

# An Analysis of the Impact of Green Open Space on Stress Stress Problems Case: Tebet Eco Park

Tamana Sibuea<sup>1</sup>; Uras Siahaan<sup>2</sup>; AartjeTehupeiory<sup>3</sup>  
 Student of Master of Architecture Study Program<sup>1</sup>  
 Lecturer of Master of Architecture Study Program<sup>2,3</sup>  
 Christian University of Indonesia  
 Jakarta, Indonesia

**Abstract:-** The rapid urban development of Jakarta has led to significant changes in people's lifestyles. The pressures of city living result in reduced outdoor activities. This, in turn, has negatively impacted mental health, with depression rates steadily rising. The Central Statistics Agency reported a significant increase in the prevalence of depression in Indonesia from 6.2% in 2018 to 13.6% in 2023. Jakarta has a higher prevalence of depressive disorders compared to the rest of the country, with 8.5% of its population affected. Recent studies have demonstrated a strong link between green spaces and improved physical and mental health. Green Open Spaces like Tebet Eco Park, located in South Jakarta, hold great potential to serve as a "therapy tool" for mental health. This research aims to explore this potential through a qualitative case study with a case study design. It seeks answers to: Do the park's design and facilities address mental health needs?, what specific elements of green spaces influence mental recovery?, what untapped potentials or weaknesses exist in Tebet Eco Park?, how can the park be improved to enhance mental well-being? The results of the study show that in general, the surrounding community has a positive perception of Tebet Eco Park. However, improvements are needed so that this park can be an effective mental health recovery place for visitors.

**Keyword:-** *Therapeutic Architecture, Mental Health, Green Open Spaces, Tebet Eco Park*

## I. INTRODUCTION

### A. Background

The world's population is becoming increasingly concentrated in urban areas. Currently, 55% of the world's population, or 4.2 billion people, live in urban areas. This number is predicted to continue to increase to 70% by 2050 (United Nations, 2014). This is due to various factors, including the various opportunities and prosperity of urban areas such as access to education, health services, cultural advancements, and so on.

Urbanization has caused changes in lifestyle. Urban communities spend a lot of time indoors and interacting with electronic devices. This has a negative impact on mental health such as stress and depression, and this has become an increasingly common health problem among urban

communities. The Central Bureau of Statistics recorded that the prevalence of depression in Indonesia increased from 6.2% in 2018 to 13.6% in 2023. In Jakarta, the prevalence of Depressive Disorder reached 8.5%, higher than the national average. Stress has become a global public health problem. In connection with this, research interest in the relationship between nature and health has increased rapidly in recent decades. Previous research has shown that spending time in nature improves physical and mental health (Brymer et al., 2014; Hartig et al., 2011). Various theories also agree that involvement with nature provides the same benefits for everyone (Kaplan & Kaplan, 1989). And almost all studies show a positive relationship between nature and aspects of health. In the midst of the COVID-19 pandemic, nature became a source of well-being that helped individuals cope with anxiety, isolation, and uncertainty about recovery (Anders et al., 2023). Berto, 2005; Bratman, Daily, Levy, & Gross, 2015; Hartig, Evans, Jamner, Davis, & Gärling, 2003 explain that people will perform better after being restored through exposure to nature. Stress Reduction Theory (Ulrich et al., 1991) explains that natural settings have a calming effect on humans. This is because nature resembles the evolutionary adaptation of human physiology and psychology. When in nature, the parasympathetic nervous system is activated, which helps to counteract the high levels of physiological arousal that accompany stress. Researchers have shown that nature can be an effective stress reducer. Therefore, the existence of green open space (GOS) is becoming increasingly important, not only as the city's lungs or a beautiful and well-maintained park but also to maintain environmental balance and the quality of life of the surrounding population.

