Integration of Spatial Planning and Conservation Policies in the Management of the Leuser Ecosystem Area in Aceh

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ABSTRACT: The Leuser Ecosystem Area (Kawasan Ekosistem Leuser/KEL) is one of the most important tropical rainforests in Southeast Asia and plays a crucial ecological role. This study analyzes the Aceh Government's strategies in managing and organizing spatial planning in the KEL. Using a qualitative descriptive approach, data were collected through document review and expert interviews. Results show that the government has integrated KEL protection into its spatial planning policy (Qanun RTRW), encouraged multi-stakeholder collaboration, and promoted community-based forest monitoring. However, implementation is still challenged by weak enforcement, overlapping authorities, and limited funding. This paper recommends improving institutional coordination and enhancing local participation to support sustainable management of KEL.

Keywords: Leuser Ecosystem, spatial planning, Aceh Government, environmental strategy.

INTRODUCTION

Aceh Province is located at the westernmost tip of Indonesia, bordering the Strait of Malacca to the north and the Indian Ocean to the west. Aceh Province boasts abundant natural resources, particularly its pristine tropical forests, compared to other Indonesian provinces. One of Aceh Province's renowned natural resources is the Leuser Ecosystem (KEL). This area is a permanent resting place for animals called "leusoh," meaning "cloud-hooded." Furthermore, the Leuser Ecosystem plays a significant role in both local and international communities, known as

the "lungs of the world." Many scientists have dedicated themselves to studying animal behavior and germplasm.[1] The Leuser Ecosystem in Aceh Province is the largest remaining conservation area in Southeast Asia.

The Leuser Ecosystem is a vast, unified region containing a variety of flora and fauna. As a region with an extraordinary habitat balance, the Leuser Ecosystem can sustainably support biological natural resources and should not be separated[2]. The Leuser Ecosystem in the Aceh region is the entire area designated with the primary function of protecting the sustainability of environmental resources, including natural resources and artificial resources, consisting of the Leuser Ecosystem as a nature reserve and nature conservation area. Meanwhile, what is meant by an ecosystem is the arrangement of environmental elements that form a complete, comprehensive unit and influence each other in shaping the balance, stability, and productivity of the environment.[3]

The Leuser Ecosystem Area in the Aceh region is the entire area designated with the primary function of protecting the sustainability of environmental resources which include natural resources and artificial resources consisting of the Leuser Ecosystem Area as a nature reserve area and a nature conservation area.[4] Meanwhile, what is meant by Ecosystem is the arrangement of environmental elements which are a complete and comprehensive whole and influence each other in forming the balance, stability, and productivity of the environment. According to its administrative boundaries, the number of districts included in the Leuser Ecosystem Area is 13 (thirteen) districts, 91 (ninety-one) sub-districts, 947 villages.[5]

Mapping of boundaries in the Leuser Ecosystem Area, in 2001 the area of the Leuser Ecosystem Area was determined for Aceh Province through the Decree of the Minister of Forestry of the Republic of Indonesia Number 190/Kpts-II/2001 concerning the Ratification of the Boundaries of the Leuser Ecosystem Area in the Special Region of Aceh Province covering an area of 2,255,577 (two million two hundred fifty-five thousand five hundred seventy-seven) hectares. In 2002 the ratification of the boundaries of the Leuser Ecosystem Area was carried out with the Decree of the Minister of Forestry of the Republic of Indonesia Number 10193/Kpts-II/2002 concerning the Ratification of the Boundaries of the Leuser Ecosystem Area in North Sumatra Province with an area of 384,294 hectares.

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[1] According to Qanun of Nanggroe Aceh Darussalam Province Number 20 of 2002 concerning Conservation of Natural Resources, Article 1 Number 25, what is meant by germplasm is: Substances found in groups of living things and are hereditary traits that can be utilized and developed or assembled to create superior types or new cultivars.

[2] What is meant by Biological Natural Resources are: biological elements in nature which consist of animal (animal) natural resources which together with the non-biological elements around them as a whole form an ecosystem.

[3] See Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management, Article 1 paragraph (5).

[4] See Law of the Republic of Indonesia Number 32 of 2009 concerning Environmental Protection and Management, Article 1, paragraph (5).

