

Challenges to the Implementation of Spatial Planning Law in Kupang City

Jimmy Pello¹, Gerald Aldytia Bunga², Shela Christine Pello³

Abstract

The research aims to examine the inconsistency between the spatial planning norms of the City of Kupang and their implementation by the community and relevant officials, which has resulted in weak control over spatial functions in the City of Kupang. Such misalignment has led to deviations from the Regional Spatial Plan Regulation (Perda RTRW) of the City of Kupang, including changes in land utilization within the city. In addressing this issue, the study employs two theoretical frameworks corresponding to the research questions: (i) the theory of the formation of criminal law norms (the formulation of legal rules within statutory provisions), and (ii) aspects of empirical legal theory (synchronization of law, emphasizing the conformity of legal norms with the legal behavior of society) in the field of spatial law. The study reveals that the legal provisions of the Kupang City Spatial Plan (RTRW) are grounded in traditional development patterns. Meanwhile, the community is currently in a state of transition—from reliance on localized socio-economic activities to engagement in social and economic life increasingly mediated by advanced communication technologies.

Keywords: *Spatial Plan, Regional Regulation, Kupang, Law Enforcement.*

Introduction

The development of Kupang City has undergone rapid changes in line with social and economic activities, as well as the supporting structures of the community's life. However, in its implementation, there have been deviations from the spatial planning regulations of Kupang City (Regional Regulation on Spatial Planning of Kupang City No. 11 of 2011 on the Spatial Planning of Kupang City and Regional Regulation No. 12 of 2011 concerning the Detailed Spatial Plan of Kupang City). These deviations do not follow the objectives of the applicable local regulations, as the legal provisions are oriented toward land management while neglecting coastal and water aspects (Kupang City Regional Regulation No. 21 of 2007 concerning the Coastal Area of Kupang City), which also includes the unique characteristics of the city and its people (Yan, S & Growe Anna, 2022).

The implementation of local regulations in Kupang City remains limited within the existing legal framework. This is consistent with the findings of A. Sugiyanto, which indicates violations in the misuse of areas, business permits, building allocations, and site placements that do not comply with applicable legal provisions (Sugiyanto, A, 2007). These issues are likely due to the enforcement of local regulations less stringent than those mandated by the national spatial planning law. The spatial management conditions in Kupang City are not much different from what is happening in various regions in Indonesia, where residential activities occur in office areas, economic activities take place in coastal and residential areas, and government and economic zones overlap. Additionally, water catchment areas have been used for cemeteries, residential areas, and government offices. Urban river flows are obstructed by waste, leading to dried-up water sources, and the road infrastructure is complex (circular or convoluted), complicating relationships between city residents. As a result, land disputes, conflicts among societies, traffic accidents, and other issues are still prevalent. To protect the spatial structure of the city, there is a need for a stronger legal role to evaluate the enforcement of regulations, ensuring Kupang City

¹ Faculty of Law, Nusa Cendana University, Kupang, Indonesia, Orcid No: 0000-0002-2622-5844, Email: jimmypello@yahoo.co.id

² Faculty of Law, Nusa Cendana University, Kupang, Indonesia, Orcid No: 0009-0007-7640-8175, Email: gerald.bunga@staf.undana.ac.id, (Corresponding Author)

³ Faculty of Public Health, Nusa Cendana University, Kupang, Indonesia, Orcid No: 0009-0000-8603-6263, Email: pelloshela@yahoo.co.id

becomes well-organized and orderly, with space utilization aligned with its intended purposes, while considering the various interests at stake.

In reality, there have been deviations from the spatial planning regulations of Kupang City, such as the mixing of residential areas with economic activities, agricultural zones being converted into office areas, and changes in the designated use of coastal areas, particularly along the shoreline. The implementation of spatial development in Kupang City has become increasingly mixed, with examples including office zones blending with economic areas and residential neighborhoods, tourism areas merging with coastal residential communities, and agricultural spaces shrinking and being converted into economic or residential zones. These issues stem from a lack of awareness about the importance of orderly living in the management of spatial resources (Yuniar, M, 2021).

Methodology

This research is an empirical juridical study that collects data directly from the community (fieldwork), conducted in and around Kupang City, East Nusa Tenggara Province (Soekanto Soerjono, 2014; Ishaq H, 2016). This study uses primary and secondary data. The data collection techniques employed were questionnaires and in-depth interviews with key informants to collect primary data. To collect secondary data, we conducted library research. The processed data were then analyzed descriptively and qualitatively.

Results and Discussion

The enforcement of spatial planning provisions in Kupang City—as governed by Regional Regulation No. 12 of 2011 on the Detailed Spatial Plan for Kupang City—must be understood in light of several foundational legal aspects pertaining to municipal establishment and urban space management. These considerations form part of the research discussion, since ideally, the enactment of Kupang City's regional regulation (Perda) from the city's founding envisioned Kupang as a Smart City Project. In such a project, urban planning would involve the use of sensors, the Internet of Things, big data, analytics, artificial intelligence, and communication platforms to interconnect various city components and provide more responsive and integrated services.

According to William J. Mitchell in *E-topia and City of Bits*, the desired outcome of the Smart City Project is "an urban environment that is more comfortable, efficient, and sustainable for its inhabitants" (Mitchell, W. J, 2003). That vision of Kupang requires support not only through technology, but also through appropriate urban-development laws and policies. In line with the above considerations, research findings indicate that ideal spatial planning of Kupang City has been contemplated since its founding—especially with regard to its territorial aspects—on the basis of the following legal foundations for its establishment:

The Legal Basis for the Establishment of Kupang City

Kupang City was established pursuant to Law No. 5 of 1996 on the Establishment of the Level II Municipality of Kupang, enacted on April 11, 1996, in Jakarta, and implemented under Government Regulation of the Republic of Indonesia No. 22 of 1978 concerning the Establishment of the Administrative City of Kupang. Initially, Kupang comprised four districts—Kelapa Lima, Oebobo, Maulafa, and Alak—with a total area of 152.59 square kilometers, situated along Kupang Bay. This legal designation also reflects the juridical conception of Kupang City's territorial and spatial dimensions.

As of 2024, Kupang City has a population of 444,661 residents, divided into 51 urban villages (kelurahan) across six districts: Kelapa Lima, Oebobo, Maulafa, Alak, Kota Raja, and Kota Lama. In accordance with the spatial management plan of Kupang City, the General Provisions on Zoning have been codified in Regional Regulation (Perda) No. 12 of 2011 on the Detailed Spatial Plan of Kupang City, Article 51 paragraph (2)(b), covering:

- a. residential zones;
- b. trade zones;
- c. local government administrative zones;
- d. industrial zones;
- e. tourism zones;
- f. non-green open space areas;

- g. disaster mitigation and evaluation zones;
- h. zones designated for informal economic activities;
- i. agricultural zones;
- j. mining zones;
- k. defense and security zones;
- l. warehousing zones;
- m. coastal zones.