"Tebet Eco Park, an open green space formerly known as the Tebet Green Corridor, has now become a popular recreational park and tourist destination. This 7-hectare park is located in the Tebet residential area, South Jakarta. The park focuses on active ecological restoration through conservation and tree planting; providing maximum benefits for park users and the habitat and natural species around it. The park is divided into 8 (eight) zones: Plaza Zone, Infinity Link Bridge, Community Garden, Forest Buffer, Children Play Ground, Community Lawn, Thematic Garden, and Wet Land Boardwalk (Prasetyorini et al., 2023). The existence of Tebet Eco Park has great potential to become a "therapy place" for mental health.



Fig 1: Satellite Map of Research Location  
Source: Google Earth

**B. Formulation of the Problem**

This research investigates the suitability of Tebet Eco Park as a "therapy tool" for mental health and to what extent the park contributes to improving mental health. The research questions posed are as follows:

- Does the design and facilities of Tebet Eco Park meet the mental health needs of visitors and surrounding residents?
- What are the potentials and weaknesses of Tebet Eco Park related to mental health issues that have not been maximized?
- What are the recommendations for Tebet Eco Park to improve the mental health of visitors and surrounding residents?"

**C. Research Objectives**

This research aims to explore the potential of Tebet Eco Park as a "therapy tool" by:

- Understanding the extent to which the design and facilities of Tebet Eco Park meet the needs and expectations of the community.
- Identifying specific factors in green spaces that influence mental restoration.
- Identifying the potential and weaknesses of Tebet Eco Park related to mental health issues that have not been maximized.
- Developing recommendations for Tebet Eco Park to improve the mental health of visitors and surrounding residents.

**D. Benefits of the Research**

The benefits of this research include:

- Strengthening existing theories about the relationship between green spaces and mental health.
- Providing recommendations to the City Government and Urban Planners in designing and managing green spaces that can help reduce the level of depression in the community.
- Providing a research example on green spaces and mental health that can be used by other researchers.

**E. Scope of the Study**

- **Substantive:** This research examines Urban Green Spaces (UGS) using Tebet Eco Park as a case study, focusing on the relationship between the activities/behaviors of local residents and the psychological benefits they obtain.
- **Spatial:** Location and Population: The research was conducted at Tebet Eco Park with a population of local residents in the surrounding area. The main aspects of UGS studied were quality, usage rate, and accessibility.
- **Research Limitations:**
  - ✓ **Methodology:** Qualitative, using surveys and observations.
  - ✓ **Sample:** 100 randomly selected local residents.
  - ✓ **Research Duration:** 3 months (Mid-March to Mid-June 2024)
  - ✓ **Focus:** Short-term psychological impacts.
  - ✓ **Exclusions:** Factors other than those related to mental health (work, family, economy) were not considered.

**II. LITERATURE REVIEW**

**A. Green Open Space (GOS)**

- **Definition:** Green Open Space (GOS), according to Indonesian Ministerial Regulation No. 5 of 2008, is an elongated/linear or clustered area with a predominantly open use, where plants grow, both naturally and intentionally planted. This includes parks, sports fields, community gardens, cemeteries, natural grasslands, protected areas, forests, and shrublands. However, it does not include private gardens and other private spaces as they are not accessible to all residents. (Wolch et al., 2014). According to the World Health Organization (WHO), the Federation of International Landscape Architects (IFLA), and the International Union for Conservation of Nature (IUCN), green space is an undeveloped area covered by vegetation, including parks, forests, and farmland, with important ecological, social, and aesthetic functions for maintaining biodiversity, providing habitats for wildlife, and protecting water resources.
- **Functions and Benefits of GOS Based on Indonesian Ministerial Instruction No. 4 of 1988 (SNI, 2004), the functions of GOS include:**
  - ✓ **Ecological Function:** Helping to maintain air and water quality, reducing noise pollution, providing habitats for flora and fauna, and enhancing the aesthetic value of the environment.
  - ✓ **Social Function:** Serving as a venue for social interaction.
  - ✓ **Entertainment Function:** Providing space for recreation.
  - ✓ **Health Function:** Serving as a place to improve both physical and mental health.
  - ✓ **Economic Benefits:** Increasing property values in the surrounding area, attracting tourists, and creating jobs. Green open spaces have ecological, aesthetic, and economic benefits. In addition to producing valuable

economic products such as wood and fruit, GOS also serves as the city's lungs, maintains groundwater availability, and provides habitats for various flora and fauna. (PerMen PUPR No.5 Thn 2008.Pdf, n.d.)

