

PEOPLE'S PERCEPTIONS OF THE BENEFITS OF LORONG SAYUR AS A OPEN GREEN SPACE IN THE CITY OF YOGYAKARTA

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Abstract. *Lorong sayur or vegetable aisles is a form of urban agriculture in the streets of residential areas in Yogyakarta City. The Yogyakarta City Government then relies on lorong sayur to be developed into green open spaces. This study aims to identify the benefits of green open space perceived by the community from lorong sayur. This research was conducted by distributing questionnaires to 60 respondents who are the people of Yogyakarta City selected by simple random sampling and conducting interviews with the people of Yogyakarta City to deepen the research results. The results of the research analysis are presented descriptively. The results of this study are lorong sayur are able to reduce temperature and improve air quality, play a role in preserving flora and fauna, encourage social interaction, beautify the environment, and play a role in improving public health. Lorong Sayur have no effect on efforts to mitigate rainwater runoff and flood prevention.*

Keywords: *Lorong Sayur, Open Green Space, Perception, Questionnaire, Yogyakarta*

1. INTRODUCTION

Green open space according to the Regulation of the Minister of Agrarian Affairs and Spatial Planning No. 14 of 2022 concerning the Provision and Utilization of Open Green Space is an elongated / striped and / or grouped area whose use is more open, where plants grow, both naturally growing and deliberately planted, taking into account aspects of ecological, water catchment, economic, socio-cultural and aesthetic functions. Yogyakarta City is one of the local governments that continues to increase the extent of its green open space. Based on the Decree of the Mayor of Yogyakarta No. 401 of 2020 concerning the Determination of Open Green Space Area in the City of Yogyakarta, the area of green open space in the city of Yogyakarta is only 7.65 km² from the area of Yogyakarta City which reaches 32.8 km². In order to increase the area of green open space in its area, Yogyakarta City then relies on an urban farming activity carried out by the community in its area to be developed into green open space. By the community, the urban farming is known as Lorong Sayur (Vegetable Aisle). The potential for added green open space in Yogyakarta City from the existence of lorong sayur reaches 64 hectares in 2021 and has the potential to reach 180 hectares in 2041, making it have an immensely large ecological role in the future (Dinas Pertanahan dan Tata Ruang Kota Yogyakarta, 2021).

Lorong sayur is a form of urban farming business in the passages or alleys in residential areas in the city of Yogyakarta (Endartiwi, Amyati, Warningsih, Khasanah, & Lestari, 2023). By the community, narrow land that is not used on neighborhood streets is turned into a garden with wall planters attached to the walls and fences of buildings and small pots containing plants using used plastic bottles, making lorong sayur a vertical garden in the urban area of Yogyakarta (Utami, 2021). Lorong Sayur is managed by the community by forming a farmer group whose members are mostly women or elderly (Wulandari, Witjaksono, & Inekewati, 2020).

Open green spaces in urban areas have many benefits. Green open spaces, especially vertical gardens, can reduce temperatures in urban areas that tend to be high (Charoenkit, Yiemwattana, & Rachapradit, 2020). Green open spaces also improve air quality by absorbing greenhouse gas emissions such as nitrogen dioxide (NO₂) and particulate matter like PM₁₀ and PM_{2.5} (Chakriwat, 2024). The existence of green open spaces is also a solution to conserve the habitat of various types of plants and animals (Zhao, Li, Yan, & Zhang, 2022).

In addition to ecological functions, green open spaces have social functions. For example, open green spaces can lure people out of their homes to interact and communicate with each other (EPA, 2023). Green open spaces can also beautify the environment (Utami, 2021). In addition, the World Health Organization or WHO also suggests to increase the amount of green open space in urban area because of its various benefits can improve public health and well-being (WHO, 2017).

Based on this, this study aims to identify the benefits of green open space felt by the community from vegetable aisles. The findings are expected to become a reference for relevant stakeholders, both government, academics, and the community to optimize the benefits of lorong sayur through proper planning.

