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Article Title

**The Responsibility of Natural Resources Conservation Center in Preventing Encroachment of Conservation Forest Areas in East Nusa Tenggara**

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## **ABSTRACT**

*This research aims to examine the relationship between the increase in encroachment on conservation forests and the classification of forests based on their ownership status, as well as assess the East Nusa Tenggara BBKSDA's responsibility in addressing conservation forest encroachment. This research uses an empirical legal research method. All collected data is then qualitatively analyzed to describe the problem and answer the research objectives. The results show that land ownership claims, boundary disputes, and a lack of community understanding regarding conservation forest status are the primary causes of encroachment. Although the East Nusa Tenggara BBKSDA has taken various proactive steps to address conservation forest encroachment, the issue has not yet been fundamentally resolved. Therefore, it is recommended that the Local Government and East Nusa Tenggara BBKSDA take concrete measures to tackle the ambiguity of land ownership status, which is one of the root problems of conservation forest encroachment. These measures could begin with reviewing and updating data related to land boundaries and ownership status, followed by mediation between the government and the community to resolve border disputes fairly and transparently. Furthermore, it is essential for traditional institutions and local communities to actively participate in this process actively, utilizing local knowledge and traditions in determining fair and mutually recognized land boundaries. The Local Government and BBKSDA must also enhance efforts to socialize and educate the community about the importance of conservation forests, including the long-term benefits of forest conservation for environmental sustainability and the local economy. These efforts should be carried out through effective communication appropriate to the local cultural context so that the community can accept and value the importance of conservation forests.*

*Keywords:* Area; Conservation Forest; Encroachment.

## **INTRODUCTION**

Forests play a vital role as guardians of ecosystem balance and as pillars of environmental sustainability (Kujala et al., 2023). Based on a holistic approach, forests contribute significant value to environmental, economic, social, and cultural realms. Essential functions of forests include soil protection, natural filtration of water sources, absorption of rainfall, and regulation of river flows, contributing to flood prevention and sedimentation processes. Moreover, forests act as oxygen suppliers through photosynthesis, a crucial element in supporting the food chain (Aju et al., 2015).

Furthermore, forests are crucial for food security, as they provide various resources, create job opportunities, generate income, and support the sustainability of existing agricultural systems (Santoro et al., 2020). In the context of health, forests contribute by providing plant-based medicines that have become the primary choice for treatment for most of the global population. Despite these critical roles, it is undeniable that forests often face various threats that necessitate a priority in conservation and protection actions (Issii et al., 2020).

In this regard, sustainable management and utilization of forests are imperative to preserve existing natural resources. This management is mandated through Law

[Number 41 of 1999](#)<sup>1</sup>, which underscores three main functions of forests: protected forests, conservation forests, and production forests. The primary focus on preserving natural resources is directed towards conservation areas, with management under the responsibility of the Ministry of Environment and Forestry, particularly through the Natural Resources Conservation Center (BBKSDA).

As an illustration, based on the [Ministerial Decision Number SK.3911/Menhut-VII/KUH/2014](#), the area of forests in East Nusa Tenggara is recorded at 1,784,751 hectares. Conservation forests occupy about 516,701 hectares of this area, divided into two parts: Terrestrial Conservation Forests at 260,219 hectares and Aquatic Conservation Forests at 256,482 hectares, spread across various Regencies. This data demonstrates the importance of conservation efforts in preserving biodiversity and supporting ecosystem sustainability in the region.

Although forests in East Nusa Tenggara play an essential role in the ecosystem and environmental sustainability, the region faces several challenges that threaten the sustainability of its ecosystems. These challenges include threats from human activities such as forest fires, illegal logging, environmental pollution, forest encroachment, and unavoidable natural factors. Studies conducted by [Dhaka et al. \(2017\)](#) and [Nasution et al. \(2023\)](#) revealed that forest encroachment, clearing forest land without considering its ecological function by individuals or groups, is one of the serious challenges. This activity is often carried out for agricultural or plantation purposes, both short and long-term, and often involves illegal actions such as logging.