Kupang City's spatial management emphasizes the concept of sustainable and efficient urban development, aiming to improve community welfare by supporting urban infrastructure such as building construction, transportation networks, road systems, tourism facilities, and other socio-economic amenities required to accommodate population growth. This approach is grounded in the Theory of Optimal City Sizes (Kamruzzaman, L, 2023), which highlights the role of local government in providing adequate services to meet urban needs, supported by proactive legal frameworks governing spatial utilization.

Nonetheless, several pressing issues have emerged, including poorly organized residential settlements, traffic congestion during peak commuting hours, waste management problems, the juxtaposition of housing and commercial areas, limited pedestrian and vehicle infrastructure, shortages of clean water, and high population density. These socio-political demands for community welfare underscore the urgent need for Kupang's urban development.

The historical evolution of Kupang City directly affects population growth, infrastructure planning (roads, public transport, electricity networks, housing, clean water, etc.), and compliance with spatial zoning regulations. However, deviations from designated land-use zoning have occurred. The Kupang City Government—particularly the Department of Public Works and Spatial Planning (PUPR)—has not consistently enforced restoration of land to its intended function, such as agricultural zones in Oebobo, Oepura, Tofa, and Maulafa. As a result, the conversion of land for other uses has led to the depletion of water sources in Airnona, Oebufu (Oebobo District), Oepura, and Sikumana (Maulafa District).

These changes are primarily attributable to weak control over land-use practices, driven by the increasing demand for urban land to accommodate adaptive infrastructure, sustainable economic development, coastal environmental management, human and goods mobility, and the improvement of urban quality of life to reduce social inequality and address demographic shifts. At the same time, environmental degradation—particularly in riverbanks and coastal areas of Kupang Bay—has become a significant challenge in maintaining urban sustainability.

The Influence of Spatial Planning Law in Kupang City on Social Life

A strong and consistent system of spatial planning law, coupled with effective law enforcement by the Kupang City Government and active participation of its citizens, is indispensable. According to W. Alonso (1964), *"land is regulated and used in a city based on the economic value of the environment in terms of the orderly and fair distribution of space."* This perspective is essential in improving the quality of urban life in relation to spatial planning. In this regard, consideration must be given to the provision of adequate facilities, the reduction of social inequality (including slum areas and traffic congestion), the enhancement of social connectivity, environmental sustainability, and disaster responsiveness.

Research findings indicate several factors contributing to the weakness in the enforcement of laws governing spatial utilization. Specifically, the implementation of spatial control has not been adequately aligned with the legal framework of urban spatial planning as prescribed in the General Provisions on Zoning under the Detailed Spatial Plan (RDTR) of Kupang City, due to the following reasons:

Land Misuse Resulting from a Defective Normative Framework

In general, land misuse across the six districts of Kupang City has occurred due to the absence of a coherent and consistent legal framework for spatial planning in earlier periods. This is evident from the sequencing of legal norm formation, such as the Regional Regulation on Green Open Spaces and the Regional Regulation on the Strategic Environmental Assessment, which are still in the planning stage.

As a legal consequence, the limited set of applicable regulations has primarily been used to justify the construction of buildings, thereby deviating from the objectives of Kupang City's Detailed Spatial Plan (RDTR) Regional Regulation. The purpose of the RDTR is to ensure justice in spatial planning by balancing the needs of the city's residents with the preservation of the urban environment, including the protection of agricultural land, plantations, and urban forests or green open spaces.

Deviations are particularly evident in building construction. Research findings demonstrate that while certain types of buildings conform to the provisions of the Regional Regulation, others deviate from the stipulations of Article 10 of Regional Regulation No. 12 of 2011, which mandates that spatial development policies as referred to in Article 4(b) must encompass:

- a. policies for the development of protected areas;
- b. policies for the development of cultivation areas;
- c. policies for the development of strategic areas.

In practice, however, various types of buildings have emerged, including:

1. Residential buildings – both traditional houses on privately owned land and high-rise apartments, each with differing ownership and management systems.
2. Educational buildings – including schools, universities, dormitories, hospitals, and recreational facilities intended for educational purposes.
3. Institutional buildings – comprising government offices, community organization facilities, orphanages, nursing homes, museums, and auditoriums.
4. Public facilities – including houses of worship, government buildings, transport terminals, sports complexes, restaurants, and markets.
5. Commercial/business buildings – such as banks, offices, courts, and other professional establishments.
6. Merchant buildings – including showrooms, shop-houses, malls, and other retail establishments.
7. Industrial buildings – including factories, power plants, laboratories, farms, and gas facilities.
8. Storage facilities – warehouses and depots for agricultural and other goods.
9. Warehouses – distribution and transit centers, increasingly associated with online commerce.
10. Mixed-use buildings – for instance, apartments situated above commercial malls.
11. Hazardous-material buildings – specialized facilities designed to store or process dangerous substances, including Pertamina facilities.

All such buildings are subject to licensing requirements; however, their regulation has not always aligned with spatial planning law. As a result of land misuse across all districts of Kupang City, efforts to achieve justice in spatial planning have been hindered. Residents are deprived of equal access to natural resources such as clean water (via wells or PDAM supply), green spaces, and a healthy environment. Research further indicates that building development often fails to comply with the established spatial pattern. For example, in relation to groundwater extraction, 39 individuals were found to lack drilling permits from the Mining Department of East Nusa Tenggara Province. This situation contradicts regional legal provisions, including Article 10(7) of Regional Regulation No. 12 of 2011, which emphasizes strategies for conserving and enhancing spatial functions and environmental carrying capacity, as well as controlling cultivation activities so as not to exceed ecological thresholds.

In short, spatial control in Kupang City requires restricting the conversion of agricultural zones—particularly irrigated farmland designated as urban food-security areas; b. preserving forest areas, such as those in Naeoni Village (Alak District), which have been converted into residential areas, leading to land disputes.

These land conversions have triggered conflicts over agricultural and residential land—both among citizens and between citizens and the Kupang City Government. In several instances, affected communities, feeling that their rights were disregarded, have resisted the changes and even pursued legal remedies. Research findings reveal a growing number of land disputes in Kupang City, including

conflicts over yard land, farmland, and gardens, involving both private citizens and the municipal government, as shown in the following table.

