AVAILABILITY OF GREEN OPEN SPACE IN MEDAN CITY

Ayu Anggraini Tambunan[1], Aprianto Soni [1]
[1]Universitas Amal Ilmiah Yapis Wamena ,Indonesia

History Article

ABSTRACT

Urban development often prioritizes the economic sector over green open spaces (RTH), which significantly impacts environmental sustainability. Medan City faces challenges in meeting RTH targets, particularly in the context of rapid population growth and limited urban land. This research explores the availability and policies of RTH in Medan City and identifies factors influencing the lack of RTH. The research findings indicate that the implementation of RTH policies in Medan City is still far from the set targets. Despite efforts such as land acquisition and the addition of RTH, deficiencies persist, mainly concerning the community's understanding of the importance of RTH. Therefore, this study recommends an approach of intensification and extensification in RTH development, involving community participation, integrated planning, and the application of Green City concepts to achieve environmental sustainability and community well-being in Medan City.

*Corresponding author email: ayutambunan66@gmail.com

INTRODUCTION

Development theory identifies two main dimensions: physical and non-physical development (Kuncoro, 2010). Physical development encompasses infrastructure, buildings, and public facilities that directly impact the community. On the other hand, non-physical development involves local community initiatives with long-term effects, such as enhancing village economies and public health (Purbantara, 2018).

Currently, urban development tends to prioritize the economic sector by developing built-up areas, including skyscrapers, shopping centers, and large and small businesses. Meanwhile, green open spaces (RTH) in urban areas, predominantly characterized by flora, play a crucial role in aspects such as relaxation, socio-cultural activities, aesthetics, ecology, and economic development (Suhasman, 2017). Law Number 26 of 2007 on Spatial Planning defines RTH as elongated areas or places where plants grow, either naturally or intentionally (Article 1).

In the context of providing RTH, the government has a responsibility to maintain sustainable spatial management, which is key to achieving general welfare and social justice. Law Number 26 of 2007 Article 29 stipulates that RTH consists of public RTH and private RTH, with the proportion of urban RTH being a minimum of 30% of the city's area, including a minimum of 20% as public RTH.

Local governments, including Medan City, often face challenges in providing land for RTH development, especially amid the scarcity of strategic urban land. Unfortunately, RTH development is often neglected compared to other strategic development agendas, despite its vital role in environmental sustainability and providing oxygen for the city.

Medan City plans its spatial arrangement with Regional Regulation Number 1 of 2022 concerning the Spatial Planning Plan (RTRW) of Medan City for the years 2022-2024, in line with the provisions of Law Number 26 of 2007. However, the high rate of urbanization in Medan City, one of the highest in Indonesia, poses a significant challenge to the availability of urban land.

Current conditions indicate that Medan City, with a total area of 265.10 hectares, only has RTH covering 5 hectares or 0.018% of the total area. This is far from the requirements of Law Number 26 of 2007 on spatial planning. Meanwhile, the RTH needs of Medan City until 2030 are estimated to reach 2152 hectares, while the Department of Cleanliness and Parks of Medan City is currently unable to meet these needs (Aek Nauli Forestry Research Institute, 2014) (Patana, 2016).

Various factors contribute to the lack of RTH in Medan City, including population growth, budget difficulties for urban green spaces, and obstacles in land acquisition. Landowners also tend to convert land into buildings to generate more income, especially for strategic purposes such as managing small and medium-sized enterprises on vacant land.

High taxes on vacant land encourage landowners to sell quickly, leading to a shift in land use and ecological imbalances in urban areas. The negative impacts include increased risks of floods, landslides, and drought. Therefore, transforming urban RTH into a city forest can be an alternative to utilizing green open spaces, providing pleasure and clean air for city residents.

The Medan City Government has made efforts to meet RTH needs through the socialization of Regional Regulation Number 1 of 2022 concerning the RTRW of Medan City for the years 2022-2024. In the past two years, the Medan City Government has successfully freed up 3 hectares of land as RTH.

Environmental awareness in Medan City is crucial in the government's efforts to provide RTH. Communities that are conscious of environmental values can preserve RTH by planting trees, conserving city forests, supporting recreational zones, and green sports fields. However, field research shows that some communities do not understand the importance of RTH, converting land into buildings without considering the aesthetics and environmental conditions.

Based on an understanding of the issues and previous literature studies, this research emphasizes the importance of analyzing RTH needs in Medan City and finding RTH fulfillment strategies in accordance with applicable regulations. Therefore, this research is focused on the "Analysis of Green Open Space Needs Fulfillment in Medan City." It is hoped that this research can contribute to overcoming challenges in providing RTH in urban areas, particularly in Medan City.