The factors driving forest encroachment are highly complex, including economic motivations, low levels of education, lack of financial support, insufficient forest patrol staff, and weaknesses in applying legal sanctions that should deter perpetrators ([Kilonzo et al., 2018](#)). These factors indicate an urgent need to enhance the effectiveness of forest management and protection through increased surveillance, community education, and the strengthening of legal frameworks and their enforcement.

Furthermore, data recorded by the East Nusa Tenggara BBKSDA indicates that 16 areas in 10 Regencies are experiencing encroachment. This data highlights the importance of focusing research and conservation efforts on Regencies such as South Central Timor, Ngada, Ende, West Manggarai, Malaka, Sikka, Rote Ndao, Kupang, Manggarai, and Alor, where these encroachments occur. This situation demands a swift and decisive response to address the issue, in line with the provisions of Article 50 section (3) point b of [Law Number 41 of 1999](#), which normatively prohibits forest encroachment. Strategic and collaborative steps between the government, community, and relevant institutions are key to addressing this challenge to achieve conservation and sustainability goals for forests in East Nusa Tenggara.

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<sup>1</sup>Law Number 41 of 1999 has been amended by Government Regulation in Lieu of Law Number 1 of 2004, which is enacted with Law Number 19 of 2004.

Based on the description above, this research examines the relationship between the increase in encroachment on conservation forests and the classification of forests based on their ownership status. It also seeks to assess the East Nusa Tenggara BBKSDA's responsibility to tackle conservation forest encroachment. This research is expected to gain deep insights into the issues faced and formulate effective measures that can be taken to preserve the conservation forests in the East Nusa Tenggara region. The expected benefits of this study include the provision of data that can serve as a basis for policy-making, as well as strategic recommendations for strengthening the role of the East Nusa Tenggara BBKSDA in controlling and preventing forest encroachment towards the realization of sustainable conservation forest management.

## **METHOD**

This research uses an empirical legal research method. This research seeks to comprehend legal practices as a social phenomenon by analyzing facts or data (Qamar & Rezah, 2020). It examines how various social, economic, political, psychological, and anthropological factors influence community behaviour (Irwansyah, 2020). It utilizes both primary and secondary data sources. Primary data collection is conducted through interviews and emails with 16 conservation area managers spread across 10 Regencies in East Nusa Tenggara. The collection of secondary data is carried out using the literature study technique. All collected data is then qualitatively analyzed to describe the problem and answer the research objectives (Sampara & Husen, 2016).

## **RESULTS AND DISCUSSION**

### **A. Encroachment: A Threat to Conservation Forest Areas in East Nusa Tenggara**

The data and document analysis of the encroachment phenomenon in East Nusa Tenggara conservation areas reveals significant facts. Based on the data and documents from the East Nusa Tenggara BBKSDA, 16 areas have been identified as experiencing encroachment. This occurrence is not limited to one or two locations. However, it spans a wide area, covering 10 different Regencies, including South Central Timor, Ngada, Ende, West Manggarai, Malaka, Sikka, Rote Ndao, Kupang, Manggarai, and Alor.

#### **1. South Central Timor Regency**

Mutis Nature Reserve, located in the South Central Timor Regency, is an area designated for conservation. However, in reality, this area faces a serious challenge of encroachment. The encroachment is conducted by local community members who convert the land into agricultural areas, such as

fields and gardens, primarily for gardening purposes. The extent of the area affected by this activity is significant, amounting to approximately 46 hectares. Further investigation reveals that this encroachment activity stems from the needs of the local community members who view the conservation area as an alternative source of agricultural land. The drive to meet livelihood needs and economic factors are strong reasons they decided to change the function of the conservation area into agricultural land.

## **2. Ngada Regency**

Watu Ata, Wolo Tado, and Riung Nature Reserves, located in Ngada Regency, face a serious challenge of encroachment. In Watu Ata, individuals living around the area enter and convert part of the conservation area into agricultural land. Initially, the affected area was 27.6 hectares, but without firm action and legal sanctions, the situation worsened, and the encroached land drastically increased to 1,793.21 hectares.

