

Living in harmony with nature: the indigenous knowledge of Baduy people in Kanekes village, west Java

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Abstract

The Baduy of Kanekes are an indigenous community living in the remote region of Banten, Indonesia. They are known for their strong commitment to preserving their traditional way of life and natural living environment and resisting outside influences. For centuries, their indigenous knowledge has managed to maintain the survival of their culture and natural resources, largely unaffected by modernization and globalization. The Baduy society comprises two main groups: the Inner Baduy (Baduy Dalam) and the Outer Baduy (Baduy Luar). The Inner Baduy, also known as *Tangtu*, are the most conservative and live in the region's heart, adhering strictly to their ancestral customs and traditions. They are not allowed to use footwear, electrical power and devices, chemical products, or vehicles and have contact with the outside world. On the other hand, the Outer Baduy, known as *Panamping*, have limited interaction with the modern world and act as intermediaries, representing the community in external matters.

This study aims 1) to reveal the livelihood and indigenous knowledge of the Baduy, which are practiced daily in maintaining harmony with nature, and 2) to identify the external threats that may jeopardize the future lives of the Baduy community. The researchers conducted field surveys and in-depth informal interviews with key informants to acquire deeper cultural information and meanings during 2021–2023 and recorded visual data and information using sketches and handwriting since the Baduy highly prohibits the use of electronic and digital devices in the Inner Baduy area.

The Baduy indigenous people have a deep knowledge of nature, culture, and religion, which sustains their lives through a harmonious relationship between man, the environment, and the supreme power, guided by strict customary rules. The principles of protecting nature and its survival are realized through rules and taboos that are always carried out in everyday life. The rules and restrictions they make are related to nature, such as mountains, forests, land, water, flora, and fauna, and the way to create and maintain the built environment.

While the Baduy try to keep their survival by continuing to adhere to their principles, unfortunately, challenges such as scarcity of horticultural land, external threats such as illegal mining, and industrial waste produced by tourism began to threaten their quality of life in the long run. In the future, the Baduy may not be able to tackle the complex challenges they face single-handedly. Collaborative efforts among the stakeholders will be necessary to ensure their cultural survival.

Keywords: Baduy People, Ecological Balance, Indigenous Knowledge, Kanekes Village, Indonesia

1. Introduction

The Kanekes Village community, known as the Baduy, resides in a secluded enclave within the Banten province of Indonesia. They are divided into two main zones, namely Inner Baduy, known as *Tangtu*, and Outer Baduy, known as *Panamping*. Their unwavering dedication to preserving ancestral customs and the pristine natural environment is relentless, as they firmly resist external influences. Across generations, their indigenous wisdom has adeptly safeguarded both their cultural heritage and the bountiful natural resources that sustain them, steadfastly resisting the tides of modernization and globalization. The Baduy community showed remarkable prowess in building or renovating houses and essential structures. They made many dwellings in just 1 to 2 days, achieved very quickly by utilizing original materials and locally sourced wood, efficient building structures and elements, and cooperative work. This astute practice of employing native resources through cost-effective construction methods and design principles is referred to by Gulati (2019) as something that epitomizes an ingenious and intelligent solution (Gulati et al., 2019; Manu, 2006).

This study explores the daily life and knowledge of Baduy customs in Kanekes Village, Banten. Field observations and in-depth informal interviews with key informants were conducted during 2021–2023 to unearth deeper information and cultural significance. This study aims 1) to reveal the livelihood and indigenous knowledge of the Baduy, which are practiced daily in maintaining harmony with nature, and 2) to identify the external threats that may jeopardize the future lives of the Baduy community.

2. Indigenous knowledge and its paradox

The term indigenous knowledge refers to a range of knowledge produced in a specific social context and used by community members daily. Indigenous knowledge is not generated through a planned set of procedures or rules but as a result of the search for practical solutions to the problems of everyday life, relying on community wisdom and available resources, and utilizing intuition and creativity. The knowledge built is then passed down from generation to generation through oral tradition. (Sudrajat, 2019; George, 1999; Semali and Kincheloe, 1999).

The legacy of indigenous knowledge is not only passed down to indigenous communities themselves but has the potential to be adopted by all levels of society throughout the world. Several studies have proven that indigenous architecture is inherently sustainable, and modern architects adopt its principles in creating cultured and environmentally friendly architecture (Wahid, 2012; Dayaratne, 2003; Dayaratne, 2000; Dayaratne, 1999).

There is a paradox happening right now. Indigenous peoples possess valuable indigenous knowledge that can be adopted as good principles. However, they are often unable to defend themselves due to external interests. Therefore, research must not only uncover good indigenous knowledge but also identify potential threats so that they can be anticipated and mitigated early on.

3. Literature Review

The sustainable way of life that indigenous communities have implemented has proven to be effective in maintaining harmony and continuity of life. Turner states in his book (2005) that even though all forms of life need to eat and are willing to give themselves to each other as food, traditional protocols must still be followed. The rule is to treat all life with respect and never waste or use animals, plants, food, or medicine carelessly. The elders will explain that, just as one should not joke about other creatures, children should not joke, tease, play with, or waste animals or plants because these living creatures have generously given themselves to humans for our good. The ties of inland peoples to their entire territory—from river valleys to mountain peaks—are extensive and strong. For them, too, everything in their lives, past and present, is still interconnected. The diverse landscapes and waterways that sustained their ancestors were as important as their well-being and survival.

In connection with living in harmony with nature, Turner (2005) also conveys the famous speech of thanksgiving, which is always read at Mohawk ceremonies. Several things that can be taken from the Haudenosaunee Thanksgiving speech state that the cycle of life always continues according to the will of the Creator, and we as a society are given the duty and responsibility to live in balance and harmony with each other and all living creatures. We must unite our hearts and minds, greet each other, and give thanks to the earth, which supports all forms of life and the place where humans return; to water, which supports life in its various forms, namely river water, waterfalls, rain mist, and oceans; to plants that provide food, fruit, medicine, and materials for making objects; to animals; to the wind, sun, moon, and stars; to enlightened teachers; and to the Almighty Creator, who allows us to know life as it is, who gives us all beauty, who gives us the ability to love.

Currently, many indigenous peoples still adhere to their principles of maintaining harmony with nature, even though most of them are currently experiencing quite complicated problems. Many of them are marginalized and forced to abandon traditional lifestyles due to the development of the modern world (Dayaratne, 2018). The conveniences of modernization, such as communication, transportation, and fulfillment of daily life, are very tempting for indigenous peoples. Many people, especially young people, leave their villages and go to the city to experience the joys of modernization. However, there are still many indigenous peoples who continue to value and maintain their culture and lifestyle, utilizing traditions and creating new solutions (Dayaratne, 2018; Knudtson and Suzuki, 1992).

Some of them are making transitions and changes; for example, indigenous people who live in forest villages in Barak Valley, Assam, Northeast India, still carry out traditional activities in their daily lives, such as shifting cultivation and carrying out new activities outside of customary practices. These indigenous communities are faced with the problem of population growth coupled with land scarcity due to restrictions imposed by the government. They were forced to change their livelihood patterns. Agricultural livelihoods are increasing, namely, the traditional method of shifting cultivation coupled with lowland or wetland paddy, as well as the increase in commercial farming such as monoculture and agroforestry. Outside of agriculture, they do additional work as laborers, private employees, government employees, and others (Chanu et al., 2023).

