



DOI: <https://doi.org/10.38035/sjam.v4i3>  
<https://creativecommons.org/licenses/by/4.0/>

**Received:** 05 September 2026 | **Revised:** 24 September 2026 | **Accepted:** 02 Oktober 2026

## The Role of the Regional Spatial Plan (RTRW) in Preserving Environmental Sustainability in North Sulawesi Province

Friend Henry Anis<sup>1\*</sup>, Dientje Rumimpunu<sup>2</sup>, Maya Sinthia Karundeng<sup>3</sup>

<sup>1</sup>Universitas Sam Ratulangi, Manado, Indonesia, [fh.anis@unsrat.ac.id](mailto:fh.anis@unsrat.ac.id)

<sup>2</sup>Universitas Sam Ratulangi, Manado, Indonesia, [dientjerumimpunu02@gmail.com](mailto:dientjerumimpunu02@gmail.com)

<sup>3</sup>Universitas Sam Ratulangi, Manado, Indonesia, [mayakarundeng@gmail.com](mailto:mayakarundeng@gmail.com)

\*Corresponding: [fh.anis@unsrat.ac.id](mailto:fh.anis@unsrat.ac.id)<sup>1</sup>

**Abstract:** Regional development is essential to improving public welfare, yet poorly planned spatial development can threaten environmental sustainability. Although previous studies have examined spatial planning, environmental protection, and spatial law enforcement, limited attention has been given to the gap between regional spatial planning regulations and their implementation in maintaining environmental functions in North Sulawesi. This study aims to analyze local government policies on spatial planning and evaluate the implementation of regional spatial plans in protecting environmental functions. The study employs normative legal research using statutory and conceptual approaches, complemented by empirical inquiry. Legal materials and field data were collected through literature review and field investigation and analyzed qualitatively. The findings show that North Sulawesi has established formal spatial planning policies through regional regulations at provincial and district or city levels, including provisions for protected and cultivation areas. However, implementation remains suboptimal, as spatial uses inconsistent with designated functions continue to occur, including development in protected areas, disaster-prone zones, and water infiltration areas. The novelty of this study lies in demonstrating that the main challenge is not regulatory absence but the implementation gap between spatial planning provisions and actual land use, requiring stronger coordination, supervision, public participation, and law enforcement.

**Keywords:** Role, Spatial Planning, Region, Sustainability, Environment.

### INTRODUCTION

Development activities are an integral part of state administration and governance aimed at achieving public welfare. As a country that adheres to the principles of the welfare state, Indonesia has an obligation to manage and utilize natural resources optimally while taking into account the interests of the public and environmental sustainability. This is in line with Article 33, paragraph (3) of the 1945 Constitution of the Republic of Indonesia, which affirms that the earth, water, and the natural resources contained therein are controlled by the state and utilized to the greatest extent possible for the prosperity of the people. Therefore, development cannot be measured solely by economic growth and improvements in material well-being but must

also take into account the sustainability of natural resources and the preservation of environmental functions (Imamulhadi, 2024).

Development that is not accompanied by adequate planning and control of land use has the potential to cause various environmental problems. Uncontrolled use of natural resources can lead to changes in land use, ecosystem degradation, pollution, a reduction in buffer zones, and an increased risk of ecological disasters. From a sustainable development perspective, the environment is a fundamental component of sustainable development because environmental damage can ultimately reduce the availability of resources needed for development while threatening the survival of communities. These issues become increasingly complex in urban areas experiencing rapid population growth and physical expansion. Urban growth that is not accompanied by targeted land-use planning can lead to disorderly land use, suboptimal use of space, limited facilities and utilities, transportation problems, and environmental pollution. (Kurniawan & others, 2024; Pugara et al., 2025; Sari, 2024).

In this context, spatial planning holds a strategic position as a legal and policy instrument to guide land use in accordance with the environment's functions, carrying capacity, and capacity. Law No. 26 of 2007 on Spatial Planning defines spatial planning as a process that encompasses spatial planning, land use, and the control of land use. This regulation indicates that space is a shared resource whose use requires regulation and control by the state so that various development interests can proceed in a balanced manner. Spatial planning thus serves not only as an instrument for regulating physical development but also as a means of preventing environmental damage and conflicts over land use (Imamulhadi, 2024; Nugroho, 2022; Riyadi et al., 2026).

