

# IMPACT OF POPULATION DENSITY ON PHYSICAL ENVIRONMENTAL QUALITY

## *Dampak Kepadatan Penduduk terhadap Kualitas Fisik Lingkungan*

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### Abstract

*This study aims to identify and assess population density that causes slums and physical effects on the environment in the Simpang Dago area. The methodology used is a qualitative research method on the object's condition by conducting a literature study and collecting related documents. The study was conducted with a case study in one area in the city of Bandung. The results showed that the achievement of comfort, safety, health, and mutual satisfaction is expected to help reduce population density impact in the Simpang Dago area. To achieve that goal, a study of population density impact on the quality of the physical environment. The solution of densely populated areas problem by relocating residents and providing affordable vertical housing by considering various aspects. The implication of this study's results is due to the dense population and houses' distance is too close; therefore residents around the Simpang Dago area must be concerned about their environment's cleanliness. In addition, not all population density gives negative impacts to the quality of an area's physical environment, depending on the residents' awareness.*

**Keywords:** Population, Population Density, Physical Environment.

### Abstrak

Penelitian ini bertujuan untuk mengidentifikasi dan mengkaji kepadatan penduduk penyebab permukiman kumuh dan dampak fisik terhadap lingkungan di kawasan Simpang Dago. Metodologi yang digunakan adalah metode penelitian kualitatif terhadap kondisi objek dengan melakukan studi pustaka dan pengumpulan dokumen terkait. Penelitian dilakukan dengan studi kasus di salah satu wilayah di Kota Bandung. Hasil penelitian menunjukkan bahwa tercapainya kenyamanan, keselamatan, kesehatan, dan kepuasan bersama dari penduduk merupakan solusi yang diharapkan dapat membantu mengurangi dampak dari kepadatan penduduk di kawasan Simpang Dago. Untuk mencapai tujuan tersebut dilakukan studi tentang dampak kepadatan penduduk terhadap kualitas lingkungan fisik wilayah kajian. Solusi permasalahan kawasan padat penduduk adalah dengan relokasi penduduk dan atau penyediaan hunian vertikal yang terjangkau dengan mempertimbangkan berbagai aspek. Implikasi dari hasil penelitian ini adalah karena padatnya penduduk, jarak antar rumah sangat dekat; maka penduduk kawasan Simpang Dago perlu untuk memperhatikan kebersihan lingkungannya. Di lain pihak, tidak semua kepadatan penduduk berdampak negatif pada kualitas lingkungan fisik suatu kawasan, tergantung pada kesadaran warganya.

**Kata kunci:** Penduduk, Kepadatan Penduduk, Lingkungan Fisik.

### Introduction

Population growth, which is currently not controlled, causes population density in

certain areas. The density also indirectly results in many aspects and policies issued by the government to control the population. If human growth is not

controlled, it will undoubtedly have consequences in the future (Bongaarts, 2009, and Chirisa, 2008). The increase in population and the disorderly implementation of some land uses indirectly causes land-use pressure to change the physical area. Urban development regional attracts residents from outside the region. The attractiveness of the area can be caused by educational and trade infrastructure (Sudhira et al., 2004, and Fenta et al., 2017).

The Simpang Dago area as part of Bandung is an area that is multiplying due to the education area's growth. As a metropolitan whose development is relatively fast, Bandung has resulted in the development of the slum area (Tarigan et al, 2016). The Simpang Dago area is in the Lebak Gede sub-district of Coblong sub-district; Bandung has high population growth, high activity, and mobility. There is a market on the main road that adds to the density in the Simpang Dago area. With dense settlements in the Simpang Dago area, it will undoubtedly affect the physical environment's quality, causing several impacts felt by the surrounding population.

This study focuses on case studies of an area in the Simpang Dago Area. Data collection Research will be conducted using descriptive qualitative research methods. Qualitative Research Methods are research methods that produce findings that cannot be obtained using statistical procedures or other means of measurement. The descriptive method illustrates the conditions in the field regarding the conditions in the Simpang Dago Area. This research objective is to identify and assess population density that causes slums and physical effects on the environment in the Simpang Dago area.

## Method

### *The area of the research project*

This study area is the Simpang Dago, which covers the dago market, is around 3 hectares. Residents who have a Family Card registered in the area are around 649 people and are aged from 0 to 60 years.

