

Green Open Space System in an Effort to Increase Green Open Space in the Tangerang City Area

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Abstract

The first stage of this research was carried out in the city of Tangerang, especially in green open spaces, by analyzing green open spaces based on land use that has potential in the area as a green open space system. One of the landscape elements found in urban areas is urban parks, environmental parks, urban forests, river banks, railroad banks, green lanes, roads and so on. The problems that develop and exist are mainly in green open space planning, where the plan is made after a plan is finished, so that green open spaces are not integrated, and are not connected to various elements of the city area. So that achieving 30% green open space in urban areas is difficult, if implemented it will take a relatively long time. The City of Tangerang in terms of land area and green open space is still 15% and in terms of land use has not yet formed a continuous green open space system, so one green open space with other green open spaces still stands alone. The aim of the research is to map the existence of green open spaces in the city of Tangerang, so that an overview or profile of green open spaces is obtained, as the first stage of the research conducted. The research method was designed qualitatively with a case study approach.

Keywords

green open space; green belt; city park; Tangerang city



I. Introduction

In the pandemic era, green open spaces are absolute because they are a forum for socializing residents and ecological spaces, so that in quantity they should have filled 30% of the total area of the city. Chiara (1975), states that green open space is part of urban open space which has multiple functions for various social needs of society and for the natural needs of a city. Green open spaces in their various forms and functions must be integrated with other urban elements as is the case with the city of Tangerang, so that green open spaces can be easily accessed by all residents and as interpenetration between other urban elements (Heckscher 1913 and 1977). According to the Regulation of the Minister of Home Affairs Number 1 of 2007 concerning Urban Green Open Space Arrangement (RTHKP) Article 6, the types of RTHKP include: (1). City Park; (2). nature tourism parks; (3). recreational park; (4). housing and settlement environmental parks; (5). office environment parks and commercial buildings; (6). grand forest park; (7). city Forest; h. protected forest; (8). natural landscapes such as mountains, hills, slopes and valleys; (9). nature preserve; k. Botanical Garden; (10). zoo; (11). public cemetery; (12) sports fields; (13). field ceremony; (14) open parking; (15). urban agricultural land; (16). lines under high voltage (SUTT and SUTET); (17). river borders, beaches, buildings, lakes and swamps; (18). road safety lines, road medians, railroads, gas pipes and pedestrians; (19). green areas and lanes; (20). airfield buffer zone; and (21). roof garden. Some definitions of green open space are presented below: urban agricultural land; (16). lines under high

voltage (SUTT and SUTET); (17). river borders, beaches, buildings, lakes and swamps; (18). road safety lines, road medians, railroads, gas pipes and pedestrians; (19). green areas and lanes; (20). airfield buffer zone; and (21). roof garden. Some definitions of green open space are presented below: urban agricultural land; (16). lines under high voltage (SUTT and SUTET); (17). river borders, beaches, buildings, lakes and swamps; (18). road safety lines, road medians, railroads, gas pipes and pedestrians; (19). green areas and lanes; (20). airfield buffer zone; and (21). roof garden. Some definitions of green open space are presented below:

1. According to Legal Aspect

- a. Law of the Republic of Indonesia Number 26 of 2007 concerning Spatial Planning, stated as follows Green open space is an elongated/lane and/or open area, a place for plants to grow, both those that grow naturally and those that are intentionally planted.
- b. Regulation of the Minister of Home Affairs Number 1 of 2007 concerning Urban Green Open Space Planning: Open green space as open space whose utilization is more in the nature of filling green plants or natural plants or cultivating plants such as agricultural land, landscaping, plantations and so on
- c. Regulation of the Minister of Public Works No. 05/PRT/M/2008 concerning Guidelines for Provision and Utilization of Green Open Spaces in Urban Areas: Green open spaces are elongated/lane and/or grouped areas, which are used more openly, where plants grow, both those that grow plants naturally or intentionally planted.

