Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

An Analysis Of Regulation Number 2 Of 2015 Implementation Medan City Regional Concerning Medan City Green Open Space Zoning

Harry Kurniawan[1], Abdiyanto[2], Feby Milanie[3]
[1,2,3]Universitas Pembangunan Panca Budi, Medan, North Sumatera, Indonesia

Article Info
Keywords:
Green Open Space,
RDTR,
Medan City.

ABSTRACT
The increase in population triggers demand for land for residence and other activities. Urban spatial planning often lags behind increasing physical development needs, causing uncontrolled expansion of urban development and causing limited green open space. Urban green open spaces are very important for environmental sustainability, including maintaining ecosystem balance, improving air quality, and providing social space. However, the allocation of green open space in the 2015-2035 Medan City spatial planning regulations is still below the 20% target, only reaching 11.10%. Conflicts regarding permits for the use of built-up land as green open space are a frequent problem. The disclosure of empirical facts about the dynamics of the implementation of the green open space plan in Medan City can be a more comprehensive input for the Medan City Government in the 2015-2035 Medan City RDTR Revision and become a consideration for the districts/other cities to plan green open space that is fair and provides additional insight for academics, practitioners and the general public. The research uses descriptive-qualitative methods on empirical facts with spatial exploration based on the Geographic Information System using the ArcGIS 10.8 application and the Google Maps Platform to identify and analyze the realization of the implementation of green open space plans which provide various empirical facts. Data analysis is carried out spatially through technical interpretation of satellite images and overlays on several spatial research themes.The results of this paper show that the green open space plan in Medan City is dominated by undeveloped land, such as 28.50% of ponds/ponds which are not land with green open space functions, and can create dynamics in the provision of green open space. Strategies for resolving green open space problems include optimizing land acquisition, controlling urbanization, regulating land price speculation, public education, and developing green open space to mitigate environmental impacts, and involve the formation of special teams, periodic evaluations, and strong public participation.

Corresponding Author:
Harry Kurniawan
Universitas Pembangunan Panca Budi, Medan, North Sumatera, Indonesia
hajiabdiyanto@gmail.com

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

INTRODUCTION

The ability of the environment to absorb pollution, the availability of agricultural land, and limited land are physical limits to growthresident[1].Urban green open space is an important element of the urban landscape for sustainability which helps in maintaining balanceecosystem, improving air quality, providing recreational space, and reducing the risk of natural disasters[2].Urban green open spaces also increase residents' happiness by improving physical and mental health. Lack of green space can cause high crime and horizontal conflictdue to limited places for social interaction and stress relief[3].

Population growth in the city of Medan causes an increase in residential areas which influenceenvironmental problems such as waste, air pollution and reduction of green open space areas in dense settlements[4]. The distribution of surface temperatures in Medan City ranges from 20.57-33.83°C and the vegetated cover haslower surface temperatures compared to residential areas. Green open space is very important in neutralizing surface temperatures. The development of green open space is directed at dense residential areas that have surface temperatureswhich is high in Medan Denai District, Medan Helvetia District, Tembung District, and Medan Kota District[5].

Provision of public green open space of at least 20% of the area of the City or Urban Area, where the provision is the responsibility of the district/city regional government which is carried out in stages according to the capabilities of each region [6]. Provision of public green open spaceThe spatial regulations in Medan City are still insufficient at the 20% target due to overlaps in the formulation of spatial policies for public green open spaces. Public green open space in the 2015 Medan City RDTR regulations is allocated only 3,242.15 Ha or 11.10%[7]Meanwhile, in the 2022 Medan City RTRW regulations, only 3,547.15 Ha or 12.58% of public green open space is allocated.[8].

The increase in built-up land area indicates increasing land conversion[9]. Land conversion often occurs on open land, reducing the use of dry land forests, mixed gardens, cultivation, rice fields, shrubs and fish ponds.[10]. The decline in the area of urban green open space is in line with infrastructure development[11]. The transfer of land functions to various human activities is a factor that influences the existence and sustainability of the function of public green open spaces[12]. The conversion of vegetated land into built-up land has an impact on changes in the microclimate and changes in environmental quality in big cities, so that in big cities the air temperature is higher than the air temperature in other areas.[13]. This condition is an indication of an Urban Heat Island (UHI) and in the long term can have an impact on reducing environmental quality. In this case, the government needs to anticipate by determining priority zones for green open spaces[14].

Biogeophysical aspects have a positive and significant influence on water supply and clean water needs[15]. The existence of ecologically degraded green open spaces causes indirect problems related to reduced groundwater quality, increased air pollution and noise in urban areas. Disruption of the water system due to limited water catchment areas and high volume of surface water (run-off). This condition can economically reduce productivity levels, as well as reduce people's health levels and life expectancy[16].

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

The high dynamics of green open space planning in Medan City from the description above means that it is necessary to carry out research on the implementation of green open space plans in Medan City which aims to determine the implementation of the RTH plan determination based on the facts of existing conditions, land ownership status, existing green open space considerations, budget requirements for providing green open space, and strategies for solving green open space problems in Medan City.

METHOD

Research Area

The research area covers the entire administration of Medan City based on the 2015-2035 Medan City RDTR with the research focus on the Green Open Space (RTH) zoning plan. The research area covers an area of 3,242.15 hectares (11.10% of the area of Medan City) spread over 21 sub-districts in Medan City. The research area in the RTH RDTR Zoning of Medan City is presented in Figure 1.

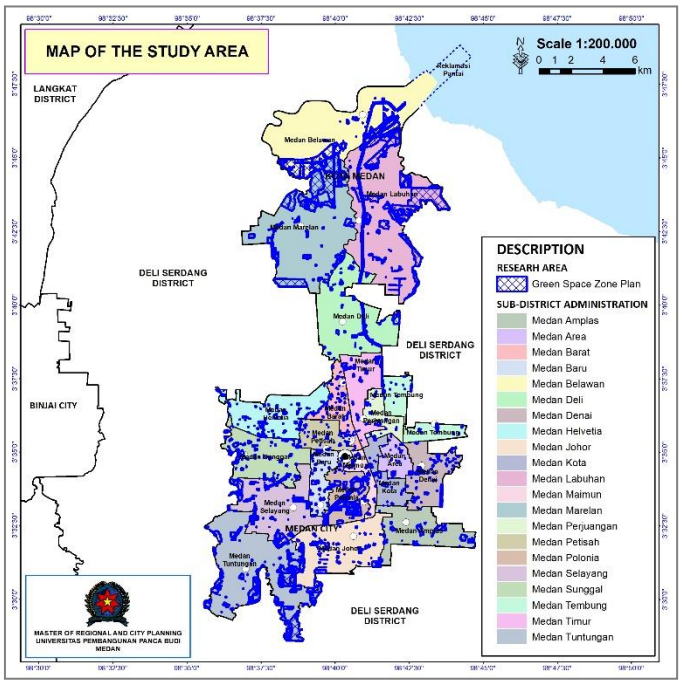

Figure 1. Map of Research Area

Research Approach

Research is carried out with a general strategy forcollect and analyze data[26] which is descriptive in nature with qualitative methods. Spatial exploration with Geographic Information System (GIS) based analysis techniques using the ArcGIS 10.8 application. Various spatial analyzes can be carried outusing GIS methods, including overlapping analysis, scoring, spatial linkages, and other spatial analysis[27]. In this research, GIS is used to identify and analyze the realization of implementationgreen open space plan that provides various empirical facts.