Nearly 40% of residents in the area provide boarding houses for the students. The area is close to many universities such as Universitas Komputer Indonesia, Bandung Institute of Technology, and other universities. This area also has many rented houses for traders in the Dago intersection market; the average trader in the market is not native residents around it but residents who come from outside the area such as from Lembang, Cisarua, Garut, Tasikmalaya, and Central Java Province. Universities and trade facilities make the area even more congested with the boarding houses and rented houses built and owned by residents so that outsiders dominate the area.

### *Data collection and analysis*

Data collection is from secondary and primary data. In collecting primary data, it is done to determine information not obtained in secondary data collection by conducting surveys and field observations.

Observation technique is used to see or observe changes in the region's growth, especially in residential areas, which can then be assessed on these changes. The researcher acts as an observer by observing the object and sensitivity to the location, then revealing and reading the problems. This observation technique was chosen because through this observation or observation, a general description of the study area can be seen from the morphological formations that exist, such as road networks and facilities available.

Data that has been obtained will be processed descriptively. In data processing, several steps will be carried out. The first is to provide descriptive responses to the results of field observations. The second is to illustrate the government program regarding affordable housing for low-income communities to overcome physical environment quality problems.

## Result and Discussion

Simpang Dago Area has a land area of around 3 hectares. Natural population

growth and migration can change land-use patterns into settlements that are not suitable for their intended use. Existing settlements are land owned by the government. However, the community built their house with the Right to Use status. Furthermore, residents of the house have to pay every year. Rental fees are classified based on length of stay of three years, five years, and ten years by submitting applications to the City of Associates. The payment of the lease rights is based on the financial capacity of the residents themselves.

The more densely populated the need for a place to live even bigger between buildings houses is diverse. Even some houses are still being built on watersheds, even though they can endanger the residents themselves. The access road available is also relatively small for two motorbikes. The need for parking lots is also increasing. Almost every house has at least one vehicle. The vehicle will be parked not far from the house. Many residents in the Simpang Dago area park their vehicles on the road in front of their homes. Causing the cause of narrowing of road land. Pedestrian rights will undoubtedly be taken away.

The results of monitoring and field visits conducted at several points of research objects in the Simpang Dago area, there are still very few Green Open Space. The task currently carried out by the Bandung city government is to conduct socialization regarding the provision, utilization, and supervision of green space at the community level. Besides, the formation and preservation of green communities are also crucial to build a healthy lifestyle for people in the Simpang Dago area. Support from the government can be done through organizing social activities and drafting regulations governing green open space in the Simpang Dago area. This support includes giving the public or private parties incentives to provide green space on their yard/land. Reward for monitoring and making green space for the public interest will encourage every community member to be more innovative.

Rights Holders grant usufructuary rights with deeds drawn up by the Land Titles Registrar. The granting of usufructuary rights must be registered in the land book at the Land Office. Usufructuary rights over land are also binding on third parties because registration of Usufructuary Rights is granted for a maximum of 25 (twenty-five) years and may not be extended. Usufructuary rights over land can be renewed by granting new ones based on the agreement between the holders.

It is different from observational information obtained, which states that the Right to Use renewal is carried out in 3 years, five years, and ten years. Each house usually renews the Right to Use within three years, while productive homes in commercial areas do renewal within a period of 5 or 10 years.

Field surveys are informed that the existing buildings are very unkempt and disregarded building borders (Figure 1). The buildings in the area seem dark and dirty due to the limited light. In this alley, a lack of parking spaces for residents, which ended up with many vehicles parked in this alley, led to narrow access roads for other users. The occurrence of high humidity due to lack of sunlight coming into the alleyways makes some of the aisles always look wet. On the walls of houses built on the river banks, moss indicates the walls are humidly caused by water coming from the river.



**Figure 1: Housing condition of Simpang Dago Area**  
(Source: Field survey, 2020)

Bandung City Government had implemented a strategy in handling the density of housing construction in 2018 with

the affordable housing program to provide solutions in structuring Bandung's settlements. This program that the government has proposed is one of the solutions in structuring settlements in Bandung. Simpang Dago is one of the categories to be carried out in the program's construction. Related to the Bandung city government's mission or objectives above, one of them is to develop a mixed-function area between residential and commercial or workplace. The concept of Green mobility and the provision and manufacture of green space for the Simpang Dago area meet residents' needs in dense residential areas. To minimize the impact that is likely to occur on the population around dense settlements.

Green open space plays a vital role in development both at the provincial level district and city levels. It is necessary to have three main pillars: the economic, environmental, and social aspects that must work together. When the population is out of control, and more and more, it will give impact to many living needs that must be met, such as adequate food availability, land for housing, and many infrastructures that also require land while the ground will not increase (Nzau and Trillo, 2020, and Surya et al., 2020a).