[5] Leuser Ecosystem Management Agency (BPKEL), Management Plan for the Leuser Ecosystem Area in the Aceh Region (2008-2012), Banda Aceh, 2008, p. 13

The results of the interpretation of the Aceh Forest, Nature and Environment Foundation (HAkA), Estimated forest cover loss in Aceh in 2022 is 9,383 hectares. Photo: Husaini/acehkini. Forest cover in Aceh decreased by 9,383 hectares in the past year. The Foundation noted that South Aceh Regency was the largest contributor to forest cover loss in Aceh in 2022. This data is the result of HAkA team interpretation using satellite imagery supported by Glad Alert automatic detection data, drone monitoring, and field inspections. "Forest cover loss not only occurs downstream, but also occurs in the upstream area. In 2022, forest cover loss was spread across 21 districts/cities. The largest deforestation occurred in South Aceh (1,883 hectares), Aceh Jaya (776 hectares), and East Aceh (753 hectares). Based on HAkA data, the estimated forest cover loss in Aceh throughout 2022 was 9,383 hectares, not much different from 2021, which was 9,028 hectares. Of the total 9,383 hectares of forest cover loss in Aceh in 2022, HAkA recorded that 4,676 hectares of it occurred within the Leuser Ecosystem Area (KEL) and another 4,706 hectares outside the KEL.[6]

Based on the background of the problem above, the problem formulation is as follows:

1. How are environmental conservation policies integrated into spatial planning in the Leuser Ecosystem Area?

2. What are the obstacles and challenges in implementing the integration of spatial planning and conservation policies in the region?

METHODS

This research employs a normative legal research method, an approach focused on the study of applicable legal norms, both those enshrined in legislation and legal doctrine. This research aims to analyze the Aceh Government's strategy for managing and planning the Leuser Ecosystem Area (KEL) based on the applicable legal framework and to assess the compliance of policy implementation with environmental and spatial planning law principles.

The approaches used in this research include: a statutory approach to examine various regulations, such as Law Number 11 of 2006 concerning the Governance of Aceh, Law Number 26 of 2007 concerning Spatial Planning, and other related regulations; a conceptual approach to examine the concepts of sustainable development, environmental protection, and the rights of indigenous peoples; and, where necessary, historical and philosophical approaches to understand the background of forest management policies in Aceh.[7]

The legal materials used consist of primary legal materials (statutory regulations), secondary legal materials (literature, journals, and expert opinions), and tertiary legal materials (legal dictionaries and encyclopedias). The analysis was conducted qualitatively, interpreting legal norms and comparing them with the reality of implementation in the field, to identify the

[6] Lukmanul Hakim, *Manager Geographic Information System (GIS) HAkA*, dalam diskusi di Sekretariat Aliansi Jurnalis Independen (AJI) Kota Banda Aceh, Senin 13 Febuari 2023.

[7] Peter Mahmud Marzuki, *Penelitian Hukum*, (Jakarta: Kencana, 2017), hlm. 95.

effectiveness of government strategies and identify normative obstacles and opportunities for future improvement in the management of the Leuser Ecosystem Area.[8]

1. INTEGRATION OF ENVIRONMENTAL CONSERVATION POLICY

The Integration of Environmental Conservation Policy refers to the process of incorporating the principles and objectives of biodiversity conservation, ecosystem protection, and sustainable natural resource management into various sectoral policies, including spatial planning, economic development, infrastructure, and land use policies. The primary purpose is to ensure that environmental protection efforts do not operate in isolation but are embedded as an integral component of development policies across sectors and at all levels of government. According to the OECD, environmental policy integration is defined as:

"The incorporation of environmental objectives into all stages of policy making in non-environmental policy sectors, with a specific recognition of this goal as a guiding principle for the planning and execution of policy".[9]

In the context of spatial planning, the integration of environmental conservation policy means that any planning or land-use decision must take into account the carrying capacity of the environment, the existence of protected areas, disaster risk, and essential ecological functions such as tropical rainforests, water catchment areas, or wildlife habitats.