Research involves collecting, recording, and documenting data from various sources. The data used is secondary data obtained from related agencies, including:

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

1. MaterialTechnicaland the Medan City RDTR Spatial Plan 2015-2035, obtained from the Medan City Housing, Settlement Areas, Human Settlements and Spatial Planning Department.
2. The 2023 Pleiades Satellite Image was obtained from the Public Works and Spatial Planning Department of North Sumatra Province.
3. *Google Open Source Platform (Google Satellite Image, Google Maps, Google Street View*) in 2023, obtained from the site https://www.google.co.id/.
4. Spatial Data on Land Rights (HAT) and Land Zone Value (ZNT) in 2023, obtained from the Medan City Land Office and the BHUMI Application of the Ministry of ATR/BPN on the site https://bhumi.atrbpn.go.id/.

Data analysis was carried out spatially through technical interpretation of satellite imagery and overlay on several research spatial themes with map accuracy at a scale of 1:5,000 which was adjusted to the RDTR mapping scale. Geospatial data overlay techniqueanalyzing spatial relationships between various elements of space, so that it really helps reveal empirical spatial facts and provides a better basis for decision making in spatial planning[28]. Flow diagramresearch is presented in Figure 2.

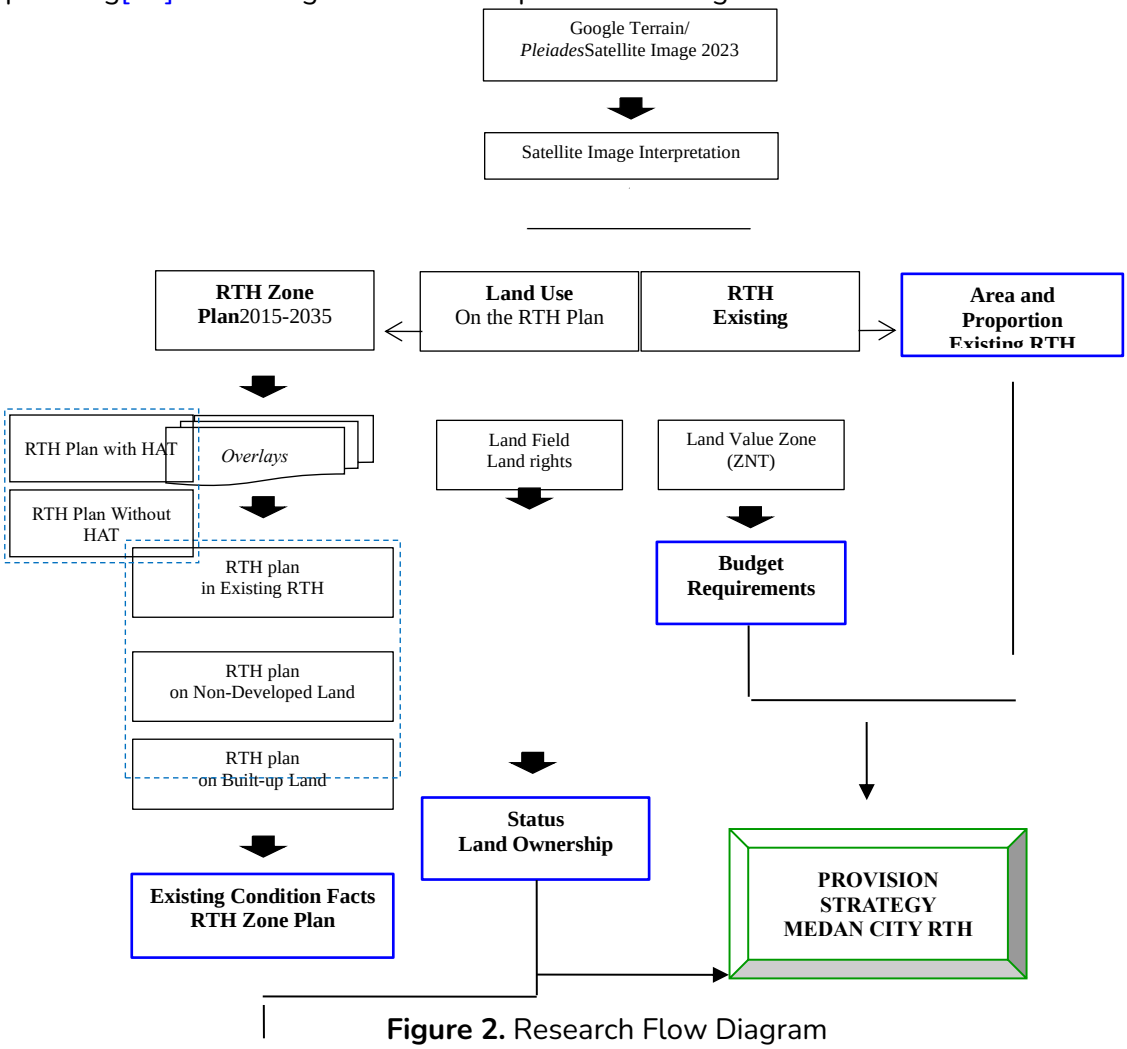

Figure 2. Research Flow Diagram

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

RESULTS AND DISCUSSION

Updating Nomenclature and Classification of RTH in Spatial Planning Regulations

Based on the guidelines for preparing the RDTR[30], it is stated that the RTH Zone consists of 8 classifications (sub zones), namely City Forest (RTH-1), City Park (RTH-2), District Park (RTH-3), Village Park (RTH-4), RW Park (RTH-5), RT Park (RTH-6), Cemetery (RTH-7), and Green Route (RTH-8). Meanwhile, in the Medan City RDTR 2015-2035, the RTH Zone consists of 6 classifications (sub zones), namely RTH Taman Kelurahan (RTH-1), RTH Taman Kota (RTH-2), RTH Public Cemetery (RTH-3), RTH Tourist Area (RTH-4), City Forest Open Space (RTH-5), and Sports Field Open Space (RTH-6). So the nomenclature of Medan City's RTH RDTR plan is no longer relevant at this time, especially for the RTH for Tourism Areas which should be included in the Tourism Sub Zone and the RTH for Sports Fields which should be included in the Public Service Facilities Sub Zone. Due to the discrepancy in the nomenclature of green open spaces in the Medan City RDTR, it is necessary to adjust the nomenclature, codify and add to the classification of green open spaces based on the latest regulations in order to achieve harmony in the content of green open spaces in the city of Medan. A comparison of the nomenclature in the latest regulations is presented in Table 1.

