



Resistance of Indigenous Peoples of “Atoni Pah Meto” to the Conversion of Mutis Nature Reserve into Mutis Timau National Park in Indonesia

Kristianto Ratu Marius Naben¹, Krisdyatmiko², Gabriel Faimau^{3*}

¹Ledalero Institute of Philosophy and Creative Technology, Maumere 86152, Nusa Tenggara Timur, Indonesia.

²Department of Social Development and Welfare, University of Gadjah Mada, Bulaksumur, Yogyakarta 55281, Indonesia.

³Department of Sociology, University of Botswana, Private Bag 00705, Gaborone, Botswana; Extraordinary Researcher, North-West University, Potchefstroom, South Africa.

Corresponding Author's E-mail: faimaug@ub.ac.bw

Original Article

Abstract

Received:

13-Oct-2025

Revised:

10-Nov-2025

Accepted:

02-Dec-2025

Published Online:

10-Dec-2025

© 2025 The Author(s). Published by the OICC Press under the terms of the [CC BY 4.0 Creative Commons Attribution License](https://creativecommons.org/licenses/by/4.0/), which permits use, distribution and reproduction in any medium, provided the original work is properly cited

This study focuses on the resistance of the Atoni Pah Meto indigenous community in the island of Timor in Indonesia to the proposed conversion of the Mutis Nature Reserve into a national park, noted for biodiversity and geodiversity. The findings from in-depth interviews and documentary research reveal that the Atoni Pah Meto community opposed the proposed conversion to preserve the Mutis area as the heart of their cultural identity and socio-economic livelihood. They are concerned that the conversion would primarily benefit specific individuals or groups, further marginalizing local communities. Their resistance was expressed through protests, collective action, advocacy, and cultural ceremonies, together representing a struggle to assert their rights for justice, particularly in relation to forest management and socio-economic development in their territory. Although the Government of Indonesia has officially reclassified the status of Mutis Nature Reserve to Mutis Timau National Park, we suggest that community engagement and socialization efforts remain essential. Such empowering and engagement of local communities is critical to fostering sustainable conservation of natural resources.

Keywords: Mutis Nature Reserve, Mutis Timau National Park, Atoni Pah Meto, Indigenous people, Environmental sustainability

Introduction

Protection of the environment and nature is a global priority and a significant concern for many countries, including Indonesia, as reflected in various development policies and programs. However, the implementation of these policies often leads to resistance and conflicts in conservation

areas, including vertical conflicts between the government and local communities and horizontal conflicts among community members. Previous studies suggest that several factors contribute to these conflicts, including regulatory ambiguity (Saptawartono *et al.* 2019; Angi 2005; Mahmud *et al.* 2016), cultural and customary rights (Rezende *et al.* 2017; Markum *et al.* 2022) and economic

pressures (Amin 2014; Maulana 2022).

The Mutis Timau National Park was officially declared and designated as Indonesia's 56th national park through Ministerial Decree No. 96 of 2024 issued by the Ministry of Environment and Forestry of Indonesia on September 8, 2024. This decree reclassified the Mutis Nature Reserve core zone as a national park, and its protected forest area into national park territory spanning and covering three regencies, Kupang, South Central Timor (TTS), and North Central Timor (TTU) of the East Nusa Tenggara (NTT) Province of Indonesia. The Mutis Timau National Park covers 78,789 ha, including the former Mutis Timau Protected Forest, covering 66,473.83 ha (84.37% of the park's area), and the former Mutis Nature Reserve, covering 12,315.61 ha (15.63% of the park's area) (Direktorat Jenderal KSDAE 2024). The park has dual significance as a critical habitat for endemic species and a socio-cultural landscape supporting local livelihoods and long-standing customary rituals practiced for generations (Rahmat 2025). The Mutis Timau National Park is under the management of the Natural Resources Conservation Center in the NTT province in Indonesia, popularly known as BBKSDA.

Over the years, several underlying issues have threatened the environmental sustainability of the Mutis Timau National Park. Dako *et al.* (2019) report that the Mutis Timau protected forest, which acts as a buffer for the reserve, faces significant challenges from deforestation and environmental degradation, arising from forest encroachment, slash-and-burn agriculture, livestock grazing, and illegal logging. Kurniawan and Iswandono (2018) highlight several practices that contradict the reserve's designation as a protected area. First, customary land claims: communities claimed sections of the reserve as customary land, leading to forest encroachment, livestock grazing, and the resulting difficulty in regenerating *Ampupu* (*Euca-*

lyptus urophylla) tree saplings or replacing aging trees. Second, road construction: a road connecting Fatumnasi Village with Nenas, Nuapin, and Mutis villages provided access into the reserve, increasing its use for tourism and other activities. Third, resource utilization: water from the reserve was being used by communities in the TTU and TTS districts for drinking water and hydroelectric power.

In response to these challenges, BBKSDA NTT conducted an evaluation of the area's function and recommended reclassifying the Mutis Nature Reserve as a national park in November 2018. This proposal was based on the high community dependence on the area, which makes utilization activities unavoidable, and the impracticality of managing the reserve in strict accordance with its designation (BBKSDA NTT 2018). Reclassifying the reserve as a national park would allow for regulated utilization practices while minimizing environmental damage. BBKSDA NTT submitted this recommendation to the Indonesian Ministry of Environment and Forestry in September 2020.

The proposed reclassification of the Mutis Nature Reserve was met with resistance from the *Atoni Pah Meto* indigenous people living in the surrounding Mutis area. They organized resistance actions, formed joint movements, and engaged in advocacy, ultimately leading to the cancellation of the plan in January 2021 (Nulangi 2021). The opposition of the *Atoni Pah Meto* people is understandable, considering their prior experiences with government policies in the region, which often resulted in various forms of oppression (Krisdyatmiko 2005). While changing the conservation function of the Mutis Nature Reserve might allow communities to utilize the area to improve their economic well-being, the question remains: who can ensure that these benefits would be equitably realized?

To date, no study has examined the reasons and motivations behind the *Atoni Pah Meto* indigenous people's resistance to the proposal to convert the Mutis Nature Reserve into a national park. Our primary research question is: why did the *Atoni Pah Meto* community reject the proposal to reclassify the Mutis Nature Reserve as a national park? The objectives of this study are threefold: (1) to identify the reasons behind the resistance of the *Atoni Pah Meto* indigenous community to the proposed reclassification of the Mutis Nature Reserve as a national park; (2) to examine and document their forms of resistance; and (3) to explore their role in conserving the natural environment of the Mutis Timau National Park.

