

## Identifying the Implementation of Three Attributes of Green City in Gorontalo City

Zamaludin Mantali<sup>1</sup><sup>1</sup>Master of Urban and Regional Planning, School of Architecture, Planning and Policy Development, Bandung Institute of Technology, Indonesia\*Corresponding author: [zamalmantali25@gmail.com](mailto:zamalmantali25@gmail.com)

## Article history

Received	Received in revised form	Accepted	Available online
19 September 2023	31 January 2024	31 January 2024	1 February 2024

**Abstract:** Over time, population growth in Gorontalo City will continue to increase. Meanwhile, land for housing will not increase. This is certainly one of the problems that requires seriousness in handling it. Based on data from the Central Bureau of Statistics of Gorontalo Province from 2012 to 2021, population growth in Gorontalo City continues to increase from 189,476 people to 199,788 people. This has led to a decline in the quality of the environment in Gorontalo City which results in the emergence of slums and climate change, in this case global warming. As an effort to overcome these problems, Gorontalo City is currently implementing the Green City concept. Green City is an environmentally friendly and sustainable city development concept. In this research, the author uses Qualitative Research Method, which is conducting interviews with the government and also some environmental activists as well as direct observation and documentation. However, in this research, the author realizes that there are still limitations in collecting the required data so that the author tries to collect data from various sources of previous research. as for the output of the research that the author hopes for is the improvement of the principles of Green City attributes from each element of the Green City attributes so as to create Sustainable and Environmentally Friendly Gorontalo City Regional Development supported by the city community itself.

**Keywords:** Green City, Environment, City of Gorontalo.

## 1. Introduction

Green City is a sustainable urban planning concept where Green City is also known as Ecological City or in other words, a healthy city [1]. In addition, Green Cities are able to provide a balance in urban development while still paying attention to environmental sustainability because green cities are cities that often utilize natural resources in the form of water and energy effectively and efficiently, implement integrated transportation infrastructure systems, reduce waste, synergize natural and artificial environments and ensure health and the environment [2].

The implementation of green cities in Indonesia has been planned as a form of UUPR No. 26 Year 2007 which is related to the fulfillment and provision of land for green open space. Based on UUPR No. 26 Year 2007, 30% of urban areas are designated as green open space with a division of 20% each for public green open space and 10% for private green open space [3]. In carrying out the construction and development of urban areas using the concept of green cities, it is necessary to determine in advance what the criteria for green cities themselves are, so that the planning is in accordance with the main objectives of creating sustainable cities and environmentally friendly cities [4]. The Green City is closely related to the urbanization factor which in this case causes the growth of the city to become uncontrollable if not managed properly and correctly so that a scheme or concept is needed to make it happen.

Gorontalo City is one of the cities in Indonesia whose population growth is increasing from year to year. The increasing population will certainly affect the condition of Gorontalo City, in this case one of which will have an impact on the city's development process itself. Not only that, the availability of natural resources in the form of clean water, land availability and food needs will certainly also decrease. In this situation, the condition of the region, especially Gorontalo City, which is the center of the community to carry out all activities, both educational work and investment in development, will force the Gorontalo City area to be able to accommodate and accommodate all activities carried out by people living in the city. This is one of the challenges and problems that must be faced in terms of the availability of facilities and infrastructure as well as the environmental readiness of Gorontalo City in facing the impact of environmental damage. In addition, the rapid growth of the city can have an impact on the emergence of various urban problems, such as slum conditions, congestion, social inequality, flooding, and the lack of availability of green open space [5].

Judging from the condition of Gorontalo City which has a tropical climate, of course this makes Gorontalo City area needs to pay attention to the comfort of the surrounding environment in order to create a balance between the people who live in Gorontalo City area and also the Gorontalo City environment itself. Currently, the availability of Green Open Space in Gorontalo City has not yet answered the

challenges of environmental problems because the existence of Green Open Space in Gorontalo City is still lacking when compared to the increase in population. Another impact of the increasing population in Gorontalo City is the waste problem that arises due to the actions of the community itself where not all Gorontalo people behave wisely in managing the waste generated from the activities they do. In addition, the waste problem is a classic endless polemic in society where waste will never run out if there is a lack of public awareness about it [6]. For this reason, improving Green Waste management needs to be done as an effort to overcome environmental problems caused by waste generated by the community. The author hopes that ecological-based environmental balance can be realized in Gorontalo City.