Meanwhile, in Wolo Tado, the initial encroachment covered an area of 42 hectares. However, timely intervention and increased community awareness resulted in a significant reduction of encroachment to 0.52 hectares. However, this condition lasted briefly, as encroachment expanded in the following period, reaching 83 hectares.

## **3. Ende Regency**

In line with the discussion above, similar challenges exist in the Ende Regency, particularly in the Kemang Boleng and Ndeta Kilikima Nature Reserves. In Kemang Boleng, initial encroachment activities covered an area of 832.51 hectares. Although a slight increase to 838.51 hectares was recorded in the following year, intensive efforts by the Regency and Provincial Governments significantly reduced the encroached area to just 133 hectares remaining.

Contrastingly, the Ndeta Kilikima Nature Reserve experienced a significant escalation in encroachment. From an initial 29.50 hectares, the area impacted by encroachment dramatically surged to 379.5 hectares. This increase indicates the need for more effective strategies and interventions to combat encroachment in this area.

## **4. West Manggarai Regency**

The Wae Wuul Nature Reserve in West Manggarai Regency also comes under scrutiny in the case study of conservation area encroachment. This area experienced encroachment of 14.10 hectares due to the local community's

perception that the land was not being used effectively. They then utilized it as residential land, demonstrating how the understanding and attitudes of the local community can impact conservation efforts.

## **5. Malaka Regency**

The Kateri Wildlife Reserve in Malaka Regency has also seen a significant increase in encroachment. Initially, the affected area was 860 hectares, but in a short period, this number rose to 1,557.18 hectares and continued to increase, reaching 2,426 hectares. Most of these encroachment activities were carried out by immigrants, former residents of East Timor Province, who integrated into Indonesia and spread across various regencies in East Nusa Tenggara, with the main objective of converting forest land into agricultural areas to support their families.

This issue is exacerbated by encouragement from the local population of Malaka Regency, who invite these immigrants to engage in encroachment activities. This phenomenon indicates that encroachment in the Kateri Wildlife Reserve is not only driven by the economic needs of the immigrants but also influenced by social interactions and the dynamics of the local community.

## **6. Sikka Regency**

Within the broader discussion of encroachment in conservation areas in East Nusa Tenggara, the Egon Ilimedo Wildlife Reserve in Sikka Regency adds another dimension to the issue. There was an encroachment of 49.50 hectares in just 2014, marking a specific incident rather than an ongoing trend. This phenomenon was triggered by groups of immigrants, particularly pro-integration former residents of East Timor, seeking new land to meet their living needs. This activity then gained support from native residents living around the periphery of the conservation area, demonstrating collaboration between immigrants and residents in encroachment activities.

## **7. Rote Ndao Regency**

Continuing the discussion on encroachment in various conservation areas, Harlu Wildlife Reserve in Rote Ndao Regency also faces a similar issue. Here, the scale of encroachment is relatively smaller, covering an area of 30 hectares. Residents intending to develop agricultural land exploit parts of this conservation area. The absence of clarification regarding land status and the lack of preventive actions by the authorities encourage the continuity of encroachment activities by the community in the following years.

## **8. Kupang Regency**

In the context of encroachment occurring in various conservation areas in East Nusa Tenggara, Camplong Natural Park in Kupang Regency presents a case with the smallest scale. Although it only covers an area of 0.1 hectares, this encroachment activity still reflects the challenges faced in managing and protecting conservation forest areas. This phenomenon asserts that no scale of encroachment can be overlooked, considering every encroachment act, no matter how small, can potentially disrupt the ecosystem and biodiversity in conservation areas.

## **9. Manggarai Regency**

Continuing the discussion on encroachment in various conservation areas, Ruteng Nature Park in Manggarai Regency demonstrates a significant increase in encroachment. Initially, encroachment was recorded only in an area of 5.72 hectares. However, there was a dramatic surge over the next two years, with the impacted area expanding to 3,976.16 hectares. This escalation highlights an encroachment scale that is widening and accelerating, indicating the urgency for more comprehensive and strategic intervention.