Table 1. ComparisonNomenclature and Classification of RTH in the Latest Regulations

No	ATR Ministerial Regulation/Ka. BPN No. 11 of 2021		Medan City RDTR Regional Regulation No. 2 of 2015		Study RTH Medan City RDTR Regional Regulation
	Green Space Classification	Code	Green Space Classification	Code	
1	City Jungle	RTH-1	City Forest Green Open Space	RTH-5	Nomenclature and code adjustments required
2	City Park	RTH-2	City Park Green Open Space	RTH-2	Nomenclature and code adjustments required
3	District Park	RTH-3	-	-	There isn't any
4	Village Park	RTH-4	RTH Taman Kelurahan	RTH-1	Nomenclature and code adjustments required
5	RW Park	RTH-5	-	-	There isn't any
6	RT Park	RTH-6	-	-	There isn't any
7	Burial	RTH-7	RTH Public Cemetery Park	RTH-3	Nomenclature and code adjustments required
8	Green Line	RTH-8	-	-	There isn't any
9	-	-	RTH Tourist Area	RTH-4	Does not include RTH Zone
10	-	-	RTH Sports Field	RTH-6	Does not include RTH Zone

Source: Author's Analysis in 2024

Use of Existing Land in the 2015-2035 RTH Zone Plan

Identification of existing land use in 2023 from interpretation of Google Satellite Imagery produces 18 types of land use in the delineation of the 2015-2035 green open space plan. The largest existing land uses are ponds/ponds covering an area of 923.88 hectares

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

(28.50%), shrubs covering an area of 435.80 hectares (13.44%), fields/fields covering an area of 381.90 hectares (11.78%) , and Mangroves covering an area of 369.02 hectares (11.38%). This analysis data informs that the green open space plan is dominated by land that has not been developed and does not function as green open space. The distribution of existing land use in 2023 in the 2015-2035 Medan City RTH plan is presented in Figure 3.

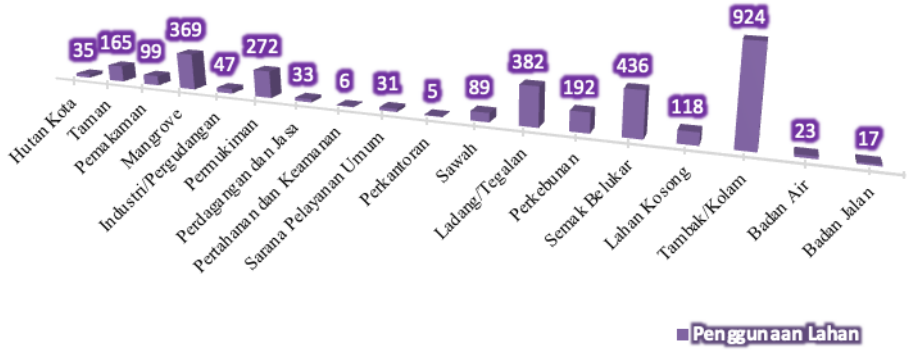

Figure 3. DistributionUse of Existing Land in RTH Plans
Source: Author's Analysis in 2024

Facts about the Existing Conditions of the RTH Zone Plan for 2015-2035

Comparing the 2015-2035 green open space zone plan with land use in 2023 produces facts about existing conditions which show that the implementation of the green open space plan is in accordance with the Medan City RDTR. The Taman Kelurahan RTH (RTH-1) plan is dominated by the use of "shrub" land covering an area of 98.52 hectares (22.29%) and "settlement" area of 72.20 hectares (16.33%). The City Park RTH plan (RTH-2) is dominated by the land use of "ponds/ponds" covering an area of 55.43 hectares (17.41%) and "farms/fields" covering an area of 55.05 hectares (17.29%). The RTH plan for the Public Cemetery (RTH-3) is dominated by the use of land "ponds/ponds" covering an area of 145.21 hectares (25.22%) and "fields/fields" covering an area of 95.93 hectares (16.66%). The RTH plan for the Tourist Area (RTH-4) is dominated by the land use of "ponds/ponds" covering an area of 419.35 hectares (57.13%) and "mangroves" covering an area of 98.58 hectares (13.43%). The City Forest Green Open Space Plan (RTH-5) is dominated by the land use of "ponds/ponds" covering an area of 217.69 hectares (27.37%) and "mangroves" covering an area of 191.44 hectares (24.07%). The RTH plan for Sports Fields (RTH-6) is dominated by the land use of "ponds/ponds" covering an area of 74.20 hectares (19.69%) and "farms/fields" covering an area of 61.58 hectares (16.34%). The large number of ponds/ponds allocated as green open space plans has become an internal dynamicprovision of green open space land in Medan City. The proportion of planned RTH to existing land use is presented in Figure 4.

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

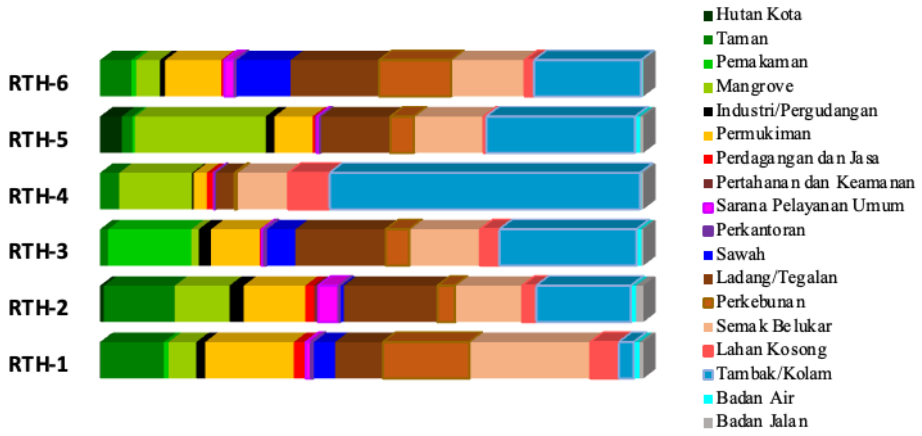

Figure 4. ProportionTypes of Green Open Space Plans for Existing Land Use
Source: Author's Analysis in 2024

