Private Green Open Space Arrangement through Indonesian Building Permits

L N Lathifah¹*, H S Hasibuan¹ and A Sodri¹

¹School of Environmental Science, Universitas Indonesia, Jakarta, 10430, Indonesia,
ORCID ID: 0000-0002-4438-3977

¹linanida9@gmail.com, ¹hayati.hasibuan@ui.ac.id, ¹ahyahudin.sodri@ui.ac.id

Abstract. Private Green Open Space (GOS) is a part of the proportion of Urban GOS of 10%, complemented by 20% of public GOS. In 2019, DKI Jakarta Province had an urban GOS area proportion of 9.8%. The arrangement of private GOS is inseparable from limitations based on the provisions of space intensity, space requirements, and availability of land ownership. This study discusses the arrangement of private GOS through building permits that can increase the proportion of urban GOS. This research was conducted in Jatinegara District, East Jakarta City. The research method that will be used is quantitative. The descriptive statistical analysis method was used to process secondary data in Public GOS data shows the proportion is currently still far from 30% and building permit data for the 2019-2020 period in Jatinegara District shows the proportion of private GOS at 33.46%. For housing with limited land, alternatives are needed to provide private GOS such as green roofs or vertical gardens.

1. Introduction
Green open space (GOS) is an elongated area/lane and/or cluster which use is more open, where plants grow, both naturally and intentionally planted [1]. Green open space is a space that is planned to meet the needs of community interaction and joint activities, and the space also functions as an active playground for children and adults [2]. Private GOS is part of the proportion of Urban GOS of 10%, complemented by 20% of public GOS. In 2019, DKI Jakarta Province had an urban GOS area proportion of 9.8% (Figure 1). The proportion of urban GOS that has not been achieved can be increased through the arrangement of Private GOS. In previous studies, the focus was more on discussing public GOS. At the same time, this study discusses the arrangement of private GOS in residential areas through the Building Permit. The 11th SDGs target, applied in this research, is to ensure access to adequate, safe, and affordable housing and essential services for all.

The arrangement of private GOS is inseparable from limitations based on space requirements and the availability of land ownership. Jakarta is a megapolitan city with a population density of 15,663 per 1 km² [3]. With a high population density, it is necessary to arrange settlements that can help the proportion of urban GOS through private GOS.
Public green open space is the use of green open space focused on the public interest and is under the ownership and management of the local government or local community [4]. Constraints to the provision of public GOS can be combined with the provision of private GOS. Private GOS is a GOS that is the responsibility of individuals and business entities in land use. There are several types of GOS in DKI Jakarta Province that can add to the proportion of Urban GOS (Figure 2). Based on data from all GOS in DKI Jakarta, currently, the proportion of GOS is 9.8%.

Three things can cause the lack of GOS in big cities:
1. The lack of land owned by the local government to be developed into GOS.
2. The government does not have the funds to increase open space.
3. The land purchase to be converted into open space is not easy for price reasons or non-strategic locations.

Because of this, many city governments have had difficulty increasing the share of GOS in their jurisdictions. Urban GOS in DKI Jakarta has not yet reached 30%. Constraints to the provision of public GOS can be combined with the provision of private GOS. Private GOS is a GOS that is the responsibility of individuals and business entities in land use.

Urban green open space is a valuable resource for the physical activity of urban residents and has the potential to reduce chronic diseases and improve health [5]. In addition to limited land for residentialss, there is also less land for green open space with the application of vertical landscape. Vertical landscape is applied by utilizing vertical spaces in the housing [6]. The private GOS has
positive ratings such as freedom, joy and well-being. This is reinforced by the existence of a policy in providing private GOS [7]. In building permits, several criteria are needed, one of which is in the form of landscaping. Landscape, which includes topography, vegetation and associated plants and soil, bodies of water, and their spatial configuration, is one of the most visual needs [5][8]. The effectiveness of building permit regulations in the fulfillment of private green open space standards in residential areas is influenced by input implementation, especially organizational internal characteristics and actor characteristics [9].