Meanwhile, according to Regulation of the Minister of Public Works No. 05/PRT/M/2008 concerning Guidelines for Provision and Utilization of Green Open Spaces in Urban Areas, types of green open spaces include:

1. Green Open Space Yards: residential yards, office yards, shops, and business premises. Roof gardens
2. RTH City Parks and Forests: RT parks, RW parks, village parks; district park, city park, urban forest, green belt
3. RTH Green Road Line: road islands and road medians, pedestrian paths, space under flyovers.
4. Green Open Space for Certain Functions: Green Open Space for Railroad Borders, Green Line for High Voltage Power Networks, Green Open Space for Rivers, Green Open Space for Coastal Borders, Green Open Space for securing raw water sources/springs, cemeteries

Chiara (1975) states that the type of green open space is determined based on its function, namely mono-function and multi-function, both of which can be formed naturally or built. For those with mono function, it can be river banks, railroad banks, high-voltage green lines, road green lines, cemeteries and others. For those with multiple functions, it can be in the form of corridors, green lanes between buildings, green lanes for flood control, watersheds and so on.

Dramstad (1996), states that green open space systems can be developed in the form of green belts or parks, depending on the existing landscape structure (Dramstad et al, 1996). The green open space system (RTH) is a system of green areas whose role is to connect various green areas in one city or region and these conditions are expected to increase the percentage of area, role and function of green open spaces, so that each park can be interconnected and form a green belt. (Budiyanti et al, 2020). Green open space as a system has several concepts.

The Greenbelt concept is a form of a green open space system, which aims to connect green open spaces in the form of city parks, environmental parks and other green belts, which will later be directed towards the river, because according to Olmsted the river

cannot be used as a system. because the river is a system that stands alone (Olmsted in Heckscher, 1977). The greenbelt concept is also known as the network pattern concept which consists of radial, geometric and tree-shaped (branching) patterns, where city parks or neighborhood parks are connected by street greenways

The universal problem that arises is that green open space planning is often made after a plan has been made, so that between green open spaces and other urban planning elements are often not systemically integrated.

The existence of green open space in urban areas is still 15% and in terms of land use has not yet formed a green open space system, so one green open space with other green open spaces still stands alone. This first stage of research is intended to map the existence of green open spaces in urban areas in general, so that an overview or profile of green open spaces is obtained using the green open space system method with a land use approach. Based on the results of a survey to the Tangerang city area, several land uses were found, such as those that have been submitted, which will be applied to the method. The findings that will be obtained from the research will be used as a basis for preparing the concept of green open space planning for the city of Tangerang.

1.1 Formulation of the problem

The problems found are as follows:

Can the green open space system method be applied in urban areas?

1.2 Research purposes

The aims of this research are as follows:

Mapping the types of green open spaces that exist in urban areas that have the potential to be developed as a system.

1.3 Research Limitations

This research is limited to urban areas, specifically the city of Tangerang, which has the potential to be utilized as a green open space system in an effort to further increase the area of green open space.

1.4 Benefits of research

Urban green open space, as an architectural element of urban landscape, is a priority, to expand or increase the area of urban green open space.

II. Research Method

a. Research sites

The research was conducted for 1 (one) year in Tangerang City.

b. Research design

The research was designed qualitatively with a case study approach, namely compiling knowledge about a particular problem from a case with clear boundaries.

c. Population and research sample

The population in this study is all public green open spaces in the city of Tangerang. The research sample is a type of green open space that has the potential to be developed as a green open space system.

d. Method of collecting data

- Survey method.
- Archive method.
- Observation method.

2.1 Analysis Method

Done as an attempt to describe the data so that the knowledge hidden in the data is structured. The technique used to interpret the data is descriptive and overlay. While the green open space system (GOS System), as an effort to increase the area of open space urban green. The variables to be measured in this study are as follows:

Table 1. Research variables

Variable	Sub Variable	Indicator
Public green open space	Classification of green open space	Green open space according to land use
	Green open space type	Green open space that can be developed as GOS Systems

2.2 Achievement Indicators Study

The achievement indicators of this study are as follows:

1. Obtain an overview of the existence of green open spaces in urban areas,
2. Get profile about the types of space open green, that is developed as a green open space system in the city of Tangerang.

III. Result and Discussion

3.1 General Description

Tangerang City is a city located in Banten Province. This city is located just west of Indonesia's capital city, Jakarta. Tangerang City is bordered by Tangerang Regency to the north and west, South Tangerang City to the south, and the Special Capital Region of Jakarta to the east.

