting cucumbers, planting good and getting good, planting bad and getting bad)" which can be interpreted to mean that humans' treatment of nature will have an impact on themselves. When humans treat nature well, the results will also be good for them, and vice versa. In addition, the parable "*leuweung ruksak, cai beak, manusa balangsak* (The forest is damaged, the water is running out, and the people are having difficulty)" describes the relationship between humans and the environment. If forests are cut down uncontrollably, the balance of the ecosystem, especially the water cycle, will be disturbed and cause drought. This condition will ultimately cause difficulty for humans to meet daily living needs and even trigger natural disasters. Unsurprisingly, the values in *Pikukuh* emphasize living in balance and harmony with nature, respecting and caring as an integral part of life. This has a significant impact on the way Indigenous peoples care for their environment, ultimately leading to good nature conservation practices.

Preserving the sustainability of forests and protecting the survival of flora and fauna are fundamental principles embedded in the *Pikukuh*. This rationale is inherently logical; human life will also be threatened when forests are threatened. The interdependency between human life and the presence of forests is undeniable. The degradation of forests not only hinders human livelihoods but also elevates the likelihood of calamities. Numerous studies have unequivocally demonstrated the severe repercussions of deforestation, encompassing exacerbation of global warming and climate change (Makarieva et al., 2023). This aligns with the World Resources Institute report by Stevens et al. (2014), which shows that approximately 13 million hectares of forest are lost annually, equivalent to 50 football fields disappearing daily. This loss contributes to 11 percent of greenhouse gas emissions each year. A staggering 420 million hectares of forest have been lost since 1990 (FAO, 2020). These findings encourage the international community to quickly take concrete actions to overcome deforestation and forest degradation because it is seen as the main strategy for reducing greenhouse gas emissions, which, in the end, can influence climate change management before it reaches a more critical level.

The values of Sundanese traditional communities offer an innovative approach to addressing deforestation and forest degradation. The Sundanese traditional community's way of life is rooted in the belief that we should treat nature with the same ethic as fellow humans (Darusman, 2020). In Sundanese traditional communities, these ethics are outlined in *Pikukuh*, which contains rules that can be used as guidelines for individuals or communities to behave and manage the environment wisely (Asteria et al., 2022). The pervasive influence of *Pikukuh* within Sundanese society significantly contributes to their adeptness in addressing a wide spectrum of environmental challenges. Rooted in deeply ingrained cultural norms, *Pikukuh* guides individuals' daily actions and fosters a collective commitment to environmental conservation. The Sundanese community navigates their interactions with the natural world by adhering to these principles, ensuring sustainable resource utilization and harmonious coexistence.