This private GOS arrangement is an alternative for providing vegetation even on limited land. Limited land is categorized based on Regional Regulation No.1 of 2014 DKI Jakarta Province regarding the type of tiny house occupancy (R.3) with an area limit of 60-150 m². The location is in Jatinegara District, with the second-highest population density in 2018 in the East Jakarta Administrative City of 25,871 people/km². Limited land can be overcome by arranging private GOS through several media such as rooftop gardens, vertical gardens, and open gardens.

In previous studies, the focus was more on discussing public GOS. The novelty of this research is an overview of the effectiveness of building permits to increase the proportion of Urban GOS in DKI Jakarta with a case study in Jatinegara District. This study discusses private GOS in housing through building permits. Building permits regulate the intensity of space utilization in the form of the amount of space for specific functions, which are determined based on the setting of the building floor coefficient (BFC), building basic coefficient (BBC), building height (BH), green basic coefficient (GBC), basement tread coefficient (BTC), each the part of the city by its position and function in urban development [10].

2. Method

This study describes the potential for structuring private GOS through building permit, increasing the proportion of urban GOS. This study uses a quantitative approach which means that all variables, subvariables, or parameters in the research are assessed and measured quantitatively.

2.1. Case study location and period

The research location was conducted in DKI Jakarta by considering it as a prototype of a large city with a high population density. The percentage distribution by district/city with a floor area of 20-149 square meter in DKI Jakarta Province is the highest in the East Jakarta Administrative City area by 74.25% [11]. This research is in the Jatinegara sub-district which is a strategic area with dense population and dense settlements. This research is done within the period of June 2021 until August 2021.

2.2. Data collection and analysis

The research method that will be used is quantitative. The descriptive statistical analysis method was used to process secondary data in Public GOS data and applications for residential building permit for the period 2019-2020 in Jatinegara District through the service web www.jakevo.jakarta.go.id. The data consists of new established building permit and term temporary building permit.

3. Results and discussion

3.1. Building permit regulation

The DKI Jakarta Provincial Government has 2 (two) categories of building permit, namely the definitive building permit and the term temporary building permit. The definitive building permit is given to dwellings by the intensity of space utilization regulated in the DKI Jakarta Provincial Regulation No. 1 of 2014 concerning RDTR and PZ that are already appropriate. Meanwhile, the term temporary building permit is given to dwellings that have been built and used, but the intensity of space utilization is not in accordance with the provisions. Residential buildings that have been established, but do not yet have a building permit, may obtain a building permit marked with a
cross (X) in certain sections. A temporary building permit for futures is issued based on secondary data, considering that the minimum GBC of 20% is not yet appropriate.

In the definitive building permit, the applicant applying for the permit is following the intensity of the building according to the zoning that has been determined. The building intensity applied is based on the city plan information and proof of land ownership.

### Table 1. Data for building permit UP PMPTSP Jatinegara District for the 2019-2020.

| No. | Year | Total building permit | Total land area (m²) | Total Private GOS (m²) | Percentage of residential private GOS | Percentage of Private GOS/building permit |
|-----|------|-----------------------|----------------------|------------------------|--------------------------------------|----------------------------------------|
| 1.  | 2019 | 93                    | 17,551.50            | 6,336.02               | 36.09%                               | 68.11%                                 |
| 2.  | 2020 | 50                    | 8,213                | 2,285.90               | 27.83%                               | 45.72%                                 |
| Total |      | 143                   | 25,764.5             | 8,621.92               | 33.46%                               | 56.92%                                 |

The building intensity that affects the private green open space is the green basic coefficient (GBC) which has a minimum value of 20% of the planning area. The published building permit data shows that the GBC obtained in 2019 was 36.09%, and in 2020 it was 27.83% of the total land area for which a building permit application had been submitted (Table 1). The data shows that if it can increase the urban GOS by 33.46% of the land area that has applied for a building permit. If it is projected that the Jatinegara area is 10.64 km², the land that already has a building permit in the 2019-2020 period is 0.0024% and gives the proportion of Urban GOS of 0.000000008%. The existence of GBC intensity in buildings can be a reference and supervision of the addition of private GOS.

#### 3.2. Private GOS

The increase in the proportion of private GOS can be done by applying GBC intensity on the building permit application. However, limited land can influence the community in providing green areas. There are several obstacles in structuring private GOS through building permit, as stated by the Head of the PMPTSP Management Unit in Jatinegara District as the issuer of residential building permit. Social factors are one of the main factors in fulfilling the GBC. Public awareness of the benefits and importance of green areas is still low and prioritizes the space needs of building occupants. Every community sometimes compares buildings that do not meet the green area in the surrounding environment.