The need for land-use planning focused on environmental protection is becoming increasingly important in North Sulawesi Province. Regional development, population growth, the expansion of residential areas, and the exploitation of natural resources are putting pressure on forests, agricultural lands, plantations, and areas with ecological functions. These conditions indicate that spatial planning policies must not merely exist on paper but must be consistently implemented in all land-use activities. The enforcement of spatial planning laws is a critical factor, as discrepancies between spatial plans and actual land-use practices can lead to environmental degradation and hinder the achievement of sustainable development (Junef, 2017; Sari, 2024; Wijaya et al., 2025).

Normatively, the North Sulawesi Provincial Government has a legal basis in the form of North Sulawesi Provincial Regulation No. 1 of 2014 concerning the 2014–2034 Spatial Plan for the Province of North Sulawesi. The regencies and cities in North Sulawesi also have local regulations regarding spatial plans to serve as guidelines for land use and control. The existence of these regulations indicates that, institutionally, there are legal instruments available to integrate development interests with environmental protection. However, the existence of these legal instruments does not yet fully guarantee that land use will be carried out in accordance with its designated purpose. In fact, the North Sulawesi Provincial Spatial Plan and a number of regency/city spatial plans are currently undergoing adjustments or revisions; therefore, it is important to assess the extent to which the established spatial planning policies are capable of protecting environmental functions.

These implementation issues are evident in the continued occurrence of land-use practices that do not conform to the spatial plan. One example is the change in the function of an area originally designated as a protected forest into a residential area, such as the construction of housing in Sea Village, Minahasa Regency. In addition, forest encroachment for the exploitation of natural resources, as well as the conversion of agricultural and plantation land into residential areas, continues to occur in various parts of North Sulawesi. Land-use changes that do not comply with the RTRW have the potential to eliminate the ecological

functions of these areas as water catchment and buffer zones, thereby increasing the risk of floods and landslides and causing harm to the community (Lestari et al., 2025).

A number of recent studies have examined the relationship between spatial planning, environmental protection, and the implementation of spatial policies in Indonesia. Kultsum (2023) examined the implementation of sustainability principles in the preparation of provincial and regency or city spatial plans and emphasized the importance of integrating environmental considerations into regional spatial planning. Saadiya & Najicha (2024) further demonstrated that spatial planning and sustainable development are closely connected because spatial utilization must remain consistent with designated functions while maintaining environmental protection. More specifically, Amelia (2024) analyzed the role of the Regional Spatial Plan as an environmental protection instrument and highlighted the importance of compliance, monitoring, and law enforcement when spatial planning decisions potentially conflict with environmental protection.

In the context of environmental governance, Muhibbin et al. (2025) found that land-use changes and weak enforcement of spatial planning regulations contributed to flood vulnerability in Batu City, demonstrating that deficiencies in spatial planning governance can generate direct environmental and disaster-related consequences. Gunawan & Animuntaha (2025) also highlighted that ineffective spatial planning can create regulatory conflicts and weaken community involvement in managing local resources, demonstrating the importance of integrating spatial governance with participatory and decentralized development. Despite these contributions, recent studies have generally focused on particular cities, planning processes, environmental risks, or village-level authority. Limited attention has been given to examining the relationship between regional spatial planning policies, their implementation by local governments, and the protection of environmental functions across the provincial and regency or city levels within North Sulawesi. This study addresses this gap by examining not only the normative framework of regional spatial planning but also the implementation gap between established spatial planning provisions and actual land-use practices, particularly where spatial-use inconsistencies may undermine environmental sustainability.

The uniqueness of this study lies in its effort to examine spatial planning not only from the perspective of the existence and substance of RTRW regulations, but also from the perspective of the implementation of these policies in preserving environmental functions. This study specifically focuses on North Sulawesi as the area of study to analyze the relationship between local government policies, zoning regulations within the RTRW, land-use practices, and the potential environmental impacts arising from inconsistent land use. This approach is expected to provide a more comprehensive picture of the effectiveness of the RTRW as a legal instrument for environmental protection, while also identifying implementation issues that need to be addressed in regional spatial planning policies.