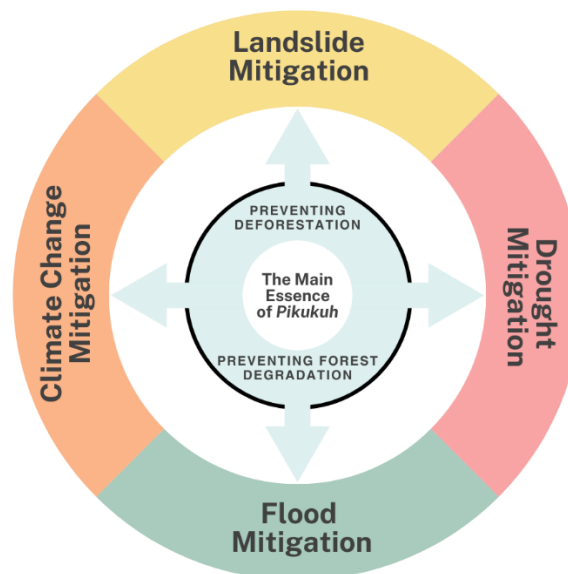


Figure 2. The Relevance of Sundanese Indigenous Laws for Disaster Mitigation

As presented in Figure 2, the Sundanese indigenous law (*Pikukuh*) mainly highlights efforts to prevent deforestation and forest degradation. This is inseparable from Indigenous peoples' belief that forests are the core of life. Thus, they are seen as natural resources that can be exploited and an integral part of social, cultural, economic, and even spiritual life that needs to be protected and preserved (Abas et al., 2022). Maintaining forest sustainability means maintaining the density of forest vegetation and has a broad impact on the ecosystem. With healthy vegetation conditions, forests will be better able to absorb rainwater, maintain soil stability, prevent erosion, and maintain the groundwater cycle. This action is crucial because it will indirectly act as a form of disaster mitigation. Suppose deforestation and forest degradation continue to be ignored. In that case, they will certainly trigger other environmental problems

such as floods (Yaseen, 2024), landslides (Khan et al., 2023), and water source extinctions (Sweya et al., 2022). Therefore, preventing deforestation and forest degradation based on Sundanese indigenous laws (*Pikukuh*) not only has short-term benefits in the form of forest conservation but also sets off a chain reaction that serves as a form of disaster mitigation.

Quantitative data describing the benefits of *Pikukuh* on forest areas in Sundanese traditional villages are limited, but previous studies and researcher observations have provided valuable insights into the positive impacts of implementing *Pikukuh* to sustain the forest for the local community. Hasanah et al. (2021) and Saleh et al. (2020) demonstrate that *Pikukuh*, such as the designation of prohibited forests, have a positive impact on preserving water sources and preventing water source damage in order to protect the communities from drought. In the context of disaster mitigation, *Pikukuh* encourages people to preserve nature, individually and collectively. Thus, *Pikukuh* plays a crucial role in preventing or at least reducing environmental problems. Furthermore, traditional regulations among the Sundanese indigenous communities encourage them to actively conserve forests, a form of non-structural disaster mitigation. These actions play an essential role in maintaining the stability of the local ecosystem, absorbing rainwater, reducing soil erosion, and minimizing the risk of natural disasters such as landslides and floods. Overall, the presence of *Pikukuh* represents a comprehensive form of non-structural disaster mitigation. It promotes active community participation and encourages behaviors in harmony with nature. By adhering to these traditional values, the community is better equipped to prevent and mitigate the impacts of natural disasters.

Conserving forests has a wide-ranging impact, including protecting biodiversity, mitigating global warming, preventing summer droughts, and reducing the likelihood of landslides and floods during the rainy season (Rohman et al., 2022). Thus, Sundanese indigenous laws (*Pikukuh*), which mainly emphasize efforts to prevent deforestation and forest degradation, are concrete evidence that local wisdom can contribute to overcoming global problems. By maintaining forests, the absorption of greenhouse gas emissions becomes more optimal, which eventually provides positive impacts on reducing the rate of global warming and maintaining the balance of the global ecosystem (Ewert & Mäurer, 2023; Krüger & Tarach, 2022). This aligns with various international agendas and commitments in efforts to mitigate disasters that can threaten life. The comprehensive report by the Intergovernmental Panel on Climate Change (2023) warns that exceeding the globally agreed limit of 1.5°C in warming temperatures could result in loss of biodiversity, drought, sea level rise, floods, extreme weather events, and even previously unimaginable sea ice loss due to climate change. This emphasizes the significance of Sundanese indigenous law in local mitigation efforts and in contributing to global mitigation efforts.

This reality highlights the importance of Indigenous laws among the Sundanese people in preserving the forest environment. Maintaining these traditional practices can help protect the ecosystem and significantly reduce the risk of natural disasters such as floods, landslides, droughts, and climate change, which eventually prevent the widespread detrimental effects on humanity. The wisdom contained within *Pikukuh* is not only deeply philosophical but also inherently practical, as it is translated into tangible rules that govern everyday life. While *Pikukuh* is often seen as a part of Sundanese culture due to its manifestation in Sundanese proverbs and parables, its principles of environmental conservation hold relevance beyond the boundaries of the Sundanese traditional community. Hence, the Indigenous laws within Sundanese society are universal as they apply to individuals outside this community. This is because *Pikukuh* is not merely a myth or belief but is also underpinned by a rational basis that can be comprehended by the general populace.