Table 1. Land Dispute Cases in the Field of Law

Type of Land Case	Administrative Law			Civil Law			Criminal Law		
	2021	2022	2023	2021	2022	2023	2021	2022	2023
Land Encroachment	–	–	–	–	–	–	2	2	3
Land Occupation	–	–	–	1	2	1	–	–	–
Business Licensing	1	0	1	–	–	–	1	–	–
Total	1	–	1	1	2	1	2	3	3

Source: Kupang Department of Public Works and Spatial Planning, 2024.

Based on Table 1 above, it is evident that legal disputes concerning land ownership and control in Kupang City fall within three areas of law: civil law, particularly in relation to land rights; criminal law, concerning minor and ordinary offenses such as land encroachment; and administrative law, arising from the need for land to establish businesses or residential settlements, which has triggered conflicts in the governance of urban land use.

According to the research of Warsito Raharjo Jati, et al (2023) the resolution of current environmental problems and unequal social participation must first be addressed before proceeding with capital city development planning. Research findings further indicate that in the spatial planning of Kupang City, community representatives have been involved in the consultation and participatory process conducted by the initiators of the Regional Regulation on Kupang City (namely, the Kupang City Department of Public Works and Spatial Planning/PUPR). However, the community representatives engaged in this process were not landowners directly affected by disputes, but rather influential members of selected urban villages. Land disputes typically arise when certain groups seek to utilize land for specific purposes, particularly the construction of commercial buildings and residential housing.

Environmental Degradation of the Coastal Areas of Kupang City

Environmental degradation in the coastal areas of Kupang City has been observed in Oesapa Beach, Lasiana Beach, Kelapa Lima Beach, and Namosain Beach, including coastal erosion, mangrove deforestation, periodic seawater pollution during the rainy season, and seawater intrusion (such as the case reported at the Mayor's Hospital, where seawater entered freshwater wells used by the hospital). Additionally, habitat destruction has occurred in the vicinity of the Oesapa sub-district market. In short, significant transformations have taken place along the coastal zone of Kupang Bay, such as shoreline damage (coastal abrasion) in Kelapa Lima, Lasiana, and Namosain (Alak District), which can be attributed both to climate change and to changes in land-use allocation for economic purposes, residential settlements, market construction, port activities, and coastal tourism development.

Transformations in the Kupang Bay coastal zone also demonstrate patterns of social inequality, particularly in terms of access to the shoreline. Coastal communities are only marginally involved in development planning, while coastal development projects primarily benefit developers and investors. Consequently, local communities have been unable to maximize the benefits of coastal development projects. Moreover, there is an increasing tendency of environmental degradation in the Kupang Bay coastal area, particularly in regions allocated for hotels and local tourism, where coastal ecosystems in several sub-districts—Nunhila, Solor, Oeba, Kelapa Lima, and Oesapa—are experiencing significant damage.

According to Kay and Alder (2005), coastal damage can be prevented or mitigated through the adoption of an integrated management approach involving multiple stakeholders, including government, local communities, and the private sector. Furthermore, coastal challenges are exacerbated by climate change. As emphasized by Nicholls & Cazenave (2010), the rainy season consistently worsens conditions along the Kupang Bay coast, due to rising sea levels and tidal surges. The current impacts

in Kupang Bay include thermal expansion of seawater as well as significant social consequences for coastal residents, especially flooding during the rainy season. This flooding originates from built-up land areas, with flood materials flowing into dry rivers and waterways (such as the Liliba and Dendeng rivers), carrying large volumes of sediment into the Kupang Bay conservation area.

Traffic Congestion

With the increasing population in Kupang City and the rise of social and economic activities, traffic congestion has become more prevalent, particularly during commuting hours when residents travel to and from workplaces or schools. Population density is closely related to land use, ultimately influencing traffic congestion. This issue is primarily attributed to poor spatial planning, which has led to overcrowding in Kota Lama District, followed by Kelapa Lima and Maulafa Districts.

In the latter two districts, the development of residential housing, clustered settlements, commercial shops, cemeteries, informal trading stalls, and roadside eateries along both sides of the streets has exacerbated congestion. Traffic bottlenecks typically occur during office hours, school commuting times, and are further aggravated by limited parking spaces. Moreover, many residents of Maulafa and Kelapa Lima commute daily to workplaces located in Kota Lama, Kelapa Lima, and Alak Districts, and vice versa.

From a legal perspective of urban spatial planning, legal scholars generally associate traffic congestion not only with inadequate urban planning and ineffective municipal regulation but also with the lack of legal awareness among motorists in Kupang City. The situation is compounded by weak enforcement of urban regulatory frameworks. Furthermore, traffic congestion contributes annually to motor vehicle accidents, some resulting in fatalities. This condition demonstrates several key legal concerns:

- a. Regulation of Spatial and Building Planning – weak urban planning, limited parking spaces, and narrow road networks contribute significantly to traffic congestion.
- b. Legal Awareness of Traffic Rules – compliance with traffic laws requires continuous public education and awareness-raising.
- c. Law Enforcement – stricter enforcement of traffic regulations is necessary to maintain order, including monitoring illegal construction and improper parking practices.
- d. Municipal Policy – the Kupang City Government must strengthen its policies on urban infrastructure management, land-use regulation, and the promotion of public transportation initiatives to reduce reliance on private vehicles.

In addition, traffic behavior in Kupang City also reflects poor civic conduct, such as indiscriminate disposal of waste from vehicles onto public roadsides, further degrading the urban environment.

Waste Management

Kupang City faces persistent problems in waste management, which is still carried out through a conventional system of collection–transport–disposal. Waste generated by households and public spaces is gathered by residents without being sorted according to material type. The efforts of the Kupang City Government to address this issue remain inadequate. In the period 2022–2023, approximately 152,000 tons of waste were generated, of which only 83,000 tons were successfully transported to the final disposal site. The remaining household waste was scattered across various locations in every village (kelurahan) within the six districts of the city and remained unmanaged. Similarly, waste accumulated in a number of tourist sites in Kupang City, which were not properly managed by local tourism operators.

The weak spatial planning and governance of Kupang City has had a significant impact on waste management, directly affecting the quality of life of its residents. Despite initiatives in waste management, waste accumulation continues to occur due to the lack of permanent waste disposal facilities, as temporary storage sites often become damaged or unusable. As a result, waste scattered along roadsides diminishes the aesthetics of urban spaces, reduces public comfort, and undermines the economic value of urban areas. This situation poses an obstacle to the development of the city's tourism sector, particularly coastal tourism in Kupang Bay, where inadequate access roads and poorly organized residential buildings further exacerbate the problem.

To address these challenges, stronger urban planning is required, particularly through the development of an integrated waste management system, improvement of waste-related infrastructure,

and public education on the importance of proper waste handling. Additionally, more effective transportation and logistics are needed to ensure that waste from temporary collection points is consistently transferred to final disposal sites.