Based on the above discussion, this study aims to analyze the policies of the North Sulawesi Provincial Government in regulating spatial planning as an instrument to preserve environmental functions, as well as to analyze the implementation of the Regional Spatial Plan (RTRW) in practice, specifically regarding the alignment of land use with designated land-use categories and its implications for environmental protection. Thus, the questions to be answered in this study are: (1) How does the North Sulawesi Provincial Government's policy regulate spatial planning to preserve environmental functions? and (2) How does the North Sulawesi Provincial Government implement the RTRW to preserve environmental functions and address land use that does not conform to its designated purpose?

## **METHODS**

This study employs a normative-empirical legal research method. Normative legal research is used to examine the legal norms and provisions governing spatial planning as well

as environmental protection and management, while empirical research is used to determine the application of these provisions in the practice of spatial planning by local governments. The approaches used include the statutory approach and the conceptual approach. The statutory approach is used to analyze regulations related to spatial planning and the environment, while the conceptual approach is used to understand the concepts of spatial planning, environmental protection, and sustainable development (Marzuki, 2009; Nugroho, 2022).

The subject of this study is the policy and implementation of the Regional Spatial Plan (RTRW) in preserving environmental functions in North Sulawesi Province. Primary legal sources include the 1945 Constitution of the Republic of Indonesia, Law No. 26 of 2007 on Spatial Planning, environmental laws and regulations, as well as regional regulations on the RTRW of North Sulawesi Province and the RTRW of regencies and cities. Secondary legal sources consist of books, journal articles, research findings, and relevant academic documents. (Soekanto & Mamuji, 2010).

Empirical research was conducted in North Sulawesi Province with informants selected through purposive sampling, primarily local government officials or agencies with authority over spatial planning and environmental protection. Empirical data were collected through interviews and documentation to identify the alignment between RTRW policies and actual land-use practices, as well as various forms of violations or deviations in land use. The study was conducted in 2026 in North Sulawesi Province.

The research instruments consisted of an interview guide, documentation forms, and a matrix for analyzing laws and regulations. The data and legal materials obtained through literature review and field research were analyzed qualitatively, that is, by identifying, interpreting, and linking legal provisions with empirical facts to gain an understanding of the effectiveness of the RTRW's implementation in preserving environmental functions. (Soekanto & Mamuji, 2010).

## RESULTS AND DISCUSSION

### Local Government Policies on Spatial Planning to Preserve Environmental Functions

The research findings indicate that local government policies in North Sulawesi Province regarding spatial planning have a relatively comprehensive formal legal framework, both at the provincial and regency/city levels. At the provincial level, these policies are set forth in Regional Regulation No. 1 of 2014 on the 2014–2034 Spatial Plan for North Sulawesi Province. At the regency/city level, the study identified the existence of various Regional Regulations on Spatial Planning in Bolaang Mongondow, East Bolaang Mongondow, North Bolaang Mongondow, the Siau Tagulandang Biaro Islands, the Talaud Islands, South Minahasa, North Minahasa, Tomohon, Bitung, Manado, and Kotamobagu. These findings indicate that, from a normative perspective, local governments have provided legal legitimacy for the regulation of land use (Imamulhadi, 2024; Riyadi et al., 2026).

Substantively, these regulations are not only oriented toward the allocation of land use functions but also incorporate environmental protection interests through spatial planning. Within the framework of the RTRW, spatial planning distinguishes between land use designations for protected areas and cultivated areas. The regulation of protected areas serves as a key instrument for maintaining the ecological functions of the region, while cultivated areas are managed to ensure that land use remains consistent with their designated functions. For example, the RTRW of Tomohon City designates protected areas that include protected forests, local conservation areas, nature reserves, nature conservation and cultural heritage areas, disaster-prone areas, and green open spaces. Thus, the research findings show that environmental functions have been normatively established as one of the primary considerations in spatial planning policies.