For this reason, in improving the Three Attributes of a Green City in Gorontalo City, it is necessary to get attention from the Government in the form of policies which are then discussed with the community. Because in overcoming environmental problems, it is not only the responsibility of the government but also the support and role of the Gorontalo City community. One of the expected roles is the formation of a community of environmentalists among the people of Gorontalo City so that more people are concerned and sensitive to environmental conditions.

Thus, more serious efforts are needed in building and increasing human concern for the environment so that damage and degradation of environmental quality do not continue to occur [7]. Facing complex phenomena in Gorontalo City, there needs to be an effort from related parties and the Gorontalo City government in carrying out the development of Gorontalo City in an integrated, sustainable and systematic manner. Currently, Gorontalo City has implemented the Green City concept as a sustainable and environmentally friendly city. The green city concept is an effort that has been used by various countries in the world to overcome various problems in urban areas [8]. So this concept is considered appropriate in creating a balanced development strategy for the Gorontalo City region in terms of economic, social and environmental growth of the City to create development that takes into account present and future life.

## 2. Methods

### 2.1. Approaches and methods

In this study the authors used a qualitative approach which included descriptive, exploratory and perspective. Descriptive research is research that tells, analyzes and classifies data with various techniques

such as interviews, observations, surveys, questionnaires and others[9]. The application of descriptive methodology in this research is carried out by, among others:

1. Using interview techniques directly to the parties involved both the government and the community. as for the questions asked in the interview include how the waste management process, how the role of environmental activists in this case the community as a Green Community on the influence of environmental conditions.
2. Conducting direct observation at the research location, namely observing every green open space in Gorontalo City, waste banks and at the location of Green Community activities.

### 2.2. Analysis Methods

The analysis method in this research includes the following steps:

1. Assessing the level of importance of the existence and distribution of parks in Gorontalo City.
2. Assessing waste management based on the 3R Principle (reuse, reduce, recycle).
3. Identify the role of the community in improving the Green Community of Gorontalo City.

The three stages of data collection above were analyzed using content analysis which describes objectively and qualitatively each result found.

## 3. Results and Discussion

### 3.1. Identification of Green Open Space distribution in Gorontalo City

Provision and Utilization of Green Open Space in Urban Areas is to improve the quality of a comfortable, fresh, beautiful and clean living environment, as well as a means of securing the urban environment and also creating a harmonious natural environment and built environment that is useful for the benefit of the community [10]. The existence of Green Open Space is very necessary for urban areas. The existence of green open space is expected to overcome environmental quality problems caused by urban activities [11]. The distribution of green open space types in Gorontalo City consists of two types, namely public green open space and private green open space.

Where Public RTH in Gorontalo city includes Urban Forest, Protected Forest, Cultural Heritage Green Open Space, Park, Green Line, Sports Field while Private RTH consists of yards or pages of offices and houses and housing complexes. In addition, there are also wetlands in the form of rice fields, which in this case are water catchment areas [12]. The following table shows the existing condition of green open space distribution in Gorontalo City in 2016.