In Indonesia, this principle is reflected in Article 10 of Law Number 32 of 2009 concerning Environmental Protection and Management, which mandates that environmental protection and management must be an inseparable part of sustainable development and be integrated into national and regional development policies.[10]

The foundational principles and legal doctrines underlying environmental protection in Indonesia, including the management and spatial regulation of the Leuser Ecosystem Area in Aceh, are rooted in the Preamble to the 1945 Constitution of the Republic of Indonesia, particularly in its fourth paragraph. Furthermore, Article 33 paragraph (3) of the Constitution stipulates:

"*The land, the waters, and the natural resources contained therein shall be controlled by the State and shall be utilized for the greatest benefit of the people.*"

According to Koesnadi Hardjasoemantri, this provision grants the State the right of control over all natural resources in Indonesia, while simultaneously imposing a duty upon the State to manage those resources for the greatest possible benefit of the people.[11]

From this constitutional mandate, two essential elements of the State's authority in managing natural resources can be identified:

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[8] Ibid., hlm. 178–180.

[9] OECD. *Environmental Policy Integration: An Overview*, OECD Publishing, Paris, 2001.

[10] Republic of Indonesia. *Law Number 32 of 2009 concerning Environmental Protection and Management*, State Gazette of the Republic of Indonesia Year 2009 Number 140.

[11] H. Juniarso Ridwan, Achmad Sodik, Hukum Tata Ruang Dalam Konsep Kebijakan Otonomi Daerah, Penerbit Nuansa, 2008, hlm. 68

a) The utilization of natural resources (exploitation) to maximize the welfare of the people;
b) The protection, preservation, and control of nature (the environment) from damage and/or pollution.

As the highest organization representing the sovereignty of the people, the State — according to Van Vollenhoven — is vested with the authority to regulate all matters, and by virtue of its position, holds the power to enact binding legal regulations.

Meanwhile, Muhammad Hatta clarified that the term "*controlled by the State*" should not be interpreted as the State itself acting as a business entity or entrepreneur. Rather, it refers to the State's regulatory authority to ensure smooth economic operation and to prevent the exploitation of the weak by those with capital.[12]

According to Pan Mohammad Faiz, the State's right of control (*hak penguasaan negara*) means that the State, through its government, holds the authority to determine the use, utilization, and entitlement to natural resources within the scope of regulating, administering, managing, and supervising the exploitation and utilization of such resources. Therefore, natural resources that are essential to the State and affect the livelihood of the public—particularly those related to public utilities and public services—must be under the control of the State and administered by the government. These resources must be equitably accessible and beneficial to the people, ensuring affordability, prosperity, and general welfare in a just and equitable manner.[13]

At the national level, Indonesia's forest management system has been in place since the 1970s, and has continuously developed through various policy instruments and regulatory reforms. Key initiatives include the Forest Concession Rights (Hak Pengusahaan Hutan/HPH), the Selective Logging and Industrial Plantation System (Tebang Pilih Tanaman Industri/TPTI), and the establishment of new industrial forest plantations. These programs were aimed at stabilizing forest areas, promoting sustainable use, and ensuring economic productivity from forest resources.

A range of legal instruments have been enacted to provide a regulatory framework for forest management and environmental protection. The early Law No. 5 of 1967 concerning Basic Forestry Provisions was later repealed and replaced by Law No. 41 of 1999 on Forestry, which provides a more comprehensive and sustainable basis for forest governance. Likewise, Law No. 4 of 1982 on Environmental Management was updated through Law No. 23 of 1997, and subsequently replaced by Law No. 32 of 2009 on Environmental Protection and Management, which emphasizes sustainable development and environmental justice. In addition, Law No. 5 of

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[12] *ibid*

[13] Pan Mohammad Faiz, *Interpretation of the Concept of State Control Based on Article 33 of the 1945 Constitution and the Decisions of the Constitutional Court*, available at: http://jurnalhukum.blogspot.com/2006/10. As cited in Taqwaddin's dissertation, *State Control over the Management of Customary Forests by Indigenous Legal Communities (Mukim) in Aceh Province*, Doctoral Program in Law, University of North Sumatra, Medan, 2009, p. 21.

1990 on the Conservation of Biological Natural Resources and Their Ecosystems remains a central legal foundation for biodiversity and conservation policy in Indonesia.[14]

Within this national framework, the Leuser Ecosystem (Kawasan Ekosistem Leuser/KEL) holds a unique status as one of the largest and most important ecological zones in Southeast Asia. It spans approximately 2.6 million hectares, covering areas in both Southeast Aceh and North Sumatra Provinces.[15] Of this total area, around 800,000 hectares is designated as Gunung Leuser National Park, which serves as a critical habitat for endangered species such as the Sumatran tiger, rhinoceros, elephant, and orangutan.[16] The Leuser Ecosystem is not only vital for biodiversity, but also provides essential ecosystem services such as water regulation, carbon storage, and protection against natural disasters, thereby contributing directly to public welfare and sustainable development in the region.