#### ➤ *Characteristics of GOS*

Pope et al.'s (2015) research revealed that the characteristics of green open spaces (GOS) have a significant relationship with reducing the risk of psychological stress. These include:

- **Accessibility:** The ease with which people can visit the GOS.
- **Comfort:** The ability of the GOS to provide a space for visitors to relax.
- **Recreational Facilities:** The availability of recreational facilities in the GOS.
- **Extent:** The adequate size of the GOS area. This research shows that GOS that are comfortable and have many positive characteristics can provide greater benefits to the mental health of visitors compared to large but unmaintained or unattractive GOS. This suggests that the quality and accessibility of GOS may be more important than its size in influencing mental health.

#### ➤ *Completeness of GOS:*

##### • *Sociable Element:*

According to Whyte, a sociable space should have the following features:

- ✓ **Strategic Location:** Preferably situated in high-traffic areas and easily visible.
- ✓ **Integrated Pathways:** Paths should be an integral part of the RTH and accommodate social activities.
- ✓ **Accessible Elevation:** The space should be at a level that is easily accessible, ideally level with the sidewalk.
- ✓ **Seating Accommodations:** The area should provide seating options for both groups and individuals.

##### • *Meeting the Needs of Public Space Users:*

Carr et al. (1992) identified five primary needs of public space users:

- ✓ **Comfort:** A sense of safety and security from harm.
- ✓ **Relaxation:** A state of mental and physical calm. (Carr et al., 1992, p. 98)
- ✓ **Passive Involvement:** Opportunities to observe others and the surrounding environment. (Whyte, 1980, p. 13) Passive involvement with the environment can lead to relaxation. This also involves "the need to meet the environment, even without actively engaging with it" (Carr et al., 1992, p. 103).
- ✓ **Active Involvement:** Opportunities to interact with others and the surrounding environment.
- ✓ **Discovery:** Opportunities for new and enjoyable experiences that can encourage strangers to interact with each other.

#### B. *Stres*

Stress is a condition where a person feels overwhelmed by their environment (Bartlett, 1998). There are three fundamental approaches to understanding stress in humans. First, stress can be seen as a trigger (stimulus) that disturbs a person. Second, stress can be viewed as a person's bodily reaction to this trigger. Third, stress can be perceived as a person's evaluation process of a stressful situation. Stress can have positive effects, known as eustress, and negative effects, known as distress (Gadzella et al., 2012). Eustress leads to increased performance and health (Greenberg, 2006). Conversely, distress leads to decreased performance, physical and mental health, and impaired social relationships (Gadzella et al., 2012; Greenberg, 2006)

#### C. *Relationship Between Green Spaces and Stress*

Stress Reduction Theory (Ulrich et al., 1991) explains that natural settings have a calming effect on humans and can help alleviate stress. Being near green spaces has been shown to have positive benefits for mental health (Callaghan et al., 2021), such as:

- Lowering cortisol levels, the stress hormone (Roe et al., 2013).
- Helping to cope with the negative effects of stressful life events (Van den Berg et al., 2010).
- Reducing depression in mothers (R. McEachan et al., 2016).
- Increasing social cohesion or a sense of belonging among individuals (Gonzalez & Kirkevold, 2016; Hartig et al., 2014).
- Improving overall psychological well-being (Annerstedt et al., 2012; Triguero-Mas et al., 2015)

#### D. *Therapeutic Architecture Approach*

Therapeutic Architecture utilizes evidence-based design as a tool to design spaces in healthcare facilities. Therapeutic architecture employs various design elements to create effective healing environments, such as: Natural and artificial light, Color, Nature experience, Natural views, Sound environment & Music, Material & furniture layout, Art & entertainment (Schweitzer, 2004; Iyendo, 2016)