Conclusion

The Sundanese traditional community holds a profound and balanced perspective on environmental conservation, particularly forests. This outlook is rooted in ancient adages and values found in traditional regulations (*Pikukuh*) that have been passed down through generations. These principles emphasize the significance of preserving ecosystem equilibrium and refraining from irresponsible exploitation of nature, making it pertinent to worldwide initiatives aimed at reducing deforestation and lessening the impact of natural calamities. These values demonstrate a profound and widely applicable rationale, making them instrumental in environmental conservation as a strategic measure to minimize the threat of natural disasters. Implementing the Indigenous laws of the Sundanese community (*Pikukuh*) can preserve local wisdom and values and provide positive and sustainable impacts on ecosystems, biodiversity, and human

welfare. These practices help maintain the groundwater cycle, reduce erosion risks, and uphold the stability of the broader ecosystem. Thus, exploring and implementing the Indigenous laws of the Sundanese community (*Pikukuh*) is not merely romanticizing a tradition but an effective means of safeguarding the environment for the well-being of future generations. Applying these principles locally can serve as an inspiring and relevant model for global efforts in environmental conservation and natural disaster mitigation. This research has significantly contributed to supporting environmental conservation initiatives and offers a local cultural perspective that can be integrated into sustainable development strategies in Indonesia.

Limitation

This research indeed has some limitations, especially related to the coverage area and diversity of Sundanese indigenous communities spread across several West Java and Banten areas. In addition, limited funds and time are significant challenges that make it impossible to reach and study all Sundanese indigenous people comprehensively. Therefore, this research focuses on several communities, such as Kampung Naga, Kampung Kanekes (Baduy), Kampung Kuta, and Kampung Cikondang, whose existence in maintaining and implementing Sundanese customary rules is already widely known and recognized by the community and previous research. These villages are selected as they consistently maintain and actualize Sundanese cultural values in their activities. Considering the limitations of this research, future studies can explore further the contribution and relevance of *Pikukuh* for environmental conservation and disaster mitigation efforts.

References

- Abas, A., Aziz, A., & Awang, A. (2022). A Systematic Review on the Local Wisdom of Indigenous People in Nature Conservation. *Sustainability*, 14(6), 3415. <https://doi.org/10.3390/su14063415>
- A'la, A., Mukminan, M., Anisfa, D. S., Putri, A. P., & Farida, W. (2023). The Belief System Serves as a Disaster Mitigation Mechanism to Preserve the Local Wisdom of the Baduy Tribe. *INFERENSI: Jurnal Penelitian Sosial Keagamaan*, 17(1), 45–58.
- Asteria, D., Alvernia, P., Kholila, B. N., Husein, S. I., & Asrofani, F. W. (2022). Forest conservation by the indigenous Baduy community in the form of customary law. *Journal of Cultural Heritage Management and Sustainable Development*. <https://doi.org/10.1108/JCHMSD-12-2020-0171>
- Badan Nasional Penanggulangan Bencana. (2020). Rencana Nasional Penanggulangan Bencana 2020-2024. In *BNPB, Jakarta* (Vol. 1).
- Bol, G. K., & van Niekerk, D. (2024). Application of African indigenous knowledge systems and practices for climate change and disaster risk management for policy formulation. *International Journal of Disaster Risk Reduction*, 111, 104670. <https://doi.org/10.1016/j.ijdr.2024.104670>
- Carson, S., Kentatchime, F., Nana, E., Njabo, K., Cole, B., & Godwin, H. (2018). Indigenous Peoples' Concerns About Loss of Forest Knowledge: Implications for Forest Management. *Conservation and Society*, 16(4), 431. https://doi.org/10.4103/cs.cs_17_105
- Darusman, Y. (2020). Local Wisdom and Environmental Preservation (Study on Sundanese Indigenous People in East Priangan, West Java, Indonesia). *PalArch's Journal of Archaeology of Egypt/Egyptology*, 17(8), 453–469.
- Dwisaputra, E., Budiarta, W., & Hendratno, A. (2023). Soil Infiltration Mapping in the Eastern Part of Mijen Sub-District, Semarang City, Indonesia. *E3S Web of Conferences*, 468, 10008. <https://doi.org/10.1051/e3sconf/202346810008>