2. LITERATURE REVIEW

2.1 The Benefit of Open Green Space

2.1.1 Ecological, Social, and Economic Benefits

Open Green Space is beneficial in mitigating the urban heat islands (Liu, Wu, Yang, Zhang, & Yin, 2024), increasing the sense of comfort of city residents due to decreased levels of air pollution (Allen, et al., 2016) and helping to reduce the rate of rainwater surface while preventing erosion (Song, et al., 2020). Vertical gardens especially can reduce excess rainwater runoff on building wall (Lau & Mah, 2018). The existence of green spaces also creates space for social interaction between people, reduces the level of community fatigue, and increases the potential income for the community (Utami, 2021).

2.1.2 Aesthetic Benefits

Aesthetics is a condition that is able to arouse a person's feelings. The aesthetic value of Green Open Space is derived from the combination of plant colors from leaves, flowers, and stems, as well as the texture and composition of the stems, branching, and crowns of the plants. The combination then creates a harmonious and beautiful landscape. (Bakar, Mansor, & Harun, 2013).

2.1.3 Biodiversity and Conservation Benefits

Green Open Space is a place for the preservation of various types of flora and fauna. Humans who are often exposed to the greenery that is an element of Green Open Space also tend to be more familiar with the richness of biodiversity than those who are not. (Fuller, Irvine, Devine-Wright, Warren, & Gaston, 2007).

2.2 People's Perception

Perception is the most basic form of a human being as they interact with the environment around them. The human brain attempts to translate information gained from the senses, coupled with memories of similar events in the past, giving humans the ability to understand their environment. (Zhang, et al., 2024).

The perception of everyone is unique and different, even towards the same object because any individual has their own background (Setyani, 2020). The individual's attitude towards the environment can be:

1. Individuals who reject the environment because the individual is unable to adapt to the environment.
2. Individuals who accept the environment, namely individuals who are compatible with the environment around them, and

3. Individuals choose to be neutral because even though they do not feel compatible with their environment, these individuals choose not to behave.

3. RESEARCH METHODS

The research was conducted from March to May 2025 in the city of Yogyakarta. The research method was to distribute questionnaires to 60 respondents who were residents of Yogyakarta City who were selected by simple random sampling so that every member of the community had the same opportunity to become a questionnaire respondent. Questionnaire questions can be seen in table 2 below:

Table 1. Hypotesis on Perceived Impact of Green Spaces from Lorong Sayur

Hypotesis	Questions	Reference
Open Green spaces mitigate urban heat island	I feel the surrounding temperature around <i>lorong sayur</i> is cooler	(Liu, Wu, Yang, Zhang, & Yin, 2024) (Charoenkit, Yiemwattana, & Rachapradit, 2020)
Open Green Space improving air quality	I feel that <i>lorong sayur</i> improves the air quality in the surrounding area.	(Chakriwat, 2024)
Open Green Space function to persevere the habitat	I feel that <i>lorong sayur</i> has become a habitat/home for various types of living things	(Fuller, Irvine, Devine-Wright, Warren, & Gaston, 2007)
Open Green Space mitigate stormwater runoff and prevent flooding	I feel that <i>lorong sayur</i> can prevent puddles and potential flooding, such as during heavy rain.	(Song, et al., 2020) (Lau & Mah, 2018)
Open Green Space encourage social interaction	I perceive <i>lorong sayur</i> as a location for community interaction and activities	(EPA, 2023)
Open Green Space beautifies the neighborhood	I feel that the existence of Lorong Sayur beautifies the surroundings area.	(Utami, 2021)
Open Green Spaces improve public health	I feel that Lorong Sayur helps me live a healthier and more prosperous life.	(WHO, 2017)

The answer to each question is designed using a Likert scale. Likert scale is a scale used to measure the attitudes, opinions, and perceptions of individuals or groups about a phenomenon by providing gradations of answers ranging from the lowest value to the highest value (Sugiyono, 2013). Respondents to the questionnaire were asked to answer each question with the answers strongly disagree, disagree, neutral, agree, and strongly agree. The results of the analysis were then presented descriptively using pie charts and compared with the results of interviews and the theoretical basis of the literature study.