Table 1. Existing Conditions of Gorontalo City Green Open Space in 2016

RTH Type	Wide (Ha)	Location	Type RTH
RTH PUBLIC			
1. RTH Historical	1.16	Ex. Dembe I	Experience
Tourism Object (Fort Otanaha)			
2. Forest protect	552.33	Ex. Dembe I, Pilolodaa, Buliide, Leato South, North Leato, Talumolo	Experience
3. RTH The Field	3.65		Artificial
a. Buladu The Field	0.86	Ex. Buladu	
b. Nani Wartabone Square	1.25	Ex. Limba U II	
c. West Bulotadaa Field	0.63	Ex. West Bulotadaa	
d. Company Field	0.63	Ex. Liluwo	
4. RTH Park City	6.05	Spread start from limit city up to City center	Artificial
5. RTH Green Line Road	1.96	throughout road Jhon Ario Katili and Joseph Dali	Artificial
6. Ricefield	835.68	Spread in district City Nort Sapatana, East City, Central City and Dunge	Artificial
Total RTH Public	1400.56		
RTH Private			
RTH office page/hotel/school/campus	15.37	Park School, Office and Campus UNG	Artificial
Total RTH Exsisting	1415.93		

Source: Primary Data, 2016 Sri Sutarni Arifin, et al

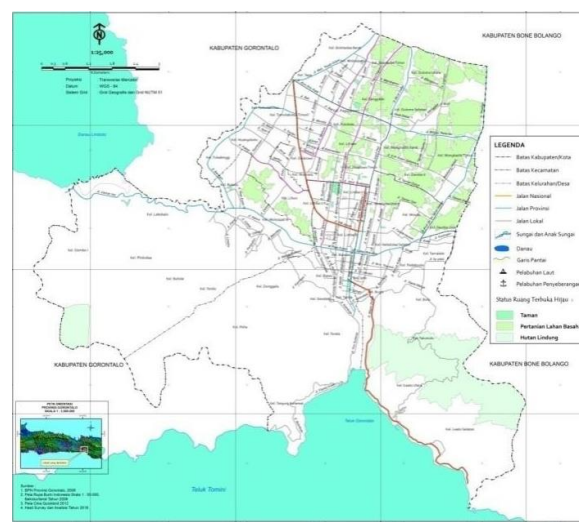


Figure 1. Map of the distribution of green open spaces in Gorontalo City (Source: <https://bit.ly/3zFI0sp> )

The following is a map of the distribution of Green Open Space in Gorontalo City. Based on the results of the analysis of the distribution of Green Open Space availability needs based on PermenPU No. 5 of 2008 that the standard area of city park green open space is 0.3 m<sup>2</sup> / population. The Green Open Space area required by Gorontalo City based on the population in 2015 is 5,094 ha or 0.064 percent of the city area. So this amount has been fulfilled when compared to what

is available in Gorontalo City, namely the area of green open space for this type of city park is 6.05 hectares. For this reason, considering the condition of the population of Gorontalo City is increasing from year to year, so in this case Gorontalo City needs the availability of more green open space for the next few years (Year 2025). The following is a breakdown of population projections based on green open space needs until 2025.

Table 2. Green Open Space Needs based on Population Projection

No.	Subdistrict	Population 2015 (Soul)	Population 2025 (Soul)	City Park Needs 2025 (Ha)
1	Great Dumbo	18.263	22.172	0.665
2	Dungingi	24.804	34.528	1.036
3	Hulonthalagi	16.127	18.485	0.555
4	West City	22.995	61.32	1.84
5	Middle City	26.063	23.111	0.693
6	East City	26.76	31.455	0.944
7	South City	22.471	27.943	0.838
8	North City	18.647	25.61	0.768
9	Sipatana	17.764	20.587	0.618
	Gorontali City	193.898	265.211	7.965

Source: City of Gorontalo in 2015 figures, Sri Sutarni Arifin, et al

Based on the data on green open space needs, Gorontalo City needs an additional city park of at least 2 hectares by 2025. However, if referring to the provisions of Law No. 26/2007 on Spatial Planning which requires 30% green open space from the area with details of 20% public green open space and 10% private green open space, Gorontalo City needs 1,508.65 ha of public green open space and 790.32 ha of private green open space. In 2021, based on field observations, the amount of green open space in Gorontalo City will continue to grow. In addition, there needs to be other specific strategies in developing green open space, among others:

1. Conducting tree planting activities in every location that is considered strategic.
2. Planning the development of city parks as an effort to increase the need for green open space.

Here are some documentation of the current distribution of Green Open Space in Gorontalo City.