**Tabel 1. Local Government Policies on Spatial Planning**

| Policy Aspects                               | Research Findings                                                                                                                           | Implications for Environmental Sustainability                                           |
|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Legal Basis                                  | Provincial and regency/city RTRW regulations are available.                                                                                 | To provide a legal basis for the regulation and control of space.                       |
| Spatial patterns                             | There are protected areas and cultivation areas.                                                                                            | Supporting the protection of ecological functions while guiding development activities. |
| Protected area                               | These include protected forests, local conservation areas, nature reserves/conservation areas, disaster-prone areas, and green open spaces. | Protecting areas that serve ecological and community protection functions.              |
| Policy integration                           | Provincial and regency/city spatial plans are intended to be integrated and not contradictory.                                              | Reducing conflicts between land-use designations.                                       |
| Revision of the Regional Spatial Plan (RTRW) | Adjustments were made to national regulations and development trends.                                                                       | Consistent environmental protection is needed in the policy-adjustment process.         |

Source: Compiled from research findings.

From an analytical perspective, the existence of the RTRW Regional Regulation cannot be interpreted solely as evidence that environmental protection has been effectively implemented. Regulations serve only as an initial instrument that determines the direction of land use. The effectiveness of a policy depends heavily on consistency between planning, utilization, control, oversight, and law enforcement. Therefore, the quality of a policy is not measured solely by the existence of the RTRW document, but also by the extent to which its provisions serve as a practical guideline in the issuance of permits and development decision-making (Nugroho et al., 2024; Sari, 2024).

The study also found changes in the regulatory environment following the enactment of Law No. 6 of 2023 on Job Creation. The streamlining of spatial planning and its integration with the permitting system through the concept of Spatial Utilization Activity Conformity (KKPR) has prompted local governments to revise their existing Regional Spatial Plans (RTRW). At the time of the study, revisions to the RTRW in a number of regencies and cities were still under discussion in the Regional People's Representative Councils (DPRD), while revisions to the provincial RTRW were also underway. These revisions covered spatial structure and patterns, including mangrove areas, conservation areas, protected forests, agriculture, tourism, fisheries, industry, and settlements. This situation indicates that spatial planning policies in North Sulawesi are undergoing a regulatory transition; therefore, consistency in environmental protection must be maintained amid adjustments to accommodate development needs and national regulations (Purba & Ramli, 2025; Wijaya et al., 2025).

Thus, the research findings address the first issue, the local government of North Sulawesi Province has a spatial planning policy that, in principle, accommodates the protection of environmental functions through the regulation of spatial patterns, protected areas, and the control of land use. However, the implementation of these regulatory instruments still faces challenges in terms of synchronization, regulatory alignment, and consistency of implementation.

### **Implementation of the Regional Spatial Plan (RTRW) by Local Governments to Preserve the Environment in North Sulawesi Province**

The research findings indicate that the implementation of the RTRW by local governments in North Sulawesi has not been fully consistent with the provisions set forth in the RTRW Regional Regulation. Although land-use zones have been clearly defined in theory, the study still found instances of land use that did not conform to their designated purposes.

These findings indicate a gap between *das sollen*, the spatial planning regulations that are supposed to serve as guidelines, and *das sein*, actual land-use practices on the ground.

One significant finding was in Minahasa Regency: the issuance of a housing development permit in an area containing protected forests and springs that serve as a source of clean water for some residents of Sea Village. This issue subsequently escalated into an administrative dispute filed by the community, resulting in a final and binding court decision ordering the local government to revoke the development permit and halt construction by the developer. This finding demonstrates that mechanisms for controlling and correcting non-compliant land use ultimately require legal intervention when administrative instruments are unable to prevent violations from the outset.

Other findings were identified in the city of Tomohon. The construction of tourist facilities, such as restaurants and lodging, is reportedly taking place in disaster-prone zones at the foot of Mount Lokon, and land is also being used for agriculture and settlements in areas designated as water catchment zones. These changes in land use have led to a reduction in the area's ecological functions, particularly its ability to regulate water flow, which is subsequently linked to the occurrence of flooding. These findings indicate that inappropriate land use is not merely an administrative issue but can have direct ecological and social impacts.