Several villages develop aspects of tourism to increase income. One interesting study involves tourists' attitudes and preferences towards one of the traditional village forest landscapes of Bise Village. According to the survey they conducted, aspects such as peaceful views, tree-lined landscapes, sea views, traditional architecture, and rich biodiversity are very important. Tourists consider that maintaining the rows of distinctive trees (Fukugi trees) and restoring traditional architecture are the two most important things in Bise Village (Chen, Nakama, and Zhang, 2017). The conclusion of this study also shows that tourists are willing to pay for beautiful rural views (Chen, Nakama, and Zhang, 2017; Yadav and O'Neill, 2013).

Various parties must address the problems experienced by the majority of indigenous communities today. The state, as a lawmaker, must involve and communicate intensively with indigenous communities. One study in China shows that rural elites are important actors in transformational development in relatively successful villages (Li, Fan, and Liu, 2019). In this research, it is also stated that the main factors influencing village development can be identified as endogenous factors and exogenous factors. Endogenous factors include natural and environmental resources, geographical location, economic foundation, human resources, social resources, and random endogenous factors. Exogenous factors include institutional settings, specific technologies, local and foreign markets, the macroscopic economic environment, government policies, and random exogenous factors. Another important thing is community involvement in every village activity. When community participation becomes a consistent activity, the results will continue, thus ensuring that important issues in village transformational development can be effectively addressed (Li, Fan, and Liu, 2019).

4. Research Methodology

Data collection, observations, and interviews in this research project were carried out using an ethnographic approach. Ethnography is an approach by which the researchers collect information about community life (Wolcott, 1999). They select key informants with the most subtle approach. The researcher slowly builds rapport with several local figures and creates a sense of trust among the local communities. The researcher can dig deeper and obtain the relevant information naturally and openly (Hasim et al., 2023; Neuman, 2013).

The research was conducted in the 2021–2023 period, where initial visits were more focused on getting to know several key persons and building relationships. After several visits and more than a year of building relationships, several key persons who were successfully approached were cultural figures, community figures, and government figures. At the same time, in Inner Baduy, they were "Juru Basa," namely interpreters of words or language experts, "Juru Pantun," namely interpreters of rhymes or poetry experts, and "Jaro Tangtu," one of the leaders of the Inner Baduy.

Inner Baduy does not allow the use of modern tools such as electronic and digital tools, so recording, observing, and retrieving data in Inner Baduy is performed by handwriting and sketches. Digital recording can only be carried out in Outer Baduy, so interviewing and recording Inner Baduy people can only be done when they occasionally leave the Inner Baduy area.

5. Result and Discussion

The Kanekes Village is in Leuwidamar District, Lebak Regency, Banten Province. Geographically, it is at $6^{\circ}27'27''$ - $6^{\circ}30'$ South Latitude and $108^{\circ}3'9''$ East Longitude, covering an area of 5,136.58 ha (Iskandar and Iskandar, 2017), occupying the western part of Java Island (Figure 1).

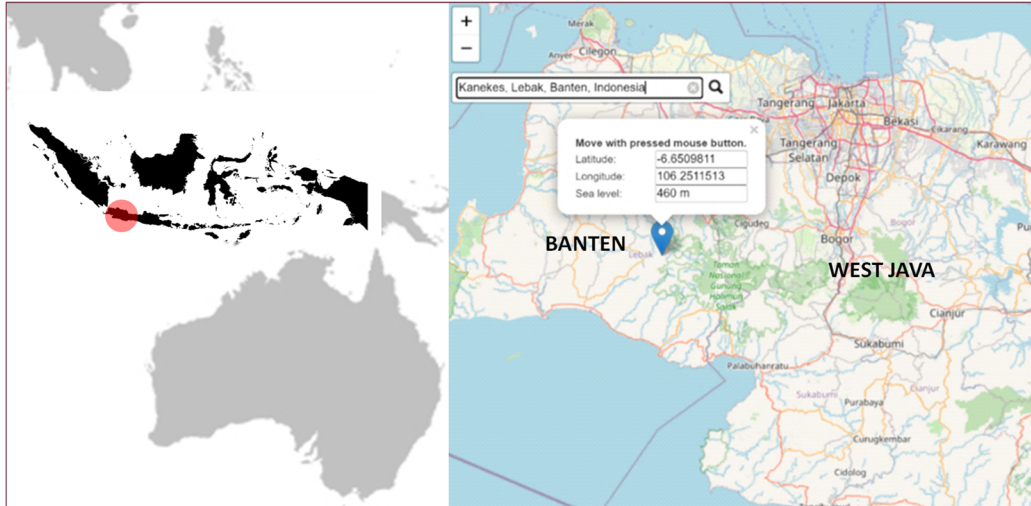


Figure 1: The Location of the Kanekes Village
Source: <https://www.mapcoordinates.net/en>

The Baduy community in Kanekes Village consists of the Tangtu, and the Panamping. The Tangtu (Inner Baduy), who live in the inner areas of Baduy, firmly adhere to the customary rules and authorities. (Nuryanto et al., 2021; Susilowati et al., 2020; Permana and Eka, 2006). The Panamping (Outer Baduy) who live in the outer regions of Baduy do not strictly adhere to but respect the traditional regulations and controls (Figure 2). The inner areas of Baduy cover the mountain areas, the sacred forest, the plantation areas, and the three primordial villages, namely: 1) Cikeusik, 2) Cibeo, and 3) Cikertawana. The number of villages in Inner Baduy remains steady, while the number of villages in Outer Baduy tends to increase. In 2010, the number of villages in Outer Baduy amounted to 58 (Suryani, 2021; Kurnia and Ahmad Sihabudin, 2010), and according to the data recorded at the village office, by 2023, it had increased to 64.

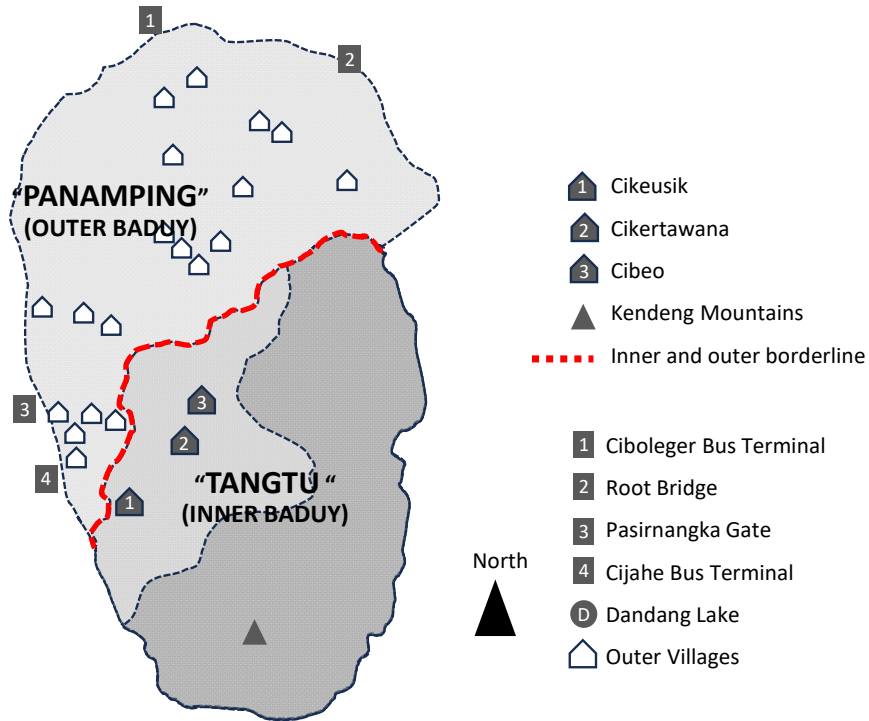


Figure 2: The Baduy's Customary Land in Kanekes Village

5.1 Baduy's Natural Environment

The natural environment of Baduy is part of the Kendeng mountain range, with an altitude of 300–600 meters above sea level. It has a hilly and undulating topography with an average slope of 45%, composed of volcanic soil (in the north), sedimentary soil (in the middle), and mixed soil (in the south), with an average temperature of 20 °C (Susilowati et al., 2020).