## **10. Alor Regency**

Learning from the significant increase in encroachment in Ruteng Nature Park, a similar situation, albeit with a different pattern, occurs in Alor Regency, particularly in Tuti Adagae Nature Park and Lapang Island. In Tuti Adagae, encroachment initially covered an area of 3.85 hectares. However, within two years, there was a dramatic increase, with the affected area expanding to 1,307 hectares. This phenomenon signifies an escalation of encroachment that requires serious attention to prevent further damage to the area's ecosystem.

Meanwhile, on Lapang Island, there is a contrasting trend where initial encroachment was recorded over an area of 95.7 hectares, but it decreased to only 5 hectares in the subsequent observation period. This reduction indicates the effectiveness of conservation efforts, better management, or a change in the local community's behavior towards land use.

The discussion on encroachment in various East Nusa Tenggara conservation areas underscores this issue's widespread distribution. The primary factor identified relates to land ownership status, highlighting the complexity of the encroachment issue that not only impacts environmental degradation but also involves socioeconomic and legal aspects. This land ownership factor is key to understanding why encroachment continues to occur despite various efforts to

control it.

The East Nusa Tenggara BBKSDA has planned and implemented various measures and actions to address encroachment. However, findings indicate that these efforts will only achieve maximum effectiveness by addressing and resolving land ownership issues and enhancing community understanding of the importance of conservation areas. Therefore, a more comprehensive strategy, encompassing legal, educational, and community empowerment, must be developed and implemented to tackle the root causes and reduce future encroachment incidents.

## **B. The Impact of Land Ownership Status on Encroachment of Conservation Forests**

Delving deeper into the increase in encroachment on conservation forests reveals that the ambiguity of land ownership status plays a significant role. This condition does not mean disregarding the existence of other factors that also contribute to encroachment in the area. However, resolving the issue of land ownership is recognized as important because it can facilitate handling other related problems. The East Nusa Tenggara BBKSDA and the local community are expected to take proactive steps to address this issue. The problem-solving strategy could involve various parties, including local government from the provincial to the village level, and through cooperation with traditional institutions and local community leaders.

Three main indicators have been identified as variables causing encroachment in this situation. First, land ownership claims by several parties often need to be based on clear legal documents, creating uncertainty over land rights. Second, boundary disputes arise from the unclear demarcation of conservation forest areas with residents' land. Third, the local community's need for more understanding of the status and regulations governing conservation areas leads to unintentional violations often.

### **1. Land Ownership Claims**

[Law Number 41 of 1999](#), which serves as the reference for determining forest status, clearly differentiates between Private Forests and State Forests. Private Forests are recognized as forest areas bound by legitimate ownership evidence, which could be individual or collective ownership by a tribe or a specific group ([Atuo et al., 2019](#); [Pota et al., 2022](#)). On the other hand, State Forests are identified as land with the status of state land, not tied to specific ownership evidence, including conservation forest areas within them.



The difference in perspectives between the government and local communities regarding this land status leads to land use conflicts. Local communities often consider the land ancestral property used for agriculture or plantations based on long-standing nomadic farming traditions (Klümper et al., 2018). This practice of shifting cultivation creates abandoned lands that become increasingly wild with dense and diverse vegetation growth, eventually making it difficult to revert to productive land.

The condition of the land is becoming increasingly more challenging to clear and develop for agriculture or plantations, leaving some areas that need to be addressed. These lands, previously managed based on individual or collective rights, then evolve into areas with dense vegetation that can be identified as part of conservation forests. However, in the community's perception, these lands still constitute part of their customary rights land that they can manage, especially when facing economic pressures (Helida et al., 2021; Nahak et al., 2023; Ria et al., 2023). The need to survive prompts some community members to re-cultivate lands they consider their own, even though, from the government's perspective, such actions constitute encroachment on State Forests.