**Tabel 2. Findings on the Implementation of the RTRW and Their Implications**

| Location/Findings             | Forms of Nonconformity                                                                                         | Impact/Implications                                                                     | Implementational Meaning                                                                   |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Minahasa Regency, Sea Village | Permits for housing development in protected forest areas and spring areas.                                    | Potential disruption to the functioning of protected areas and community water sources. | This highlights the lack of consistency between the RTRW and the issuance of permits.      |
| Tomohon City                  | Tourism development in disaster-prone zones and the use of water absorption areas for agriculture and housing. | A decrease in water absorption capacity and an increased risk of flooding.              | This shows that changes in land use can have ecological impacts.                           |
| Other Regencies/Cities        | There are still instances of land use that does not conform to its designated purpose.                         | There are still instances of land use that does not conform to its designated purpose.  | This indicates that the implementation issue is broader in scope than individual cases.    |
| Community involvement         | Tends to be limited to information and consultation.                                                           | Social oversight is not yet optimal.                                                    | Participation needs to be enhanced, moving from a mere formality to substantive oversight. |

Source: Compiled from research findings.

Upon further interpretation of these findings, the main issue in the implementation of the RTRW in North Sulawesi does not lie in the absence of regulations, but rather in the gap between regulations and implementation. The Spatial Planning Law establishes integration, harmony, sustainability, transparency, legal certainty, and accountability as the principles governing spatial planning. However, the research results show that, in practice, there is still land use that does not conform to the designated zones. Thus, the quality of spatial planning governance is largely determined by the local government's ability to translate the RTRW into the processes of permitting, oversight, control, and law enforcement.

The issue of public participation is also a key aspect of implementation. In theory, the public should be involved in the formulation of spatial plans, land use, and spatial planning controls. However, research has found that, in practice, public involvement is often limited to the provision of information and consultations that are merely a formality. This situation has

the potential to weaken social oversight of policies and land use and increase the likelihood of conflicts arising when violations occur.

Thus, the research findings address the second issue: that the implementation of the RTRW by local governments in North Sulawesi Province has not been fully effective in preserving environmental functions. Implementation issues are primarily evident in the mismatch between land use and RTRW zoning, inconsistencies in the issuance of permits, weak control and oversight, and suboptimal community participation. In the process of revising the RTRW, these conditions should be used as an opportunity to strengthen, not weaken, environmental protection functions.

The novelty of this study lies in the finding that spatial planning issues in North Sulawesi Province are not primarily caused by a lack of regulations, but rather by a disconnect between the normative power of the RTRW and its implementation at the local level. The study shows that the RTRW framework provides a framework for environmental protection through protected areas, spatial patterns, land-use controls, and sustainability principles; however, its effectiveness is undermined by inconsistencies in permitting, weak oversight, limited public participation, and a tendency to adjust the RTRW in response to violations that have already occurred. The novelty of this study lies in the assertion that the protection of environmental functions in North Sulawesi cannot be sufficiently achieved through the formulation and revision of RTRW regulations alone, but requires consistent implementation from the zoning designation stage, through the issuance of permits/KKPR, oversight, public participation, to law enforcement. Only then can the RTRW truly function as a preventive and corrective instrument against environmental damage, rather than merely serving as a development planning document.

## **CONCLUSION AND RECOMMENDATIONS**

### **Conclusion**

Based on the research findings, it can be concluded that the North Sulawesi Provincial Government's policies on spatial planning to preserve environmental functions are supported by an adequate legal framework and policy instruments. These policies are implemented through Regional Regulations on Spatial Planning (RTRW) at both the provincial and regency/city levels, with spatial patterns that distinguish between protected areas and cultivation areas. Regulations governing protected areas, disaster-prone areas, water catchment areas, and green open spaces demonstrate that the protection of environmental functions has been integrated into spatial planning policies. However, the ongoing adjustments and revisions to the RTRW indicate that the effectiveness of these policies still requires regulatory synchronization and consistency to ensure that development interests remain aligned with environmental protection.