- Ewert, T., & Mäurer, N. (2023). Safety and Security Considerations on the Airbus Wake Energy Retrieval Program “fello’fly.” *2023 Integrated Communication, Navigation and Surveillance Conference (ICNS)*, 1–12. <https://doi.org/10.1109/ICNS58246.2023.10124302>
- FAO. (2020). *Global Forest Resources Assessment 2020*. FAO. <https://doi.org/10.4060/ca9825en>
- Faridah, A., Adisendjaja, Y. H., & Sriyati, S. (2020). Local wisdom values of the Baduy tribe: the potential to develop biology teaching materials of high school grade X. *Journal of Physics: Conference Series*, 1521(4), 042015. <https://doi.org/10.1088/1742-6596/1521/4/042015>
- Garna, J. (1987). *Tangtu Telu Jaro Tujuh: Kajian Struktural Masyarakat Baduy di Banten Selatan Jawa Barat Indonesia*. Unpublished Ph. D. Thesis, University Kebangsaan Malaysia, Bangi.
- Hang, P. T., Thị Hai, N., & Ngu, N. H. (2023). Impact of the customary law on the implementation of land use rights of Bana ethnic minority in Vinh Thanh district, Binh Dinh province. *Multidisciplinary Science Journal*, 6(6), 2024084. <https://doi.org/10.31893/multiscience.2024084>
- Hasanah, S., Yani, A., & Setiawan, I. (2021). Water conservation based on local wisdom in Cikondang traditional village community. *IOP Conference Series: Earth and Environmental Science*, 683(1), 012143. <https://doi.org/10.1088/1755-1315/683/1/012143>
- Indriana, F. N. L., Pangestu, Y. A., Amanda, B., Ranti, A. D., & Amaruli, R. J. (2021). A Preliminary Study on the Javanese Folklore as a Disaster Mitigation Strategy. *E3S Web of Conferences*, 317, 01021. <https://doi.org/10.1051/e3sconf/202131701021>
- IPCC. (2023). *Synthesis Report of the Sixth Assessment Report: A Report of the Intergovernmental Panel on Climate Change*. <https://www.ipcc.ch/report/sixth-assessment-report-cycle/>
- Kalalo, J. J. J. (2018). Protection of indigenous legal community rights in the border area of the South Papua. *International Journal of Mechanical Engineering and Technology*, 9(12), 212–219.
- Khan, A., Nawaz, U., Ulhaq, A., Gondal, I., & Javed, S. (2023). Accurate and Efficient Urban Street Tree Inventory with Deep Learning on Mobile Phone Imagery. *2023 International Conference on Digital Image Computing: Techniques and Applications (DICTA)*, 486–493. <https://doi.org/10.1109/DICTA60407.2023.00073>
- Krüger, J. J., & Tarach, M. (2022). Greenhouse Gas Emission Reduction Potentials in Europe by Sector: A Bootstrap-Based Nonparametric Efficiency Analysis. *Environmental and Resource Economics*, 81(4), 867–898. <https://doi.org/10.1007/s10640-022-00660-7>
- MacAfee, E., Lohr, A. J., & de Jong, E. (2024). Leveraging local knowledge for landslide disaster risk reduction in an urban informal settlement in Manado, Indonesia. *International Journal of Disaster Risk Reduction*, 111, 104710. <https://doi.org/10.1016/j.ijdrr.2024.104710>
- Makarieva, A. M., Nefiodov, A. V., Rammig, A., & Nobre, A. D. (2023). Re-appraisal of the global climatic role of natural forests for improved climate projections and policies. *Frontiers in Forests and Global Change*, 6. <https://doi.org/10.3389/ffgc.2023.1150191>
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis 3rd Edition: Source book of Bew Methods*. Beverly Hills: SAGE Publications Inc.
- Morgan, S. J., Pullon, S. R. H., Macdonald, L. M., McKinlay, E. M., & Gray, B. V. (2017). *Case Study Observational Research: A Framework for Conducting Case Study Research Where Observation Data*