Baduy's natural environment is well preserved, especially the mountains and forests. For the Baduy people, forests are part of their living ecosystem and must be maintained sustainably (Mustomi, 2017). The mountainous and forest area in the southernmost part is heavily guarded and sanctified by the Baduy people. They called this sacred place "leuweung kolot" or "leuweung larangan" (ancient forest or forbidden forest).

5.2 The Baduy's Activities

The daily activities of the Baduy community are mainly related to farming as their livelihood, which covers four consecutive activities along the year, namely: 1) harvesting activities, 2) post-harvest rituals, 3) land clearing activities; and 4) planting and maintaining fields (Figure 3).

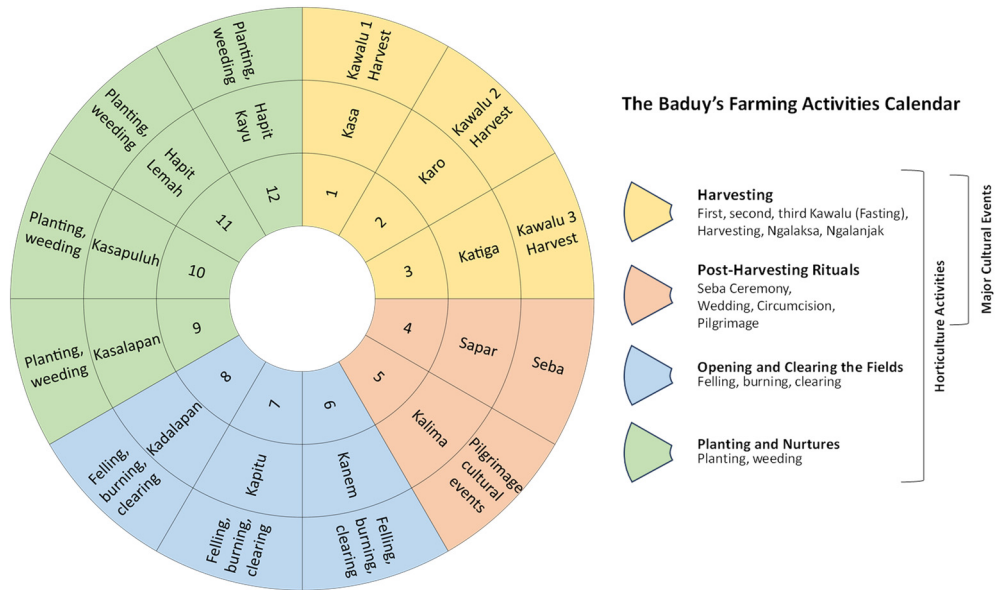


Figure 3: The Baduy's Farming Activities Calendar

5.3 Harvesting

The Baduy people divide the yearly calendar into 12 months. They call the 1st, 2nd, and 3rd months "Kasa," "Karo," and "Katiga," and named these three months "Kawalu," the best time for rice harvesting or "mipit." During the months of Kawalu, they reap the paddy, dry it, and store it in the granary. They also choose the best paddy to use as seeds for the next planting season and save it in different places.

Besides the harvesting activities, several cultural events also take place during the months of Kawalu, such as hunting ("ngalanjak"), rice noodle feast ("ngalaksa"), and fasting (Maharani, 2016). The months of Kawalu are considered sacred; no outsiders can visit the Inner Baduy area.

5.4 Post-Harvesting Rituals

Harvesting activity usually ends when the 4th month comes. The Baduy people call the 4th and 5th months the month of "Sapar" and "Kalima." Many important rituals involving the entire Baduy community occurred during these two months, including the tremendous social interaction event "Seba" in the 4th month and the pilgrimage "Hajat Puun" in the 5th month. In the ritual of Seba, the Baduy community reinstates their relationship with the general public outside their villages, while with Hajat Puun, they reestablish their relationship with the divine God.

In the ritual of Seba, the Baduy community from the inner and outer areas congregate and process to the offices of political leaders at the local government, namely the regent and the governor, who symbolically represent the local citizens. On this occasion, they display and deliver their crops to the general public as an expression of gratitude for their support and

sympathy (Isnendes, 2016). In 2023, according to the international calendar, the Seba was held on the 4th to the 7th day of the 4th month of Baduy or the 27th to 30th of April. More than 1350 Baduy community members participated in this event to make a 160 km roundtrip journey (Figure 4). Amongst them, 47 members from the Inner Baduy had to travel on foot, as they are forbidden to use any vehicle.



Figure 4: The ritual of Seba, 2023
(a) Community members from the Inner Baduy. (b) Community members from Outer Baduy.

"Hajat Puun," or pilgrimage to the sacred sites, is the highest spiritual or religious activity of the Baduy community, conducted in the 5th month and usually takes 2 to 3 days. In 2023, 80 Inner Baduy and Outer Baduy members participated in the worship. They left the village in the morning to make an arduous journey to the southern prohibited forest to perform rituals of worship to their divine God.

During the 4th and 5th months of the Baduy calendar, the community also conducts other essential rituals such as weddings, mass circumcisions, house construction, and renovation. In these rituals, the traditional leaders are always involved from the beginning to the end.

5.5 The Baduy's Horticulture - Swidden Cultivation Fields

The Baduy community spends most of their time tending to the fields to fulfill their basic needs, but the high respect for the natural environment has given them a place to live. Their horticultural practices involve a traditional method of shifting cultivation. This method entails clearing forested areas to cultivate crops for a few years before moving to a new location, allowing the vacated land to regain its soil fertility naturally. (Cairns, 2015). Shifting cultivation involves planting a piece of land for several years, then leaving it uncultivated or resting for a long time so that the natural vegetation growing on it will naturally restore soil fertility that had declined during the planting times (Aweto, 2013).

The Baduy do not breed cattle, goats, or fish. To supplement their protein intake, they sometimes go hunting in the forest or fishing in the river (Aweto, 2013). In the farming system, they do not water the crops but are entirely dependent on rainwater. Many taboos apply to the Baduy concerning the farming system. The cultivation lands should be left natural, not to be dug, cut, filled, or leveled. No wells, dams, or irrigation are allowed to

provide water except for the existing wild rivers. Modern farming equipment such as plows, tractors, chemical fertilizers, and pesticides are not allowed to cultivate the fields. Four-legged livestock is not permitted in the farming area and the village. Some industrial products are forbidden to be planted, including papaya, cassava, coffee, tea, cloves, and palm oil.

The farming activities of the Baduy community began with clearing forests, cutting down trees, and burning (slash and burn). The tools used are only cleavers and "*baliung*" (typical Baduy axes), not hoes. The next activity is planting seeds in the following ways: 1) The men carry wooden sticks 1–1.2 m long and thrust them into the ground, making small holes with a depth of between 3 and 6 cm; 2) The women follow the men and insert the seeds into those tiny holes. The fields are then treated and cleared of nuisance plants and pests by natural means, such as burning particular crops to repel beetles (Figure 5).



Figure 5: The Baduy's Cultivation Activities

a) Cutting down the trees, burning branches, and clearing land; b) Planting the paddy seeds; and c) The paddy's field on the sloping land.