The grouping results of comparing green open space plans with existing land use produce 3 groups of facts on existing conditions and their proportions, namely: (1) "Green open space plans for existing green open spaces" as an implemented green open space plan has an area of 667.41 hectares (20.59%); (2) "Green Open Space Plan on Non-Built-Up Land" as a green open space plan that has not been implemented on non-RTH open space with an area of 2,164.56 hectares (66.76%); and (3) "Green Open Space Plan on Built-up Land" as a green open space plan that has not been implemented on built-up area with an area of 410.17 hectares (12.65%). This analysis data shows that the area of green open space that is actually realized is only 20.59%, while the remainder, namely 79.41%, is not green open space. The proportion of various types of green open space plans to existing conditions is presented in Figure 5.

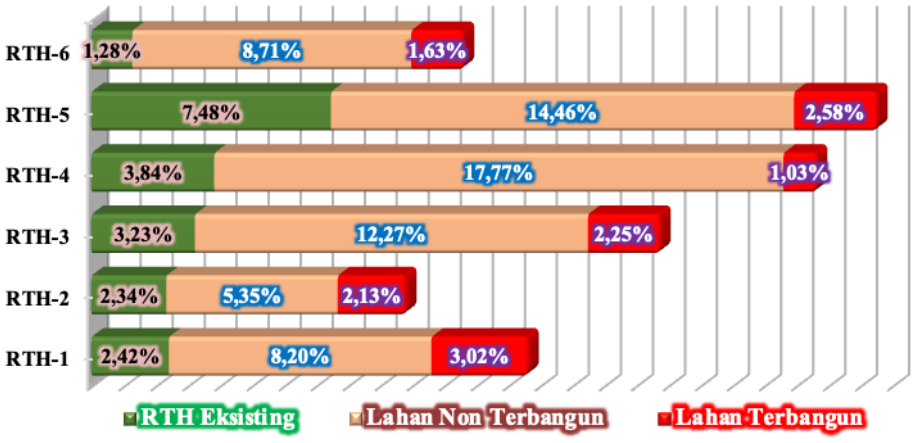

Figure 5. ProportionTypes of RTH Plans Against the Facts of Existing Conditions
Source: Author's Analysis in 2024

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

The green open space plan is on built-up land covering an area of 410.17 hectares (12.65%), where the built-up land consists of residential areas, trade services, public service facilities, offices, defense and security, industry/warehousing, and roads. To realize the green open space plan on built-up land requires very heavy efforts and the existence of legal regulations in its implementation, where the built-up land is in the form of activities/businesses that are already operating and of course the operations already have permits. So that the existence of a green open space plan on built-up land can be a considerationbro, in the Revised RDTR for Medan City 2015-2035. The built-up land area in the RTH plan is presented in Table 2.

Green Open Space Plan on Residential Land

The residential land allocated for the Green Open Space (RTH) plan is 271.91 hectares, consisting of 45.76 hectares (16.83%) of housing complex land (real estate) and 226.16 hectares (83.17%) of residential land self-subsistent. 69 housing complexes were identified in the RTH plan and of them 27 housing complexes whose entire land was allocated for the RTH plan, namely Berlian Residence Complex, Bilal Indah Complex, Bromo Residence Complex, D'Paragon House Complex, D'Residence One Complex, Family Indah Residence Complex , Karya Setia Residence Complex, Pulo Brayan Railway Complex, Krakatau Vista Complex, Medan Utara City Complex, Gim & Jasmine Residence Housing Complex, Safana Residence Complex, The Elegant Residence Complex, de Vista Housing, D'Regalle 2 Housing, Gatsu Mansion Housing , Glinss Residence Housing, Golden Palace Housing, Grand Gading Mas Housing, Grand Permata Hijau Housing, Griya Terjun Sari Housing, Ksatria Residence Housing, Rose Palace Resident Housing, Perfect Garden Housing, The Marelan View Housing, Victoria Townhouse Housing, and Rusunawa Sunggal KODAM I/BB.

The land for public service facilities allocated for the RTH plan is 271.91 hectares, consisting of 15.02 hectares of land for transportation facilities; 8.43 hectares of land for educational facilities; 0.16 hectares of health facilities land, 2.00 hectares of sports facilities land; 1.11 hectares of land for social and cultural facilities; and 4.41 hectares of land for religious facilities. 1 means of transportation has been identified in the RTH plan, namely Polonia Airport. In terms of educational facilities, 37 facilities were identified in the RTH plan and among them 15 educational facilities whose entire land was allocated as RTH plans, namely: Kindergarten St. Clara Simalingkar B; Kindergarten, Pelita Kasih Elementary School; Murni Victory Kindergarten, Elementary School, Middle School; Rainbow Kindergarten, Elementary, Middle School; MDTA YP Al Jamiatul Walshiliyah; Public Elementary School 060837; Public Elementary School 064025; Public Elementary School 065006; Public Elementary School 068475; At Taqy Elementary School, Middle School; Karang Sari Private Elementary School, Middle School; SMA Negeri 21 Medan; YP Methodist Pelita Kasih High School; South PrimeOne School; and the Titus Bransma Boys' Dormitory. In health facilities, 1 facility was identified, namely the Martubung Community Health Center. In sports facilities, 3 facilities were identified, namely the Tasbih Swimming Pool; One-A Badminton and Futsal; and Rona Badminton Center. In terms of social and cultural facilities, 5 facilities were identified, namely the Go Sia Kong So Foundation Social Hall; Maimun Palace; Chinese Town Site Museum; North Sumatra Fair; and Gayo Lues Shiva Dormitory. Meanwhile, 51 facilities

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

for worship were identified in the RTH plan and of them 35 worship facilities whose entire land was allocated for the RTH plan, namely: GBI Gatot Subroto Church; GBKL Pinang Baris Church; GBKP Bena Meriah Church; Runggun Laucih Assembly GBKP Church; GKPI Bromo Ujung Church; GKPI Church Griya Martubung Special Congregation; GKPS Sambu Baru Church; GPDI Imamat Rajani Church; HKBP Pardomuan Nauli Church; HKBP Student Church; Saint Krispinus Catholic Church Viterbo; St. Mary's Catholic Church Francis Xavier; PTPN II Oikoimene Church; Pentecostal Church of Christ; Gurudwara Sri Guru Arjun Dev Ji; Bunga Raya Temple; Al Hasanah Mosque; Al Jihad Mosque; Al Ma'ruf Mosque; Ar Rahman Mosque; As Siddiq Mosque; As Syakirin Mosque; As Syuda Mosque; Jamik Mosque; Shirotut Tholibin Mosque; Silaturrahim Mosque; Sunnanul Huda Mosque; Taqwa Ar Rahim Mosque; Al Baroqqah Prayer Room; Al Barqah Prayer Room; Al Ikhlas Prayer Room; Al Muttaqin Prayer Room; Al Ridho Prayer Room; Bagan Deli Prayer Room; and the Hidayatul Mukmin Prayer Room.