#### ➤ *Guide to Designing Therapeutic Spaces*

- **Quiet and Activity Zones:** Incorporate diverse green spaces, flexible seating arrangements, and easy access to various relaxation activities. Leverage nature to foster tranquility.
- **Sports Zone:** Maximize opportunities for physical activity and increase greenery. Offer a variety of sports activities and use green or orange accents. Provide both private and public areas.
- **Escape Zone:** Ensure a minimum area of 9 square meters with at least 2% natural lighting. Opt for an open design and prioritize warm color palettes.
- **Productive Zone:** Achieve even sunlight of at least 500 lux and incorporate views of the natural surroundings. Provide ample storage to maintain organization. Create a cool atmosphere with cool colors and lighting.

### III. RESEARCH METHODOLOGY

This research employs a qualitative descriptive approach, examining phenomena, events, people, and objects to obtain descriptive data in the form of words and images. The research area is the Tebet Eco Park (TEP) region, with boundaries: the eastern border is Jl. Tebet Barat Dalam X, the western border is Rusun Harum Tebet, the northern border is Jl. Tebet Timur Raya, and the southern border is Jl. Tebet Barat Raya. TEP is flanked by residential areas in two administrative villages: Tebet Barat and Tebet Timur. The TEP area is also adjacent to the MT. Haryono office district and two public transportation modes: Cawang Station and the Transjakarta Bus Stop.

#### ➤ Data Collection Techniques

- **Observation at the research site:** This involves recording and taking pictures of the conditions or behavior of the target objects. This step analyzes natural features that can influence mental health, including area size, park facilities, natural attributes such as vegetation, and biodiversity.
- **Surveys using questionnaires:** These will include questions about people's perceptions and experiences of Tebet Eco Park, their satisfaction with the existence of the green space, and its impact on their psychological well-being.
- **Data collection from journals, books, articles, social media, and Google:** This involves gathering relevant information from various sources to support the research.

- **Fieldwork:** Research will be conducted during both weekdays and weekends to observe how people use the park. Data collection will take place from mid-March to the end of July 2024.
- **Population:** The study population includes visitors and residents living around Tebet Eco Park.

#### ➤ Data Analysis

Data analysis in qualitative research is characterized by being descriptive, inductive, narrative, and ongoing (Yusuf, 2014). The analysis stages include:

- **Data collection:** As much data as possible is collected through various methods such as observation, interviews, and document studies.
- **Data selection:** The collected data is selected based on the research needs.
- **Data presentation:** The researcher creates data presentations, such as tables, graphs, narratives, and diagrams, to illustrate the research findings.
- **Conclusion:** The researcher draws conclusions from the analyzed data, ensuring that the conclusions are supported by the evidence.
- **Recommendations:** The researcher provides recommendations for increasing the variety of physical activities at Tebet Eco Park to cater to diverse mental health needs.

### IV. RESULTS AND DISCUSSION

#### A. In-park Observations



Fig 2: Site Plan of Tebet Eco Park  
Source: Google

Tebet Eco Park is divided into eight zones in the north and south. The northern section features a welcoming plaza, a bridge connecting the two parts, a themed garden, and a picnic area. The southern section includes a boardwalk over a naturalized river, a community garden, a forest buffer for air and noise reduction, and a children's play area

A research study was conducted to evaluate the potential of Eco Park (TEP) as a therapeutic environment. Through on-site observations and photographic documentation, the researcher examined the park's functions, features, and facilities. By comparing these findings with existing theories on park design and stress reduction, the study aimed to determine if TEP can effectively serve as a place for stress relief.