Figure 2. Existing condition of Gorontalo City Park (Source : <https://bit.ly/3zGtEII> )



Figure 3. Existing condition of Gorontalo City Youth Taruna Park (Source : <https://bit.ly/3zEcPHR> )



Figure 4. Existing condition of Gorontalo City Open Space Park (Source: <https://rb.gy/j02kj> )



Figure 5. Existing condition of Moodu Park, Gorontalo City (Source: <https://bit.ly/3UBH62n> )



Figure 6. Existing condition of Gorontalo City Molosipat Park (Source: <https://bit.ly/3T076Ty> )



Figure 7. Existing condition of Kalimadu Park, Gorontalo City (Source: <https://bit.ly/3SZw18G> )

### 3.2 Identification of Improved Green Waste Management in Gorontalo City

Waste is a problem that is currently faced by major cities in Indonesia and even other countries. This of course has become a global problem. Situation Analysis Waste is a crucial problem in environmental issues that is in line with the population so that there is an increase in development activities in an environment where the increase in population from year to year causes waste production to increase [13]. For this reason, it is necessary to make efforts to manage waste to realize a waste-free city by managing waste according to the 3R principle. quoted from what was conveyed by the Head of the Gorontalo City Environmental Service Junaidy Kiai Demak explained that the volume of waste in Gorontalo City began to increase in 2020 which reached 120 tons per day compared to previous years such as in 2019 which only reached 80-90 tons per day. With the increasing volume of waste, there is a buildup of waste in the Talumelito landfill because it is full. so that currently all efforts are being made by the government in managing waste so that it becomes a positive value for the community and the surrounding environment. For this reason, it is necessary to have facilities in waste management. Currently Gorontalo City has 9 waste management sites which can be seen in the following table [14]

Table 3. TPS 3R in Gorontalo City

No	Name TPS 3R	Location	Processed Garbage (Tons)	Trash Type
1	TPS 3R Pulubala	Middle City	1.4	Plastic and Organic
2	TPS 3R Tapa	Sipatana	0.3	Plastic
3	TPS 3R Wongkaditi	North City	1.9	Plastic and Organic
4	TPS 3R Donggala	Hulonthalangi	0.6	Plastic
5	TPS 3R Dembe	West City	0.3	Plastic
6	TPS 3R Tuladenggi	Dungingi	0.4	Plastic
7	TPS 3R Moodu	East City	0.8	Plastic and Organic
8	TPS 3R Buladu	West City	0.4	Plastic and Organic
9	TPS 3R West Bulotadaa	Sipatana		Plastic and Organic

Source: Jakstrada Report 2020, DLH City of Gorontalo

In addition to the 9 TPS 3R, the Gorontalo city government, especially the Gorontalo City Environmental Service, has established a waste management site, namely the Gorontalo City Iloheluma Waste Bank. Iloheluma Waste Bank Gorontalo City is one of the main waste banks in Gorontalo City which has been operating since 2019, the achievement targeted by the Gorontalo City Environmental Service Government and the management of Iloheluma Waste Bank Gorontalo City is to reduce waste in the Gorontalo City area using the 3R Reduce, Reuse and Recycle method.

From the target achievement, it can be seen that currently the 3R method is running well as evidenced by public awareness in reducing the use of disposable plastic waste, besides that the management of the Gorontalo City Iloheluma Waste Bank has made several products from recycling plastic waste into handicrafts that have positive value in protecting the surrounding environment in order to realize the implementation of the Green City concept through the Green Waste attribute. The results or products of recycling plastic waste can be seen in the following picture:



Figure 8. Recycling of plastic waste into bags and tissue containers (Source: Personal Documentation, 2021)



Figure 9. Recycling of plastic waste into bags (Source: Personal Documentation, 2021)

Based on the results of plastic waste recycling products into valuable products as green waste, a red thread can be drawn that the improvement of the Green City attribute in Gorontalo City currently needs to be improved through a collaborative movement between government parties who continue to provide education in the form of understanding to the community in protecting and preserving the surrounding environment, which in essence, the community is required to think wisely in producing waste which can then be recycled into valuable items. As a form of realization, waste management must start from the community, making community participation the basis of waste management [15].