Unitegrated Public Transportation

Inadequate spatial planning often neglects the development of proper road infrastructure, such as highways and sufficient alternative roads, which are frequently narrow and disconnected from strategic destinations. This condition compels residents to rely heavily on private vehicles, thereby increasing traffic volume and ultimately resulting in traffic congestion. Such congestion is frequently observed in the jurisdiction of the Regional Police of East Nusa Tenggara (Kapolda NTT), particularly along the routes from Kuanino to Oeba, Kelapa Lima, Merdeka Street, as well as in front of schools and other public facilities across Kupang City.

Public transportation represents the most effective solution for urban mobility, reducing traffic congestion, and lowering vehicle emissions. In Kupang City, public transportation includes: (a) buses; (b) city taxis; (c) motorcycle taxis (*ojek*); and (d) *angkutan kota* (locally known as *bemo*). The expansion and optimization of public transportation reduce dependency on private vehicles, alleviate congestion, and promote urban sustainability. Moreover, public transportation contributes to environmental protection, ensures accessibility by providing equitable mobility to workplaces, schools, commercial areas, and government offices, while simultaneously reducing dependence on fossil fuels. This aligns with the broader agenda of renewable energy and sustainable development in the city.

From a theoretical perspective, the application of smart transportation systems (*Smart Transportation*) is increasingly necessary. This entails the utilization of information and communication technologies to develop a transportation system that is more efficient, safer, and environmentally friendly. Key features include intelligent traffic management systems, shared mobility applications, and real-time emission monitoring aimed at mitigating adverse environmental impacts in urban areas.

As emphasized by Jeffrey Kenworthy and Felix Laube (2004), “there is a correlation between the use of public transportation and reducing the use of private vehicles.” Accordingly, transportation in Kupang City can and should be legally regulated and administratively managed to foster an urban environment that is both ecologically sustainable and socially equitable. In this context, urban transport law and spatial planning regulation play an integral role in reducing emissions, improving the quality of life, and shaping Kupang City into a sustainable urban center.

Coastal Spatial Planning of Kupang City

In discussing the Spatial Planning (RTRW) of Kupang City, the matter is intrinsically linked to coastal spatial planning as stipulated under the Kupang City Spatial Planning Regulation (RTRW) and the Detailed Spatial Plan (RDTR), which designate Kupang City as a coastal city. In practice, the coastal environment of Kupang Bay has undergone significant changes due to climate change and community activities along the coast, compounded by the local government's inadequate policies in anticipating transformations in coastal livelihoods. These conditions are further exacerbated by the rapid development of residential housing and commercial buildings in the coastal areas.

Changes along the Kupang Bay coast from the landward direction—resulting from heavy rainfall and construction along the shoreline—have caused sudden alterations (evulsion, with accretion occurring more slowly). Such abrupt coastal changes have shifted shoreline boundaries or coastal land limits (notably along Oesapa, Kelapa Lima, and Namosain). These shifts directly affect land ownership in the coastal zone as a result of natural processes. In reference to the decision of the New York Court of Appeals (Sharone, O, 1999): “... It can be said fairly that discrete evulsive events in a repetitive time then the bounds of intact property must be protected by local authority...” Such jurisprudence highlights the need to safeguard property rights and coastal boundaries under local authority.

Furthermore, these ecological changes threaten public access to coastal spaces. With regard to land use in several sub-districts directly bordering Kupang Bay, it is evident that coastal management practices in Kupang Bay are intensive, involving not only government regulation but also the active participation of local fishermen, as reflected in Table 2 below.

Table 2. Number of Fishermen by Sub-District and Type (Kupang City) in 2024

Sub-District	Full-Time Fishermen			Primary Subsistence Fishermen			Supplementary Subsistence Fishermen		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Alak	1,412	1,431	1,446	438	447	452	391	391	396
Maulafa	8	21	71	7	7	7	6	6	6
Oebobo	108	108	108	42	42	42	22	22	22
Kota Raja	28	29	29	11	11	11	7	7	7
Kelapa Lima	819	820	823	390	390	391	228	228	229
Kota Lama	784	784	790	270	270	272	196	196	198
Total	3,169	3,193	3,217	1,158	1,167	1,175	850	850	858

Source: Kupang Department of Public Works and Spatial Planning, 2024.

Based on the data presented in Table 2, it is evident that the residents of Kupang City whose primary occupation is fishing, in carrying out their activities in the fisheries sector, require designated spaces for business purposes, namely facilities for selling their catch in the coastal areas of Kupang City, as well as docking and landing sites for their boats, which are often simultaneously used as residential spaces within sub-districts/villages and coastal zones. Consequently, the persistent poverty among fishermen significantly influences the over-exploitation of fishery resources, thereby threatening the coastal ecosystem of Kupang Bay, in addition to creating further problems such as waste management along the coastline. Furthermore, the construction of various buildings on coral areas of the coastal zone exacerbates environmental degradation, generating additional environmental issues including waste accumulation along coastal areas and tourist sites within Kupang Bay. During the rainy season, floodwaters transport debris and sediment into the sea, which accumulates over coral reef areas and threatens reef ecosystems, ultimately disturbing fish habitats in Kupang Bay and creating socioeconomic impacts for fishermen, particularly through the reduction of fish catches.

In light of these conditions, it is essential to examine the Population Severity Index of Kupang City as an analytical tool for understanding the socioeconomic conditions of the urban population, particularly fishermen, as well as residents engaged in other types of work, in order to achieve several objectives:

1. Monitoring mental and emotional well-being of fishermen, urban residents, and the municipal government's human resources.
2. Ensuring the security of fishermen through the identification of socioeconomic conditions of the population, enabling the assessment of welfare levels and inequalities based on occupational sectors and needs, thereby informing programs of economic empowerment.
3. Equitable distribution of resources, which is crucial for both governmental and non-governmental organizations in distributing resources more efficiently and fairly.
4. Measuring the severity index of Kupang City's population.

According to statistical data, Kupang City demonstrates the lowest population severity index within East Nusa Tenggara Province during the period 2021–2023, namely: 0.17 (2021), 0.93 (2022), and 0.80 (2023). In connection with these findings and in accordance with the implementation of Regional Regulation No. 12 of 2011, as amended by Regional Regulation on Detailed Spatial Planning (RDTR) No. 9 of 2012, it is crucial to understand the population severity index of Kupang City, particularly with respect to fishermen and farmers, in order to formulate local regulations and support policies and programs aimed at community empowerment and spatial planning of Kupang City. The objectives include:

- a. building the mental resilience of individuals to adapt to environmental changes within Kupang City;

- b. fostering new perspectives regarding the importance of maintaining urban spatial areas in accordance with their designated functions and enhancing appreciation of the urban environment.