According to Governor of Aceh Decree Number 19 dated May 19, 1999, the total forest area in Aceh amounts to 3,335,613 hectares. More specifically, the classification of forest areas in Aceh, or the functional zoning directives of Aceh's forests as stipulated in the decree, can be seen in the table below. Overall, the forest area in Aceh constitutes approximately 60.22% of the province's total land area, which is 5,539,000 hectares. The breakdown is presented in the following table:

Table 1.

Forest Area of Aceh Province

No	Fungsi Hutan	Luas (ha)	Persen (%)
1	Kawasan Lindung	2.697.033	80,86
	A. Hutan Konservasi	852.533	25,56
	a. CA. Pinus Janthoe	16.640	4,98
	b. CA Serbajadi	300	0,01
	c. SM Rawa Singkil	102.370	3,06
	d. Tahura Pocut Meurah Intan	6.220	0,18
	e. TN Gunung Leuser	623.987	18,71

[14] Republic of Indonesia, *Law No. 41 of 1999 on Forestry*, State Gazette No. 167 of 1999; *Law No. 5 of 1990 on the Conservation of Biological Natural Resources and Their Ecosystems*, State Gazette No. 49 of 1990; *Law No. 32 of 2009 on Environmental Protection and Management*, State Gazette No. 140 of 2009.

[15] BAPPENAS, *Strategi Nasional Pengelolaan Kawasan Ekosistem Leuser*, Jakarta, 2017.

[16] UNESCO, *Tropical Rainforest Heritage of Sumatra*, World Heritage Centre Report, 2022.

	f. TWA Iboih	1.200	0,04
	g. TWA Kepulauan Banyak	15.000	0,45
	h. TWA Lhok Asan (PLG)	112	0,003
	i. TB Lingga Isak	86.704	2.60
	B. Hutan Lindung	1.844.500	55,30
2	Kawasan Budidaya	638.580	19,14
	Hutan Produksi	638.580	19,14
	a. Hutan Produksi Terbatas	37.300	1,11
	b. Hutan Produksi Tetap	601.280	18,03
Total Luas Hutan Aceh		3.335.613	100

Source: Decree of the Minister of Forestry of the Republic of Indonesia. No. 170/Kpts-II/2000 Decree of the Governor of Aceh Number 19, dated May 19, 1999

2. Legal Review of Spatial Planning in the Leuser Ecosystem Area (Kawasan Ekosistem Leuser)

The Leuser Ecosystem Area (LEA) is a critically important conservation area in Aceh Province, Indonesia, which holds the status of a National Strategic Area due to its environmental functions. Spatial planning for LEA is governed under a complex intersection of national laws and Aceh's special autonomy legislation under Law No. 11 of 2006 on the Government of Aceh.[17]This law allows the Aceh Government to manage natural resources, including spatial planning, in accordance with Islamic values and local wisdom.

However, this authority must still conform to the Law No. 26 of 2007 on Spatial Planning, which requires the integration of ecological, economic, and social sustainability principles into regional spatial planning (RTRW). The Leuser Ecosystem was explicitly

[17] Law No. 26 of 2007 on Spatial Planning (Undang-Undang Nomor 26 Tahun 2007 tentang Penataan Ruang

protected under Presidential Decree No. 33 of 1998 and later reinforced by Aceh Qanun No. 19 of 2013 on Spatial Planning for Aceh Province, which designates the LEA as an Area with Environmental Protection Function.[18] Conflicts often arise due to overlapping interests between conservation and development, especially concerning plantation and mining permits issued within the LEA. Legal advocacy for stricter implementation of environmental carrying capacity (daya dukung lingkungan) and the precautionary principle remains crucial.[19] The spatial plan (RTRW Aceh) must be synchronized with the National Spatial Plan (RTRWN) and uphold Indonesia's commitments under international environmental agreements, such as the Convention on Biological Diversity.