The Baduy community only practices one harvest per year. After a field has been harvested or left unused, they allow the land to recover over an extended period. The time it takes for the land to recover varies depending on the region. For instance, tropical dry forests in Colombia, semi-deciduous forests in Bolivia, and humid cypress forests in Nigeria take 5 to 7 years to recover. In contrast, in the tropical dry forests of southern Mexico, it takes between 8 and 13 years (Delang and Li, 2013). In Baduy, it takes nine years, but due to the limited farming land and population, the cycle is shortened to less than five years.

There are two types of cultivation fields (*huma*) in Baduy based on their ownership: 1) community-owned fields and 2) privately (family) owned fields. The community field is called "*Huma Serang*" and is owned by each inner village (*Tangtu*). The community fields always

initiate the horticulture cycle, followed a month later by the private fields owned by the elders and leaders and then by the private fields owned by the ordinary people. In 2023, the planting of "Huma Serang" was carried out in early August, and in early September, privately owned fields began to follow. Figure 6 shows the spatial distribution of Baduy's cultivation fields in 2023.

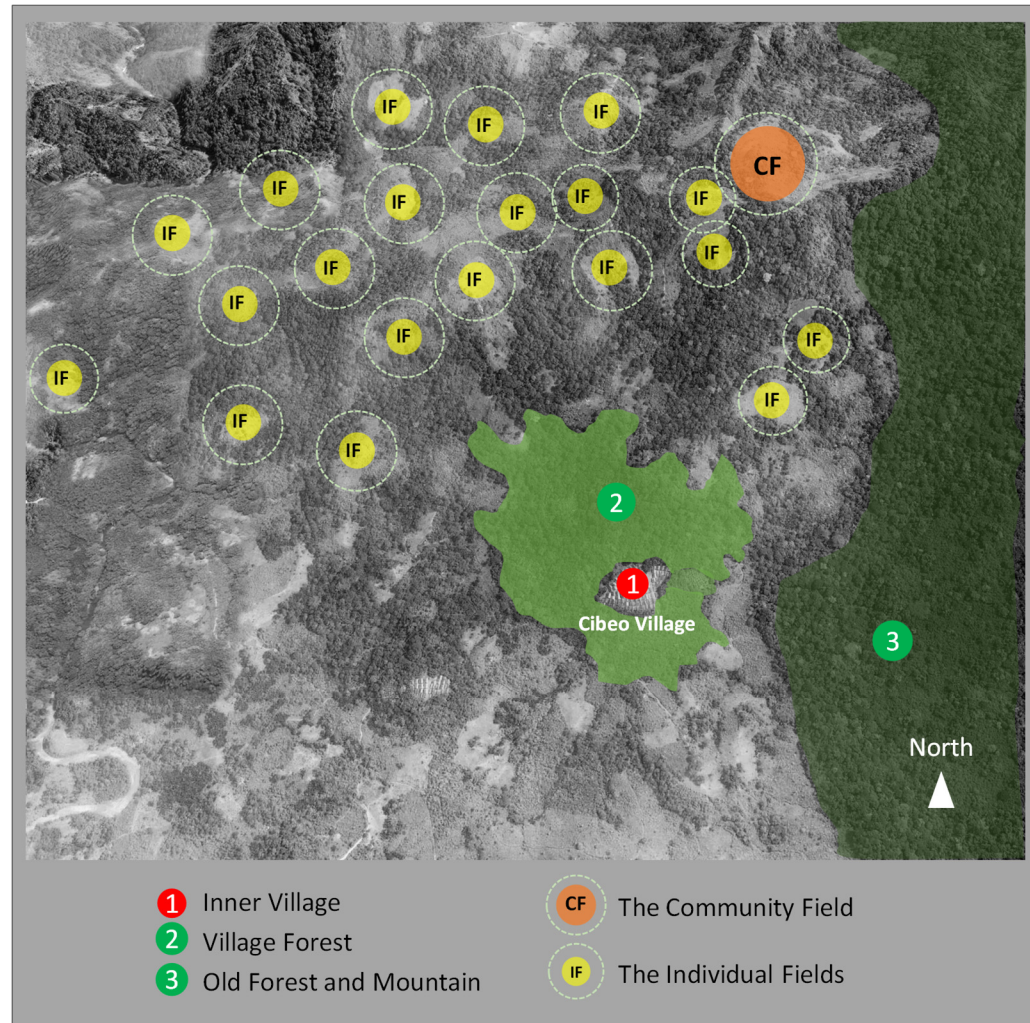


Figure 6: The Spatial Distribution of Baduy's Cultivation Fields, 2023

5.6 Baduy's Built Environments

Kanekes Village comprises 67 villages, three located in Inner Baduy and 64 in Outer Baduy. The villages in inner and Outer Baduy have similarities but also differences. The buildings and environment in Inner Baduy are well reserved. The three villages, Cikeusik, Cibeo, and Cikertawana, have a very similar layout, consisting of the traditional leader's house, the meeting hut, the mortar and pestle hut, open space (plaza), granary, cemetery, and villager houses (Figure 7).