From a legal perspective, the enactment of such regional regulations ideally seeks to balance human relations and equality, ensuring harmony between the urban community and the surrounding environment in a sustainable manner. Specifically, for fishermen in Kupang City, the implementation or amendment of local regulations is expected to enhance their welfare, safeguard marine resources, and ensure the sustainability of fishery ecosystems. Indirectly, such a legal framework will reinforce fishermen's rights, promote access to training and modern technology, and improve both productivity and efficiency.

Within the current urban conditions of Kupang City, however, the implementation of spatial planning regulations (RTRW/RDTR) demonstrates a prevailing anthropocentric paradigm, which positions humans and their interests at the apex of normative considerations. While this paradigm is reflected in the formulation of legal norms, in practice, human behavior tends to disregard environmental considerations, prioritizing human needs over the ecological system. Consequently, urban communities frequently neglect environmental obligations established under spatial planning regulations. This view has become widespread, even within the ranks of local government officials, resulting in the perception of Kupang City merely as a "built space." The deficiencies of this built-space paradigm are evident, namely:

- a. environmental impacts (such as rising temperatures accelerating climate change);
- b. increased demand for energy and fuel resources;
- c. the presence of buildings structurally unfit to withstand natural disasters; and
- d. urban sprawl, in which mobility is heavily dependent on motorized vehicles, thereby creating a cascade of further urban problems.

Therefore, the development of residential centers, the management of green open spaces, efficient infrastructure, public education, and environmental awareness are indispensable components of urban planning. With the proper integration of these elements, spatial policies and urban development strategies can minimize adverse impacts while simultaneously fostering a more sustainable, efficient, and environmentally friendly city, supported by the active participation of stakeholders in Kupang City.

Institutional Framework for Urban Spatial Planning in Kupang City

The technical authority for the management of spatial planning in Kupang City lies with the Public Works and Spatial Planning Agency of Kupang City (Dinas Pekerjaan Umum dan Penataan Ruang Kota Kupang). In carrying out its mandate, this agency performs essential functions in administering and controlling the city's spatial planning to ensure that the development of Kupang City proceeds in a sustainable manner, in accordance with the principles of legal certainty, environmental justice, people's participation, accountability, and flexibility.

The findings of this study reveal that the management of Kupang City's spatial planning—ranging from the planning stage to the evaluation of its implementation—is under the responsibility of the Public Works and Urban Planning Agency. Based on interviews with the Spatial Planning Division (Bagian RTRW) of Kupang City, it was further identified that there are limitations in both human resources and operational budgets, particularly due to the need for coordination with the Civil Service Police Unit (Satpol PP) of Kupang City.

In light of these conditions, it is necessary to establish local legal policies concerning workload analysis of human resources within the Public Works and Spatial Planning Agency, particularly within the Spatial Planning Division, with respect to the following matters:

- a. Conducting an assessment of duties and activities, especially by identifying and documenting all tasks and functions of individuals within the agency.
- b. Analyzing the available time relative to the activities undertaken in order to determine individual workload.
- c. Reviewing the distribution of tasks among individuals within the agency to ensure workloads are fairly allocated and aligned with individual competencies.
- d. Identifying factors that hinder individual productivity within the agency.

- e. Measuring outputs in terms of time and effort expended.
- f. Proposing changes or adjustments in task distribution through the application of new technologies to optimize workloads while enhancing individual productivity.
- g. Establishing monitoring and evaluation mechanisms to ensure that workloads are consistently tracked and reviewed periodically.

For these measures to be effectively implemented in order to optimize human resources (HR) within the Spatial Planning Division of Kupang City, there must be legal communication and coordination with relevant stakeholders for the formulation of legal policies and the development of HR empowerment programs. Such efforts are also necessary to anticipate and mitigate the current weaknesses of the RTRW/RDTR legal framework of Kupang City.

Weakness in the Legal Aspect

The research findings demonstrate that the establishment of regional spatial planning law aims to guide and regulate actions that deviate from the objectives of the formation of spatial planning law in Kupang City. Regional spatial planning law in Kupang serves as a standard of appropriate behavior with respect to the city's land-use management plans.

According to Sallim (2024) Ideally, municipal spatial planning regulations should contain paired norms, namely primary norms and secondary norms. A primary legal norm prescribes rules or standards governing individual or community behavior. A secondary legal norm, by contrast, regulates the procedures and legal consequences in cases where primary norms are violated or disregarded. Spatial planning law must embody values of environmental justice, grounded in moral etiquette—namely, the imperative to coexist peacefully with nature, given that the natural environment is consistently the victim of urban expansion. In other words, urban spatial planning should reflect harmony with a green and livable urban environment, where environmental restoration fosters peace and balance.

The existence of municipal spatial planning regulations ostensibly reflects the concern of the city's inhabitants and local legislators toward their natural environment, as expressed through codified legal provisions. However, in practice, community compliance with these laws is driven primarily by human needs, thereby prioritizing anthropocentric interests. Among the public and law enforcement agencies, spatial policies and actions are often considered “good” insofar as they benefit urban residents, rather than the environment itself. Consequently, Kupang's spatial regulations have become instruments to demonstrate to the state the mere existence of spatial planning law, while their implementation remains inconsistent. This is evident in practices such as constructing buildings contrary to zoning designations, indiscriminate waste disposal, deforestation in urban areas, mixed-use of residential spaces with commercial, governmental, and informal trading activities, as well as unregulated road development and arbitrary private construction. These deviations have further triggered land conflicts among residents and between residents and the local government, thereby obstructing sustainable urban development.

The legal framework governing spatial planning in Kupang (Regional Regulation No. 11 of 2011 on RTRW and Regional Regulation No. 12 of 2011 on Detailed Spatial Plans) contains weaknesses in fulfilling “legality standards at the ministerial level.” As a result, the Ministry did not align the draft regulation with higher-level legislative provisions, nor was it harmonized with provincial regulations. The initiative to amend Regional Regulation No. 11 of 2011 (RTRW) and Regional Regulation No. 12 of 2011 (Detailed Spatial Plans) originated from the Public Works and Spatial Planning Office (PUPR), given that urban development no longer conformed with the technical and legislative provisions initially established. Of critical importance is the preservation of green open space, as environmental studies emphasize that disturbances to green cover—such as deforestation, tree die-offs, and the loss of ecological habitats—result in documented shifts in species composition. Thus, spatial planning should ensure ecological balance through effective control mechanisms (Gordon, S, 2023).