The land is a particular area of the earth's surface that has specific characteristics. The area includes the atmosphere, geological soil, hydrology of plant and animal populations and are influenced by human activities (economic, social, and cultural) in the past and present and subsequently affects future use. The information above can be concluded that the appropriate land use has sustainability in influencing its potential use in the future. Conversely, without regard to land use, that should impact various aspects of the life of living things.

Existing solutions and programs are expected to help reduce population density, especially in the Simpang Dago area, to study the impact of population and building density developments on the physical environment's quality. The solutions that have been made and implemented are expected to achieve comfort, safety, health,

and mutual satisfaction. Continuously communicating peacefully between the people and the government, especially those who have many activities, can improve the sustainability of a nation's economic development. The government has provided a scheme of developing an affordable house with the name Apartemen Rakyat Simpang Dago (Figure 2).



**Figure 2: Affordable housing program planning for Simpang Dago Area (Apartemen Rakyat Simpang Dago)**  
(Source: Dinas Perumahan dan Kawasan Permukiman, Pertanahan dan Pertamanan Kota Bandung, 2018)

The government's program addresses population growth and regulates better spatial planning, such as building low-cost housing and apartments. The approved apartment is the Bandung City Government's branding program to meet housing needs with a future ownership pattern. Concept of building without displacing and revitalizing urban areas. The Simpang Dago People's Apartment (Apartemen Rakyat Simpang Dago) has a land area of 43,808 m<sup>2</sup>, with a construction price of Rp.341.146.350.000. The quantity of affordable housing is 120 units at a price of Rp.72.000.000. In contrast, the affordable housing plus is 98 units at a price of Rp.262.000.000 (Dinas Perumahan dan Kawasan Permukiman, Pertanahan dan Pertamanan Kota Bandung, 2018).

With the solution planned by the government, the implementation of the government program, up to the year 2020, the implementation of the affordable housing development plan has not yet been seen, especially the implementation plan at this dago intersection location. Because several obstacles may occur, including (a) Socialization: Difficult to socialize the community to handle this because the community is still difficult to leave of their

homes; (b) Relocation: Suppose the community can obey what makes this solution. The relocation must also be considered by the government to relocate the inhabited communities around the intersection of this dago to be temporarily relocated before constructing affordable housing. (c) Licensing: There are still many stages of development licensing that have not yet been resolved. (d) Land Readiness: In this development, the land requires sufficient land and by development criteria. (e) Selection of Prospective Residents: The need for prospective occupants must be in accordance with what the government has classified into categories that can inhabit the affordable housing program. This affordable housing program has also been implemented in several areas with similar obstacles and difficulties (Chirisa, 2008, Surya et al., 2020b, and Viratkapan and Perera, 2006).

Implementation of population density supporting factors in overcoming the problem can reveal essential elements in it, namely humans and institutions that play a role in population density problems. Human Resources who play a role consists of four target groups: (1) the community element is the driving element. (2) Bureaucrats, able to position themselves as executors of development. (3) On the personal side, companies in urban areas play a role in supporting the Population Control Program. (4) Supporting elements: universities, community leaders, intelligent people, religious leaders, traditional leaders, and non-governmental organizations (Surya et al., 2020). The four elements of the target group are related to population density each has a critical role in optimizing population growth control.

Strategic steps are taken to anticipate the explosion of population in the Simpang Dago area; in the future, the local government makes regulations that regulate densely populated areas or areas not to build or construct buildings that have been designated as Green Open Space. The arrangement of open space regulation must be created based on its function as regulated in Spatial Planning Law No. 26 of 2007 (The Government of Republic of Indonesia, 2007). The Simpang Dago area

can coordinate and communicate in an integrated system of planning to handle integrated watershed management issues with the government. The problem of densely populated areas is relocating residents and providing affordable vertical housing by considering various aspects. The relocation of a population due to dense populations and slum areas needs more careful consideration (Masta, 2013).

## Conclusion

The population density in an area is due to the area's attractiveness, as happened in the Simpang Dago area. This population density has an impact on slum area. Environmental conditions can illustrate this slum area. To overcome this slum area, the local government has planned a program of flats for low-income communities. The relocation method will be challenging because residents have invested in the area by building a rented room area for both students and workers. The affordable housing program is hoped to overcome physical environment quality problems.

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