Tangerang City has 13 sub-districts, namely kec. Tangerang, kec. Objekti, district. Cibodas, kec. Ciledug, kec. Cipondoh, kec. Jatiuwung, kec. Karang Tengah, sub-district. Karawaci, kec. Prohibition, kec. Neglasari, kec. Periuk, kec. Pinang and kec. Flatstone. Tangerang District is located in the center of Tangerang City, precisely at the 0 kilometer point of Tangerang City. Inventory of types of green open space

Green open spaces in the city of Tangerang are as follows:

a. Green open space in the form of a corridor consists of:

1. The green line along the Cisadane River.
The location of the river border in the city of Tangerang is along the Babakan Village to the Cikokol Village. In 2017 the Provincial Government of Tangerang City carried out a revitalization, namely creating a green line, which could be used as a recreation area, as well as a landslide barrier in two sub-districts.
2. Railroad green line.
The location of this green open space lies in the Sukasari Village, the Buaran Indah Village and the Tanah Tinggi Village.

3. green line road,
Green open space green road lane, located in Tanah Tinggi Sub-District and Sukarasa Sub-District.



Figure 1. The green line of the road

Source <https://www.google.com/search?q=jalur+green+jalan+di+tangerang+kota&tbm>

b. Green open space in the form of a city park.

1. City parks, located in Cikokol Village, Babakan Village and Sukasari Village, namely:
 - Single Elephant Park. This park is located on Jalan Perintis Kemerdekaan, Cikokol, right by the Cisadane river. This park is equipped with children's playgrounds such as swings, slides and others, and is equipped with a culinary area with facilities for selling food as many as 53 food outlets.



Figure 2. Single Elephant Park Source: researchers and <https://www.google.com/search?q=tamangajah+tunggal+kec.+Tangerang+>

- Portrait Park is located in the village of Babakan, District of Tangerang. The condition of the garden is well maintained and the types of plants are dominated by trees, and equipped with food outlets. Can be seen in figure 3.



Figure 3. Source Portrait Park:
<https://www.google.com/search?q=park+potret+kec.+Tangerang+city+Tangerang&tbm>

- **Tangerang City Square.**
 There is a Tangerang City square located on Jl. Ahmad Yani, located in the middle of the city of Tangerang Tangerang City Square or often referred to as Ahmad Yani Square, and is a place for practicing various sports activities



Figure 4. The square
 Source :<https://www.google.com/search?q=park+alun-alun+kec.+Tangerang+city+Tangerang&tbm>

Map the types of green open spaces that have the potential to be developed as a system.

The city of Tangerang as a whole has quite a diverse green open space structure, namely in the form of mixed gardens, rice fields and shrubs. According to the system according to Motloch (1991), it has various sub-systems which are interrelated with each other so that they become a unified whole as the landscape structure of a city.

However, not all of these green open spaces have the potential to be developed, only green open spaces in the form of corridors in the form of road greenways, river borders, railway borders and parks, namely city parks and environmental parks which have the potential to be developed as an effort to increase their area in the city of Tangerang. like in picture 5 below.