### 3.3 Identification of the existence of Green Community Forum in Gorontalo City

In Gorontalo City, the Green Community Forum was formed in 2017. The Green Community Forum is a community organization engaged in the environment to assist the Gorontalo City Government in developing the city through a movement to protect, pay attention to and preserve the surrounding environment. This has a positive impact on how to create public awareness to compete and synergize in protecting the environment through the formation of Green Communities in Gorontalo City. The formation of this community is due to the sensitivity of

community groups who care about the very alarming environmental conditions. The number of members of the green community is approximately 100 members consisting of the younger generation to the elderly. Based on the author's observation in the field and information through direct communication with one of the administrators of the Gorontalo City Green Community Forum, it is said that the existence of the Green Community Forum is a response or effort in making the movement to make Gorontalo City an environmentally friendly city in the context of implementing the Green City concept through the Green Community attribute. Since the establishment of this community, many activities have been carried out. These activities include tree planting, green open space cleaning, drainage cleaning and other activities. as for these activities can be seen from the author's documentation during field observations.



Figure 10. Gorontalo City Green Community Forum (Source: Personal Documentation, 2021)



Figure 11. Green Open Space Cleaning (Source: Personal Documentation, 2021)



Figure 12. Tree planting action (Source: Personal Documentation, 2021)



Figure 13. Drainage cleaning from plastic waste (Source: Personal Documentation, 2022)

The various activities that have been carried out by the Green Community Forum to protect the surrounding environment, of course these activities need to be appreciated because they can provide awareness and understanding to the people of Gorontalo City so they can enjoy and protect the environment together. Apart from the above activities that have been carried out by the Green Community, there are also large activities or projects that are often carried out every year from the start of the Green Community Forum until now. The big project or activity in question is a green office competition where this activity was initiated to compare which sub-district offices in Gorontalo City have very well-maintained office environments such as lots of green planting in the office environment and there are no traces or remains of burning waste in the office area and so on. etc. Apart from that, they also often hold slum area planning competitions in densely populated areas in Gorontalo City. Apart from the Green Community Forum, there are several other Green Communities in Gorontalo City such as MPA Alaska, the Nusantara Community which continue to work together in protecting the environment around Gorontalo City. The author hopes that with the increasing number of communities like this in Gorontalo City, of course we can overcome

environmental problems easily so that we can easily apply the Green City attributes in Gorontalo City.

#### 4. Conclusion

The problem of increasing population in Gorontalo City certainly has an impact on changes in environmental conditions in Gorontalo City. So that currently the government and elements of society continue to collaborate together to protect the environment of the city of Gorontalo. Through this collaboration, the government hopes that the environment of Gorontalo city will be better in the future. Everything can be realized if society can instill a sense of awareness and sensitivity to environmental conditions. as an example, one of them is that with the increasing number of people joining the green community forum in protecting and preserving the environment, of course environmental problems will be easily resolved. Apart from that, as a future plan, currently the government is also trying to coordinate with restaurant business owners in the city of Gorontalo to be able to sort the waste from these restaurants so that later the Gorontalo City environmental service will find it easier to process the transported waste to be able to Sort out which waste can be recycled and which waste cannot be recycled. Environmental problems are not individual problems but rather collective problems, so there needs to be cooperation and synergy from the Government, Community and related parties to work together to protect and preserve the environment of Gorontalo City in order to realize the Improvement of the Green City Concept in Gorontalo City for the sake of continuity of life now and in the future front.