Currently, however, changes to Kupang's urban space are driven more by population growth and economic expansion than by environmental considerations. This necessitates a reliable enforcement response to ensure compliance with spatial law. Yet, law enforcement regarding violations of detailed spatial regulations remains weak. Interviews with stakeholders, such as Adrianus Talli, indicate widespread deviations in land use, prompting collaboration between the Kupang City Government and the City Council (DPRD) to review spatial planning regulations. However, legislative authorities appear motivated by political and institutional interests—exercising law instrumentally and egoistically—rather than prioritizing environmental protection. This is corroborated by statements from the Chair of

Commission III of the DPRD, who acknowledged a “shift in development direction,” and officials from the PUPR Office, who admitted that the organizational structure of spatial planning functions is smaller than the responsibilities assigned, leading to institutional weaknesses.

The excessive workload within the RTRW Division results in diminished focus, rushed drafting, and poor implementation of regulations. Consequently, enforcement in controlling land use has been minimal, with Dinas PUPR and Satpol PP failing to exercise adequate oversight. Furthermore, strong investment pressures in the economic sector drive policy shifts in land-use allocation, prioritizing commercial development such as shops, markets, and malls. This reveals a weak commitment to enforcing spatial planning law in Kupang, further exacerbated by limited resources and inadequate coordination with Satpol PP.

Such weaknesses have significant legal implications, including overlapping land-use claims, lack of enforcement against zoning violations, and increased risks of land disputes. Poor coordination has also undermined environmental management, leading to urban risks such as flooding, landslides, and inadequate household waste management. Collectively, these issues contribute to environmental degradation, public health risks, and eroded public trust in Kupang’s municipal government.

In conclusion, to avoid negative legal consequences, the Kupang City Government must strengthen its institutional capacity by aligning its legal framework with the scope of responsibilities entrusted to the PUPR Office and other relevant institutions. Such measures are necessary to ensure effective control over land-use conversion, in line with prevailing legal standards and principles of sustainable urban governance.

Neglect in Implementing Building Construction Standards

Based on an interview with the Head of the Public Works and Spatial Planning Agency (Dinas Pekerjaan Umum dan Tata Ruang) of East Nusa Tenggara Province, it was explained that building approval (*Peretujuan Bangunan Gedung* or PBG) through the OSS system is regulated under Government Regulation No. 16 of 2021 concerning Buildings. The PBG constitutes a form of legal authorization granted to building owners to construct new buildings, alter, expand, reduce, or maintain a building in accordance with the technical standards of building construction.

The findings of this study indicate that legal subjects frequently found to disregard the provisions of the City Spatial Plan (RTRW) and the Detailed Spatial Plan (RDTR) of Kupang are individuals and entities undertaking construction of buildings or other activities on land not designated for such purposes. Individual legal subjects, for instance, are landowners or building owners who erect buildings without obtaining the requisite permit or who alter the designated use of land. Furthermore, developers or contractors engaged in the construction of housing projects, including commercial housing, are also implicated. Even local government entities may be identified as legal subjects, particularly when they exhibit delays in processing building approvals.

In Kupang City, the NTT branch of the Real Estate Indonesia Association (REI) has voiced concerns that the provincial government has yet to integrate the building permit approval process into the OSS system, as mandated by the prevailing legal framework. Consequently, the absence of a systematized permit management process has hindered the public’s ability to secure building approvals in NTT, including in Kupang City. Although the self-registration system under OSS is a progressive mechanism intended to encourage compliance with applicable regulations, in practice it has become an obstacle, prompting residents to neglect legal requirements—especially in implementing building permit provisions.

This condition has led to various irregularities, particularly in the construction of buildings inconsistent with the spatial planning regulations of Kupang City. In Indonesia, several legal instruments regulate building and construction technology with emphasis on safety, energy efficiency, and environmentally sound construction practices, including:

- a. Law No. 28 of 2002 on Buildings, which stipulates the technical requirements for buildings, encompassing safety, health, comfort, and accessibility, as well as obligations of building owners to maintain their buildings to ensure continued functionality and safety.
- b. Government Regulation No. 36 of 2005 on the Implementation of Law No. 28 of 2002, which details technical building standards, including earthquake resistance, energy efficiency, and construction technologies.

- c. Ministerial Regulations of the Ministry of Public Works and Housing (PUPR), which regulate technical building standards, including earthquake resistance, energy efficiency, and construction technologies.
- d. Indonesian National Standards (SNI), which regulate technical aspects of building construction, including standards on earthquake loads, reinforced concrete, and environmental engineering.

Overall, these legal instruments aim to ensure that constructed buildings meet standards of safety, health, comfort, and energy efficiency, while utilizing modern and environmentally conscious construction technologies. The findings of this study further demonstrate that securing building permits (PBG) provides not only legal compliance but also generates local revenue for Kupang City. However, several obstacles remain, including frequent regulatory changes requiring applicants to adjust to new rules—where previously manual processes have now shifted to the OSS system. Additionally, many citizens lack complete documentation as required by law, leading them to disregard legal provisions. Other difficulties arise from the absence of technical requirements, particularly for lower-income residents of Kupang City, as well as legal disputes regarding land ownership intended for construction.

The legal framework underpinning urban management must also adapt to the evolving urban environment, which is increasingly at risk of environmental degradation, including flood hazards and landslides due to excessive construction of buildings and roads. The placement of buildings with varying functions and the opening of road access across the six districts of Kupang City contribute to environmental damage, land use conflicts, and rising crime rates, exacerbated by poor spatial design—such as insufficient lighting, overcrowded housing, and limited road access. Dense building developments, particularly rapidly expanding housing complexes, have increased urban anonymity, enabling the presence of unknown individuals who may engage in unlawful behavior. In general, the types of buildings present in Kupang City can be categorized as outlined in the following table.

Table. 3 Types and Functions of Buildings in Kupang City

No.	Type of Building	Designated Use	Number
1	Residential Buildings	Used as permanent collective housing	26
2	Educational Buildings (Universities, Senior High Schools, Junior High Schools, Primary Schools, Kindergartens)	Permanent (Universities: 96; Senior High Schools: 52; Junior High Schools: 63; Primary Schools: 64; Kindergartens: 111)	286
3	Religious Buildings	Permanent (Islam: 70; Christian: 316; Catholic: 49; Hindu: 7; Buddhist: 1)	443
4	Institutional Buildings	Permanent, used for offices	9
5	Assembly Buildings	Permanent	7
6	Business Buildings	Permanent	84
7	Single Detached Residential Buildings	Permanent	139,986
8	Local Market Buildings	Permanent	6
9	Public Health Facilities / Hospitals, etc.	Permanent	21
	Total		140,868

Source: primary data, 2024

The results of field observations indicate that the number of constructed buildings in the territory of Kupang City amounts to 140,868 units. Buildings constitute an inseparable part of daily human life. They are not merely physical structures, but also spaces where residents engage in various activities, including economic, social, and institutional functions. In this regard, the legal aspect of building permits and urban spatial planning regulation becomes indispensable.