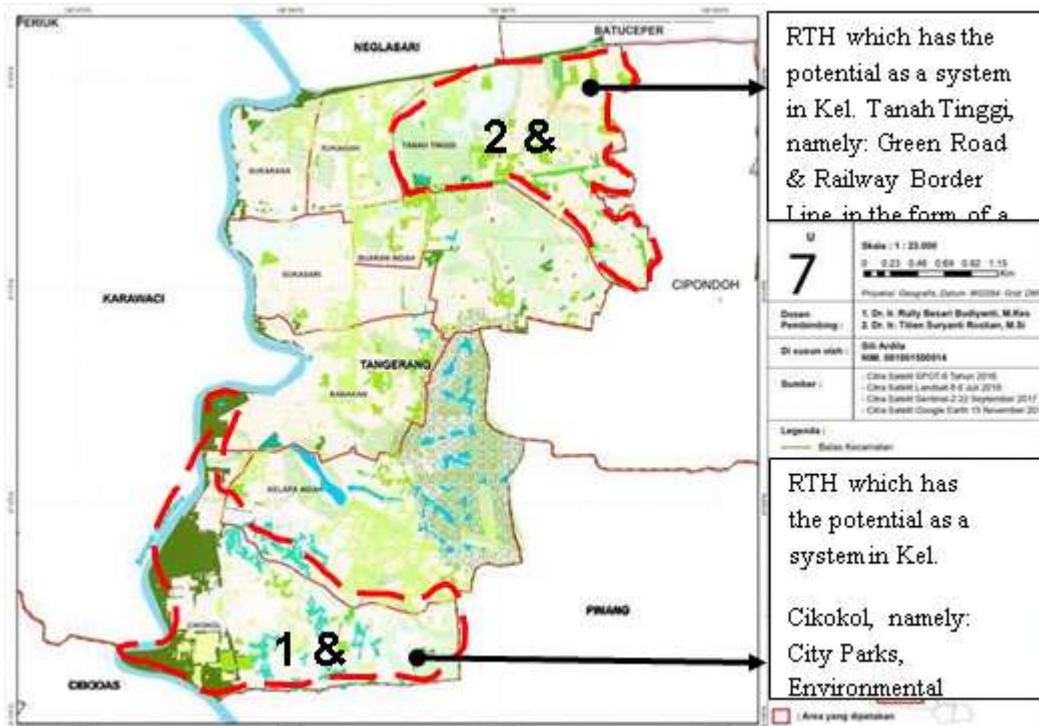


Figure 5. Map of the potential for developing green open spaces as a system Source: 2020 processed by researchers

Green open space expansion planning concept. The green open space system method will be used to develop green open space planning concepts to produce linear patterns, network patterns and natural patterns. The variables used to determine these patterns are the shape, area and location of each green open space



Figure 6. Linear pattern on the Cisadane riverbank

Source : Journal of Landscape Architecture Issn: 2442-5508 Vol. 6, No. 1, April 2020 and <https://www.google.com/search?q=concept+space+open+green+border+river+cisadane+di+kelurahan+cikokol+kota+tangerang>



Figure 7. Linear pattern on a railroad border

Source : *Journal of Landscape Architecture* Issn: 2442-5508 Vol. 6, No. 1, April 2020 and <http://repository.unpas.ac.id/29007/1/BAb%20%20Tinjauan%20Teoritis.pdf>



Figure 8. Network patterns in city parks Source: *Journal of Landscape Architecture* Issn: 2442-5508 Vol. 6, No. 1, April 2020 and <https://www.google.com/search?q=concept+garden+city+12+with+pattern+network&tbm>

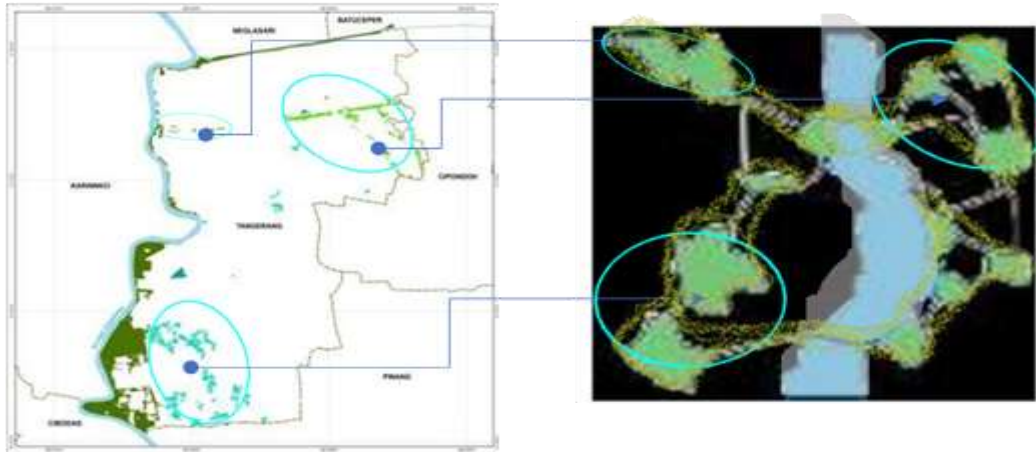
Application of green open space system (GOSS)

The green open space system (GOSS) method aims to develop green open spaces based on land use as an effort to increase the area of green open spaces in the city of Tangerang. The GOSS method is to combine several green open spaces that are considered to have the potential to be developed or combined, namely river border green open spaces,