The office land allocated for the RTH plan is 4.98 hectares and 18 offices have been identified, namely the Beringin Village Head Office; Central Helvetia Village Head Office; Mosque Village Head Office; Paya Pasir Village Head Office; Perintis Village Head Office; North Sumatra Province Agricultural Research and Development Agency; Medan Financial Training Center; Medan Class 1 Correctional Center; Medan City Agriculture and Maritime Affairs Office; Tirtanadi Science Office - Denai; Glugur Substation Office; BPJTOL Office; Medan Fisheries Training and Extension Center Office; Indihome Office; Belawan District Prosecutor's Office; KPP Pratama Medan Petisah; North Sumatra Regional Main Unit PLN Office; and PLN UPB Sumbagut Office.

Table 2. Built-up Land inRTH Plan 2015-2035

No	Built-up Land in RTH Plan		Area (Ha)
	Type of Land Use	Land Use Class	
1	Industry/Warehousing	Industry	17.88
		Warehousing	29.24
2	Settlement	Self-Help Settlements	226.16
		Housing (Real Estate)	45.76
3	Trade and Services	-	32.76
4	Defense and security	-	5.74
5	Public Service Facilities	Health facility	0.16
		Sports Facilities	2.00
		Education facility	8.43
		Worship Facilities	4.41
		Social and Cultural Facilities	1.11
		Transportation Facilities	15.02
6	Office	Government offices	4.98
7	The road	-	16.53
	Total (Ha)		410.17

Source: Author's Analysis in 2024

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

The green open space plan in the Medan City RDTR 2015-2023 which is planned on built-up land is caused by several factors, namely: (1) the process of legalizing the Medan City RDTR regulations which took 4 years (2012-2015) based on aerial photography in 2011, resulting in the green open space plan which was originally planned on empty land became built-up land when the RDTR was ratified; (2) lack of attention to existing conditions and land ownership parcels in the preparation process; (3) limited existing green open space land, especially those controlled by the City Government; (4) the high built-up area which causes limitations in the allocation of RTH plans; (5) the existence of political interests in the use of space and planning of RTH land; (6) use of inaccurate or incomplete data in analyzing existing conditions and projections of future needs, which can result in errors in determining zoning and land allocation. This non-compliance with the RTH plan can have a serious impact on the implementation of space that is not in accordance with the plan. Apart from that, this could lead to conflicts over the use of space and the possibility of confiscation of land rights if the community land is not immediately controlled by the City Government. Several satellite image captures of the location of the planned RTH land and the facts of the existing condition of the buildingpresented in Figure 6 and a fact map of existing conditions is presented in Figure 7.

Information: (a) Green open space plan on residential land; (b) Green open space plan on warehouse land

Figure 6. Image CaptureSatellite Green Open Space Plans on Built-up Land in 2011 and 2023

Source: Author's Analysis in 2024

Budget Needs for Providing RTH Land in Medan City

The land acquisition program for the RTH Zone in the Medan City RDTR Program Indications 2015-2035 will be implemented for 20 years until the end of the planning year (PJM 1 - PJM 4). However, the budget requirements for land acquisition were not stated. Based on the analysis that has been carried out previously, it is known that the green open space plan has overlap with built-up land and non-built land as an area of green open space plans that have not yet been realized. Built-up land, which consists of residential areas,

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

public service facilities, offices, trade services, defense and security, and industry/warehousing, requires great effort and has the potential to face legal problems. Therefore, the area of built-up land is not included in the calculation of budget requirements in this research.

The budget requirement for providing green open space is calculated based on the area of non-built land in the green open space plan and the land value zone. The non-built land area is 21,645,597.81 m² (2,164.56 hectares), with land values varying from IDR 100,000 to IDR 20,000,000 per square meter. Thus, the budget requirement for providing green open space in Medan City is IDR 10,870,382,673,035.30 or 10.87 trillion rupiah. If divided over 20 planning years, a budget of IDR 543,519,133,651.77 or 543 billion rupiah is required for each fiscal year. The budget requirements for providing green open space in Medan City based on non-built land and land value zones are presented in Table 3and non-built land is presented in Figure 7.

Table 3. NeedsBudget for Providing RTH Land in Medan City

Green Open Space Plan Conditions	Land Value Zone (ZNT)			Area (m2)	Budget Requirements (Millions)
	ZNT Class	ZNT Price Range (Rp)	Maximum ZNT Price		
RTH plan on Non-Developed Land	1	< 100,000	Rp. 100,000	11,012,805.90	IDR 1,101,281
	2	100,000 - 200,000	Rp. 200,000	2,008,951.06	Rp. 401,790
	3	200,000 - 500,000	Rp. 500,000	4,412,926.36	IDR 2,206,463
	4	500,000 - 1,000,000	IDR 1,000,000	2,649,842.25	Rp. 2,649,842
	5	1,000,000 - 2,000,000	Rp. 2,000,000	1,144,644.68	Rp. 2,289,289
	6	2,000,000 - 5,000,000	IDR 5,000,000	403,027.07	Rp. 2,015,135
	7	5,000,000 - 10,000,000	Rp. 10,000,000	6,142.82	Rp. 61,428
	8	10,000,000 - 20,000,000	Rp. 20,000,000	7,257.68	Rp. 145,154
		Total		21,645,597.81	Rp. 10,870,383