RESULTS AND DISCUSSION

1. Environmental conservation policies are integrated into spatial planning in the Leuser Ecosystem Area.

A natural disaster or environmental event, often exacerbated by systemic, destructive, and massive human interventions, has caused widespread environmental degradation, economic losses, agrarian conflicts, human rights violations, and casualties—including increasing human-wildlife conflicts in Aceh. These circumstances indicate that the forest ecosystem in Aceh, which historically served as a natural regulator of ecological balance, has been severely disrupted. The resulting consequence is a rise in ecological disasters that ultimately lead to the structural impoverishment of local communities.[20]

In response, urgent policy interventions are needed. These include allowing the forest to naturally regenerate without human interference through moratorium policies and a halt to land-use conversion, revisiting and evaluating existing forestry governance frameworks in Aceh, rehabilitating degraded forest areas, and developing inclusive forest management systems that recognize local communities as sovereign stakeholders and rights-holders in forest governance. Additionally, it is essential to formulate new forestry policies that ensure both ecological sustainability and the well-being of forest-dependent populations.[21]

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[18] Presidential Decree No. 33 of 1998 on the Leuser Ecosystem Area.

[19] Convention on Biological Diversity (1992), ratified by Indonesia through Law No. 5 of 1994.

[20] Nuribadah. *Eksistensi Pemerintah Aceh Dalam Mengurangi Kerusakan Hutan Aceh* Authors", Jurnal Asia Fasipic of Public Policy , Sinta 5, Vol. 8, No. 1, 1-15, 2022, ISSN: 2540-9123.

[21] Pemerintah Aceh. *Peraturan Gubernur Aceh Nomor 5 Tahun 2019 tentang Pengelolaan Kawasan Ekosistem Leuser*, Banda Aceh, 2019.

Nonetheless, positive policy measures introduced by the Aceh Government are not always met with acceptance, particularly from parties driven by vested interests seeking continued exploitation of forest resources. This includes resistance to efforts aimed at preventing further deforestation and forest degradation. To build a dignified and resilient Aceh, strong political will is required, starting with the leadership of the Aceh Governor and supported by relevant government agencies (SKPA). The remaining forest cover in Aceh holds immense ecological and economic value and must be managed prudently. Sustainable natural resource management should be pursued in a way that balances conservation objectives with equitable economic benefits, including the promotion of eco-tourism and long-term community development.

The Leuser Ecosystem Area (LEA), located in the provinces of Aceh and North Sumatra, is one of the last remaining intact tropical rainforests in Southeast Asia and has been internationally recognized for its biodiversity and ecological significance. Despite its status as a *National Strategic Area for Environmental Protection Functions* under Indonesia's Law No. 26 of 2007 on Spatial Planning, and its designation in the Aceh Provincial Spatial Plan (Qanun Aceh No. 19 of 2013), the LEA faces persistent challenges in spatial governance and protection.

The current spatial planning regime in Aceh does not fully reflect the ecological boundaries of the Leuser Ecosystem, as a significant portion of the LEA lies outside the officially protected zoning areas. This discrepancy creates legal loopholes that allow for the issuance of permits for logging, mining, and large-scale plantations within ecologically sensitive zones. Weak law enforcement, overlapping land claims, and the absence of a unified spatial framework further exacerbate the situation.

Moreover, political and economic interests have frequently influenced spatial policy-making, undermining conservation objectives. The lack of synchronized planning between national, provincial, and district-level authorities has resulted in fragmented forest governance. Additionally, limited participation of indigenous and local communities in spatial planning processes has marginalized their traditional rights and knowledge, despite existing legal recognition under the Law No. 11 of 2006 on the Governance of Aceh, which grants Aceh special autonomy including authority over natural resource management.

In summary, the current spatial planning of the Leuser Ecosystem remains fragmented, inconsistent, and vulnerable to exploitation. A more integrated, legally-binding, and ecologically-based spatial plan is urgently needed—one that aligns with national conservation goals, respects customary rights, and promotes sustainable development for present and future generations.

Figure . overflight Medan Naganraya, The Current State of Spatial Planning in the Leuser Ecosystem Area (LEA)

The integration of environmental conservation policies into spatial planning within the Leuser Ecosystem Area (Kawasan Ekosistem Leuser/KEL) constitutes a strategic effort to ensure the protection of this critical ecosystem from threats such as deforestation, land conversion, and unsustainable development. This process is realized through the strengthening of legal instruments, the adoption of eco-regional approaches, and the synergistic collaboration between central and regional governments as well as indigenous communities, Among others:

1. Legal and Policy Framework

The Leuser Ecosystem Area has been designated as a National Strategic Area (Kawasan Strategis Nasional/KSN) due to its environmental significance, pursuant to Article 13 letter d of Law Number 26 of 2007 concerning Spatial Planning. This designation is further affirmed by Government Regulation Number 13 of 2017 on the Spatial Plan of Sumatra Island, which stipulates that KEL is a National Strategic Area

with protective functions. Accordingly, all development and spatial plans within this area must strictly adhere to the ecological functions of the region.