## **2. Boundary Disputes**

The issue of land ownership claims that spark conflicts between private and State lands, especially in conservation forest areas, illustrate the situation's complexity (Zainuddin, 2022). Disputes over territorial boundaries constitute one critical aspect of this conflict, particularly when the forestry service sets coordinate points which, according to locals, often encroach upon areas they have long utilized for agriculture or plantations (Prabowo et al., 2023). The government's demarcation, perceived by the community as a unilateral shifting of previously recognized boundaries, triggers dissatisfaction and tension.

Communities, typically avoiding confrontation with government authorities, often approach this situation by encroaching on forests. This action is taken not merely as a protest but also as an adaptation and survival strategy in the face of the uncertainties caused by boundary disputes. Another contributing factor to this tendency is the condition of the conservation forest areas, where not all areas are covered by dense forests, thus facilitating access to encroachment.

Analysis of land ownership and territorial boundary disputes reveals a strong correlation with the increasing activity of conservation forest encroachment. The government's claim over lands, also regarded as private

lands by the local community, becomes the central point of conflict. Communities often use encroachment to reaffirm their claims over the land in the face of ambiguities and boundary changes implemented by the government.

In this context, a dialogue and collaboration-based approach between the government and the community is crucial (Sari et al., 2024). Open discussion and negotiation can assist in mapping boundaries more accurately and fairly, taking into account the claims and traditional practices of the local community. Moreover, joint efforts in natural resource management involving active participation from the community can promote the conservation of forest areas while respecting the traditional rights of the community (Nyang'au et al., 2020). This solution not only addresses forest encroachment but also aids in strengthening the relationship between the government and the community, building trust, and creating more sustainable and inclusive natural resource management.

### **3. Community Understanding Regarding Conservation Forest**

In East Nusa Tenggara, respect for the "culture of shame" inherited by rural communities becomes important in conveying information related to conservation forests. A culturally sensitive approach and delivering messages relevant to community life can enhance their compliance and participation in forest protection efforts (Rezah & Muzakkir, 2021). When communicating with an understanding of cultural values and community needs, the importance of conservation forests is more likely to be accepted and valued.

However, challenges arise when there is a need for more understanding of the functions and benefits of conservation forests, often due to ineffective communication and approaches that do not align with the community's cultural context. This misunderstanding undermines appreciation for the value of conservation forests and reduces the motivation to protect them. According to research by Hasan et al. (2023) and Rola et al. (2023), this lack of understanding leads communities to take actions that harm the forest when faced with economic or social needs.

Encroachment, often starting from non-forested areas and potentially spreading to forested regions, becomes an option for communities to meet their needs for wood and land. This action reflects economic needs and indicates a gap in understanding the value of conservation forests. Therefore, in-depth and culturally relevant educational strategies are needed to enhance community awareness and understanding of the importance of conservation forests (Wilkie & Painter, 2021).

These efforts could include education programs designed according to local values and traditions, utilizing community figures as information ambassadors, and integrating educational material about conservation forests into local cultural and religious activities. By enhancing community understanding and appreciation of conservation forests through approaches that are appropriate to the cultural context, an improvement in forest preservation behavior and a reduction in encroachment activities in East Nusa Tenggara are expected.

### **C. Government Responsibility in Preventing Encroachment of Conservation Forest Areas**

In examining the policies and responsibilities of the East Nusa Tenggara BBKSDA regarding the issue of encroachment in conservation forests, a phenomenon that has occurred and is still ongoing without a definite end, the analysis was conducted through data collection from related documents and direct interviews with the BBKSDA. From this process, several strategic initiatives that have been implemented as part of the efforts to address the problem were identified. These initiatives include the resort approach to encroachment management, which refers to the separate and focused management of specific conservation areas. Furthermore, efforts are being made to strengthen the capabilities of field staff to enhance the effectiveness of forest condition monitoring. This effort includes regular training and improvement of skills relevant to field needs. Finally, an in-house training improvement program initiated by the Information and Communication Subdirectorates is planned to enrich staff knowledge and skills in communication and information management related to forest conservation.