METHODS

This research article employs a descriptive method with a qualitative approach to investigate the availability of green open spaces (RTH) in Medan City. The study was conducted in Medan City from July 2022 to May 2023, with the city chosen as the research location based on several factors, including significant population growth, air pollution issues, climate change risks, and regulations related to Green Open Spaces (RTH).

Data collection involved primary sources, including interviews with the Environmental Agency and the Housing Agency, as well as secondary sources from the Central Statistics Agency (BPS) of Medan City. The research participants consisted of government officials and community members selected through purposive sampling. The research utilized software such as ArcGIS, Microsoft Excel, GPS, and laptops. Research materials included regional maps, satellite images, and regulations related to RTH.

The data analysis technique encompassed a series of steps, starting from geometric and radiometric correction of images, image cropping, band combination, image classification, to analyzing RTH needs based on the area and projecting RTH requirements based on the population. Drawing conclusions involved a process of data reduction, data presentation, and verification to ensure the accuracy and validity of the research results. The entire methodological framework aimed to provide a comprehensive understanding of the state of RTH in Medan City.

RESULTS AND DISCUSSION

Availability of Green Open Spaces in Medan City

This research explores the availability of green open spaces (RTH) in Medan City using a descriptive method and a qualitative approach. The research focuses on analyzing the implementation of the Medan City Regional Regulation No. 1 of 2022 concerning the Spatial Plan of Medan City for the years 2022-2042, specifically regarding the allocation of RTH at 20% for public green open spaces and 10% for private green open spaces of the city's total area. The research location encompasses Medan City from July 2022 to May 2023, chosen due to its high population growth, air pollution issues, climate change risks, and regulatory provisions related to RTH. The data collection approach includes primary sources through interviews with the Environmental Agency and the Housing Agency, as well as secondary sources using data from the Central Statistics Agency (BPS) of Medan City. Through data analysis tools such as ArcGIS, Microsoft Excel, and GPS, the research reveals that the extent of private RTH in Medan City reaches 28.58%, exceeding the maximum limit of 10%, while public RTH only reaches 11.44%, below the minimum limit of 20%. This indicates the need for an additional 8.56% of public RTH to meet the established standards.

The identification results show the existence of 11 city parks in Medan City, most of which also function as part of urban forests, green street corridors, artificial lakes, and yards. These parks are identified to have ecological, economic, socio-cultural, and aesthetic functions. The utilization of land on a certain scale in the landscape area provides scope at a certain level, in line with the research findings. Parks in Medan City are recognized as essential elements in public open spaces, playing a role in providing fresh air and having significant ecological and social functions.
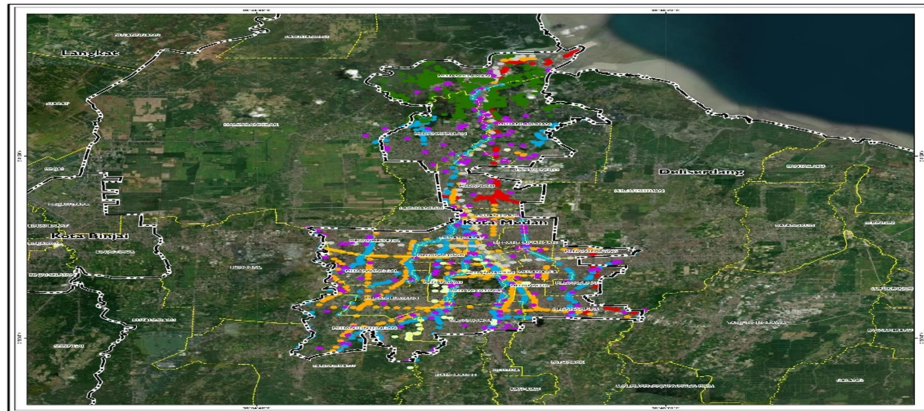
Figure 1. Distribution of Green Open Space in Medan City

Table 1. Legend of Symbols on the Map of Green Open Space Distribution

Symbols	Types of Green Open Spaces	Wide
		%
1	Toll Road Green Lane	6,12
2	Public Road Green Belt	15,31
3	Green Line Railway Track	3,66
4	River Riparian Greenway	28,79
5	Burial	8,32
6	City Jungle	16,74
7	City Park	21,30

Furthermore, the study examines the implementation of Green Open Space (RTH) policies in Medan City, involving the expansion of RTH areas in accordance with Regional Regulation No. 1 of 2022. The Medan City Government has allocated an additional 3 hectares of RTH and set the requirement for private RTH at 13% of the building area. However, there are districts that have not yet met the 30% RTH proportion as stipulated in Law No. 26 of 2007 concerning Spatial Planning. The efforts to implement RTH policies in Medan include the creation of a distribution map of RTH with eight classification symbols, involving RTH types such as toll road green belts, public road green belts, railway green belts, riverbank green belts, cemeteries, urban forests, and city parks. Green open spaces in Medan are predominantly characterized by riverbank green belts covering an area of 28.79%, providing essential benefits such as ecosystem protection, water filtration, flood control, soil quality maintenance, and landscape enhancement for recreation.