The Geomorphology of Mount Mutis: Scientific Justification

Timor is tectonically located on the southern margin of the broad convergence zone between the Pacific, Australian, and Eurasian plates. The island marks the location of the late Cenozoic arc continent, situated between the Australian-New Guinea plate moving north-northeast and the vol-

canic inner Banda Arc (Sopaheluwakan 1991). There are three rock units in Timor Island, namely the para-autochthonous unit, also known as the Australian facies, the allochthonous unit, also known as the Asian facies, and the autochthonous unit formed after the collision of the continental arc that formed post-orogenic deposits (Bachri and Permana 2015). Mount Mutis is the highest peak in western Timor, composed of allochthonous rock units, termed the Mutis Complex (Figs. 1 and 2). The Mutis Complex is part of the allochthonous unit formed by the collision of the Australian plate and the Banda Arc (Wahyudiono *et al.* 2016). According to Berry *et al.* (2024), the rock units of the Mutis Complex consist of Mesozoic basaltic volcanoclastic rocks and melange containing blocks of normal mid-ocean ridge basalt, basalt, amphibolite, garnet and actinolite-bearing schists, arkosic sandstone and volcanogenic sedimentary rocks. Mount Mutis is surrounded by numerous massive rocky hills, contributing to its striking landscape. As part of the Mutis Complex, it offers a unique geological character shaped by a rich history of Mesozoic ultramafic rocks that

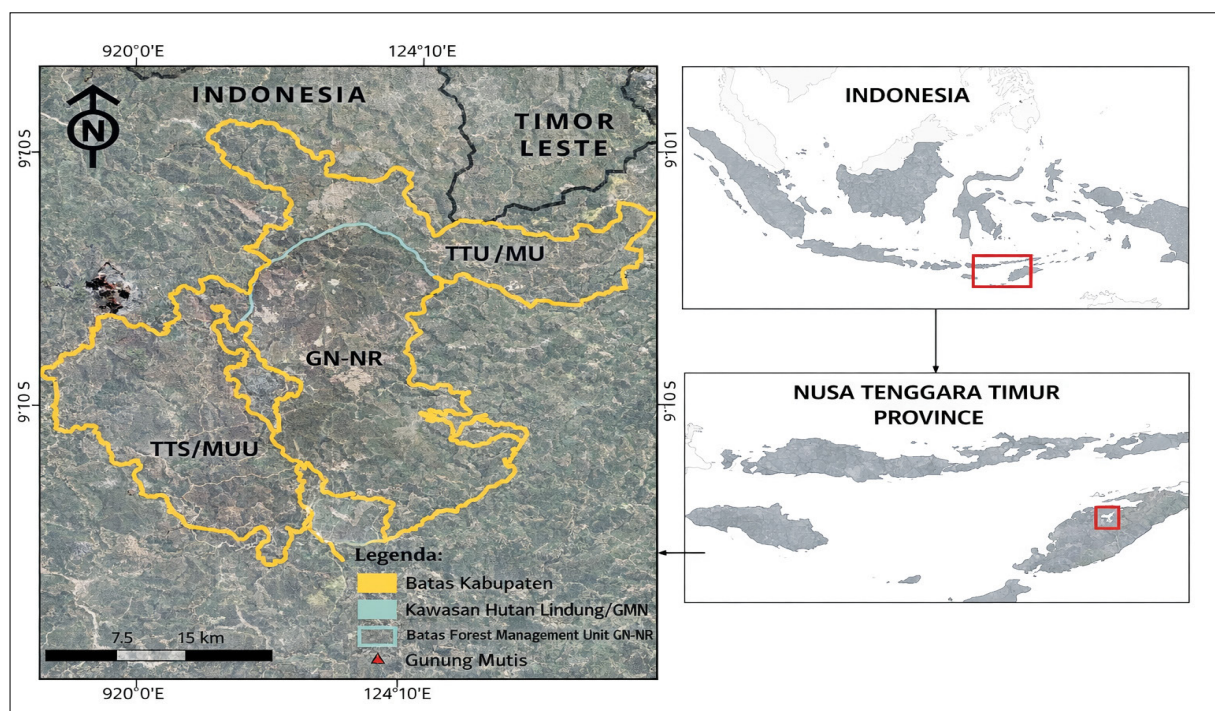


Figure 1. The Mutis Timau Forest Complex (source: Pujiono *et al.* 2023)

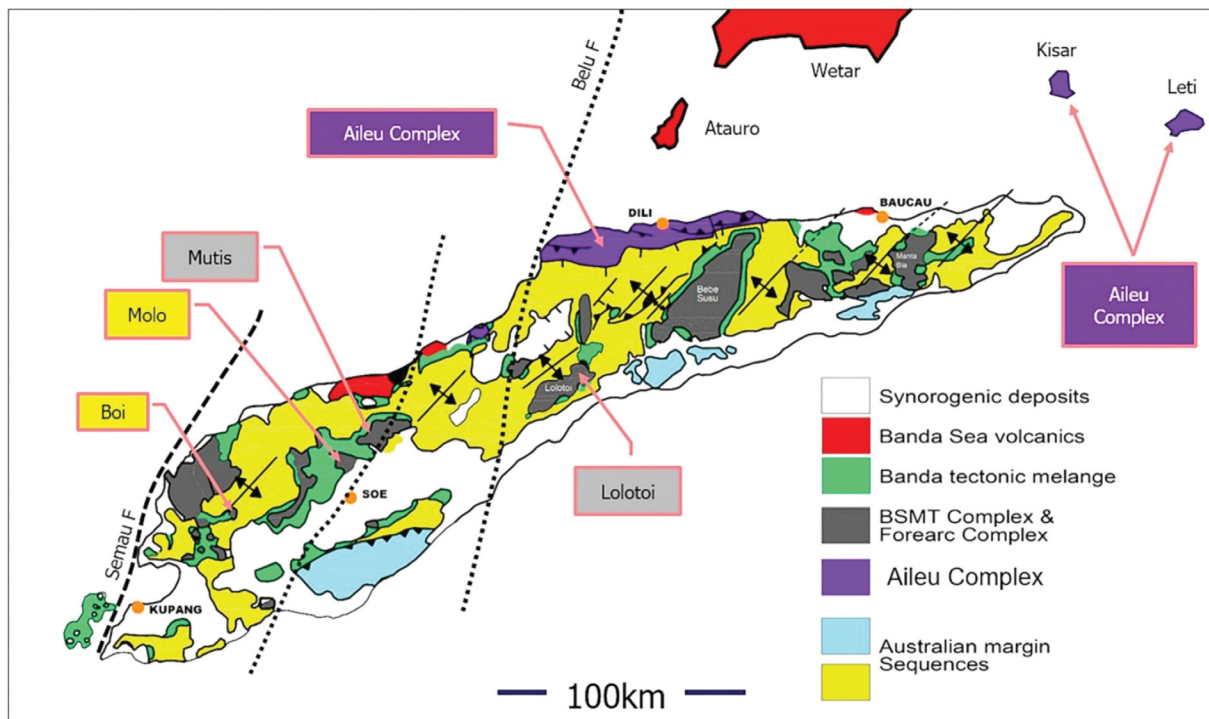


Figure 2. Distribution of the Metamorphic Complexes of Timor, including the Mutis Complex (source: Earle 2023)

have undergone significant metamorphism over time. This distinctive geological character makes Mount Mutis a promising site for marble mining (Kurniawan and Iswandono 2018).

Mount Mutis has a hilly relief and some parts of it have steep slopes. The forest covering the Mount Mutis area is a tropical rainforest with many Ampupu trees (*Eucalyptus urophylla*). The ecosystem of the Mutis Timau National Park comprises five classes, namely primary dryland forest covering 3,620 ha, secondary dryland forest covering 7,248.92 ha, dryland agriculture mixed with shrubs covering 994.80 ha, grassland covering 134.58 ha, and shrub or thicket covering 317.21 ha (Kurniawan and Iswandono 2018). The dense Ampupu trees

play a significant role in absorbing and storing carbon, crucial for environmental sustainability. The carbon content of the conservation forest in the Mutis area is 221.14 tons of carbon per hectare (Marimpan et al. 2023).