Source: Author's Analysis in 2024

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

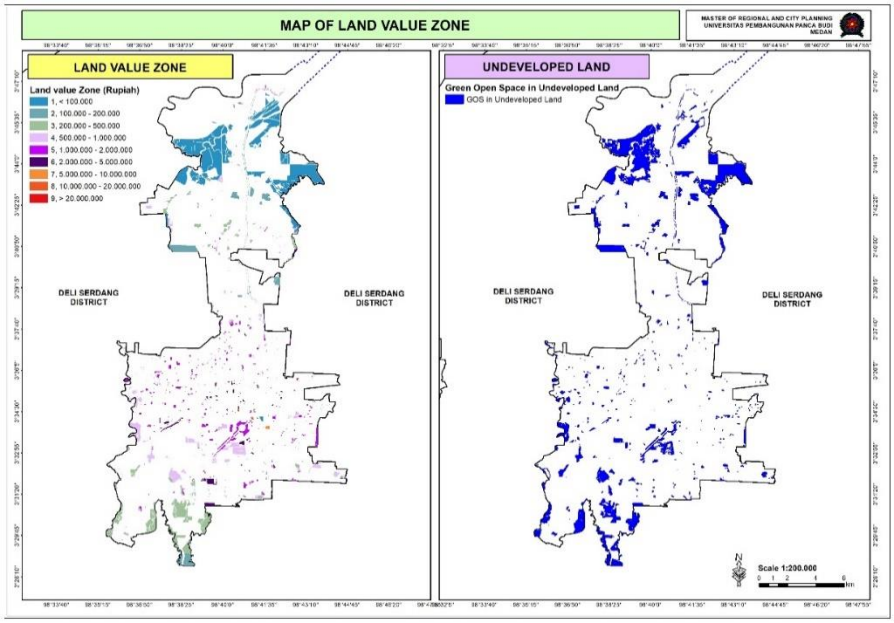

Figure 7. Value ZoneUndeveloped Land and Land in the 2015-2035 RTH Plan
Source: Author's Analysis in 2024

Existing Green Open Space in Medan City

The results of identification and interpretation of green open spaces in the city of Medan produce 5 types of green open spaces. The urban jungle, including mangroves and the zoo, is the largest with 1696.13 hectares (62.46%). City parks, totaling 19 parks including Ahmad Yani Park and Merdeka Square, amount to 128.73 hectares (4.74%). Other parks in residential and office areas as well as other public facilities cover an area of 170.66 hectares (6.28%). The cemetery includes 207 cemeteries with an area of 171.98 hectares (6.33%), while the green belt which includes roads (toll roads and public roads), river riparian paths, and railroad tracks has an area of 547.88 hectares (20.18 %). Each green open space has a water absorption function and is known by a specific name.

The significant difference with the green open space plan is the urban forest and green belt, where in the 2015-2035 green open space plan these two types of green open space are not accommodated as part of the green open space. So this analysis can be taken into consideration in the revision of the Medan City RDTR forallocate green open space land.

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

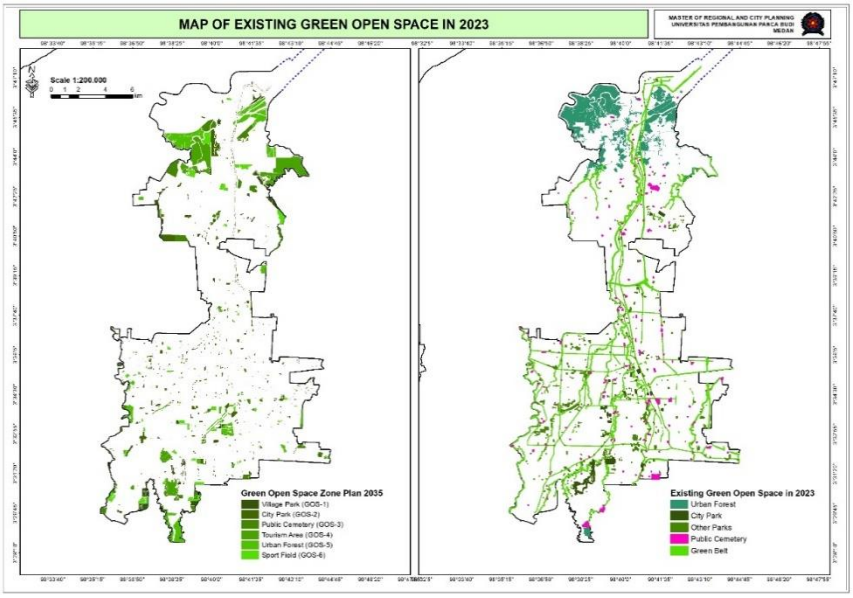

Figure 8 MapExisting Green Open Space
Source: Author's Analysis in 2024

Strategy for Solving Problems in Providing Green Open Space in Medan City

Analysis of RTH problems is integrated into environmental analysis, covering the internal environment and external environment. Internal environmental analysis includes strengths and weaknesses, while external environmental analysis includes opportunities and threats. Environmental analysis is a SWOT analysis which aims to formulate alternative strategies for developing green open space in Medan City. The SWOT analysis matrix of green open space problems in Medan City can be seen in Table 4.

Table 4. MatrixSWOT Analysis of RTH Problems in Medan City

	Opportunities	Threats
SWOT MATRIX	-Medan City RDTR Revision 2015-2035; -There is empty land without buildings as potential green open space; -There is empty land without land ownership as potential green open space; -Mangrove land and green belt as potential green open space; -Cemeteries that have not been allocated have the potential to become open space; -Parks at SPUs and offices have the potential to become green open spaces;	-Uncontrolled dynamics of urbanization; -Speculation on land prices is getting higher; -the occurrence of tenure conflicts in RTH plans; -Increased temperature and air pollution; -Lack of public awareness of RTH; -Sustainable development is not realized.

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

		-Housing complex PSU assets have potential as green open space; -There are several lands that have been acquired by the government for RTH; -Increase in the budget for green open space land procurement; -Multi-Stakeholder Collaboration; -Priority use of CSR funds for RTH; -Expansion of green open space to suburban areas; -Green Building Development Concept in the City Center; -Data collection on land rights on RTH land; -Reconstruction of government sectoral authority; -Implementation of incentive schemes on RTH land.	
Strengths	-Implementation of RDTR in space control; -Large green open space potential in the northern region; -There is an environmental management program as part of CSR; And -The Government is starting to get serious about handling RTH.	•Utilizing the revised RDTR to strengthen the implementation of space control so that it is more effective and in line with the latest developments; •Develop and utilize mangrove land, green belts and empty land as green open space; •Optimizing CSR funds from companies to accelerate green open space procurement; •Increasing cooperation between government, companies and communities to develop RTH effectively and sustainably; •Development of the Green Building concept in the City Center; And •The Government's seriousness is the basis for strengthening efforts to better manage RTH as a whole.	•Tightening spatial control through RDTR to overcome the negative impacts of uncontrolled urbanization; •Utilizing the potential of green open space in the northern region to reduce air pollution and improve environmental quality; •Using CSR programs to secure land before land prices increase further due to speculation; And •Using the government's seriousness in handling RTH to resolve tenure conflicts through mediation and law enforcement.
Weaknesses	-Green open space plans are allocated to built-up land; -Green open space plans are allocated to land with land rights;	•Changing the allocation of green open space plans from built-up land to vacant land that does not yet have ownership to reduce conflicts and speed up green open space procurement;	•Revise the allocation of green open space so that it is not on built-up land which is at high risk of land price speculation, looking for more affordable land alternatives;