4. RESULTS AND DISCUSSION

4.1 People's Perception of Lorong Sayur in Reducing Urban Temperature

Green open space in urban areas has a function to control temperature increase due to climate change. In Thailand, vertical gardens can reduce 83.2% of the heat absorbed by building walls. The amount of temperature drop varies between 0 to 0.4 oC in summer depending on the size of the plant leaves (Charoenkit, Yiemwattana, & Rachapradit, 2020). Based on this, people should feel cooler with the presence of lorong sayur in their neighborhood.

Based on the results of the analysis, it was found that 70% of respondents agreed and 13.3% of respondents strongly agreed with the statement that the presence of lorong sayur reduces the temperature of the environment around them (Figure 1). Lorong sayur users feel the place is serene and comfortable enough for them. The people of Yogyakarta City them make use of the serene atmosphere of lorong sayur by adding

furniture such as chairs and tables that are freely accessible to anyone. Lorong sayur then transformed into a favorite location for people to rest during the day.

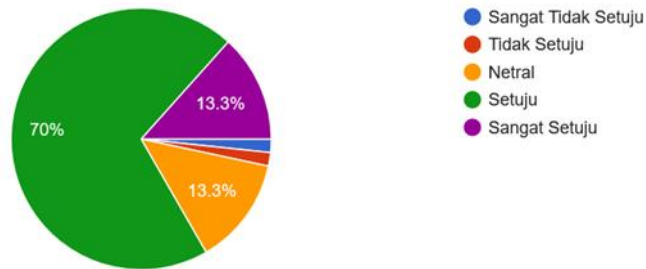


Figure 1. Respondents' perception of the benefits of lorong sayur in lowering temperature

4.2 People's perception of lorong sayur in improving air quality

Plants in open green spaces carry out the photosynthesis process by absorbing CO₂ and releasing oxygen. The human body when exposed to carbon dioxide will experience a decrease in cognitive function, making the body feel heavy and stiff (Allen, et al., 2016). Theoretically, with the presence of lorong sayur in their neighborhood, people should feel fresher and healthier.

A total of 73.3% of respondents agreed and 10% of respondents strongly agreed when asked if they felt that lorong sayur improved the air quality in their neighborhood (Figure 2). Interestingly, the people of Yogyakarta also utilize the fresh air from the lorong sayur as a treatment for their illnesses and to calm their minds.

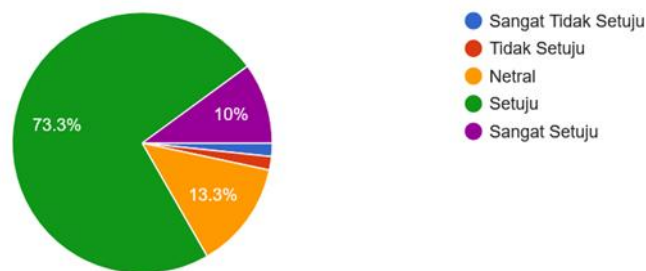


Figure 2. Respondents' perception of the benefits of lorong sayur in improving air quality

4.3 People's perceptions of lorong sayur in conserving flora and fauna habitats

Open green spaces in urban areas have a function to protect biodiversity and at the same time improve the quality of human life around them (Zhao, Li, Yan, & Zhang, 2022). The existence of open green spaces can increase public perception of the various types of plants that grow around their neighborhood (Weber, Kowarik, & Saumel, 2014).