From its high altitude, this area is the wettest region in Timor, characterized by high rainfall, ranging from 2000-3000 mm per year (BBKSDA NTT 2018), and the Mutis Timau National Park is a water catchment area. Four major rivers originate from Mount Mutis, as well as various springs. The local community uses some of these sources to meet household water needs and to irrigate rice fields and gardens. The largest spring is *Oel Ni Anin*, which is used by regional water companies to provide drinking water (Kurniawan and Iswandono 2018).

The Mutis Timau National Park area is also home to several unique species. One of the plants found only in the park is *Dicsonia timorensis*, a type of fern. In addition, there are also several protected animal species such as *elang alap coklat* (*Accipter fasciatus*), *kowak malam nerah* (*Nycticorax caledonicus*), *delimukan wetar* (*Gallicolumba hoedtii*), *punai timor* (*Treron psittacea*), *alap-alap layang* (*Falco chroides*), *alap-alap sapi* (*Falco moluccensis*), *cikalang christmas* (*Fregata an-*

drewsi), *bentet kelabu* (*Lanius schach*) Wildlife in the area includes wild boars (*Sus sp.*), cuscus (*Phalanger orientalis*), deer (*Cervus timorensis*), long-tailed monkeys (*Macaca fascicularis*), porcupines (*Hystrix sp.*), Timor lizards (*Varanus timorensis*) and Timor pythons (*Phyton timorensis*) (BBKSDA NTT 2018).

The hilly terrain of Mount Mutis makes the area prone to landslides and erosion, which is exacerbated by the activities of local communities who cut down trees to clear land for gardens around the area and burn the forest (Dako *et al.* 2019). Therefore, Mount Mutis plays an important role in stabilizing slopes, ensuring water flow, and preventing land degradation. Development in vulnerable mountainous areas will increase the risk of soil erosion and landslides. This means that forest conservation around Mutis serves as an ecological strategy to mitigate geomorphological hazards while maintaining landscape integrity (Pujiono *et al.* 2023). One of the key conservation efforts is the development of agroforestry, which aims to restore environmental quality while also supporting the economic interests of the local community (Dako *et al.* 2025).

The Mutis Timau National Park holds significant meaning for the Timorese people. Mount Mutis is generally considered the “lungs” of the island and is known as a center of biodiversity. The geomorphology of Mount Mutis supports a diverse ecosystem network with a variety of endemic species. Protecting the area is a guarantee for the survival of the Timorese people. This aligns with the Timorese view of Mount Mutis as a source of life. The *Atoni Pah Meto* Indigenous community has an emotional attachment to Mount Mutis and view it as an extension of their identity and an integral part of the community’s life (Suminar *et al.* 2024).

Theoretical Framework

To understand the reasons and forms of resistance

of the *Atoni Pah Meto* relating to the conversion of Mutis to a national park, our analysis is guided by the Deep Ecology Movement and Resistance Theory as theoretical frameworks.

The deep ecology movement (DEM) was developed by thinkers such as Bill Devall and George Sessions, drawing heavily on the ideas of the Norwegian philosopher Arne Naess. According to Naess (2008), the DEM is grounded in religion, philosophy, and ethics, offering fundamental norms and principles that govern the relationship between humans and nature. To underline the essence of this relationship, Naess (1973: 105) introduced the concept of *ecosophy*, defined as “a philosophy of ecological harmony or equilibrium.” For Naess, ecology and philosophy can be harmonized to foster a deeper understanding of environmental issues. Furthermore, Naess emphasized the importance of the principles of diversity and symbiosis within the deep ecology movement, and that diversity enhances the potential for survival and opens opportunities for new ways of life. The idea of preserving life is the primary guiding principle, while the notion of symbiosis intersects with the diversity of lifestyles, cultures, work, and economic systems.

According to Devall (1991), the distinctiveness of the DEM lies in the concept of ecocentric identification, which he views as the highest norm of self-realization, whereby humans recognize themselves as an integral part of nature. By emphasizing the unity between humans and nature, the DEM challenges anthropocentrism and advocates for an ecocentric worldview, asserting that humans are part of a web of life, equal to other living beings. Consequently, the DEM calls for a mental and psychological shift in human attitudes, encouraging greater respect for nature and other forms of life (Situmorang 2019). Further, the DEM opposes development models that prioritize economic progress and productivity, often at the

expense of sustainability, continuity, and justice. As such, the proponents of this theory reject various forms of environmental exploitation, as well as large-scale bureaucratic and oligarchic systems (Situmorang 2019). Another key aspect championed by the DEM is the promotion of local autonomy and decentralization in efforts to preserve nature. Strengthening local autonomy impacts ecological balance positively by empowering local communities to develop their economic potential, which in turn reduces exploitative tendencies toward nature. Additionally, decentralization is necessary to shorten decision-making hierarchies, allowing local governments and communities to participate actively in the management of conservation areas.

Resistance often arises in response to the abuse of local autonomy and the arbitrary exercise of power by individuals or groups, especially when such domination targets marginalized groups. Through his theory of everyday resistance, Scott (1990) explores the dynamics of domination and resistance within the context of power relations. One of the key propositions of this theory is that through power structures, the dominant group generates discourses that serve to perpetuate their control, maintaining influence over those who are subordinated. Scott uses the term *public transcript* to describe the interactions between the dominant or controlling group and the controlled group. The dominant group goes to great lengths to keep the subordinate group under their influence, often masking their desire for control and domination, which is achieved by employing strategies to compel the subordinate group to comply, monitor their actions, and ensure that they remain under control (Scott 1990).

Scott also introduces the concept of the *hidden transcript*, which refers to discourse that occurs outside the observation of the dominant group or power holder (Scott 1990). This hidden transcript

is practiced by marginalized groups who resist their oppression covertly or fight for their rights in secret. According to Scott (1990), there are three key characteristics of the hidden transcript. First, it is context-specific, emerging in particular social situations and among specific actors as a response to the dominant group's discourse. Second, it is expressed through words and actions, including negative behaviors such as poaching, tax evasion, or theft. These actions are not inherently unjust but are viewed as reactions to the dominance of the ruling group. Third, the dominant elite views the practices associated with the hidden transcript as contradictory and unacceptable within the public transcript, because they disrupt the established order and challenge the comfort of those in power.

The power relations described by Scott illustrate that the dominant and powerful groups will continue to assert their control by producing discourse through the *public transcript*, thereby reinforcing their dominance. In contrast, the marginalized groups respond to this controlling power either through verbal expressions or concrete actions, facilitated through the *hidden transcript*. This response from subordinate groups is known as resistance, which can take various forms including ideological resistance. Such resistance challenges dominant interpretations of specific conditions and contexts, advocating for alternative standards of justice and fairness, and emphasizes intentions over outcomes, recognizing that many acts of resistance may not achieve their intended results (Scott 2000).

Methods

This research employs a case study method, a variant of qualitative research. A case study refers to a spatially confined phenomenon observed at a specific moment or over a period of time (Gerring 2017). In this study, the case is the proposal by BBKSDA NTT to reclassify the Mutis Nature Reserve as a national park, which faced resistance

from the indigenous communities surrounding Mutis. Fieldwork in the Mutis Timau National Park (Fig. 3) was conducted by the first author from June to July 2023 in six villages directly adjacent to the Mutis area, namely Fatumnasi, Nenas, Mutis, and Bonleu in TTS District, and Nopesu and Fatuneno in TTU District. Interviews were conducted with 13 key informants (Table 1), and field notes were used to record contextual and observational information.