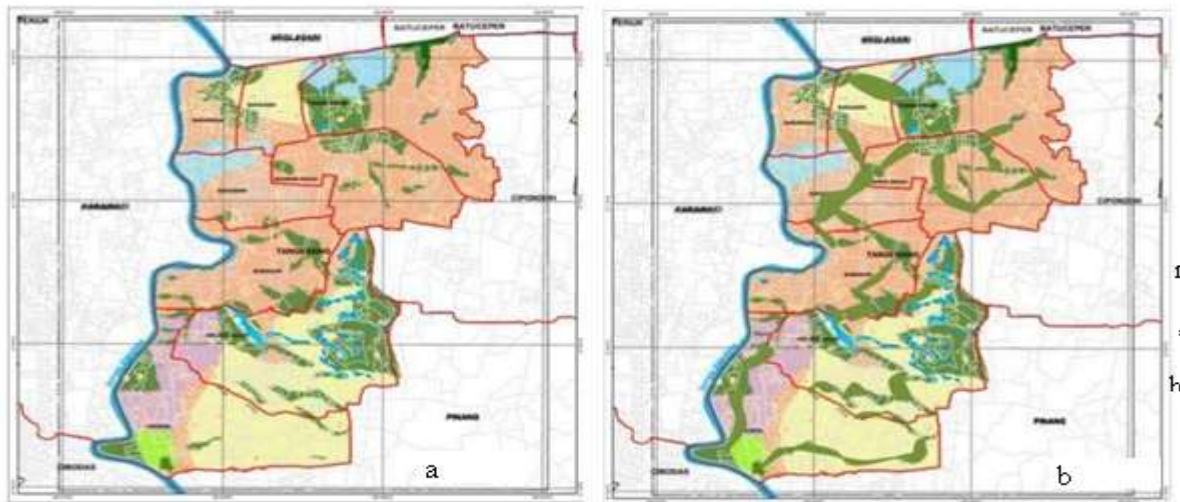
railway border green open spaces, road green open green spaces, city parks and environmental parks.

The merger is carried out by adding vegetation and opening new land in the form of corridors with linear shapes and networks.

1. The Network Pattern, by applying the concept created by Olmsted Greenbelt (green belt), which aims to connect green open spaces in the form of Tangerang city parks and other green belts, to the Cikokol Village; Upland; Sukasari .



2. The linear pattern is dominant in the city of Tangerang, by applying the concept from Kessler in the form of a combination of the natural structure of the city and the artificial structure of the city. In the concept of this linear system, green open spaces that were originally standing alone (partially) can become a green open space system with the addition of other green open spaces, located in Sukarasa (Sukasari) Village which is part of the city of Tangerang.



Sebelum dibuat Sistem
RTH

Setelah dibuat Sistem
RTH

Figure 9 a & b. In figure 27a green open space before being developed and figure 27 b green open space has been developed using the GOS method

Source: Ardila & Budiayanti, *Journal of Landscape Architecture* Issn: 2442-5508 Vol. 6, No. 1, April 2020

IV. Conclusion

An approach is needed to find out what types of green open space can be converted into sub-systems of the green open space system. In this study land use is one of the approaches and in the city of Tangerang it is found that the appropriate green open space system is in the form of corridors and networks. This is because the green open space is dominated by corridors and networks in the form of mixed gardens, river border lines, road green lines, railroad border lines with several patterns, namely:

1. Network pattern, by applying the concept created by Olmsted Greenbelt (green belt).
2. Linear Pattern, by applying the concept of Kessler in the form of a combination of the natural structure of the city with the artificial structure of the city. In this linear system concept, a green open space that originally stood alone (partially) can become a green open space system with the addition of other green open spaces.
3. Natural Pattern, by applying the concept from Cleveland, namely adding trees with a crown with a diameter of more than 5 meters, thus forming a green corridor.

Of the three patterns, the linear pattern is the most efficient because it can use minimal land, and can connect between green open spaces, so that green open space is not only seen as space, but as a sub-system of the landscape that plays a role in forming the green open space system. So that the application of the green open space system in the city of Tangerang shows that it can increase the area of green open space by 5.70% from the initial start which was only 15% of the total area. With an ecological approach, all green open spaces in the city of Tangerang have the potential to be developed as a green open space system as an effort to further increase the area of green open space in the city of Tangerang.

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