The majority of questionnaire respondents (70%) stated that they agreed with the statement that the existence of vegetable aisles has become a habitat for various types of animals and plants. Only a small number of respondents (18.3%) stated that they felt normal / neutral with the statement (Figure 3). The people of Yogyakarta City who are active in the management of vegetable aisles understand the types of plants they plant and how to care for them, such as Brazilian spinach (*Alternanthera sissoo*), chili (*Capsicum annum*), and basil (*Ocimum basilicum*).

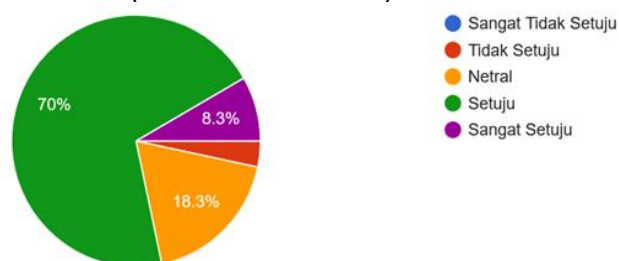


Figure 3. Respondents' perception of the benefits of lorong sayur for conserving the habitat of flora and fauna

4.4 People's perceptions of lorong sayur in mitigating stormwater runoff and prevent flooding

The existence of open green spaces can mitigate stormwater runoff, especially in urban areas. Vegetation cover in open green spaces prevents precipitation from directly hitting the ground, allowing time for water to soak into the soil (Song et al, 2020). In vertical gardens, the amount of stormwater runoff that passes through building walls can even be reduced by half compared to buildings without vertical gardens (Lau & Mah, 2018).

The majority of respondents with a percentage of 38.3% stated that they disagreed and some others felt normal (35%) with the role of lorong sayur in mitigating rainwater runoff and preventing flooding (Figure 4). This means that the people of Yogyakarta City do not feel the impact of reduced runoff during heavy rains by lorong sayur. The people in the community stated that in Yogyakarta City there have been many infiltration wells built at many points, so the presence or absence of lorong sayur does not really affect the risk of flooding.

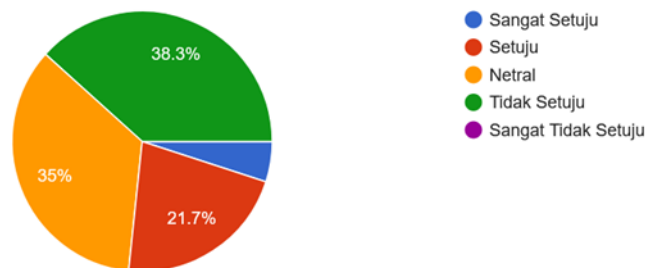


Figure 4. Respondents' perception of the benefits of lorong sayur to mitigate stormwater runoff and prevent flooding

4.5 People's perceptions of lorong sayur that facilitate social interaction.

The atmosphere in open green spaces seems to encourage people to get out of the house and open up opportunities for social interaction. The green and serene atmosphere provokes human senses with contrasting colors, smells, sounds, and movements compared to urban structures or buildings that usually exist in urban areas (EPA, 2023). In theory, lorong sayur as green spaces in urban areas should have the same function.

53.3% of respondents stated that they agreed and 26.7% strongly agreed with the statement that lorong sayur became a place of interaction and community activities in their neighborhood (Figure 5). The existence of Lorong sayur also making people to organize by forming farmer groups as they need to manage lorong sayur regularly as well as a medium to communicate with various agencies and institutions, especially to obtain support and funding. Lorong sayur then becomes a place to gather for the community to just chat or do community service. In addition, lorong sayur are often visited by students to conduct research or travelers to take photos, becoming a bridge of social interaction between local residents and outsiders.