The data was analyzed using the review method proposed by Stake (in Denzin and Lincoln 2009), emphasizing the importance of in-depth interviews and field notes as well as engaging in reflective interpretation to uncover meaningful insights. This requires the researcher to be deeply immersed in the field, actively participating in community activities related to the case, while continuously revisiting and refining the interpretations drawn from the data. In this analysis, the perspectives of the *Atoni Pah Meto* indigenous community are emphasized to highlight their arguments in opposing the proposal and the importance of accommodating their social rights in policies and development programs.

Results

Voices Supporting the Conversion Proposal

In the early 2000s, the BBKSDA NTT, in collaboration with the World-Wide Fund (WWF) Indonesia, proposed the idea of changing the status of the Mutis area, but the idea then waned. The issue resurfaced following an evaluation conducted by BBKSDA NTT in 2018, assessing the functions of the Mutis Nature Reserve, led by a team established through a decree from the Minister of Environment and Forestry. A key finding was that Mutis Nature Reserve had long been utilized for various purposes, including agriculture, illegal cattle grazing, extraction of natural resources such as *Akar Angin*, mushrooms, fabric dyes, and wild forest honey, and use of environmental services for water and tourism. Additionally, the roads crossing the area exerted pressure on its natural sustainability, inconsistent with the area's designated function as a nature reserve. Further, forest fires and hunting posed significant threats to the area's flora and fauna. Consequently, it was determined that managing Mutis Nature Reserve in accordance with its designated function as a nature reserve was no longer feasible or effective. The proposed solution was to convert the area's status

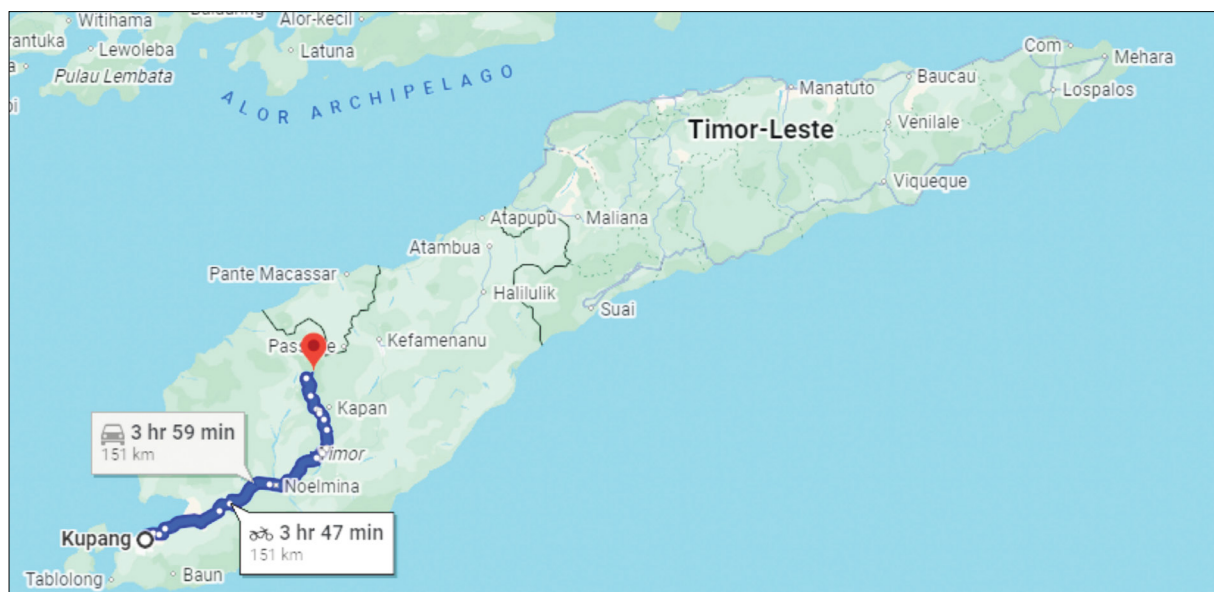


Figure 3. Map of Timor Island with a route from Kupang city to Mutis Timau National Park. Source: Google Maps.

Table 1. Demographic profile of the key informants

No.	Key Informant	Gender	Age	Village	Position	Level of education	Date of interview
1.	KI-01	Male	52	Nenas, TTS	Village leader	College	June 23, 2023
2.	KI-02	Male	64	Mutis, TTS	Community figure	Primary School	June 24, 2023
3.	KI-03	Male	35	Bonleu, TTS	Youth leader	College	June 27, 2023
4.	KI-04	Male	75	Noepesu, TTU	Farmer, community figure	Primary school	June 30, 2023
5.	KI-05	Male	49	Noepesu, TTU	Village leader	Senior high school	June 30, 2023
6.	KI-06	Male	84	Fatumnasi, TTS	Community Figure	Senior high school	July 7, 2023
7.	KI-07	Male	45	Fatumnasi, TTS	Village Leader	Senior high school	July 8, 2023
8.	KI-08	Male	54	Kupang	NGO activist	College	July 10, 2023
9.	KI-09	Male	74	Nenas, TTS	Community figure	Senior high school	July 15, 2023
10.	KI-10	Male	32	Inbate, TTU	Youth leader	College	July 23, 2023
11.	KI-11	Female	48	Fatuneno, TTU	Woman activist	College	July 25, 2023
12.	KI-12	Male	45	Fatumnasi, TTS	Forest ranger	College	July 26, 2023
13.	KI-13	Female	57	Lelobatan, TTS	Female figure	College	July 28, 2023

from a nature reserve to a national park (BBKSDA NTT 2018).

In Indonesia, national parks are designated nature conservation areas whose management is structured around a zoning system, as outlined in Minister of Forestry Regulation No. 56 of 2006. According to this regulation, the zoning system includes the following categories: (1) Core Zone that must be strictly protected due to its unique and original biodiversity; (2) Wilderness Zone (for land) or Marine Protection Zone (for water) to support the conservation of both the core zone and the utilization zone; (3) Utilization Zone designated for sustainable use, such as tourism or environmental services; (4) Traditional Zone reserved

for the traditional needs of local communities; (5) Rehabilitation Zone designated for areas that have suffered degradation and require intervention for ecological restoration; (6) Religious, Cultural, and Historical Zone allocated for religious, cultural, or historical sites that must be preserved to maintain their values; (7) Special Zones designated to accommodate existing community groups or facilities that were present before the area's official designation as a national park.

The BBKSDA NTT's proposal to convert the reserve into a national park is based on the zoning system described above. If this change occurs, sections of the reserve that have been encroached upon, such as water sources, livestock grazing ar-

eas, and locations used for collecting forest honey, *Akar Angin*, and firewood, could be designated as either utilization or traditional zones. Areas that have damaged—such as the aging Ampupu tree stands, where regeneration is lacking—could be designated as rehabilitation zones. Potential tourism areas, including the Fatumnasi bonsai forest and *Lelofuif* grassland, might be allocated as utilization zones for tourism. Other culturally significant locations, such as the Dua Putri Fort, ancestral graves, and *faot kanaf-oe kanaf*, could be categorized as religious, cultural, or historical zones (BBKSDA NTT 2018). It is likely that the core zone of the park would include the summit of Mount Mutis, while special zones could encompass the villages or hamlets located within or adjacent to the area.