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

-Many residential public utility facilities have not been delivered; -Mangroves have not been allocated as part of the RTH plan; -Inaccuracies in describing green open space plans constitute planning errors; -The 20% proportion of green open space needs has not been met, especially in the City Center; -Large budget requirements for the procurement of RTH land; -Limited land for green open space; -Efforts to procure green open space land have not been optimal; -The government sector proposing green open space land acquisition is not active; And -Asset data collection on RTH land is not yet optimal.	•Accelerate the process of handing over public utility facilities by developers so that they can be used as green open space; •Overcoming limited land in the city center by developing green open space in suburban areas that still have empty land; And •Increase efforts to collect data on assets and land rights on RTH land to facilitate the management and development of RTH.	•Including mangrove areas in the RTH plan to address rising temperatures and air pollution; •Increasing efforts to acquire green open space land by educating and involving the community to be more concerned and supportive of the green open space program; And •Improve the accuracy of land parcel depictions to prevent planning errors that can trigger tenure conflicts.

Source: Author's Analysis in 2024

Problems providing green open space in Medan City generally include internal and external problems. This problem is the main focus that needs to be addressed to improve green open space management, both from an internal government perspective and in dealing with the dynamics of the external environment. The results of the analysis show that the main internal problems in providing green open space in Medan City are: (a) the planned green open space is allocated to built-up land and land with land rights; (b) asset data collection and efforts to procure RTH land have not been optimal; (c) the proportion of green open space needs of 20% has not been met, especially in the City Center; (d) large budget requirements for the procurement of RTH land. Meanwhile, the main external problems in providing green open space in Medan City are: (a) the dynamics of uncontrolled urbanization; (b) Speculation on land prices is getting higher; (c) Increased temperature and air pollution affect living comfort; (d) Lack of public awareness of RTH.

The strategy for dealing with the main internal problems is the need to optimize land acquisition through increasing the accuracy of data collection and revising the RDTR, utilizing

Jurnal Ekonomi
Volume 13, Number 03, 2024, DOI 10.54209/ekonomi.v13i03
ESSN 2721-9879 (Online)
https://ejournal.seaninstitute.or.id/index.php/Ekonomi

vacant land, as well as strengthening multi-stakeholder cooperation and the use of CSR funds. Meanwhile, the strategy for dealing with the main external problems is the need to control urbanization through the RDTR policy, regulations for handling land price speculation, education and public awareness campaigns for green open spaces, as well as the development and expansion of green open spaces to mitigate environmental impacts. Implementation of this strategy must involve the formation of a special team, regular evaluation, and transparency and public involvement at every stage.

CONCLUSION

The green open space plan is dominated by land that has not been developed and does not function as green open space, namely the use of pond/pond land is 28.50%. The existence of this condition has become a dynamic in the provision of green open space in Medan City. The green open space plan that has been implemented (realized) only covers an area of 667.41 hectares or 2.29% of the area of Medan City. This indicates a very lack of realization of green open space in Medan City. The existence of built-up land (activities/businesses) and land with land ownership certificates in the green open space plan is the specific cause of the provision of green open space land not being able to run optimally in the city of Medan. So there is a need for a fair green open space development concept. Land without land rights in the RTH plan dominates at 70.70%, which indicates that there are difficulties in the process of obtaining land certificates, this will give rise to tenure conflicts. So that the Medan City Government can consider land ownership rights in future green open space plans, both through land acquisition efforts and collaboration with land owners for future green open space development. The Medan City Government budget of 543 billion rupiah is needed each year to implement the 2015-2035 green open space plan on land with minimal conflict (non-built land). The existing green open space in Medan City covers an area of 2,715.37 hectares or 9.30% of the area of Medan City. When compared with the 2015-2035 RTH plan (2.29%) there are significant differences in the allocation of mangrove land and green belts which have not been accommodated in the RTH plan. So that the identification of existing green open space can be taken into consideration in the revision of the Medan City RDTR to allocate green open space land. The strategy for resolving green open space problems in Medan City can be carried out by optimizing land acquisition through increasing the accuracy of data collection and revising the RDTR, utilizing vacant land, as well as strengthening multi-stakeholder cooperation and the use of CSR funds. Apart from that, it is also necessary to control urbanization through the RDTR policy, regulations for handling land price speculation, public education regarding green open spaces, and development of green open spaces to mitigate environmental impacts. Implementing this strategy requires the formation of a special team, regular evaluation, as well as transparency and strong public participation.

REFERENCES.

[1] Abdiyanto (2015). Development Theory. Publisher, Faculty of Economics & Business, UNPAB. Medan. ISBN 978-602-71238-2-3.
[2] Setiowati, R., Hasibuan, HS, Koestoer, RH, and Harmain, R. (2019). *Planning for*

Urban Green Areas and Its Importance for Sustainability: The Case of Jakarta. IOP Conference Series Earth and Environmental Science, 328(012027). https://doi.org/10.1088/1755-1315/328/1/012027

[3] Kwon, OH, Hong, I., Yang, J., Wohn, DY, Jung, WS, and Cha, M. (2021). *Urban Green Space and Happiness in Developed Countries*. EPJ Data Science 10(28): 1-13. https://doi.org/10.1140/epjds/s13688-021-00278-7

[4]A Sagala, D. (2024). Analysis of Regional Development Patterns in Medan City. Journal of Placemaking and Streetscape Design, 1(2): 109-116. https://doi.org/10.61511/jpstd.v1i2.2024.567

[5] Sulistiyono, N., Basyuni, M., and Slamet, B. (2018). *Land Surface Temperature Distribution and Development for Green Open Space in Medan City Using Imagery-Based Satellite Landsat 8*. IOP Conference Series: Earth and Environmental Science, 126(012128). https://doi.org/10.1088/1755-1315/126/1/012128

[6] Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 14 of 2022 concerning the Provision and Utilization of Green Open Space. State Gazette of the Republic of Indonesia 2022 Number 679. Jakarta

[7] Medan City Regional Regulation Number 2 of 2015 Detailed Spatial Plan and Zoning Regulations for Medan City for 2015-2035. 24 July 2015. Medan City Regional Gazette 2015 Number 2. Medan.

[8] Medan City Regional Regulation Number 1 of 2022 Medan City Regional Spatial Plan for 2022-2042. January 14 2022. Medan City Regional Gazette 2022 Number 1. Medan.