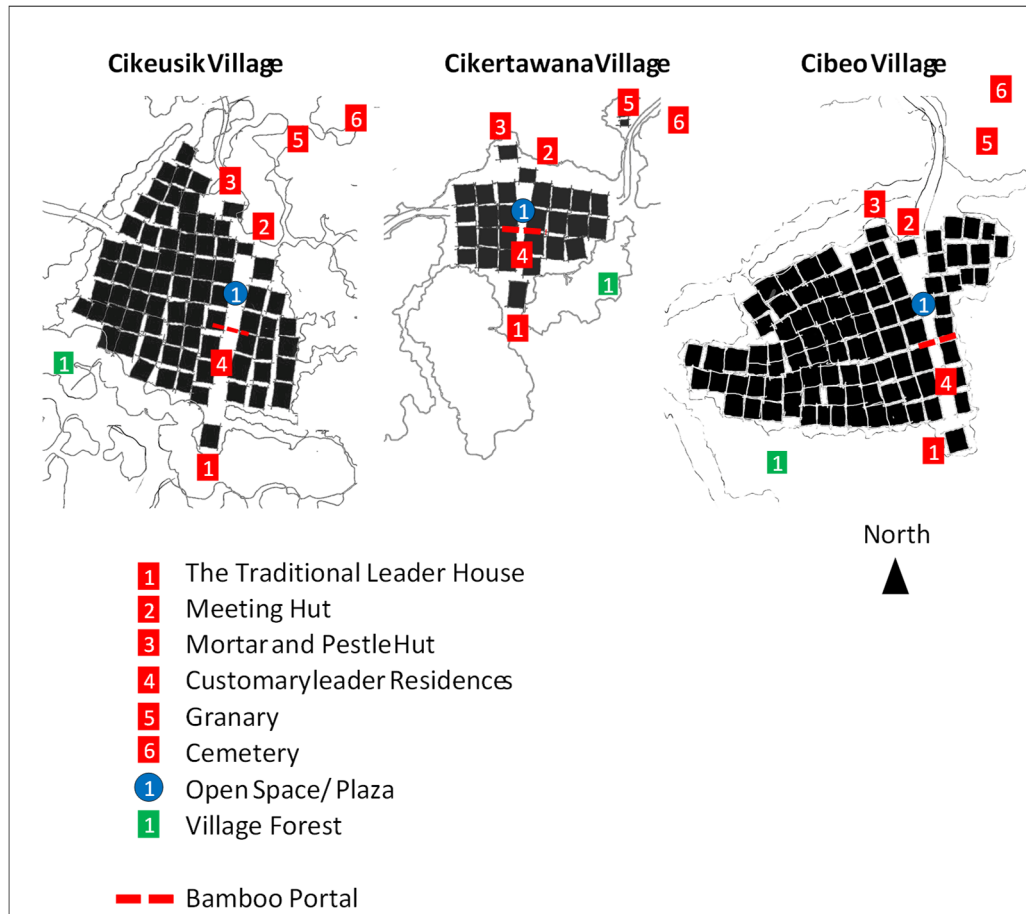


Figure 7: Inner Baduy (*Tangtu*) Village Patterns

5.7 The Baduy's Indigenous Knowledge

The Baduy community has a life guideline (*Pikukuh*) inherited from their ancestors. It covers all aspects of their daily life, from social norms and conducts, cultural values, ceremonies, and rituals to taboos. (Zawahir Muntaha and Josias Simon Runturambi, 2020). Some of these taboos are well known to the broader community, including the following directives: community members from Inner Baduy must not lie, steal, kill, or commit other crimes; they may not wear sandals or modern tools such as mobile phones, vehicles, or even body soap or toothpaste (Ichwandi and Shinohara, 2007). They should not trade because trading activities may lead them to lies and deceptions (Rochman et al., 2021; Solikhah, 2020).

All these rules and taboos were passed down from generation to generation and subsequently transformed to become their indigenous knowledge. They believe that regulations and taboos formulated by their ancestors primarily protect the sustainability of their livelihood. The indigenous knowledge of the Baduy community also teaches them how to relate harmoniously with nature, culture, and the built environment (Figure 8).

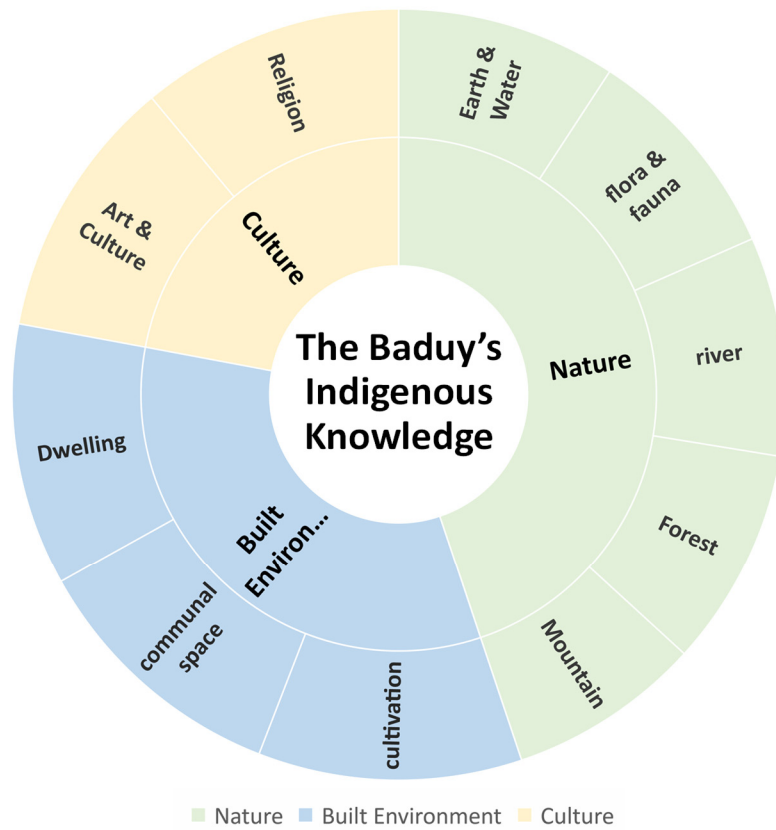


Figure 8: The Baduy's Indigenous Knowledge

5.8 Indigenous knowledge related to the natural environment

The ancestors passed down customary rules to conserve nature from generation to generation. The Baduy people must protect water, trees, rocks, rivers, and mountains and only take a little from nature as needed (Sujana, 2020).

The Baduy community strictly protects the southernmost area, as the sanctified "heirloom" is placed in this zone. Once or twice a year, the Baduy community visits this area to worship or perform holy rituals and communicate spiritually with their God. One can decipher the indigenous knowledge related to the natural environment from the following credo:

Gunung teu meunang dilebur
Lebak teu meunang dirusak

Mountains should not be disturbed
Valley should not be tampered with

For the Baduy community, this credo has become an absolute command to protect nature from any violation. The sinful feeling and shame when committing a breach will continue to

haunt us so that the customary rules born from the mandate of the ancestors can lead the community to a reasonable uniformity of behavior (Sujana, 2020).

The Baduy has strict rules related to nature, especially regarding land, water, mountains, and forests. Without permission, no one can enter the ancient or prohibited forests to cut trees, clear grounds, or harvest forest products (Senoaji, 2004). The ancestors inherited the Kendeng mountain range and the forbidden forest not for fulfilling daily needs. Logging, hunting, and horticultural activities are not allowed in this area. These sacred areas are not accessible to outsiders, and only limited community members can enter for particular purposes, such as worshipping and collecting materials for certain rituals. One may take only a few things from the forest, specifically for ceremonies or cultural events.

The Baduy also has strict rules to protect water sources and bodies of water. They prohibit the inhabitants from disturbing springs, making a dam, or diverting river flows. No industrial or chemical residues are allowed to be thrown into the rivers or creeks. They also profoundly care for trees and plants that support their daily lives. Industrial vegetation that may reduce soil fertility is strictly forbidden to be cultivated, such as cassava, coffee, cloves, tobacco, and papaya. Strict rules also apply to maintain the sustainability of their fauna population in the forest. Hunting is only allowed at certain seasons and only uses simple equipment.

5.9 Indigenous knowledge related to the built environment

The community cautiously preserved the built environment in the Inner Baduy area following directives given by their indigenous knowledge. The layout, the number of houses, structures, and materials of buildings in the villages of Cikeusik, Cibeo, and Cikertawarna are tenaciously preserved to remain the same. These three villages are located near the river, surrounded by forest, and the granary, which is placed in a distance to safeguard their food supplies in case the village is on fire. Entrance to the village is facilitated by a remarkable bamboo bridge structure (Figure 9). However, the built environment in Outer Baduy villages is allowed to gradually change in response to population growth and other socio-economic pressures.



Figure 9: Bird eyes view of the Inner Village Cibeo. 1) The Traditional Leader House, 2) Meeting Hut, 3) Mortar & Pestle Hut, 4) Bridge Structure, 5) Granary

The houses in Inner Baduy villages have typical characteristics as follows: 1) they stand on stilts without foundation; 2) each pillar has a stone as its base; 3) they have only one door but no window; 4) they use wood, bamboo, and leaves as its primary materials; 5) no nails used in its construction (Figure 10).