There are plans to improve the road infrastructure within the conservation area to enhance transportation access. Once the roads are upgraded, it is anticipated that electricity will be extended to villages such as Nenas, Mutis, and Nuapin. This is enabled by. The different regulations for national parks compared to nature reserves which prohibit utilization and development activities. These communities have long felt isolated due to the lack of proper road infrastructure and reliable electricity, as expressed by KI-1, a representative from Nenas, who spoke on behalf of the local residents:

“The majority of the residents of Nenas support the proposed change in the function of the Mutis Nature Reserve because of their isolation. We are isolated here because of the nature reserve. The road into Nenas has not been widened or paved, and we do not have access to electricity.... PLN (the state electricity company) has installed electricity poles, but when they enter the nature reserve area, BBKSDA (the forestry office) prohibits further installation. I went to the BBKSDA office with some commu-

nity leaders to discuss this matter. They explained that, according to regulations, no development activities, including the installation of electricity poles, are permitted within the nature reserve area” (Interviewed on June 23, 2023).

The Mutis Nature Reserve was not designated as a tourist destination, as its status as a nature reserve prohibited tourism activities, but people visited the area as if it was a tourist destination. It was common for visitors to enter without paying fees, and there was inadequate supervision of their activities, leading to problems such as unmanaged littering. Therefore, proponents for change of status to a national park would enable better organization and management of the area as a tourist destination, including facilities for waste disposal and the imposition of entry fees to generate revenue. Furthermore, local communities would benefit from the sustainable use of the area as a tourism resource.

Voices of the “Atoni Pah Meto” Against the Conversion Proposal

Although there are some voices that support the conversion of the reserve among the *Atoni Pah Meto*, the discourse was mainly against. Before the current government structure was established and the area was designated as a nature reserve, Mutis was under the control and supervision of the kings and traditional leaders of the communities around it. According to KI-2, an informant from Mutis Village, Mutis has always been governed by the customary leaders traditionally known as *usif*, *amaf* or *meob*, people who are seen as the guardians of the water sources that sustain the livelihoods of surrounding communities. It is believed that Mutis is common property belonging to all tribes, clans, and family groups. KI-2 refused to offer an opinion on whether to accept or reject the proposed change in function during a socialization meeting concerning the then Mutis Nature

Reserve conversion held by BBKSDA NTT in Kupang on December 2, 2021. Instead, he raised the following points rhetorically:

“Why do we want to change the status of the Mutis Nature Reserve to a national park, without inviting the *usif-usif* around Mutis to participate and share their views and perspectives? The *usif*, *amaf*, and *meob* who live around Mutis should also be invited, because Mutis does not belong to one *usif* or a specific tribe. Mutis is a common property, and it belongs to us all” (Interviewed on June 24, 2023)

KI-2’s assertion is historically well-founded. Before becoming a nature reserve, Mutis was under the authority of Sonbai Sila, the area’s ruler, following the division of Timor’s territory among the four sons of Sila Unu long before the 14th–15th centuries. According to Neonbasu (2013, pp. 21–22), the oral tradition of the *Atoni Pah Meto* shows that their ancestors came from the descendants of Sila Unu who settled around the Ramelau Mountain in Timor Leste. Sila Unu had four children, namely Liurai, Sonbai, Afoan and Benu. The four of them then moved to Mount Lakaan (Belu District of Indonesia), and from there they explored Timor Island until they arrived at Mount Mutis. There, the four men divided the territory of Timor into four parts and became the leaders of each region. Liurai Sila was assigned to control the area from which the sun rises, which is Timor Leste today, as well as the Belu and Malaka District. Sonbai Sila was tasked with guarding the northern and southern central part of Timor, while Afoan Sila was assigned to oversee the Amfoan area in Kupang District. Meanwhile, Benu Sila was given a share of Oecussi, an enclave of Timor Leste (Neonbasu 2011). As a result, Mutis and its surroundings were governed and supervised by traditional leaders, with a popular view that the area was the center of civilization and the heart of Timor Island.

When the Dutch East Indies government assumed control during the colonial era, and later Indonesia after its independence in 1945, the area was designated as a forest cover and eventually became a nature reserve. However, according to KI-13, an environmental activist in Timor, there is no written evidence of the transfer of authority over the land from traditional leaders to the government. While the government has control over the forest and its natural resources, the rights of indigenous peoples cannot be overlooked. Therefore, it is essential to listen to the voices of indigenous leaders (*usif*, *amaf*, *meob*) from the villages surrounding the area, especially because their communities continue to uphold traditional customs, perform rituals, and regard their leaders as important figures in the decision-making processes. For KI-13, resistance to the conversion of the reserve into a national park represented an effort to preserve the significance and crucial role of Mutis for the *Atoni Pah Meto* people, as she explained:

“Mutis should not be declared a national park because it will only lead to further damage. Forestry authorities should also not be allowed to enter the area. They permit activities in places where customary law prohibits such actions. It is sufficient for people to obtain water from Mutis for SoE (the capital of TTS) and Kefamenanu (the capital of TTU). That is enough... Mutis is under threat, and economic interests have influenced the community. Mutis must remain intact and sustainable” (Interviewed on July 28, 2023).

Among the *Atoni Pah Meto*, Mutis is also regarded as the dwelling place of ancestors and the deceased, a belief that is closely linked to the presence of *faot kanaf-oe kanaf* around Mutis. Destroying forests and mountains is seen as a violation that could anger the ancestors and bring disasters and calamities. For this reason, KI-10, states

that converting the area into a national park would open the space for anyone to enter freely, potentially causing further damage to the Mutis Forest, and destroying the resting place of the ancestors. KI-4 and KI-5 from Noepesu village echoed this common belief, recalling that when discussions about changing the function of the reserve began in 2001, and the people of Tasinifu (TTU District) expressed their support for the change, an earthquake struck the region. This was popularly believed to be a warning from the ancestors not to disturb or damage Mutis.

Resistance to the conversion proposal was also driven by concerns that the change would open opportunities for tourism development and other economic interests, which in turn could marginalize local communities in favor of outsiders. This view was expressed by KI-10. Resistance was also voiced by members of a local NGO, the Lopo Mutis Babnain Forum, represented by KI-4, KI-5, and KI-11. This forum consists of indigenous people from villages that have a deep attachment to Mutis. KI-5 recalled that in 2001, BBKSDA NTT and WWF Indonesia conducted a socialization session about the plans, and that the area would be managed through a zoning system with hundreds of homestays built in the Mutis area. At the time, the community raised concerns about where these homestays would be constructed, as the proposed plan did not clarify. According to KI-5, the community believes that if Mutis is declared a national park, it would be managed by outsiders, excluding the local people, as they have not been equipped with the necessary skills for the management of the park. Similarly, KI-4 raised several fundamental questions about the involvement of local communities in the management of a national park. He stated that:

“If it is turned into a national park, what are the benefits? For us, small communities, what do we gain from the change to

a national park? The government holds the power, and we, the small people, who mostly don't know anything, what can we do? In my opinion, the government should also listen to the voices of the small people. They need to take care of the people, nature, and the environment” (Interviewed on June 30, 2023).