[9] Slamet, B., Syahputra, OKH, Kurniawan, H., Saraan, M., and Harahap, MM (2021). *Analysis of Vegetation Cover and Built-up Areas in the Percut Watershed Landscape, North Sumatra Province Using Sentinel-2 Imagery. IOP Conference Series Earth and Environmental Science*, 912(012089). https://doi.org/10.1088/1755-1315/912/1/012089

[10] Rahmawaty., Harahap, MM, Kurniawan, H., and Rauf, A. (2021). *Assessment of Land Cover Change Over a Period of Five Years in Deli Serdang, North Sumatra. IOP Conference Series Earth and Environmental Science*, 782(032007). https://doi.org/10.1088/1755-1315/782/3/032007

[11] Dharmawan, IA, Rahadianto, MAE, Henry, E., Endyana, C., and Aufaristama, M. (2021). *Application of High-Resolution Remote-Sensing Data for Land Use Land Cover Mapping of University Campus. Hindawi The Scientific World Journal*, Vol. 2021 (5519011): 1-17. https://doi.org/10.1155/2021/5519011

[12] Astuti, W., Mulyadi, AT, and Setiawan, I. (2016). Identification of Green Open Space in Bogor City using Geographic Information System Applications. Nusa Sylva Journal, 16(1): 24-31. https://ejournalunb.ac.id/index.php/JNS/article/view/183

[13] Hermawan, E. (2015). Phenomenon *Urban Heat Island*(UHI) in several large cities in Indonesia as one of the impacts of global environmental change. Citra Widya Edukasi Journal, 7(1): 33-45. https://journal.poltekcwe.ac.id/index.php/jurnal_citrawidyaedukasi/article/view/119

[14] Chairuman, M., Wihandato, A., and Rusdiyanto, E. (2023). Urban Land Use Changes and

Phenomena *Urban Heat Island*in South Tangerang City. Ironwood: Journal of Tropical Forests, 7(2): 142-145. http://dx.doi.org/10.32522/ujht.v7i2.10375

[15] Milanie, F. (2023). *Regional Development of Medan City*. International Journal of Management, Economics and Accounting, 1(2): 3025-5627. https://doi.org/10.61306/ijmea.v1i2.23

[16] Silalahi, J., and Harianja, AH (2015). Analysis of the Need for Green Open Space in Medan City. Proceedings of the Exposure of Research Results, Aek Nauli Research Institute, ISBN 978-602-19559-7-0. *https://www.researchgate.net/publication/273451106*

[17] Rahmawaty., Perdinan., Dewi, NWSP, and Kurniawan, H. (2019). *Integrated Approach in Determining Priority Environmental Issues in Medan City North Sumatra Province. IOP Conference Series Earth and Environmental Science*, 399(012003). https://doi.org/10.1088/1755-1315/399/1/012003

[18] Rahmawaty., Patana, P., and Latifah, S. (2017). *Spatial Analysis on Distribution of Green Belt to Reduce Impacts of Climate Change in Medan City, North Sumatra. Malaysian Applied Biology*, 46(2): 67-76. http://journalarticle.ukm.my/12334/

[19] Zaitunah, A., Samsuri., and Sahara, F. (2021). *Mapping and assessment of vegetation cover change and species variation in Medan, North Sumatra*. Heliyon, 7(5): e07637. https://doi.org/10.1016/j.heliyon.2021.e07637

[20] Sugiarto, A., and Ramadania, RK (2023). Deli River Bank Land Management for Sustainable City Development Based on Regional Regulations (RTRW/RDTR) (Case Study: Deli River Bank, Medan Maimun District). Journal of Sharia Economics & Economics, 7(1): 2614-3259. *https://doi.org/10.36778/jesya.v7i1.1378*

[21] Marwazi, A., Nuraini, C., Abdiyanto., Sugiarto, A., and Millanie, F. (2023). Preliminary Study of Medan City Regional Planning. Fleet: A Multidisciplinary Research Journal, 1(12): 1402-1407. *https://doi.org/10.55681/armada.v1i12.1078*

[22] Siregar, RU, Sabrina, T., and Lubis, SN (2024). Analysis of Fulfillment of Green Open Space Needs in Medan City. Global Education Scientific Journal, 5(1): 442-454. https://doi.org/10.55681/jige.v5i1.2470

[23] Rahmawaty., Siahaan, J., Nuryawan, A., Harahap, MM, Ismail, MH, Rauf, A., Kurniawan, H., Gandaseca, S., and Karuniasa, M. (2023). *Mangrove Cover Change (2005-2019) in the Northern part of Medan City, North Sumatra, Indonesia. Geocarto International*, 38(1): 2228742. https://doi.org/10.1080/10106049.2023.2228742

[24] Yusuf, M. (2023). Implementation of Public Green Open Space (RTH) Development Policy in East Kalimantan Province. *Good Governance Journal*, 19(2): 175-182. https://jurnal.stialan.ac.id/index.php/gg/article/view/628/403

[25] Peramesti, NPDY (2023). Implementation of Regional Spatial Planning Policy in Providing Green Open Space in the Administrative City of South Jakarta, DKI Jakarta Province. Journal of Politics, 3(1): 1-10. https://ejournal.ipdn.ac.id/JP/article/view/499

[26] Abdiyanto (2020). Social & Scientific Research Methods. Publisher: Aneka Ilmu Semarang. ISBN 9786239220945.

[27] Kurnianti, DN, Rustiadi, E. and Baskoro, DPT (2015). *Land Use Projection for Spatial Plan Consistency in Jabodetabek*. Indonesian Journal of Geography, 47(2): 124-131. https://doi.org/10.22146/ijg.9249

[28] Kurniawan, H., Abdiyanto, Sugiarto, A. (2024). *Synchronization of The Revision of The RTRW of Tebing Tinggi City With The Revision of The RTRW of North Sumatra Province Case Study: Space Pattern Plan. International Journal of Educational Review, Law And Social Sciences*, 4(04): 901-916. https://radjapublika.com/index.php/IJERLAS/article/view/1700

[29] Sasoko, DM, and Mahrudi, I. (2023). SWOT Analysis Technique in Activity Planning. Perspective Journal - Jayabaya Journal of Public Administration, 22(1): 8-19. *https://ejournal-jayabaya.id/Perspeksi/article/view/64*

[30] Regulation of the Minister of Agrarian Affairs and Spatial Planning/Head of the National Land Agency Number 11 of 2021 concerning Procedures for Preparing, Reviewing, Revisioning, and Issuing Approval of the Substance of Provincial, Regency, City and Detailed Spatial Planning Plans. State Gazette of the Republic of Indonesia 2021 Number 329. Jakarta.