Based on interviews, it was revealed that there are no significant internal obstacles in the administration of Building Approval Services (Persetujuan Bangunan Gedung / PBG). However, it is frequently found that residents of Kupang City erect buildings without obtaining the legally required prior approval from the competent authorities (Acry, F. X. M. N, 2022).

According to both researcher observations and media reports (e.g., *Fajar Network*), the Kupang City Government is currently planning to revise the Kupang City Spatial Planning Regional Regulation

(Perda RTRW) in compliance with national regulatory demands concerning the implementation of the Building Management Information System (Sistem Informasi Manajemen Bangunan Gedung / SIMBG). Further observations show that the arrangement of green open spaces (Ruang Terbuka Hijau / RTH) in Kupang City remains suboptimal. Buildings located around these green spaces often do not support the intended use of such areas, either structurally or aesthetically.

Therefore, a responsive legal enforcement framework is required, aligned with ongoing changes in the city's detailed spatial planning. Law in this context must ensure legal certainty and spatial order in managing urban land use. At the same time, law has evolved towards a restorative legal paradigm, incorporating principles of restitution and reparation derived from the concept of restorative justice (Indonesian General Attorney, 2024). This paradigm emphasizes the autonomous awareness and accountability of violators, ultimately leading to the restoration of relationships among stakeholders (e.g., through environmental mediation and negotiation). Accordingly, legal enforcement in the context of Kupang City's urban planning must not be limited to a literal interpretation of legal norms. Law enforcers must also consider environmental values inherent in urban life and integrate them with the environmental awareness that has developed within society.

Mandate to Control the Amendment of Regional Regulations of Kupang City

The findings of the research indicate that the Kupang City Government is currently in the process of drafting amendments to Kupang City Regional Regulation No. 11 concerning Urban Spatial Planning, on the grounds that the legal provisions contained therein are no longer compatible with the ongoing dynamics and changes of the city. Based on interviews with the Head of the Department of Public Works and Spatial Planning (PUPR), it was revealed that the demolition of buildings within Kupang City has not been carried out at the initiative of the Department of Public Works and Spatial Planning (particularly the Spatial Planning Division), except in cases of legal disputes in which a final court decision has been rendered, specifically concerning the execution of land disputes within the jurisdiction of Kupang City, in order to give effect to the rights of the prevailing party in the litigation."

The Demolition of Buildings Inconsistent with Regional Legal Provisions

a. Unplanned Building Design

In general, privately owned buildings constructed by individuals are often developed without adherence to spatial planning legal procedures. This is strongly presumed to be the result of weak regulatory oversight, public indifference, and insufficient knowledge of the potential impacts arising therefrom.

b. Impacts of Building Construction

The deficiencies inherent in unplanned buildings may result in weak structural integrity, inefficiency in energy use, reduced comfort for occupants, compromised safety, diminished property value, and potentially severe negative externalities such as contamination of well water by *Escherichia coli*, depletion of water sources, and reduction of green land areas.

Overall, tolerance towards unlicensed buildings may generate adverse consequences in terms of social life, economic stability, and environmental sustainability within the city. Several actual and potential impacts include:

- a. degradation of spatial planning and the urban environment in Kupang City;
- b. threats to public safety;
- c. irregularity and disorder in urban structures;
- d. deviation of local government revenue from its projected targets;
- e. difficulties in re-planning due to cascading adverse effects;
- f. the emergence of legal and social conflicts.

Weaknesses in Designing Systems of Compliance and Local Law Enforcement Concerning Minor, Medium, and Major Violations

The Research Findings indicate several critical issues. Among them, population density combined with high levels of mobility significantly contributes to traffic congestion and road accidents in Kupang City. In 2023, Kupang City recorded the highest number of traffic accidents in the region, with 248

reported cases (Central Statistical Agency, 2024). This situation primarily arises from weaknesses in designing a compliance system with traffic law instruments. Such deficiencies are reflected in common driving habits in certain areas or road segments in Kupang City (such as Tuak Daun Merah, El Tari Street, the road leading to Tenau, and the Jalur 40 corridor), where unsafe practices by truck drivers, pick-up vehicles, and motorcyclists prevail. These circumstances demand a comprehensive approach, including enhanced traffic law enforcement and improved urban infrastructure. In addition, non-formal education, community awareness, and continuous upgrading of urban infrastructure are required. In relation to road safety, both traffic regulations and the condition of urban infrastructure directly influence safe driving practices within the city.

Grounded in the theory of Restorative Justice, it can be emphasized that the primary aim of traffic law is not merely to punish offenders but to address the harm resulting from violations and to repair relationships between offenders and the community. As stated: *"The law is not intended to reward violators but to ameliorate losses resulting from violations and to restore social relations."* In the context of traffic order in Kupang City, the application of restorative justice principles may foster behavioral change among drivers, especially in terms of accountability, rehabilitation, and lawful driving practices, while also ensuring victim recovery and strengthening community relations. Overall, it may be argued that restorative justice provides a more holistic and constructive transformation within Kupang society than the traditional justice system, which is predominantly punitive.

Considering the growing demand for urban land, restorative justice should also be applied in the context of urban land-use control, particularly in terms of land restoration, restitution of rights, and compensation in cases of eviction or land acquisition, as well as encouraging community participation in determining land allocation (Howard, Z, 1990). For local government, this requires adopting policies that strike a balance between urban environmental sustainability and community welfare.

Notably, residents of Kupang City often fail to realize that errors in spatial planning significantly affect the quality and condition of urban road networks, which in turn contribute to traffic accidents. Such failures may erode public trust in competent authorities. A parallel can be drawn to cases in the United States, where it has been noted that (Thuy, L, 2023): *"One of the obstacles faced by litigants when bringing a case under the doctrine of public trust is standing. The doctrine has long been the enemy of environmental lawsuits. In federal court, the plaintiff must establish standing by showing, first, that they have suffered 'in reality.'"*

Financial-Based Legal Policy to Restrict/Prevent the Illegal Sale, Mortgage, or Lease of Property

The Research Findings Indicate that the Kupang City Government is currently intensively implementing urban physical development, including the construction of bridges, roads, housing, the reorganization of street vendors, spatial planning to support green open spaces, the issuance of business permits to promote tourism, and the advancement of a service-based urban economy.

Kupang City has been designated as a tourism city, with its development orientation centered on tourism and hospitality, relying on this sector as the primary driver of the city's economy. In addition, the city is ethnically diverse, consisting of the Helong, Rote, Sabu, Timor, Flores, Sumba, Alor, Belu, Ambon, Bugis, Javanese, and Balinese ethnic groups. Several tourist attractions exist within the city, including Lasiana Beach, Batu Nona Beach, Manikin Beach, Pasir Panjang Beach, and Tablolong Beach.