➤ *Tebet Eco Park and Its Ecological Functions*



Fig 3: Situation of the Ecological Function of TEP

The Forest Buffer, Community Lawn, and Thematic Garden are all vegetated areas. The Wetland Boardwalk is a walkway over a man-made wetland, created by naturalizing the river. This wetland acts as a retention pond, absorbing excess water and improving water quality through natural

filtration. The diverse vegetation, including the warm orange hues of the Leda tree, ample sunlight, and other elements in this zone contribute to a therapeutic environment that can help reduce stress.

➤ *Tebet Eco Park and Its Social Functions*



Fig 4: Zona Community  
Source: Google

The social area in TEP consists of a Community Garden, Community Lawn, and Children's Playground, adjacent to an outdoor fitness area. Prayer facilities and

restrooms are also available for visitor convenience. The calm and pleasant atmosphere in this area can help reduce stress.

➤ *Tebet Eco Park and Its Recreational and Sports Functions*



Fig 5: Recreation Zone rekreasi  
Source: google dan Personal Documentation



Fig 6: Sports Facilities  
Source: Personal Documentation

The iconic orange Infinity Link Bridge connects the North and South Parks. The park features a fun-filled children's playground, a comfortable jogging trail, and a well-equipped outdoor fitness area. The serene and inviting atmosphere in this area can contribute to stress reduction.

➤ *Tebet Eco Park and the Fulfillment of Public Needs*

According to Carmona's concept of public space user needs, TEP successfully caters to the need for comfort.

- High visitor count: The park's popularity suggests that visitors feel safe and comfortable in this park.
- Extended visiting hours: People come to the park from early morning to late afternoon, indicating a sense of safety and enjoyment.
- Visitors taking naps: The fact that people feel secure and relaxed enough to sleep in the park highlights the high level of comfort it offers.



Fig 7: Visitor Situation  
Source: Google & Personal Documentation

➤ *Tebet Eco Park and its Fulfillment of the Needs for Passive, Active, and Discovery Involvement*

Carmona's theory suggests that humans are naturally inclined to watch what others are doing. The simple act of sitting and observing people can be quite calming. The Plaza and Community lawn cater to our need for passive involvement. For active involvement, the entire park offers various spaces for individual or group activities, like playing games, exercising, or chatting. Our innate curiosity drives us to seek out new experiences. This "triangulation" effect can be seen in the park, especially in places like the Infinity Link Bridge and the Pet Area, where visitors can meet new people and share their experiences



Fig 8: Pet area

Source: Personal Documentation

Based on Architectural Therapy Theory, spaces designed for mental health therapy should incorporate

- Semi-private zones that offer both calm and stimulating environments, as well as areas for physical activity.
- Private zones that provide spaces for retreat and productivity.

In TEP, the Forest Buffer, Community Lawn, Thematic Garden, and Wetland Boardwalk serve as quiet zones, while the community garden with its prayer room provides a space for rest and reflection. This design aligns with the theory's emphasis on natural light, soothing colors, and a variety of facilities.

➤ *Tebet Eco Park and its Vegetations*

Vegetation should effectively improve air quality, mitigate noise and erosion, and provide a healthy environment for wildlife by absorbing pollutants, filtering dust, and reducing wind impact. The vegetation in TEP consists of:

- **Flowering Trees:** Such as Tanjung, purple bungur, butterfly trees, and Spathodea.
- **Timber Trees:** Khaya, Pulai, Thembesi, Tabebuaya, Mahogany, Bodhi, Ketapang, Mahogany, Kapuk, and Leda.

➤ *Tebet Eco Park and its Outdoor Furnishings*

Outdoor amenities like park benches, signs, lights, and trash cans act as furniture in green spaces, becoming focal points for visitors. Thoughtful placement and color choices can enhance comfort and reduce stress.



Fig 9: Signage

Source: Personal Documentation



Fig 10: Garden Bench

Source: Personal Documentation



Fig 11: Disain Tempat Sampah

Source: Personal Documentation

The 180 cm wooden bench is designed to provide a comfortable seating area for park visitors, even for those who do not know one another. Its fixed position makes it a perfect spot for a quick rest and people-watching. The signboard provides directions and warnings. Located along the footpath in every zone. The board is 2 by 1 meter, but you can only read the words from up to 3 meters away. Its

warm design and colors make it a visually appealing feature that fits with the therapeutic architecture of the place.