- Are the Focus. *Qualitative Health Research*, 27(7), 1060–1068. <https://doi.org/10.1177/1049732316649160>
- NASA. (2024). *NASA Analysis Confirms 2023 as Warmest Year on Record*. <https://www.nasa.gov/news-release/nasa-analysis-confirms-2023-as-warmest-year-on-record/>
- NOAA. (2024). *2023 was the world's warmest year on record, by far Antarctic sea ice coverage hit record low*. <https://www.noaa.gov/news/2023-was-worlds-warmest-year-on-record-by-far>
- PB Bakornas. (2007). *Pengenalan Karakteristik Bencana dan Upaya Mitigasinya di Indonesia*. In *Jakarta: Badan Nasional Penanggulangan Bencana*.
- Pramono, J., Kusumastuti, D., Sekarwangi, M., & Choerudin, A. (2020). The Community Participation in Disaster Mitigation to Managing the Impact of Natural Disasters in Indonesia. *Journal of Talent Development and Excellence*, 12, 2396–2403.
- Rohman, S. N., Maryani, E., & Yani, A. (2022). Local wisdom of the indigenous society of kampung kuta in maintaining leuweung gede as a form of environmental conservation efforts. *IOP Conference Series: Earth and Environmental Science*, 1089(1), 012051. <https://doi.org/10.1088/1755-1315/1089/1/012051>
- Salah, I., Atmaja, I. S. W., & Syahadat, R. M. (2020). Prohibition in Baduy Dalam Community: Soil and Water Conservation Perspective. *Proceedings of the International Conference on Agriculture, Social Sciences, Education, Technology and Health (ICASSETH 2019)*. <https://doi.org/10.2991/assehr.k.200402.040>
- Simarmata, D. P., & Indrawati, D. R. (2022). Using local wisdom for climate change mitigation. *IOP Conference Series: Earth and Environmental Science*, 1109(1), 012004. <https://doi.org/10.1088/1755-1315/1109/1/012004>
- Sullivan, M. K., Browne, L., Penagos Zuluaga, J. C., Liu, J., Surendra, A., & Estrada-Villegas, S. (2024). Sacred forest biodiversity conservation: A meta-analysis. *Conservation Science and Practice*, 6(1). <https://doi.org/10.1111/csp2.13055>
- Suryawati, N., & Syaputri, M. D. (2021). Harmonization of the Application of Customary Law and Positive Law in Village Communities of Malang Regency. *International Journal of Applied Business and International Management*, 6(2), 1–12. <https://doi.org/10.32535/ijabim.v6i2.993>
- Sweya, L. N., Bumarwa, R. N., & Igunda, M. S. (2022). Water sources sensitivity: The impacts of forests loss from human activities. *Environmental Quality Management*, 32(2), 329–339. <https://doi.org/10.1002/tqem.21848>
- Uge, S., Neolaka, A., & Yasin, M. (2019). Development of Social Studies Learning Model Based on Local Wisdom in Improving Students' Knowledge and Social Attitude. *International Journal of Instruction*, 12(3), 375–388. <https://doi.org/10.29333/iji.2019.12323a>
- Von der Porten, S., Ota, Y., Cisneros-Montemayor, A., & Pictou, S. (2019). The Role of Indigenous Resurgence in Marine Conservation. *Coastal Management*, 47(6), 527–547. <https://doi.org/10.1080/08920753.2019.1669099>
- Yaseen, Z. M. (2024). Flood hazards and susceptibility detection for Ganga river, Bihar state, India: Employment of remote sensing and statistical approaches. *Results in Engineering*, 21, 101665. <https://doi.org/10.1016/j.rineng.2023.101665>