#### References

- [1] P. Arieq, N. Mugni, M. Fuad, A. Dm, and I. Yahya, "Journal of Urban Planning Studies Evaluation of The Implementation of The ' Green City ' Concept In," vol. 1, no. 3, pp. 282–295, 2022.
- [2] Direktorat Jendral Penataan Ruang, *Buku Panduan Program Pengembangan Kota Hijau P2KH*. Kementerian Pekerjaan Umum Direktorat Jendral Penataan Ruang, 2011. [Online]. Available: <https://bit.ly/3TDvLQq>
- [3] J. Hayati, S. R. P. Sitorus, and S. Nurisjah, "Pengembangan Ruang Terbuka Hijau Dengan Pendekatan Kota Hijau Di Kota Kandungan," *J. Tataloka*, vol. 15, no. 4, p. 306, 2013, doi: 10.14710/tataloka.15.4.306-316.
- [4] S. I. Hidayat, "Green City : Solusi Problematika Perkotaan Dalam Dimensi Pembangunan," *Green City Solusi Probl. Perkota. Dalam Dimens. Pembang. Berkelanjutan*, pp. 567–576, 2017.
- [5] M. Fuady, "Konsep kota hijau dan peningkatan ketahanan kota di Indonesia," *Reg. J. Pembang. Wil. dan Perenc. Partisipatif*, vol. 16, no. 2, p. 266, 2021, doi: 10.20961/region.v16i2.47698.
- [6] Luh Gede Mita Laksmi Susanti and N. N. J. Arswati, "Alternatif Strategi Pengelolaan Sampah Berbasis Pemberdayaan Masyarakat Melalui Bank Sampah Di Desa Tunjuk, Tabanan," *Kaibon Abhinaya J. Pengabd. Masy.*, vol. 3, no. 2, pp. 105–110, 2021, doi: 10.30656/ka.v3i2.3111.
- [7] U. Wahyudin, "Strategi Komunikasi Lingkungan Dalam Membangun Kepedulian Masyarakat Terhadap Lingkungan," *J. Common*, vol. 1, no. 2, 2017, doi: 10.34010/common.v1i2.576.
- [8] H. M. Caesarina and D. R. Rahmani, "Penyediaan Ruang Terbuka Hijau dengan Pendekatan Kota Hijau pada Perkotaan Martapura," *J. Planoearth*, vol. 4, no. 1, p. 11, 2019, doi: 10.31764/jpe.v4i1.712.
- [9] D. W. I. S. Nugroho and E. Syaodih, "Strategi Peningkatan Kualitas Empat Atribut Green City," vol. 13, no. 2, pp. 1–9, 2007.
- [10] Aldino Christiyandi, "Ketersediaan Ruang Terbuka Hijau Publik kota Bandar Lampung," *Semin. Nas. Ins. Prof.*, vol. 2, no. 1, 2022, doi: 10.23960/snip.v2i1.82.
- [11] B. P. Pambudi and M. P. Tambunan, "Evaluasi Kesesuaian Lahan Ruang Terbuka Hijau terhadap RTRW Kota Bekasi," *Media Komun. Geogr.*, vol. 22, no. 2, p. 183, 2021, doi: 10.23887/mkg.v22i2.38729.
- [12] S. S. Arifin, M. R. Syukri, and K. A. Utama, "Analisis kebutuhan infrastruktur hijau di kota gorontalo," *Radial*, vol. 6, no. 1, pp. 9–13, 2018.
- [13] D. A. K. Danang Aji Kurniawan and A. Z. S. Ahmad Zaenal Santoso, "Pengelolaan Sampah di daerah Sepatan Kabupaten Tangerang," *ADI Pengabd. Kpd. Masy.*, vol. 1, no. 1, pp. 31–36, 2021, doi: 10.34306/adimas.v1i1.247.
- [14] Dinas Lingkungan Hidup Kota Gorontalo, *Dokumen Informasi Kinerja Pengelolaan Lingkungan Hidup Daerah Kota Gorontalo Tahun 2021*, no. 53. 2019.



- [15] R. Sulistiyani, “Pelatihan Daur Ulang Sampah Botol Plastik Sebagai Media Pembelajaran Pengelolaan Sampah Dan Kreativitas,” *J. Pengabd. Masy. - PIMAS*, vol. 1, no. 1, pp. 10–21, 2022, doi: 10.35960/pimas.v1i1.736.