*B. Observations Outside the Park*

Tebet Eco Park has two entrances, but traffic congestion makes it challenging for visitors from outside Tebet to reach, especially by car.



Fig 12: Outside the Park  
Source: Personal documentation

The lack of parking spaces, combined with the park's distance from public transportation, has led to an increase in private vehicle use. The resulting traffic congestion has made the area around the park less enjoyable for visitors. Moreover due to insufficient trading space, street vendors have encroached upon the park's perimeter, hindering visitor access

**V. CONCLUSION**

Based on theoretical frameworks, Tebet Eco Park demonstrates significant potential as a Green Open Space (GOS) that can contribute to mental health therapies. This potential is underscored by the presence of:

➤ *Facilities:*

- A variety of facilities supporting physical activity and recreation, such as jogging tracks, sports fields, and children's play areas, which can enhance both physical and mental health.
- Quiet spaces like meditation gardens and gazebos that facilitate relaxation and stress reduction.
- Supportive facilities such as clean and well-maintained public restrooms, which contribute to overall visitor comfort."

➤ *Environmental Quality:*

- Offers a lush and diverse natural environment that promotes a sense of calm and well-being.
- Maintains a relatively clean air quality compared to urban settings.

- Provides a peaceful atmosphere with minimal noise disturbances.

➤ *Design:*

- Features a thoughtfully designed and visually appealing layout.
- Provides various zones that cater to different relaxation and nature appreciation needs.

➤ *Security:*

- Is equipped with regular security patrols to ensure visitor safety.
- Employs CCTV surveillance at key locations for enhanced security.
- Provides adequate lighting at night for visitor convenience.

Theoretical Support: Ulrich's theory underscores humans' innate need for a connection with nature. The natural elements present in Tebet Eco Park, such as trees, plants, and water, can significantly reduce stress, anxiety, and depression. Attention Restoration Theory highlights the restorative effects of natural environments on cognitive functions like focus and concentration. The serene and tranquil atmosphere of Tebet Eco Park offers an ideal setting for mindfulness and meditation practices, aiding in stress reduction. Based on therapeutic architecture theory, well-designed green spaces can positively impact mental health and well-being. The user-friendly, aesthetically pleasing, and safe design of Tebet Eco Park fosters a conducive environment for various activities that promote mental health. Considering its accessibility, comprehensive



facilities, superior environmental quality, thoughtful design, and alignment with relevant theories, Tebet Eco Park presents itself as a valuable resource for mental health therapies. The park offers a variety of natural elements and activities that can effectively mitigate stress, anxiety, and depression, while enhancing focus and concentration. While further empirical research is needed to conclusively quantify the therapeutic efficacy of Tebet Eco Park, it undoubtedly holds significant potential as a valuable asset for individuals seeking to reduce their stress.

### REFERENCES

- [1]. Bartlett, D. (1998). *Stress: Perspectives and processes*. Philadelphia, USA: Open University Press.
- [2]. Bratman, G. N., Daily, G. C., Levy, B. J., & Gross, J. J. (2015). The benefits of nature experience: Improved affect and cognition. *Landscape and Urban Planning*, 138, 41–50. <https://doi.org/10.1016/j.landurbplan.2015.02.005>
- [3]. Bungin, B. (2003). *Analisis Data Penelitian Kualitatif*. Jakarta: PT Grafindo Persad
- [4]. Callaghanetal\_2020\_Impactofgreenspacesonmentalhealth.pdf. (n.d.)
- [5]. World Health Organization, *Mental Health: A State of Well-Being* (World Health Organization, 2014).
- [6]. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, ed. 5, 2013).
- [7]. World Health Organization, *International Classification of Diseases* (World Health Organization, 2017).