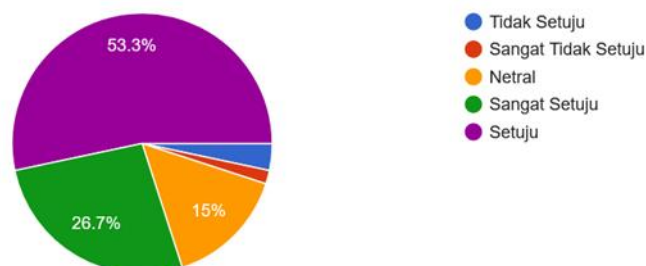


Figure 5. Respondents' perception of the benefits of lorong sayur to encourage social interaction

4.6 People's perception of the benefits of lorong sayur in beautifying the environment

Aesthetic function is fundamental when planning a quality green open space (Malek et al, 2012). Vertical gardens, besides beautifying the environment, also have artistic value that can be enjoyed by the wider community (Bakar et al, 2013). Lorong sayur which are vertical gardens should naturally have similar benefits.

The majority of questionnaire respondents agreed (56.7%) and strongly agreed (40%) with the statement that lorong sayur has beautified their environment (Figure 6). The beauty of the lorong sayur is being enjoyed by local residents, and reflected in the number of both local and international tourist who currently stay in Yogyakarta. Local tourist come from Magelang, Semarang, Solo, and even outside Java thanks to social media. Lorong sayur is considered instagrammable and can hardly found somewhere else.

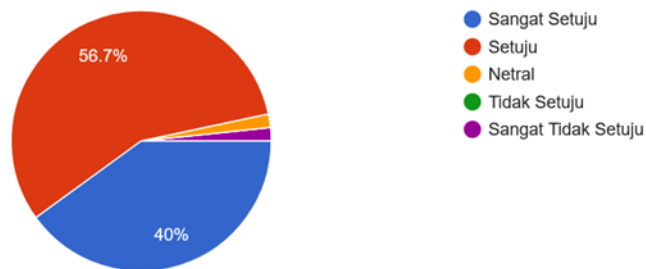


Figure 6. Respondents' perception of the benefits of lorong sayur to enhance the landscape

4.7 People's perception of the benefits of lorong sayur in improving public health

According to the World Health Organization (WHO), green spaces are beneficial for people's health and well-being (WHO, 2017). Open green spaces play a role in improving air quality, encourage people to live more active and vigorous lives, providing recreational benefits and beautifying the environment, and improving mental health by offering serene and tranquility atmosphere.

50% of respondents agreed when asked if lorong sayur also improved their health. Only 33.3% of other respondents stated that they felt normal about the statement. Lorong sayur is being put in the use by the community for providing fresh air and a calm, serene, and green atmosphere. People believe that Lorong sayur could reduce stress and the risk of illness. Physical activities such as monthly kerja bakti (community service by local resident) are also indirectly beneficial for health.

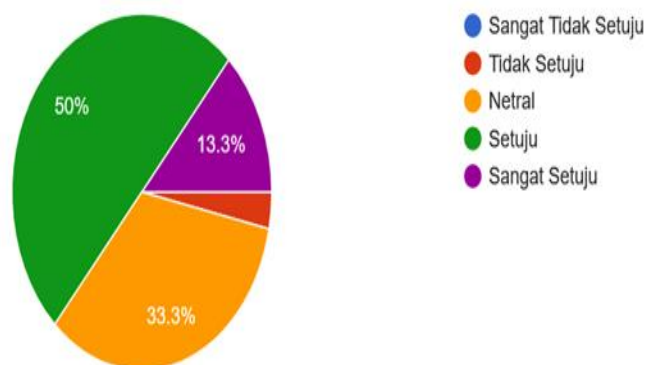


Figure 7. Respondents' perception of the benefits of lorong sayur in improving public health

CONCLUSION

It appears that the people of Yogyakarta have felt the benefits of open green space from lorong sayur. People feel that the presence of lorong sayur can reduce temperature and improve air quality, play a role in preserving flora and fauna, encourage social interaction, beautify the environment, and play a role in improving public health. However, based on people's perception, lorong sayur have no impact on mitigating rainwater runoff for flood prevention. Further research is needed to quantitatively prove the benefits of lorong sayur toward people.

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