This condition aligns with previous studies, such as Oktarini (2018), emphasizing the importance of riverbanks as wetlands in urban areas. The significance of riverbank green belts in Medan is emphasized through the symbol descriptions on the RTH distribution map, including toll road green belts, public road green belts, railway green belts, riverbank green belts, cemeteries, urban forests, and city parks. The research also discusses the role of city parks in meeting RTH needs and describes the varied functions of city parks at the neighborhood and

district levels. Minimum area requirements for parks per population at the neighborhood and district levels are outlined, with a focus on green space and ecosystem aspects. City parks in Medan serve various broad functions, including recreation, green space and ecosystems, education and environmental awareness facilities, as well as social interaction areas. These functions have proven to provide significant benefits to the quality of urban life.

In conclusion, Medan City, as the capital of North Sumatra Province, faces challenges in meeting the 30% RTH target of its total area, as mandated by Law No. 26 of 2007 concerning Spatial Planning. The implementation of RTH policies in Medan involves efforts to increase public RTH areas, add RTH in accordance with regulations, and address districts that have not yet met the stipulated RTH proportion. Riverbank green belts and city parks in Medan play a crucial role in creating green open spaces with ecological, social, and aesthetic functions, thus requiring sustainable management to ensure their continuity.

Technical Recommendations for Green Open Space Provision in Medan City

Efforts to develop green open spaces in Medan City can be pursued through two approaches: intensification and extensification. Intensification involves planting vegetation in areas that already have greenery, while extensification includes expanding green infrastructure in urban areas where feasible. Intensification can be implemented in areas where adding green space is not feasible. There is also potential to enhance existing open spaces by adding additional structures, optimizing their ability to absorb CO_2. On the other hand, extensification involves expanding green areas in urban regions that still allow for such developments.

Strategies for Enhancing the Functions of Green Open Spaces To enhance the functions of green open spaces in Medan City, several strategies can be applied, including:

1) Integrated Planning: It is crucial to integrate the needs for green open spaces into comprehensive urban planning.
2) Priority Identification: Identify priority regions or locations for green open space development based on factors such as population density and land availability.
3) Community Participation: Involve the community in the planning and decision-making processes related to green open spaces.
4) Sustainable Design: Consider sustainable design principles in the development of green open spaces.
5) Affordability and Accessibility: Ensure that green open spaces are easily accessible to all segments of the population.
6) Efficient Management: Good planning and management are essential to ensure that green open spaces are well-maintained and beneficial to the community.

CONCLUSION

This research reveals significant challenges in meeting the Green Open Space (RTH) needs in Medan City. Despite government efforts through policies such as Regional Regulation Number 1 of 2022 on Spatial Planning (RTRW), Medan City still faces a substantial gap between the availability of RTH and the increasing demand. With only 0.018% of the total area occupied by RTH, Medan City falls far short of meeting the requirements of Law Number 26 of 2007 on Spatial Planning, which stipulates a minimum of 30% urban RTH. Factors such as rapid

population growth, budget constraints, and land acquisition difficulties are the primary causes of the lack of RTH. Landowners tend to convert land for development, primarily due to greater economic impact. High taxes on vacant land also accelerate land-use conversion, potentially causing detrimental ecological impacts such as floods, landslides, and droughts. However, government efforts to raise environmental awareness and increase RTH area over the past two years show positive progress. The enhanced role of the community in preserving and understanding the value of RTH is crucial in bridging the gap between policy and implementation.

REFERENCES

Absori, A. N. (2020). Green and health constitution of green open space and its implementation in Surakarta. Journal of Global Pharma Technology, 12(9), 70-74.

Amen, S. F. (2018). Analysis of the use of green open space in dense settlements in Rappocini District, Makassar City. Journal of Architectural Sciences, 1(1), 43-47.

Arikunto. (2019). Research Procedures. JAKARTA: Rineka Cipta.

Bental, W. P., Siahaan, R., &; Maabuat, P. V. (2017). Riparian Vegetation Diversity of Polimaan River, South Minahasa-North Sulawesi. Journal of Bios LoRTH, 7(1).

Dollah, A. S., Rasmawarni, &; M., A. T. (2010). Analysis of Green Open Space (Rth) from the aspect of implementing social functions in Makassar City. Journal of Architectural Sciences, 1(1), 62-71.