2. Integration into RTRW and Qanun Aceh

The Government of Aceh, through Qanun Aceh Number 19 of 2013 on the Spatial Plan of Aceh Province (RTRW) for 2013–2033, has incorporated the protection of the Leuser Ecosystem Area by designating conservation zones, wildlife corridors, and protected areas as integral components of its spatial structure. However, environmental observers argue that the implementation of these measures remains problematic due to inconsistencies across sectoral policies and weak law enforcement.[22]

According to Dr. Fauna Rahmita, an environmental law scholar at Syiah Kuala University, *"Conservation cannot be sufficiently safeguarded through spatial planning documents alone; it must be supported by legal mechanisms such as incentive-based and punitive measures, including moratoriums on mining and plantation permits within KEL."*^[3^]

3. Ecoregional Approach and Community Involvement

An ecoregional approach is adopted by considering ecological functions and environmental carrying capacity, whereby the KEL area is delineated based on biophysical and hydrological characteristics. This supports adaptive planning in response to disaster risks, climate change, and the protection of endemic species such as the Sumatran orangutan and Sumatran tiger.

Farwiza Farhan, a conservation expert from the Forest, Nature, and Environment of Aceh Foundation (HAkA), emphasizes: *"The role of local and indigenous communities is crucial in conserving KEL. Their traditional knowledge and spiritual ties to the forest can form the basis for a more inclusive and sustainable spatial planning framework."*[23]

4. Challenges and Recommendations

Despite the existence of legal and policy instruments, major challenges include weak intersectoral coordination, overlapping land use permits, and the lack of accurate and integrated geospatial data. Therefore, it is recommended that the RTRW be periodically reviewed based on scientific data, and that a strict conservation-based zoning system be implemented to regulate infrastructure development and investment within the area.[24]

2. What are the obstacles and challenges in implementing the integration of spatial planning and conservation policies in the region?

The integration between spatial planning policies and environmental conservation policies constitutes a strategic agenda in achieving sustainable development, particularly in areas with high ecological value such as protected forests, coastal zones, and critical ecosystems. Although such integration is formally mandated by various legal frameworks, including Law No. 26 of 2007 on Spatial Planning and Law No. 32 of 2009 on Environmental Protection and Management, its implementation at the regional level often encounters multidimensional obstacles and challenges.

[22] Ministry of Environment and Forestry. (2020). *Leuser Ecosystem Conservation Strategy*.
[23] Ministry of Environment and Forestry. (2020). *Leuser Ecosystem Conservation Strategy*.
[24] Ministry of Environment and Forestry. (2020). *Leuser Ecosystem Conservation Strategy*.

First, institutional challenges serve as a major impediment. There exists an overlap of authority between institutions responsible for spatial planning and those managing natural resources or environmental matters. Weak coordination between government agencies, both at the national and regional levels, has led to inconsistencies in the formulation and implementation of spatial plans that fail to adequately incorporate conservation considerations. Moreover, limited institutional capacity at the regional level—particularly in terms of human resources and financial support—further hampers effective integration.[25]

Overlapping Authority between Government Agencies: For instance, the authority over forest area management lies with the Ministry of Environment and Forestry (KLHK), while spatial planning authority falls under the Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN). At the regional level, the Environmental Agency and the Public Works and Spatial Planning Agency (PUPR) often pursue divergent policy directions. This institutional misalignment frequently results in spatial plans that are not harmonized with conservation management plans.

Concrete example: A forest area designated as a protected zone by the Ministry of Environment and Forestry may be reclassified as a development area (budidaya) in the Regional Spatial Plan (RTRW) of a district due to the lack of inter-agency coordination

Second, economic and political interests often obstruct the implementation of integrated policies. Infrastructure development, the expansion of extractive industries, and large-scale investment projects are frequently prioritized in spatial plans, even when they conflict with environmental conservation principles. In many cases, spatial planning policy is utilized as a tool to legitimize the conversion of protected areas into development zones, resulting in environmental degradation and loss of biodiversity.[26]

Lack of Coordination and Planning Synchronization, The absence of an effective coordination forum among technical agencies has led each institution to develop its own sectoral plan independently, without strong integration. This fragmented approach often results in conflicts between sectoral policies.