Concern about the marginalization of local communities was also expressed by K-11. She argued that the change in the function of the area would benefit outsiders as they would have greater authority in managing the national park. As a result, local communities would have limited access to resources and decision-making processes. She contends that:

“If the status is changed, we are thinking ahead for the sake of our children and grandchildren. We fear that if Mutis becomes a national park, the impact on local communities would be detrimental. The authority for a national park comes from Jakarta, and we, the local people, would have no access to the area. Outsiders would control it, and no matter how capable we are, we would only be relegated to positions like security guards” (Interviewed on July 25, 2023)

KI-11 also believes that the management of a national park would primarily benefit the central government and external investors, rather than the village government or local communities. Therefore, one crucial objective is to empower local communities and ensure they remain the primary stewards of Mutis' natural environment. In her view, this empowerment should be the responsibility of the government, through initiatives such as assisting farmers in the area. KI-1, who supports the conversion of the reserve into a national park, also saw the empowerment of local communities as an urgent priority. He perceived the conversion as a long-term goal, one that can only be realized

after local communities have been adequately prepared. He suggested that the goal is for these communities to reclaim control over their own land, becoming the “masters” rather than “subordinates” to outsiders who come to occupy the area.

There are also concerns that the conversion of the then Mutis Nature Reserve into a national park would exacerbate existing pressures on the area and further harm its ecological integrity. According to KI-3, the conversion would grant greater access to and control over water sources, which could lead to a decrease in water volume, water flow and an increase in potential pollution of the water resources. His community has been relying on water from Mutis to irrigate their rice fields. Despite the abundance of water sources in Mutis, the community often faces water shortages, particularly during the dry season. The diversion of water for tourism purposes could potentially compromise water availability for both agricultural use and the broader needs of the community.

The Forms of Resistance among the Atoni Pah Meto

The *Atoni Pah Meto* indigenous people articulated various forms of opposition and resistance to the proposed conversion of the Mutis Nature Reserve into a national park. First, they refused to approve or support the change in status, which was firmly articulated by KI-2, a community leader from Mutis Village, during a socialization and consultative meeting organized by the provincial government on December 2, 2020, at the Neo Aston Hotel in Kupang. He was being critical since the meeting was attended only by community leaders and village heads from certain villages in the TTS district, excluding representatives from other relevant villages. He emphasized that the traditional leaders should first convene to discuss and voice their perspectives, and that such selective participation could lead to future disputes. In protest, he declined the transportation funds offered by the

organizers.

Secondly, the indigenous peoples combined their collective strengths to develop a cohesive stance against the proposed conversion. This was organized through a community forum known as *Lopo Mutis Babnain Forum*, formed following their participation in a workshop and dedicated to advocating for the preservation of the Mutis area and opposing its functional change. This resistance dates back to a consultative meeting in 2000. To strengthen its advocacy, the forum documented various customary ritual centers in the Mutis area, which hold cultural and historical significance. They also explored customary laws relating to nature and the environment that remain relevant and established agreements to ensure the continued preservation of the region. In addition, the forum engaged in discussions and dialogues with various stakeholders, voicing their opposition to the proposed changes and contributing to the failure of the plan to alter the status of the reserve.

Thirdly, indigenous peoples from the villages of Nuapin, Mutis, and Nenas conducted a traditional ceremony within the then Mutis Nature Reserve to assert their commitment to preserving the natural environment and their rejection of the proposed functional changes. The ceremony, held on June 11, 2022, was attended by customary leaders, community representatives from the surrounding areas, and the public. Participants included members of the tribes entrusted with the primary responsibility of safeguarding Mutis, notably the *Nafa-Auni*, *Tusala-Lame*, and associated tribal groups. The ceremony began with traditional speeches and prayers, emphasizing the cultural and spiritual significance of the Mutis area. This was followed by the ritual offering of sacrificial animals, symbolizing the community’s oaths to protect and maintain the natural and cultural integrity of the area.

These forms of resistance emphasize the cultur-

al significance of Mutis as the heart of Timorese civilization, which should remain uncompromised and undisturbed. The effort to maintain the area's status was conducted in an organized and nonviolent manner, including protests, walkouts, and traditional ceremonies. Their argument is simple but clear; preserving the authenticity of Mutis is essential for the survival of the Timorese people and for the future of Timor Island in the long term.

Deep Ecology in the Culture of the “Atoni Pah Meto”

The *Atoni Pah Meto* know that the Mutis area must remain undisturbed, and their activities are limited. These include using the road traversing the park to access the villages of Nenas, Mutis, and Nuapin via Fatumnasi. They also graze cattle and horses and conduct traditional rituals within the park, although some individuals still engage in activities such as hunting, collecting firewood, harvesting forest honey, and gathering *Akar Angin*.

Further, the *Atoni Pah Meto* indigenous community continues to play a significant role in preserving the forest within the Mutis Timau National Park, rooted in their belief that Mutis is a prohibited forest area, known traditionally as *naes tala*. The concept of *naes tala* literally means prohibited forest and is intrinsically linked to the *faat kanaf-oe kanaf*, requiring the *Atoni Pah Meto* to protect and provide care for the forest surrounding these sacred sites. Over time, the scope of *naes tala* expanded to encompass the entirety of Mutis, as affirmed by community leaders such as KI-4, KI-5, and KI-9. KI-4 stated that historically, the forested area from the slopes to the summit of Mount Mutis is regarded as *naes tala* and must remain undisturbed. Supporting this, KI-5 noted that the Mutis Forest has been designated as a forbidden area (*naes tala*) with boundaries established since the Dutch East Indies colonial era. KI-9 further emphasized that *naes tala* enforces strict prohibitions

against tree cutting, disturbing wildlife, and catching fish, prawns, or eels in water sources within the Mutis Forest.

Although the idea of *naes tala* is generally known, many individuals continue to engage in prohibited activities within the park. Some hunt animals, while others use poison to catch fish, eels, and shrimp near the springs. There are also instances of tree cutting, branch harvesting, and the use of leaves as animal feed. These activities are classified as violations of the *naes tala*. Offenders caught in the act are subject to customary sanctions, which typically involve fines and the taking of oaths. KI-9 elaborates on this point as follows:

“The customary fine, known as *Kiu To'e*, typically consists of a cow or pig, rice, and a sum of money. These items are presented to the elders, and the animal is subsequently slaughtered. The meat from the sacrificial animal symbolizes the restoration of broken relationships, a process referred to as *taekot pasu*. In addition to the fine, the offender must take a customary oath, called *tasupa*. This oath signifies a commitment not to violate customary rules again. Should the offender breach the rules in the future, they accept personal responsibility for the consequences, which may include illness, crop failure, or even death” (Interviewed on July 15, 2023).

In addition to sanctions and customary oaths, the *Atoni Pah Meto* perform traditional ceremonies to preserve nature, one of which is popularly known as *tasaeb banu*, translated literally as “enforcing prohibitions.” According to KI-5, the *tasaeb banu* ceremony is usually conducted in mid-January, coinciding with the sprouting of the corn crop. Various tree branches and reeds are placed at the ceremony site as symbols marking the beginning of a prohibition period. From the start of the ceremony, all community members are prohibited

from engaging in agricultural activities on their farms, including tilling the soil, cutting trees, or uprooting reeds, aiming to allow nature to rest and rejuvenate. This period lasts approximately three months, ending when the corn is ready for harvest, marked by the removal of the symbolic markers erected during the *tasaeb banu* ceremony.

Discussion

The proposed conversion of the Mutis Nature Reserve into a national park sparked debate, dividing stakeholders into two groups: those who supported and those who opposed the plan. Despite their differing views, both groups shared a common goal: to ensure the preservation of the area's natural environment and to promote conservation efforts that sustain the ecological integrity of the Mutis landscape. The *Atoni Pah Meto* community has a deep and intrinsic connection with nature and values the symbolic representation of Mount Mutis, which has been the heart and center of Timorese civilization. For the *Atoni Pah Meto*, maintaining the harmony and balance of their long-established relationship with Mutis is paramount. Efforts to preserve the natural environment of Mutis are, in essence, efforts to ensure their own survival.