Furthermore, the implementation of the RTRW by the North Sulawesi Provincial Government in preserving environmental functions has not been fully effective, particularly in ensuring that land use aligns with designated land-use categories. Research findings indicate that land use that does not comply with the RTRW still occurs, including housing development in areas designated as protected forests and springhead zones in Sea Village, Minahasa Regency, as well as the use of disaster-prone areas and water catchment areas in Tomohon City. These conditions indicate that the implementation of the RTRW still faces challenges regarding consistency in permitting, control, monitoring, law enforcement, and community engagement. Such non-compliant land use not only creates administrative problems but also has the potential to diminish the ecological functions of these areas and increase risks to the environment and the community.

The main findings of this study indicate that the issues surrounding spatial planning in North Sulawesi Province stem more from the gap between the normative RTRW policies and

their implementation on the ground than from a lack of regulations. Therefore, the effectiveness of the RTRW in preserving environmental functions is not solely determined by the existence and substance of regulations, but also by the consistency of their application in zoning decisions, the issuance of permits or KKPRs, oversight, public participation, and law enforcement. This finding underscores the importance of strengthening the implementation of the RTRW so that it functions not only as a development planning document but also as a preventive and corrective instrument in preserving environmental functions.

### **Limitations**

This study has several limitations that must be taken into account when interpreting its results. First, the study focuses on North Sulawesi Province, along with several regencies and cities, and on implementation cases identified within the scope of the research; therefore, the results cannot yet be generalized to describe spatial planning conditions throughout Indonesia. Second, the study places greater emphasis on the policy, regulatory, and implementation aspects of the RTRW in relation to the preservation of environmental functions; consequently, it has not empirically examined all other factors that may influence the effectiveness of spatial planning, such as institutional capacity, oversight resources, economic interests, and the social characteristics of the community. Third, the study employs an analytical-descriptive approach to the available conditions and cases; consequently, it does not fully capture long-term changes in RTRW implementation, particularly since spatial planning policies in North Sulawesi are currently undergoing a process of regulatory adjustment and revision. Therefore, the study's findings must be interpreted in light of the study's subject matter, context, and timeframe.

### **Recommendations**

Future research is recommended to expand the geographical scope and include more districts and cities in North Sulawesi as well as other provinces, thereby enabling a comparison of the effectiveness of spatial planning policies. Future studies could also employ a longer observation period to identify changes in the implementation of the RTRW before and after policy revisions, and incorporate institutional, social, economic, and environmental factors into the analysis. The use of different analytical approaches, including longitudinal studies, comparative policy analysis, or approaches based on spatial data and Geographic Information Systems (GIS), can provide a more comprehensive understanding of the appropriateness of land use and the effectiveness of the RTRW in preserving environmental functions.

### **Author Contributions**

Friends Henry Anis, Dientje Rumimpunu, and Maya Sinthia Karundeng contributed significantly to this study. All authors were involved in the conceptualization of the study, the development of the theoretical framework, data collection and processing, data analysis, interpretation of the results, manuscript preparation, and scientific revisions. All authors also contributed to refining the substance and academic quality of the manuscript and are responsible for the content of the article. All authors have read, reviewed, and approved the final version of the manuscript to be published.