With the enactment of [Director General Regulation Number P.1/KSDAE/SET.3/REN.2/1/2022](#), which focuses on the reorientation of functions and obligations of the BBKSDA, these initiatives aim to improve performance in monitoring conservation areas. This reform emphasizes several critical aspects for the effectiveness of encroachment monitoring. As a first step, clear guidelines and directions are provided for the Central Monitoring Team and the Technical Implementation Units in conducting integrated monitoring tasks designed to enhance coordination and operational efficiency.

Additionally, establishing a solid and informative database on encroachment activities is a priority, allowing quick and accurate access to information for decision-making. The development of encroachment typology also becomes a focus point, where the characteristics and patterns of encroachment are identified to facilitate the design of appropriate handling strategies. Creating detailed operational standards complements these efforts to ensure consistency and effectiveness in encroachment management.

Another crucial step is establishing a systematic monitoring system, encompassing all critical aspects, from initial identification to follow-up, to optimize the detection of and response to encroachment activities. Lastly, preparing technical guidelines and implementation instructions concludes this series of strategies to provide a comprehensive framework for conservation activities in the field.

Despite the proactive measures the East Nusa Tenggara BBKSDA took to address conservation forest encroachment, significant challenges arise from the community's occupation, control, and exploitation of areas. The success of these initiatives depends not only on implementing well-designed strategies but also on the ability to address fundamental issues such as citizens' land ownership claims, boundary disputes, and a need for more community awareness about the importance of conservation areas (Duryat et al., 2022; Powlen et al., 2023; Rahmani & Muhjad, 2023).

More effective solutions can be found in this context through a comprehensive approach that involves resolving ownership claims and boundary disputes as initial steps. This approach resolves surface-level issues and addresses underlying conflicts to achieve long-term solutions. Furthermore, enhancing community awareness and understanding of the value and status of conservation areas through intensive socialization and personal approaches to individuals directly involved in encroachment can foster behavioural change within the community.

Therefore, the responsibility of the East Nusa Tenggara BBKSDA extends beyond surveillance and law enforcement measures to include mediation, education, and the development of constructive relationships with the local community. Through an approach grounded in understanding and resolving ownership conflicts and increasing awareness of the importance of conservation area preservation, better cooperation between the BBKSDA and the community can be established, ultimately minimizing encroachment incidents and enhancing conservation efforts.

## **CONCLUSIONS AND SUGGESTIONS**

Based on the results and discussions, it is concluded that the relationship between the increase in conservation forest encroachment and forest classification based on ownership status is quite significant. Ambiguity in establishing land ownership status leads to ownership claims, border disputes between communities and the government, and a lack of community understanding of the status and importance of conservation land or areas. These factors collectively contribute to the prevalence of conservation forest encroachment in the operational area of the East Nusa Tenggara

BBKSDA. Although government efforts through the East Nusa Tenggara BBKSDA have been initiated, they still need to address the problem fundamentally. Resolving issues related to ownership claims and boundary disputes and increasing awareness of the importance of conservation forests remain critical aspects that require further attention, explaining why the activity of conservation forest encroachment continues to increase.

Based on the conclusion above, it is recommended that the Local Government and the East Nusa Tenggara BBKSDA take concrete steps to address the ambiguity of land ownership status, which is one of the root causes of conservation forest encroachment. This step can begin with reviewing and updating land boundaries and ownership status data, followed by mediation between the government and the community to resolve border disputes fairly and transparently. Furthermore, it is essential for traditional institutions and local communities to actively participate in this process actively, utilizing local knowledge and traditions to determine fair and mutually recognized land boundaries. The local government and the East Nusa Tenggara BBKSDA also need to enhance socialization and education for the community about the importance of conserving forests, including the long-term benefits of forest preservation for environmental sustainability and the local economy. These efforts must be conducted through effective communication and by the local cultural context so that the message about the importance of conservation forests can be accepted and valued by the community.

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