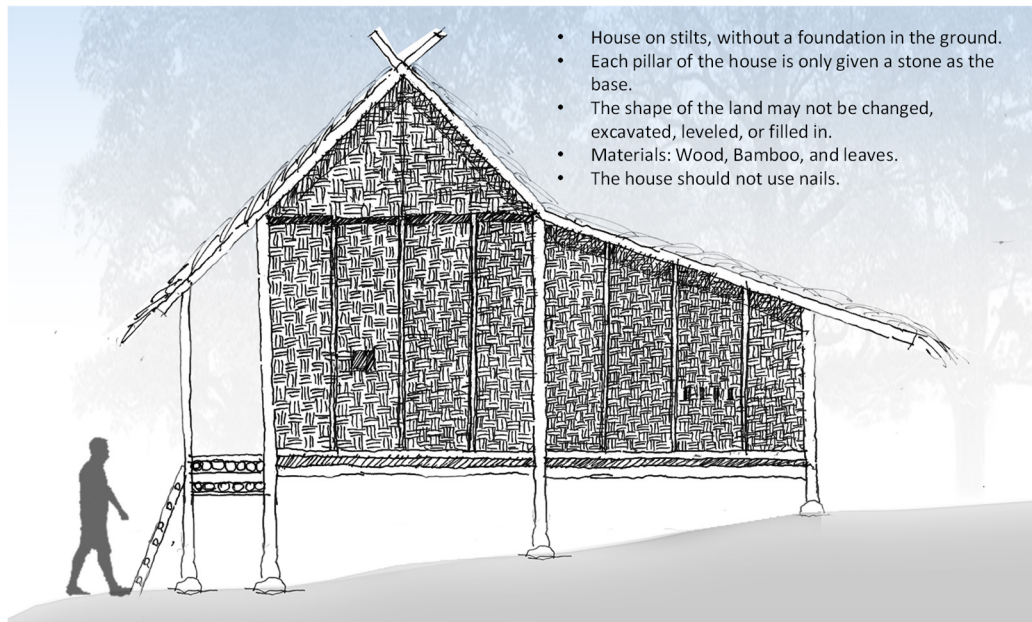


Figure 10: The Typical house in Inner Baduy (*Tangtu*) villages

5.10 Indigenous knowledge related to religion, arts, and culture

The Baduy people have simple and essential religious, artistic, and cultural activities based on a non-exploitative use of natural resources principle. This principle is reflected in the traditional attire of the male from the Inner Baduy, which consists of four main pieces (Figure 11): a white headband called "*Telekung*," a buttonless black or white shirt called "*Jamang*," a bracelet called "*Kapuru*" worn from birth, and a "*sarong aros*." They always wear this attire in big or small events such as religious rituals, weddings, funerals, and daily life. Certain accessories such as necklace, bag, or machete may or may not be worn depending on the occasion. Women from the Inner Baduy only wear "*Jamang*" and black sides as their main clothing. They have no special attire for specific events.

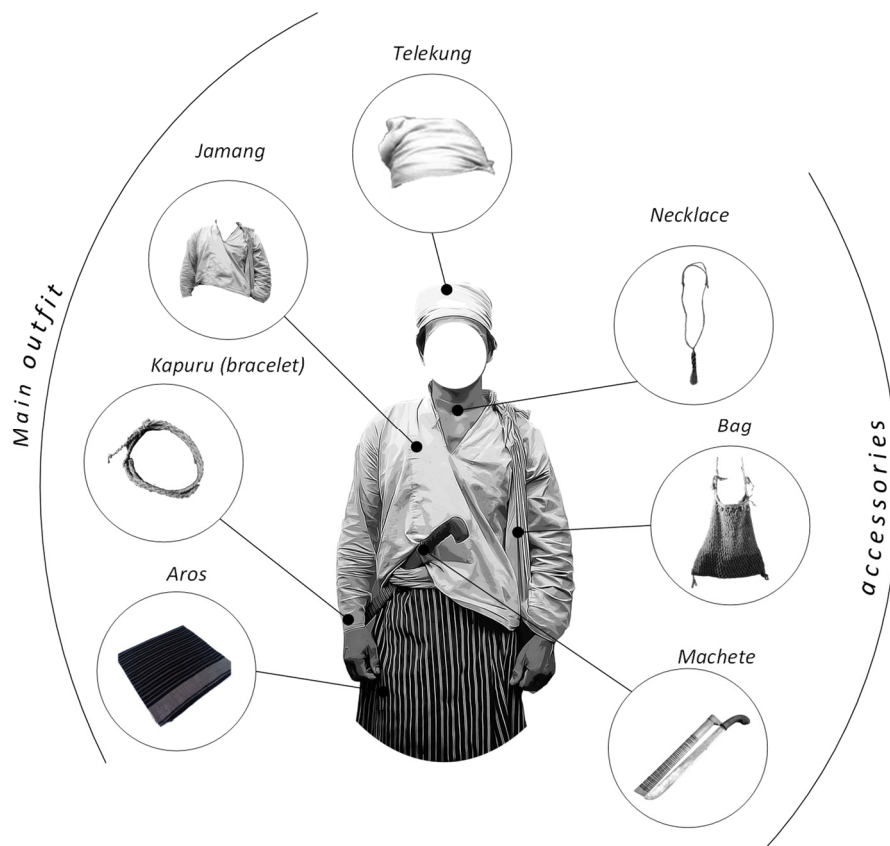


Figure 11: The Baduy Dalam's clothing

Concerning the spiritual, religious, and cultural events, the Baduy community also has strict rules. Only Baduy people from the inner village can attend the most sacred spiritual, religious, and cultural events; no recorded documentation is allowed. For the religious, art, and cultural events performed in outer villages, outsiders can participate, except for specific spiritual or religious affairs.

5.11 Indigenous knowledge of Baduy as a comprehensive strategy for survival

The indigenous knowledge of the Baduy community was developed piece by piece from generation to generation until it comprehensively covered almost all aspects needed by its community members to safeguard their survival.

Figure 12 disclosed how the Baduy community maintained the order of their living environment using a hierarchical zoning system.

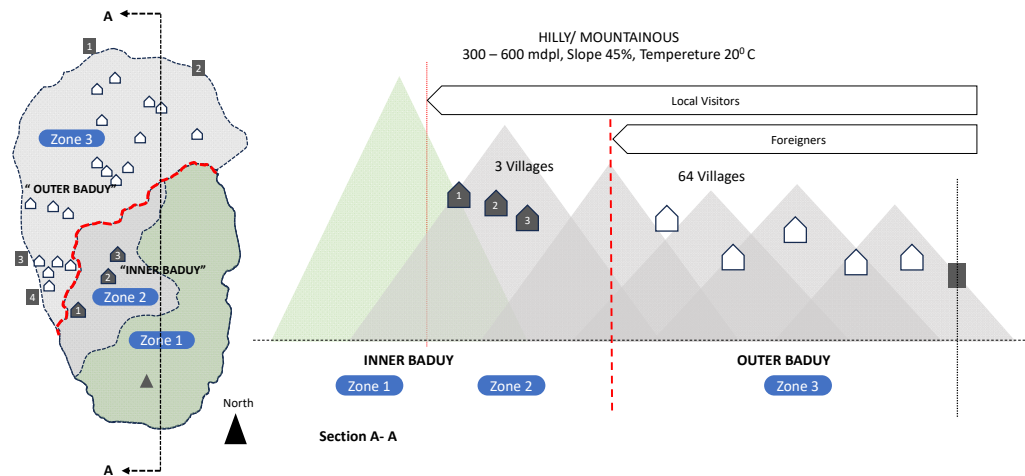


Figure 12: Hierarchical zoning system adopted by the Baduy people to maintain the order of their living environment.