Respect for nature, as practiced by the *Atoni Pah Meto*, aligns closely with the principles of the deep ecology movement, rooted in the concept of *ecosophy*, emphasizing the interconnectedness of humans and nature. The continuity of this web of life is essential for human survival, the unity between humans and nature, and the ecological balance inherent within nature itself. The *Atoni Pah Meto* indigenous community living around Mutis deeply understands and experiences the closeness of their relationship with Mount Mutis. For them, Mutis remains the center of their network of life, and they strive to ensure that this network remains intact, undamaged, and unbroken.

The deep ecology movement serves as a platform

for correcting human behaviors that harm the relationship with nature, disrupt the ecological balance, and lead to exploitative and destructive actions against the environment. The people living around the Mutis area rely on its natural resources for survival. However, it should also be recognized that certain human actions and practices undermine the authenticity of the *Atoni Pah Meto*'s relationship with Mutis and damage the long-established network of life. The deep ecology movement calls for a mental and psychological shift to foster greater respect for nature (Situmorang 2019: 67), so avoiding arbitrary or excessive exploitation of nature.

The resistance by the *Atoni Pah Meto* indigenous people to the change in status of Mutis can be understood through the lens of resistance theory in several ways. First, power relations were evident, with the dominant group being the BBKSDA NTT, responsible for managing the Mutis Nature Reserve and representing the state as the "owner" of the Mutis area. BBKSDA NTT recommended changing its status to a national park, advanced the discourse that the *Atoni Pah Meto* indigenous community would support the plan, and continued with the conversion proposal until the change of the area's status in 2024. The whole process to realize this plan is also questionable, as it did not involve a comprehensive and thorough socialization and consultation process and disregarded the participation of traditional leaders and communities from various tribes and clans around Mutis. BBKSDA NTT's actions underline the notion of *public transcript* outlined in the resistance theory.

Second, the people living around the Mutis area are marginalized as they are restricted from cultivating land outside the area to secure an economic livelihood. Consequently, some individuals encroach on the area by converting it into agricultural land, cutting down trees, burning bushes to promote the growth of new grass for livestock

grazing, utilizing water sources for community needs, and collecting firewood, wild roots, and other natural resources for economic purposes. These actions are expressions of the *hidden transcript* of indigenous peoples' rights and acts of resistance to the denial of their rights and dignity. This suggests that regulations concerning nature reserves have not adequately addressed or accommodated the rights of indigenous peoples to manage and benefit from the area. Changing the status of the Mutis Nature Reserve to a national park might accommodate the rights of indigenous peoples in terms of land use, but this might also be possible if retained as a nature reserve.

Third, in line with Scott's concept of resistance, the *Atoni Pah Meto* indigenous people have responded with resistance to the plan to change the function of the Mutis area, both at the individual and collective levels. Individual resistance has been exemplified by community leaders such as KI-2, while collective resistance has been demonstrated through various initiatives, such as the *Lopo Mutis Babnain* Forum, which has mobilized a unified movement to reject the plan since its inception. For this forum, the struggle continues as it remains consistent in their struggle to this day.

Conclusion

We have explored the reasons and forms of resistance of the *Atoni Pah Meto* indigenous community in Timor, Indonesia, to the proposed conversion of the Mutis Nature Reserve into a national park. In principle, the *Atoni Pah Meto* indigenous people remained committed to preserving the sustainability of the Mutis area, so any development should consider both environmental sustainability and the basic needs of the local people. Their resistance was an effort to ensure that the government and policymakers respect their social rights and dignity, vital in preventing vertical and horizontal conflicts. The declaration of Mutis Timau National Park on September 8, 2024 demonstrates the

government's commitment to biodiversity conservation while attempting to balance socio-ecological needs. While the *Atoni Pah Meto* opposed the idea of status change of Mutis area, the functional reclassification should continue prioritizing environmental sustainability, with a focus on the welfare of local communities. Policymakers and local communities should work in synergy to express their views and shape the future of Mutis Timau National Park. This synergy would open a space to engage in dialogue, find common ground, and initiate concrete actions to transform Mutis into a "common home" for all.

Several recommendations can be made based on our findings. First, although the Mutis area has now been designated a national park, it remains essential to examine the evolving dynamics within the local community in response to this functional classification. By identifying these issues clearly, policymakers will be better equipped to develop informed strategies and to foster community understanding and acceptance of decisions related to the park's future. Second, given that community resistance will continue, as an important agency, BBKSDA NTT plays a crucial role in explaining the functional reclassification of the area while enhancing local community rights and environmental sustainability in the area. This includes providing support and assistance to local communities as part of efforts to empower them and ensure their active participation in sustainable development. On their part, local communities can play an active role in supervising and protecting the park as part of their involvement in the conservation effort. Third, the management of the Mutis Timau National Park should prioritize comprehensive socialization and consultation processes to ensure that the surrounding communities are not only well-informed but also meaningfully involved in the park's stewardship.

Funding

The authors received no funding for the research and authorship of this article.

Conflict of Interest

The authors report no conflict of interest.

Authors' Contributions

Kristianto Ratu Marius Naben: Conceptualization, Methodology, Fieldwork and Data collection, Data verification, Formal analysis, Writing - original draft preparation, review, editing and final preparation.

Krisdyatmiko: Supervision, Conceptualization, Writing – review and editing, Verification. **Gabriel Faimau:** Writing – review, editing and final preparation, Verification. All authors have read and agreed to the published version of the manuscript.

Availability of Data and Materials

The data for this study is available from the first author upon reasonable request.

References

- Amin B (2014). Mempertahankan Ruang Hidup Konservasi dan Budaya di Teluk Tomini. *Jurnal Masyarakat & Budaya*. 16(1):113–136.
- Angi ME (2005). Kebijakan Pemerintah Pusat di Bidang Konservasi dari Perspektif Daerah dan Masyarakat: Studi Kasus Kabupaten Kutai Barat, Kalimantan Timur. Bogor: Center for International Forestry Research
- Bachri S, Permana AK (2015). Tektonostratigrafi Cekungan Timor di Bagian Barat Pulau Timor. *Jurnal Geologi Dan Sumber Daya Mineral*. 16(2): 79–91.
- BBKSDA NTT (2018). Laporan Evaluasi Kesesuaian Fungsi Cagar Alam Mutis Timau Kabupaten Timor Tengah Selatan dan Kabupaten Timor Tengah Utara Provinsi Nusa Tenggara Timur. Kupang: BBKSDA NTT. (A report)
- Berry R *et al.* (2024). Geology of the Mutis Complex, Miomaffo, West Timor. *Australian Journal of Earth Sciences*. 71(2):231–250. <https://doi.org/10.1080/08120099.2023.2290702>
- Besi AA, Mahayasa, INW, Rammang N (2021) Analisis Potensi dan Strategi Pengembangan Hasil Hutan Bukan Kayu (HHBK) Akar Angin (*Usnea barbata*) di Hutan Lindung Mutis Timau (Studi Kasus di Desa Kuan Noel dan Desa Fatumnasi, Kecamatan Fatumnasi, Kabupaten Timor Tengah Selatan) *Jurnal Wana Lestari*. 4(1):102–112.
- Dako FX, Purwanto RH, Faída LRW, Sumardi S . (2019) Identifikasi Kerusakan Antropogenik Kawasan Hutan Lindung Mutis Timau Di Pulau Timor Bagian Barat Dan Upaya Penanggulangannya. *Journal of Natural Resources and Environmental Management*. 9(2):437–455. <https://doi.org/10.29244/jpsl.9.2.437-455>
- Dako FX, Ora YANR, Ranta F, Benu Y, Paga B, Aramak FS, Pujiono E (2025). Traditional agroforestry models based on local knowledge in the Mount Mutis-Timau Highlands, Timor Island, Indonesia. *Jurnal Pengelolaan Sumberdaya Alam Dan Lingkungan*. 15(2):192–205. <https://doi.org/10.29244/jpsl.15.2.192>
- Denzin NK, Lincoln YS (Eds.) (2009). *Handbook of Qualitative Research*. Yogyakarta: Pustaka Pelajar.
- Devall B (1991). Deep ecology and radical environmentalism. *Society and Natural Resources*. 4(3): 247–258. <https://doi.org/10.1080/08941929109380758>
- Direktorat Jenderal KSDAE. (2024, September 8). Deklarasikan Taman Nasional Mutis Timau, Kini Indonesia Punya 56 Taman Nasional. Retrieved December 8, 2025, from 2588-7343[<https://doi.org/10.57647/j.gcr.2025.0802.12>]