![Figure 3](https://example.com/figure3.jpg)  
**Figure 3.** Housing in limited land (Source: Author’s Documentation, 2021)

Economic factors also influence the provision of GBC related to land ownership investment value in meeting space needs. The value of the land investment in Jakarta, which tends to be expensive, can trigger limitations in purchasing land. Between the land owned and the need for space become mutually urgent to be fulfilled in the building (Figure 3). The term temporary building permit is given to the applicant for buildings that have been occupied but do not yet have a building permit and...
have not complied with the provisions of Regional Regulation No. 1 of 2014 for three years to adjust the building. But in reality, residential conditions that do not have Private GOS (0%) are most dominant in small plots (<100M2) so that smaller building blocks will reduce Private GOS [12]. In addition, environmental factors also affect the provision of GBC. Currently, there are installations or technology in providing green areas through green roofs and vertical gardens to deal with limited land. However, these installations still tend to be expensive in procurement and maintenance. Regarding the use of green area technology, a particular review is still needed regarding the calculation of the GBC value on the intensity of the building.

4. Conclusion
Increasing the proportion of urban GOS can be done by providing public GOS and private GOS. The published building permit data shows that the GBC obtained in 2019 was 36.09%, and in 2020 it was 27.83% of the total land area for which building permit applications have been submitted. The existence of GBC intensity in buildings can be a reference and supervision of the addition of private GOS. For housing with limited land, alternatives are needed to provide private GOS such as green roofs or vertical gardens.

The limitation in this research is the building permit data which has not yet become a single database. The data have been taken from the archive on the website www.jakevo.jakarta.go.id. In addition, researchers have difficulty in finding relevant references to private GOS.

References
[1] Indrawati M, Sudiana A A K and Sumantra K 2021 Position and Management Strategy for Public Green Spaces in The City of Denpasar, Bali Province Int. J. Res. -GRANTHAALAYAH 9 75–85
[2] Yuniastuti E and Hasibuan H S 2019 Green Open Space, Towards A Child-Friendly City (A Case Study in Lembah Gurame Park, Depok City, Jakarta Greater Area, Indonesia) IOP Conf. Ser. Earth Environ. Sci. 328 12016
[3] Central Bureau of Statistics of DKI Jakarta Province 2019 DKI Jakarta Province in Figures -2019 (Jakarta)
[4] Diah I K D, Retno S, Nurini N and Zulhamdi Z 2018 Pattern of Public Green Open Space in Tembalang Settlement, Semarang E3S Web Conf. 73
[5] Zheng B, Zhang Y and Chen J 2011 Preference to home landscape: wildness or neatness? Landsc. Urban Plan. 99 1–8
[6] Az-Zahroh S and Mila Ardiani Y 2021 A Study of Vertical Landscape Application for Apartment in Jakarta IOP Conf. Ser. Earth Environ. Sci. 794 12183
[7] Lehberger M, Kleih A-K and Sparke K 2021 Self-reported well-being and the importance of green spaces – A comparison of garden owners and non-garden owners in times of COVID-19 Landsc. Urban Plan. 212 104108
[8] Wang M, Han M, Hui H and Li Y 2019 Study on seawater intrusion in Laizhou bay coastal zone based on groundwater model Int. J. Low-Carbon Technol. 14 222–6
[9] Yulianti W and Hadi S P 2018 The Effectiveness of Building Permit Regulation for Green Open Space at Housing Estates: Case Study of Kendal Regency, Central Java, Indonesia E3S Web Conf. 31
[10] DKI Jakarta Provincial Government 2014 Regional Regulation Number 1 of 2014 Concering Detailed Spatial Planning and Zoning Regulations (Jakarta)
[11] Central Bureau of Statistics of DKI Jakarta Province 2020 DKI Jakarta Province in Figures -2020 (Jakarta)
[12] Gunawansyah 2019 The development of private green open space in the residential area in Makassar IOP Conf. Ser. Earth Environ. Sci. 382 12021