The Baduy people divide their living environment into 3 (three) successive zones, which have different levels of regulation and restriction (Table 1):

Table 1: Levels of regulation and restriction

Zone	Regulation and restriction
Zone 1	1. Covers the area of the Kendeng mountain range, the prohibited forests, and the primary sources of essential streams. These are the most sacred sanctuaries where holy spiritual and ritual activities occur once or twice a year. Access to this zone is very strictly regulated. No hunting and gathering of forest products for daily needs are allowed, except
Inner Baduy	

		for specific ritual and cultural events as scheduled in the Baduy calendar system.
		2. Only Baduy people are allowed to enter, and even then, for limited events.
Zone 2	1.	Covers the settlement area of the Inner Baduy, cautiously preserved to maintain its integrity and authenticity. The villages' physical and nonphysical features represent an ideal settlement model for the Baduy people.
	2.	Land and water must not be changed.
	3.	Industrial plants are forbidden to be cultivated, including cassava, coffee, cloves, tobacco, and papaya.
	4.	Four-legged livestock are not allowed
	5.	Local tourists are allowed to enter and may stay only for one night.
	6.	Foreign tourists are not allowed to enter.
	7.	It is prohibited to use modern equipment and household supplies such as bath soap, toothpaste, and chemicals.
	8.	Taking photos and recording sound or video is prohibited.
Outer Baduy	Zone 3	1. Covers the settlement area of the Outer Baduy, which has gradually transformed in terms of density, population number, living sources, and lifestyles under the influence of the modernization process and development of the tourism industry.
	2.	More open to accepting tourists, both domestic and foreign, and there are no overnight restrictions.

5.1.2 Challenges and Threads Encountered by the Baduy People

Land scarcity for horticultural activities is a real and immediate challenge confronted by the people in the Outer Baduy zone for quite some time due to the steady increase in population and the creation of new villages to accommodate the new family units (Keck, Narendra P. Sharma and Feder, 1994). The tourism development program introduced by the government to the traditional villages of Baduy initially intended to help the local people create economic opportunities and earn some additional income. But regrettably, it also brings unintended side effects to the local community, such as introducing a modern lifestyle to the local youth. The teenagers at Outer Baduy villages began to possess cellphones and social media accounts and wear stylistic apparel, jewelry, and beauty products, primarily prohibited by customary regulations. In the long run, tourism activities that flourished in Outer Baduy villages tend to instigate disobedience toward customary rules among the youth. Another side effect of tourism activities is the incoming of non-degradable wastes derived from the packaging of

various industrial products. Every weekend, around 300 to 500 tourists visit Outer Baduy villages; some will stay a night at residents' lodges.

The most severe threats recently encountered by the Baduy people come from unexpected directions, directly threatening their most sacred sanctuary and water sources due to the land encroachment for illegal mining, forest looting, and creation of wet rice fields operated by unlawful groups or syndicates (Figure 13).

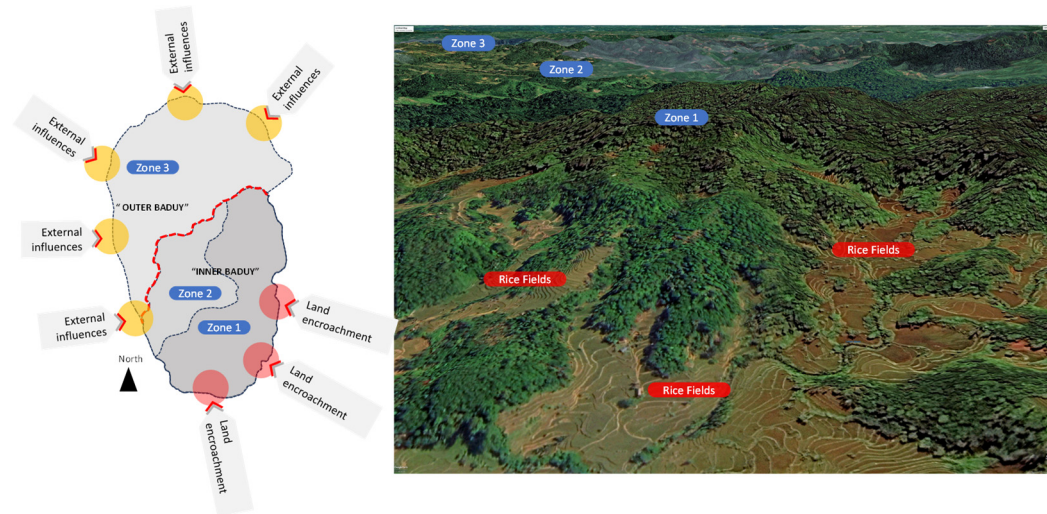


Figure 13: Land encroachment threatens the most sacred zone of the Baduy settlement.

The Baduy people are aware that they cannot stop the number of tourists who come and increase every day. To anticipate the negative impact of the tourism aspect, the Baduy community rejects the title of "*Tourism Village*" and demands the government turn off all telecommunications signals, including internet access, in their traditional area.

6. Conclusion

The indigenous knowledge of the Baduy community comprehensively covers all aspects its community members need to safeguard their survival and maintain their harmonious relationship with the supreme power, nature, and the built environment. They practice a frugal way of life, use resources provided by nature sparingly, and treat nature with great respect. Their adherence to the customary rules and taboos is another way the Baduy people respect their predecessors, who had strived to ensure their well-being, safety, and prosperity. Through taboos and tiered rules, they heavily guarded the most sacred sanctuary and deepest zone. Through restrictions and limitations, they barricade themselves from various externalities that may threaten their survival.

Until now, the Baduy can still survive by solely implementing the rules of their ancestors. However, the future will not be as easy as the past for them. Challenges and obstacles continue to increase exponentially in line with the influx of external influences, which will

bring certain complexities and paradoxes to the livelihood of the Baduy people. The only way for them to develop resistance and resilience is to consolidate internally to increase their indigenous knowledge and formulate innovative strategies for the survival of their culture. Nevertheless, in the future, the Baduy may not be able to tackle the complex challenges they face single-handedly. Collaborative efforts among the related stakeholders will be necessary to ensure their cultural survival, including national and local governments and relevant national and international cultural conservation bodies.

The hardship currently experienced by the Baduy may become a warning for other vernacular communities in Indonesia to defend themselves from any external interests that potentially threaten their existence so that they can be anticipated and mitigated earlier.

References

- Aweto, A.O. (2013). Shifting Cultivation and Secondary Succession in the Tropics, *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*. Cabi.
- Cairns, M. F. (2015). *Shifting Cultivation and Environmental Change, Indigenous People, Agriculture and Forest Conservation*. New York: Routledge. Available at: <http://www.myanmar-redd.org/?s=Shifting+cultivation>.
- Chanu, L. K. *et al.* (2023). 'Characterization of shifting cultivation, trends, and diversification of livelihood patterns: A case study from forest villages in Barak valley, Assam, Northeast India,' *Trees, Forests and People*, (August), p. 100420. Available at: <https://doi.org/10.1016/j.tfp.2023.100420>.
- Chen, B., Nakama, Y. and Zhang, Y. (2017). 'Traditional village forest landscapes: Tourists' attitudes and preferences for conservation,' *Tourism Management*, 59, pp. 652–662. Available at: <https://doi.org/10.1016/j.tourman.2016.09.007>.
- Dayaratne, R. (1999). 'The Vernacular settlements and Sustainable Traditions of Sri Lanka,' in. Depok, Indonesia: Proceedings of the First International Conference on Vernacular Settlement.
- Dayaratne, R. (2000). 'Learning from tradition for an environmentally responsive architecture: A formal practice,' *Open House International*, 25(3), pp. 10–15.
- Dayaratne, R. (2003). 'Earth Architecture for Contemporary Urban Living: Prospects and Potentials,' *Open House International*, 28(03).
- Dayaratne, R. (2018). 'Toward sustainable development: Lessons from vernacular settlements of Sri Lanka,' *Frontiers of Architectural Research*, 7(3), pp. 334–346. Available at: <https://doi.org/10.1016/j.foar.2018.04.002>.
- Delang, C. O. and Li, W. M. (2013). *Ecological Succession on Fallowed Shifting*. Springer.
- George, J. (1999). *Indigenous Knowledge as a Component of the School Curriculum, in Semali, Ladislaus M. and Joe L. Kincheloe (1999). What is Indigenous Knowledge? Voices from the Academy*. Falmer Press., p 80.
- Gulati, R. *et al.* (2019). 'Architectural Spaces as Socio-Cultural Connectors: Lessons from the Vernacular Houses of Lucknow, India', *ISVS E-journal*, 6(4), pp. 30–48.
- Hasim, I.S., Indah Widiastuti and Iwan Sudradjat (2023). 'Symbolic interactionism in vernacular cultural landscape research,' *ARTEKS : Jurnal Teknik Arsitektur*, 8(1), pp. 135–144. Available at: <https://doi.org/10.30822/arteks.v8i1.2080>.