Currently, bridge construction within Kupang City has left no open space on either side of the roads. This condition resonates with Oliver Henock's (2023) view regarding the Causeway Bridge from New Orleans to the North Shore of Lake Pontchartrain, which is crowded with commuters daily, thereby disrupting the aesthetics of the surrounding urban landscape. In the context of Kupang City, vehicle traffic across bridges and nearby settlements has failed to preserve environmental aesthetics, largely due to regulatory inaction by the competent authorities. Strong indications suggest the existence of competing interests, akin to Catarina Conran's (2022) observation concerning the controversies during the Obama, Trump, and Biden administrations over the designation of national monuments under the American Antiquities Preservation Act of 1906, particularly the disputes surrounding Bears Ears National Monument and the Grand Staircase-Escalante. These examples demonstrate that controversies at the level of stakeholders frequently arise.

Conclusion

Based on the foregoing discussion, it can be concluded that the legal framework of the Spatial and Detailed Spatial Plans (RTRW/RDTR) of Kupang City has failed to achieve its intended objectives, due to the following factors:

1. The legal framework of Kupang City's spatial planning is premised on traditional development models, while the community currently exists in a state of transition—from a society reliant on local socio-economic activities to one increasingly dependent on advanced communication technologies to conduct social and economic life. Ideally, stakeholders should incorporate the concept of *quick revolution* in the utilization of green open spaces, as such an approach could positively contribute to the development of Kupang City, particularly in the areas of:
 - a. Digital infrastructure development;
 - b. Smart cities;
 - c. Transportation;
 - d. Remote working;
 - e. Online retail;
 - f. Renewable energy;
 - g. Urban farming;
 - h. Wastewater management.
2. The development of Kupang City has deviated from its initial plan due to weak enforcement over changes in land use established under the RTRW/RDTR legal framework. This deviation occurs because all parties tend to prioritize socio-economic development that serves the immediate interests of urban residents, while neglecting environmental considerations in the broader context of urban development. Although the concept of sustainable development is embedded in the city's legal and policy frameworks, its implementation remains partial and fragmented in practice.

References

- [1] Yan, S & Growe, G. (2022). Regional Planning Land-Use Management, and Governance in German Metropolitan Region – The Case of Rhine-Neckar Metropolitan Region. Institute of Geography of Chemistry and Earth Sciences Heidelberg University, <https://doi.org/10.3390/land11112088>.
- [2] Irwansyah. (2021). Penelitian Hukum : Pilihan Metode & Praktik Penulisan Artikel, Edisi Revisi. Yogyakarta: Mirra Buana Media.
- [3] Ishaq H. (2016). Metode Penelitian Hukum : Penulisan Skripsi, Tesis Serta Disertasi. Alfabeta, Bandung.
- [4] Sugiyanto, A. Penegakan hukum Tindak Pidana Pemanfaatan Ruang Kota Ditinjau dari Perspektif Berlakunya UU No.26 Thn 2007 tentang Penataan Ruang (Studi di Wilayah Kota Pontianak).
- [5] Yuniar, M. (2021), Pemanfaatan Tanah Untuk Pembangunan Perumahan Pada Kawasan di Kecamatan Moncongloe Kabupaten Maros, Repository.unhas.ac.id/id/eprint/6173.
- [6] Mitchell, W.J. (2003). The Cyborg self and The Networked City, The Massachusetts of Technology Press: Cambridge Massachusetts AS.
- [7] Kamruzzaman, L. (2023), Towards a Theory of Planned City Size Behaviour. Australia Transport Research Forum 2023 Proceedings. <http://www.artf.info>.
- [8] William, A. (1964). Location And Land Use: Toward a General Theory of Land Rent. Harvard University, U.S.
- [9] Raharjo, W. J., et al. (2023). Assissing the Implementation of a Cyti for All. Journal of Regional and City Planning, 34 (30, 232-247.
- [10] Kay, R & Alder, J. (2005). Coastal Planning And Management, Secont Edition. CRC Press Taylor & Francis Group.
- [11] Nicholis & Kasenave. (2010). Sea-Level Rise Ang Its Impact on Coastal Zones. American Association for The Advancement of Science, Volume 328, 1517-1520.
- [12] Kenworthy, J & Laube, F. (2004), Egalitarian Capitalism: Jobs, Income, and Growth in Affluent Countries. Russel Sage Foundation: New York.
- [13] Sharonne, O. (1999). Public Access Louisiana Beaches Following Publicly Funded Restoration Projects: The Reclamation of Fouchon Beach. Tulane Environmental Law Journal, Vol.13 <https://journals.tulane.edu/index.php/elj/index>.
- [14] Sallim, P. Q. (2024), Problematika Penegakan Hukum Berkeadilan di Indonesia. Universitas Andalas.

- [15] Gordon S. (2023). Compatible Management, and Ecological Foresty, in Pasific Northwest National Forest: Limits to Biodiversity Conservation. Tulane Environmental Law Journal, Vol.36.
- [16] Acry, F. X. M. N. (2022). Implementasi Peraturan Daerah Kota Kupang Nomor 12 Tahun 2011 Dalam Upaya Mendukung Ruang Terbuka Hijau di Kota Kupang Provinsi Nusa Tenggara Timur, <http://eprints.ipdn.ac.id/id/eprint/8050>.
- [17] Indonesian General Attorney . (2024). Solusi Permasalahan Hukum di Indonesia : Keadilan Restoratif.
- [18] Central Statistical Agency of East Nusa Tenggara Province. (2024). Provinsi NTT-jumlah kecelakaan lalu lintas di NTT 2020-2023.
- [19] Howard, Z. (1990). Chagung Lenses. Heral Press:Harrisonburg Virginia U.S
- [20] Thuy, L. (2023). Trust Issues: A Revisitation of Louisiana,s Public Trust Doctrine. Tulane Environmental Law Journal, Vol. 36.
- [21] Houck, O. (2023). The Return of Silent Spring. Tulane Environmental Law Journal, 36 (1&2).
- [22] Conran, C. (2022). Rethinking The Role of The Coutrs in The Antiquities Act. Virginia Environmental Law Journal, 40 (2), 169-204, <https://www.jstor.org/stable/27217113>.
- [23] Edward, Z. A. (2024). Situating The Modern Public Trust Doctrine in Trust Law: The Duty of Loyalty ang The Cace For Bifurcated, De Novo Judicial Review. Virginia Environmental Law Journal, 42 (1). www.velj.org/uploads/1/2/7/0/12706894/42.1-va-envt-1.j.zelensky-1-46.pdf.