## REFERENCES

- Amelia, J. R. (2024). Analisis Kritis Peran Rencana Tata Ruang Wilayah (RTRW) sebagai Instrumen Perlindungan Lingkungan Hidup. *Justicia Sains: Jurnal Ilmu Hukum*, 9(1), 18–33.
- Gunawan, A., & Animuntaha, F. (2025). Development Law Politics in Village Authority Related to Spatial Planning in Indonesian. *Jurnal Penegakan Hukum Dan Keadilan*, 6(2), 99–109. <https://doi.org/10.18196/jphk.v6i2.25471>
- Imamulhadi. (2024). Aspek Hukum Penataan Ruang: Perkembangan, Ruang Lingkup, Asas, dan Norma. *Bina Hukum Lingkungan*, 6(1), 119–144. <https://doi.org/10.24970/bhl.v6i1.210>
- Junef, M. (2017). Penegakan Hukum Dalam Rangka Penataan Ruang Guna Mewujudkan Pembangunan Berkelanjutan. *Jurnal Penelitian Hukum DE JURE*, 17(4).
- Kultsum, F. (2023). Implementasi Asas Berkelanjutan dalam Penyusunan Rencana Tata Ruang Wilayah Provinsi dan Kabupaten/Kota di Indonesia. *LITRA: Jurnal Hukum Lingkungan, Tata Ruang, Dan Agraria*, 3(1), 1–17. <https://doi.org/10.23920/litra.v3i1.1314>
- Kurniawan, P., & others. (2024). Fungsi Tata Ruang Dalam Menjaga Kelestarian Lingkungan Hidup Kota Bandar Lampung. *JIIIC: Jurnal Intelek Insan Cendikia*, 1(10). <https://jicnusanantara.com/index.php/jiic>
- Lestari, I., Hariyanto, H., Hayati, R., Hanafi, F., & Dharma, A. S. (2025). Evaluasi Kesesuaian Lahan Kawasan Industri Terhadap Rencana Tata Ruang Wilayah (RTRW) di Kabupaten Pati. *Jurnal Pembangunan Wilayah Dan Kota*, 21(2), 261–279. <https://doi.org/10.14710/pwk.v21i2.71133>
- Marzuki, P. M. (2009). *Penelitian Hukum*. Prenada Media Group.
- Muhibbin, Moh., Muchsin, S., Imawan, R., & Bastomi, A. (2025). Flood Governance and Spatial Planning Failures in Batu City: A Socio-Legal Study on Risk Mitigation. *Administrative and Environmental Law Review*, 6(2), 161–176. <https://doi.org/10.25041/aclr.v6i2.4462>
- Nugroho, W. (2022). *Hukum Lingkungan Dan Pengelolaan Sumberdaya Alam*. Genta Publishing.
- Nugroho, W., Syahrudin, E., & Fahrir, F. (2024). Law Enforcement of Spatial Planning Violations to Support Investment Balance and Environmental Sustainability in the Special Capital Region of Jakarta. *Pandecta Research Law Journal*, 19(1), 1–24. <https://doi.org/10.15294/pandecta.vol19i1.647>
- Pugara, A., Susanty, A., & Purwaningsih, R. (2025). Evaluasi Rencana Ruang Terbuka Hijau pada Rencana Detail Tata Ruang Perkotaan Muara Taweh Kabupaten Barito Utara. *Jurnal Ilmu Lingkungan*, 23(4), 995–1003. <https://doi.org/10.14710/jil.23.4.995-1003>
- Purba, C. T., & Ramli, A. (2025). Pemanfaatan Ruang atas Tanah sebagai Solusi Tata Ruang Berkelanjutan di Jakarta: Studi Kasus The Villas MOI. *Bina Hukum Lingkungan*, 10(1), 138–152. <https://doi.org/10.24970/bhl.v10i1.447>
- Riyadi, D. S., Rustiadi, E., Widiatmaka, W., & Fauzi, A. (2026). Pendekatan Normatif Integrasi Daya Dukung Daya Tampung Lingkungan Hidup Penataan Ruang di Jawa Timur. *Bina Hukum Lingkungan*, 10(2), 232–248. <https://doi.org/10.24970/bhl.v10i2.499>
- Saadiya, A. Z., & Najicha, F. U. (2024). Implementasi Kebijakan Penataan Ruang dalam Mewujudkan Pembangunan yang Berkesinambungan. *Jurnal Hukum Positum*, 8(2), 299–316. <https://doi.org/10.35706/positum.v8i2.10802>
- Sari, D. M. (2024). Mengoptimalkan Perencanaan Tata Ruang sebagai Basis Kolaborasi Kelembagaan dalam Upaya Mitigasi dan Adaptasi Perubahan Iklim. *Bina Hukum Lingkungan*, 9(1), 66–83. <https://doi.org/10.24970/bhl.v9i1.137>
- Soekanto, S., & Mamuji, S. (2010). *Penelitian Hukum Normatif Suatu Tinjauan Singkat*. Raja Grafindo Persada.

Wijaya, H., Kusmana, C., Rusdiana, O., & Rushayati, S. B. (2025). Analisa Hukum dan Tata Kelola Lingkungan di Ibu Kota Nusantara: Pendekatan Hybrid terhadap Kebijakan Pelepasan Hutan Negara. *Bina Hukum Lingkungan*, 9(3), 281–296. <https://doi.org/10.24970/bhl.v9i3.470>.