Handy, M. R. (2021). Adaptation of Riverbanks Community to Urban Green Open Space Development. The Innovation of Social Studies Journal, 2(2), 127-134.Mahendra, I. M. (2022). Analisis Ruang Terbuka Hijau Dalam Perspektif Pembangunan Kota Berkelanjutan (Studi kasus Kawasan pusat Kota Denpasar, Bali). VASTUWIDYA, 5(1), 41-49.

Mulyanie, E., &; Husna, R. A. (2019). Community-based management of public green open space (RTH) in Cihideung sub-district, Tasikmalaya city. METAEDUCATION, 1(2), 70-86.

Oktarini, M. F. Principles of Settlement in Wetlands with an Ecosystem Approach and Settler Preferences in Riparian Musi, Palembang.

Prabowoningsiha, N. H., Putri, R. A., &; Rini, E. F. (2018). Factors that affect the availability of green open space in every land use dominance. REGION, 2, 133-151.

Prakoso, P. &. (2019). Analysis of the implementation of 30% green open space in DKI Jakarta. Globe Scientific Magazine, 21(1), 17-26.

Pratama, I. A., Izharsyah, J. R., &; Putri, H. M. (2022). Analysis of Green Open Space (RTH) Development Planning in Medan City. Journal of Public Administration and Policy (JAPK), 2(1), 1-12.

Purnamaselfi, M. W. (2022). Literature Study: Analysis of Green Open Space Provision in Urban Areas. Journal of Spatial Studies, 1(1), 29-48.

Retired, M. F. (2022). Identification and development of Green Open Space (Rth) in Bojongloa Kidul District, Bandung City (Doctoral dissertation, Faculty of Engineering Unpas).

Rijal, S. (2008). The need for green open space in Makassar City in 2017. Journal of Forests and Societies, 3(1), 8219.

Sugiyono. (2017). Educational research methods (quantitative, qualitative and R&D approaches). Bandung: CV. Alphabeta.

Law Number 26 of 2007 concerning Spatial Planning. (n.d.).

Cho, S. H., Poudyal, N. C., & Roberts, R. K. (2008). Spatial analysis of the amenity value of green open space. Ecological economics, 66(2-3), 403-416.

Xue, F., Gou, Z., & Lau, S. S. Y. (2017). Green open space in high-dense Asian cities: Site

configurations, microclimates and users' perceptions. Sustainable cities and society, 34, 114-125.

Khotdee, M., Singhirunnusorn, W., & Sahachaisaeree, N. (2012). Effects of green open space on social health and behaviour of urban residents: A case study of communities in Bangkok. Procedia-Social and Behavioral Sciences, 36, 449-455.

Xue, F., Gou, Z., & Lau, S. (2017). The green open space development model and associated use behaviors in dense urban settings: Lessons from Hong Kong and Singapore. Urban Design International, 22, 287-302.

Schuch, G., Serrao-Neumann, S., Morgan, E., & Choy, D. L. (2017). Water in the city: Green open spaces, land use planning and flood management–An Australian case study. Land use policy, 63, 539-550.

Wang, H., Dai, X., Wu, J., Wu, X., & Nie, X. (2019). Influence of urban green open space on residents' physical activity in China. BMC public health, 19(1), 1-12.

Nastiti, F. N., & Giyarsih, S. R. (2019). Green Open Space in Urban Areas: A Case in the Government Office of Boyolali, Indonesia. Regional Science Inquiry, 11(1), 19-28.

Handy, M. R. N., Mutiani, M., Putra, M. A. H., Syaharuddin, S., & Putro, H. P. N. (2021). Adaptation of Riverbanks Community to Urban Green Open Space Development. The Innovation of Social Studies Journal, 2(2), 127-134.

Ajrina, H., & Kustiwan, I. (2019, December). From green open space to green infrastructure: The potential of green open space optimization towards sustainable cities in Bekasi City & Regency, Indonesia. In IOP conference series: earth and environmental science (Vol. 399, No. 1, p. 012130). IOP Publishing.

Trisno, R., & Lianto, F. (2019, July). Realization of Hybrid Concept and Symbiosis in Green Open Space (RTH) at Housing Complex RW (Neighborhood Councils) Pluit, Jakarta Utara, Indonesia. In Journal of Physics: Conference Series (Vol. 1179, No. 1, p. 012165). IOP Publishing.

Mbarep, D. P. P., & Herdiansyah, H. (2019, November). Ecological function of green open space as water infiltration: Study in kalijodo green open space, north jakarta. In Journal of Physics: Conference Series (Vol. 1381, No. 1, p. 012049). IOP Publishing.

Yuniastuti, E., & Hasibuan, H. S. (2019, October). Green Open Space, Towards A Child-Friendly City (A Case Study in Lembah Gurame Park, Depok City, Jakarta Greater Area, Indonesia). In IOP Conference Series: Earth and Environmental Science (Vol. 328, No. 1, p. 012016). IOP Publishing.