Concrete example: In the drafting of a provincial spatial plan (RTRW), the forestry sector is not actively involved, leading to discrepancies between the forest area boundaries in the RTRW and those in the official Forest Area Map (*Peta Kawasan Hutan*). Such inconsistencies may trigger legal disputes and violations of spatial planning regulations.

Third, there is a lack of reliable data and scientific basis in the preparation of planning documents. Numerous spatial plans are drafted without adequately considering spatial and ecological data, leading to discrepancies between land use allocation and the actual biophysical

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[25] Moeliono, M., Gunarso, P., Wollenberg, E., & Limberg, G. (2009). *The Decentralization of Forest Governance: Politics, Economics and the Fight for Control of Forests in Indonesian Borneo*. Earthscan.

[26] Wulan, Y.C., Yasmi, Y., Purba, C., & Wollenberg, E. (2014). *Analisis Konflik Tata Ruang dan Kawasan Hutan: Studi di 4 Kabupaten di Indonesia*. CIFOR Working Paper

conditions of the area. This mismatch poses serious ecological risks, including floods, landslides, and the destruction of wildlife habitats.[27]

Limited Technical Capacity and Spatial-Environmental Data at the Regional Level, Many local governments lack experts in spatial planning who are well-versed in environmental conservation principles. Moreover, not all regions have access to adequate spatial and environmental data systems. Concrete example: A district government may draft its Regional Spatial Plan (RTRW) without conducting a carrying capacity and environmental capacity analysis due to limited data and technical expertise. As a result, the plan fails to incorporate long-term conservation considerations.

Fourth, community participation and local stakeholder involvement remain highly limited in the integration process. Communities directly affected by land use changes or dependent on conservation areas are often excluded from meaningful participation in planning processes. The absence of participatory dialogue spaces contributes to social resistance, land conflicts, and failure in the implementation of policies at the local level[4]. In light of these challenges, achieving substantive policy integration requires a cross-sectoral approach, strengthened legal and institutional frameworks, scientific-based planning processes, and the mainstreaming of environmental justice and social equity within public policy at the regional level

Tabel: 2

Institutional Barriers in the Integration of Spatial Planning and Conservation

No.	Type of Institutional Barrier	Explanation	Impact
1	Overlapping authorities	The Ministry of Agrarian Affairs and Spatial Planning/National Land Agency (ATR/BPN) manages spatial planning, while the Ministry of Environment and Forestry (KLHK) oversees conservation areas. At the regional level, coordination among agencies is suboptimal.	Spatial plans are inconsistent with conservation maps. Licensing conflicts may arise.
2	Weak coordination between central and regional levels	Regional Spatial Plans (RTRW) are often prepared without synchronization with forest area maps or national strategic areas.	Overlapping plans, legal violations, and potential ecological degradation.
3	Low technical and human resource capacity in regions	Many local governments lack experts, spatial data, and environmental analysis tools to develop comprehensive plans.	Spatial plans are not based on carrying capacity. Increased disaster and ecological risks.

[27] Bappenas. (2020). *Evaluasi Pelaksanaan RPJMN 2015–2019 dan Arah Kebijakan RPJMN 2020–2024*. Kementerian Perencanaan Pembangunan Nasional/Bappenas.

No.	Type of Institutional Barrier	Explanation	Impact
4	Absence of strong operational technical regulations	Existing laws do not sufficiently regulate the technical aspects of conservation integration in spatial planning. Regional bylaws do not yet support holistic management of conservation areas.	Weak legal standing of conservation areas within the RTRW.

3. CONCLUSION

The implementation of integrated spatial planning and conservation policies faces both substantial and institutional challenges. Key obstacles include sectoral conflicts, insufficient ecological data, limited public participation, and weak inter-agency coordination. Institutionally, overlapping authorities and limited local capacity exacerbate the disconnect between spatial plans and conservation objectives, leading to environmental degradation and the emergence of social and legal conflicts at the local level.

The integration of environmental conservation policies into spatial planning in the Leuser Ecosystem Area still faces various obstacles, including map discrepancies, weak inter-agency coordination, and conflicting development interests. Although supported by existing regulations, its implementation remains suboptimal and requires stronger institutional synergy and community participation.

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