- <https://ksdae.kehutan.go.id/berita/12740/Deklarasikan-Taman-Nasional-Mutis-Timau-Kini-Indonesia-Punya-56-Taman-Nasional.html>
- Earle M (2023). Protolith origin and plate tectonic setting of metamorphic complexes in the Timor Fold and Thrust Belt, Indonesia. *Earth-Science Reviews*. 246:104589. <https://doi.org/10.1016/j.earscirev.2023.104589>
- Gerring J (2017). *Case Study Research Principles and Practices*. New York: Cambridge University Press.
- Krisdyatmiko (2005). *Mendobrak Penindasan Atoni Pah Meto*. Yogyakarta: IRE.
- Kurniawan M and Iswandono E (2018) *Tabukah Cagar Alam Mutis Berubah Fungsi*. Kupang: BBKSDA NTT.
- Mahmud A, Satria A, Kinseng RA (2016). Teritorialisasi dan konflik nelayan di Taman Nasional Bali Barat. *Jurnal Sosial Ekonomi Kelautan dan Perikanan*. 11(1):45-54.
- Marimpan LS, Purwanto RH, Sumardi S, Wardhana W (2023). Analisis Cadangan Karbon dan Faktor yang Berpengaruh pada Hutan Alam Ampupu (*Eucalyptus Urophili*) di Kawasan Mutis Timau Provinsi Nusa Tenggara Timur. Yogyakarta: Universitas Gadjah Mada.
- Markum, Sayuti R, Hilyana S, Anugrah G. (2022). The dynamics of spatial utilization and tenurial conflict in conservation area of Moyo Island, West Nusa Tenggara. *Jurnal Pengelolaan Sumberdaya Alam dan Lingkungan*. 12(3):445–455. <https://doi.org/10.29244/jpsl.12.3.445-455>
- Maulana V (2022). Dinamika Konflik pada Perubahan Fungsi Kawasan Cagar Alam Menjadi Wisata Alam di Pulau Sempu, Kabupaten Malang. *Journal of Politics and Policy*. 4(1):51–64. <https://doi.org/10.21776/ub.jp-pol.2022.004.01.04>
- Naess A (1973) The shallow and the deep, long-range ecology movement: A summary. *Inquiry*. 16(1–4):95–100. <https://doi.org/10.1080/00201747308601682>
- Naess A (2008). *The Ecology of Wisdom. Writings by Arne Naess*. Berkeley: Counterpoint.
- Neonbasu G (2011). *We Seek Our Roots: Oral Tradition in Biboki, West Timor*. Sank Augustin: Anthropos Institut e.V.
- Neonbasu G (2013). *Kebudayaan: Sebuah Agenda Dalam Bingkai Pulau Timor dan Sekitarnya*. Jakarta: Gramedia Pustaka Utama.
- Nulangi TM (2021). Kolaborasi Ansy Lema-Masyarakat Adat Sukses Batalkan Penurunan Status Cagar Alam Mutis. Available at: <https://kupang.tribunnews.com/2021/03/01/kolaborasi-ansy-lema-masyarakat-adat-sukses-batalkan-penurunan-status-cagar-alam-mutis>.
- Patabang M, Dising J, Adrin A, Almulqu AA (2020) Stem biomass equation of *Eucalyptus urophylla* S.T. Blake. *Biogenesis: Jurnal Ilmiah Biologi*. 8(1):1–9. <https://doi.org/10.24252/bio.v8i1.10212>
- Pujiono E *et al.* (2023) Factors contributing to forest degradation in the mountainous tropical forest: A case study of the Mutis-Timau Forest Complex, Indonesia. *Journal of Sustainable Forestry*. 42(7):675–694.
- Rahmat UM (2025) SIARAN PERS Nomor: SP. 212/HUMAS/PPIP/HMS.3/9/2024: Menteri LHK Deklarasikan Taman Nasional Mutis Timau di NTT. <https://ppid.menlhk.go.id/berita/siaran-pers/7856/menteri-lhk-deklarasikan-taman-nasional-mutis-timau-di-ntt>, accessed on February 14, 2025.
- Rezende MGG, Canalez GDG and Fraxe TDP (2017) Protected areas in the Amazon: Forest management, conflict and social participation. *Acta Scientiarum. Human and Social Sciences*. 39(1):63–70. <https://doi.org/10.4025/actasci->

[humansoc.v39i1.33206](#)

- Saptawartono S, Widen K, Segah H, Yanarita Y (2019). Socio-economic condition of communities in resolving conflicts in the Bukit Tangkil-ing Conservation Area. *Jurnal Ilmu Sosial dan Ilmu Politik*. 23(2):150-162.
- Scott JC (1990). *Domination and the Art of Resistance: Hidden Transcript*. London: Yale University Press.
- Scott JC (2000). *Senjatanya Orang-Orang Kalah*. Jakarta: Yayasan Obor Indonesia.
- Situmorang AW (2019). *Gerakan Sosial: Teori dan Praktik*. Yogyakarta: Pustaka Pelajar.
- Sopaheluwakan J (1991). The Mutis Metamorphic Complex of Timor: A new view on the origin and its regional consequences. *Proceedings Indonesian Association of Geologists (IAGI) Twentieth Annual Convention* (pp. 301–315) Jakarta: IAGI. [https://www.iagi.or.id/web/digital/49/20th-\(10-12-Des-1991\)-20.pdf](https://www.iagi.or.id/web/digital/49/20th-(10-12-Des-1991)-20.pdf)
- Suminar E, Pawito P, Utari P, Kartono DT (2024). “This place is the source of our identity”: The case of the indigenous people of Atoni Pah Meto with the Mutis Timau National Park in Indonesia. *Journal of Social and Political Sciences*. 7(4):201–222.
- Wahyudiono J, Safri I, Panggabean H (2016). Geokimia Batuan Gunungapi di Pulau Timor Bagian Barat dan Implikasinya Tektoniknya. *Jurnal Geologi Dan Sumber Daya Mineral*. 17(4):241–252.