- Iskandar, J. and Iskandar, B. S. (2017). 'Kearifan Ekologi Orang Baduy dalam Konservasi Padi dengan "Sistem Leuit"', *Jurnal Biodjati*, 2(1), p. 38. Available at: <https://doi.org/10.15575/biodjati.v2i1.1289>.
- Isnendes, R. (2016). 'Upacara Seba Baduy: Sebuah Perjalanan Politik Masyarakat Adat Sunda Wiwitan', *Jurnal Masyarakat dan Budaya*, 18(2), pp. 203–214. Available at: <https://jmb.lipi.go.id/jmb/article/view/411>.
- Keck, A., Narendra P. Sharma and Feder, G. (1994). *Population Growth, Shifting Cultivation, and Unsustainable Agricultural*, *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*. Madagascar: World Bank.
- Knudtson, P. and Suzuki, D. (1992). *Wisdom of the Elders*. Allen and Unwin, Canada.
- Kurnia, A. and Ahmad Sihabudin (2010). *Saatnya Baduy Bicara*. Jakarta: Bumi Aksara and Untirta.
- Li, Y., Fan, P. and Liu, Y. (2019). 'What makes better village development in traditional agricultural areas of China? Evidence from long-term observation of typical villages', *Habitat International*, 83 (December 2018), pp.111–124. Available at: <https://doi.org/10.1016/j.habitatint.2018.11.006>.
- Maharani, S. D. (2016). 'Perempuan Dalam Kearifan Lokal Suku Baduy', *Jurnal Filsafat*, 19(3), pp. 199–213. Available at: <https://doi.org/10.22146/jf.3435>.
- Manu, S. (2006). *Exploring the Realm of Energy & Comfort in Interiors: Experiments to Understand Thermal Effects of Furniture on Interior Environments*.
- Mustomi, O. (2017). 'Perubahan Tatahan Budaya Hukum pada Masyarakat Adat Suku Baduy Provinsi Banten', *Jurnal Penelitian Hukum e- ISSN [Preprint]*. scholar.archive.org. Available at: <https://scholar.archive.org/work/hvykgvqkf5fyngtcunymxhmufy/access/wayback/http://ejournal.balitbangham.go.id/index.php/dejure/article/download/262/pdf>.
- Neuman, W. L. (2013). *Social Research Methods; Qualitative and Quantitative Approaches*. Seventh Ed. Pearson Education Limited.
- Nuryanto *et al.* (2021). 'Technic and mystics of tukang wangunan in sundanese traditional houses in indonesia (Case study: Baduy tribe community-banten)', *Civil Engineering and Architecture*, 9(2), pp. 533–544. Available at: <https://doi.org/10.13189/cea.2021.090226>.
- Permana, R. and Eka, C. (2006). *Tata Ruang Masyarakat Baduy*. Edited by Wedatama Widya Sastra. Jakarta: Wedatama Widya Sastra.
- Rochman, K. L. *et al.* (2021). 'Ngahuma (Planting rice in the fields) and tilled land limitation of the Baduy tribe in Indonesia,' *Geojournal of Tourism and Geosites*, 34(1), pp. 63–68. Available at: <https://doi.org/10.30892/gtg.34109-620>.
- Semali, L.M. and Kincheloe, J.L. (1999). *What is Indigenous Knowledge? Voices from the Academy*. Falmer Press., p. 23-24.
- Senoaji, G. (2004). 'Pemanfaatan Hutan dan Lingkungan oleh Masyarakat Baduy di Banten Selatan', *Manusia Dan Lingkungan*, XI(3), pp. 143–149. Available at: <https://journal.ugm.ac.id/JML/article/view/18628>.
- Solikhah, N. (2020). 'Ethnic tourism and sustainability of vernacular settlement in Cibeo Village, Baduy Dalam,' *IOP Conference Series: Earth and Environmental ... [Preprint]*. Available at: <https://iopscience.iop.org/article/10.1088/1755-1315/452/1/012021/meta>.

- Sudrajat, I. (2019). 'Menuju Kerangka Kritis Studi Pengetahuan Pribumi Dalam Bidang Ilmu Arsitektur Dan Lingkungan Binaan Di Indonesia', *Seminar Nasional Kearifan Lokal* [Preprint], (January).
- Sujana, A.M. (2020). 'Pikukuh : Kajian Historis Kearifan Lokal Pitutur dalam Literasi Keagamaan Masyarakat Adat Baduy', *Historia: Jurnal Pendidik dan Peneliti Sejarah*, 3(2), pp. 81–92. Available at: <https://doi.org/10.17509/historia.v3i2.24347>.
- Suryani, A.J.J. (2021). *From respected hermits to ordinary citizens: The conversion of the Baduy, ethnicity, and politics of religion in Indonesia (1977 - 2019)*, *Nuevos sistemas de comunicación e información*. Leiden University. Available at: <https://scholarlypublications.universiteitleiden.nl/handle/1887/3134744>.
- Susilowati, D. *et al.* (2020). 'Evolusi Pada Tatahan Ruang Rumah Baduy (Studi Kasus Rumah Baduy Dalam dan Baduy Luar)', *NALARs*, 19(2), p. 131. Available at: <https://doi.org/10.24853/nalars.19.2.131-138>.
- Turner, N.J. (2005). *The Earth's Blanket: Traditional Teachings for Sustainable Living*. Vancouver, British Columbia. Canada: Douglas & McIntyre Ltd.
- Wahid, A. (2012). 'Adaptive Vernacular Options for Sustainable Architecture,' *ISVS E-journal*, 2(2), pp. 74–87. Available at: http://isvshome.com/pdf/ISVS_2-2/ISVS-2-2_4_Ayesha-Final.pdf.
- Widiastuti, I. and Kurniati, F. (2019). 'Modernization and vernacularity in the tradition of Minangkabau architecture of the West Sumatra in Indonesia,' *ISVS E-journal*, 6(2), pp. 22–31.
- Wolcott, H.F. (1999). *Ethnography: A way of seeing*. Walnut Creek, CA: AltaMira.
- Yadav, L.P. and O'Neill, S. (2013). 'Is there agreement between beneficiaries on who should bear the costs of conserving farm landscapes?', *Tourism Management*, 39, pp. 62–70. Available at: <https://doi.org/10.1016/j.tourman.2013.04.001>.
- Zawahir Muntaha, P. and Josias Simon Runturambi, A. (2020). 'The Local Wisdom of Baduy Reviewed From the Perspective of Sdgs Concept (Research in the Indigenous People of Baduy, Lebak, Banten),' *International Journal of Advanced Research*, 8(3), pp. 91–101. Available at: <https://doi.org/10.21474/ijar01/10602>.