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Tanta University, Faculty of Engineering
Department of Architecture

Sustainable urban design of urban spaces in residential areas and their impact on human behavior.

A Thesis Submitted in partial fulfillment of the M.Sc.in Engineering
"Architectural Engineering"

By

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Demonstrator, Department of Architecture,
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2025

.. نَرْفَعُ دَرَجَاتٍ مَّن نَّشَاءُ ۗ وَفَوْقَ كُلِّ ذِي عِلْمٍ عَلِيمٌ.

سورة يوسف آية ٧٦

To

The memory of my father
Mr. Gaber Atiya

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Special thanks to my coreagous daughers **Maria** and **Sofia**

ABSTRACT

This study discusses the role of urban spaces within residential areas. As it contribute in shaping human behavior and stimulate social interaction, which in turn impacts individuals' life quality and their interaction with the surrounding environment. Consequently, designers should focus on designing these spaces with an emphasis on human-centered aspects, rather than solely on physical attributes. These aspects encourage individuals to be employed in or make use of the space. To achieve the desired quality of these spaces, it is essential to Emphasize on sustainability principles, particularly social sustainability together with human needs.

Despite of this in some countries, including Egypt, there is a shortfall in the design of urban spaces within residential areas. This shortfall leads to their misuse, whether through abandonment in favor of streets and public spaces or through their degradation. This negatively affects indeviduals and the overall image of the city. Despite of the importance of considering these aspects, they are not all considered in the previous studies.

In this study this aspects were considered to comprehend the needs of the indeviduals that should be met within them. In order to achieve a successful design of urban spaces within residential areas and fruit human welfare. Additionally, it explores the design standards of these spaces while considering social sustainability principles. The goal is to propose a methodology for assessing the quality of urban spaces within residential areas and testing their vitality. The proposed relation between human needs, principles of design and sustainability to residential open areas is correlated through the satisfaction of these requirement. In order to examine the efficiency of the excluded principles the three urban spaces, residential areas in North Central Brno – Czech Republic, La Cité des 1000 Logements, Algeria and Madinaty, New Cairo, Egypt, were taken as a case study. Based on the obtained results, the proposed

model was validated and proven effective in assessing urban spaces within residential areas, ensuring their functionality and sustainability. Three urban spaces in Cairo were selected, Swiss District in Nasr City, Al-Rehab City and the 7th district in 6th of October city, to test their ability to meet users' needs and adhere to social sustainability principles.

Keywords: Public spaces, urban design, residential areas, people behavior, human needs, social sustainability.

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Gaber, A., Nour, W., & Kamar, M. (2022). Sustainable Urban Design of Urban Spaces in Residential Areas and Their Impact on Human Behavior. Journal of Engineering Research, 6(4), 13-24.

1

INTRODUCTION

Urban spaces in modern cities, including streets, parks, and squares, form the city's skeletal structure, fostering interaction and cultural activities while shaping its identity. They enhance aesthetics, air quality, and biodiversity while reducing noise pollution. Economically, well-maintained public spaces attract investment and tourism, driving local growth.

Public spaces reflect the relationship between people and their environment, playing a vital role in livelihoods, environmental quality, and sustainability. They are integral to social cohesion and urban development. However, many cities, especially in developing nations, face shortages in both quantity and quality of these spaces, leading to the misuse of streets for recreation. Addressing this requires human-centered design that prioritizes user needs over purely physical aspect.

An imbalance between design and human needs prevents public spaces from functioning effectively. The relationship between public spaces and human behavior is reciprocal, yet a lack of human-centered studies limits their economic, social, and cultural roles. The gap between designers and users often results in spaces that do not align with real needs, leading to usage patterns that contradict the original design vision and fail to achieve the intended environmental and social impact.

Social sustainability is essential, bridging urbanization and human needs. Ensuring sustainability addresses the diverse needs of present and future populations while fostering a safe, inclusive, and well-planned environment that guarantees equal opportunities and quality services for all.

Therefore, this study aims to propose effective aspects that can achieve a successful and sustainable design of public spaces. It examines the relationship between human needs and urban design in residential areas, focusing on social sustainability aspects like density, accessibility, and mobility. A user survey

assesses public space effectiveness, highlighting factors influencing usage. The study concludes with an evaluation of existing spaces and recommendations for user-centered, sustainable design.

1. Research problem

Urban spaces reflect urban design and daily human activities, playing a vital role in enhancing the urban environment and quality of life. Well-designed spaces promote social interaction, community bonding, and well-being. Therefore, their design must follow standards, meet user needs, and align with social sustainability principles. Neglecting these elements in design has led to inappropriate space usage, abandonment, and neglect. This underscores the need for a methodology to enhance urban spaces and develop effective strategies for sustainable public space design.

2. Literature Review

There has been a prime focus on studying the urban public spaces in residential areas. This includes examining their components and design criteria. Beside, the human needs that must be provided within these spaces and the role of the space in achieving the principles of social sustainability. It should be noted that these spaces are not only important for meeting the needs of users, but also for improving the built environment and enhanceing the the life quality in cities. As mentioned, urban public spaces in residential areas has a dual purpose of providing an environment in which indeviduals can practice various individual and community activities. More over they was regarded as a way for enhancing community cohesion (Li Qing 2014) and promoting the integration of social relations among resident (Aleksandra Kaźmierczak 2013).

Despite of its importance, there are sevrel problems related to public spaces in residential areas. As their condition in many cities is far from the desirable quantitative and qualitative terms that have been proven by lots of published

papers (Chen, Nuo & Fang, Dewei. 2024). While others were concerned with finding ways to improve the quality of public spaces in residential areas to make them perform functionaly (Rao, Shuman & Wang, Casey & van Ameijde, Jeroen 2022).

In the study made by **Nuo Chen et al 2024,** the researchers seek to understand the extent to which specific factors affect indeviduals' satisfaction and the quality of urban space in residential areas. The quality of public spaces is an important issue in residential areas, as it directly affects indeviduals' daily lives, comfort, and social interaction. Impact-Asymmetry Analysis was used, and the researchers attempt to determine which factors contribute most to indeviduals' satisfaction, and which may have a negative or unbalanced effect. The study showed that improving some factors may have a greater impact on indeviduals' satisfaction than improving other factors. Futher, it was concluded that attention to safety and environmental factors can attract indeviduals within residential urban spaces. Leading to a major role in enhancing satisfaction and increasing the use of public spaces.

However the study suffers from several shortcomings that affect its effectiveness in meeting indeviduals' needs and achieving the principles of social sustainability. First, the study focused on psychological and social factors only (safety, comfort, and ease of access), ignoring environmental and material factors, which affects indeviduals' comfort within the space and reduces the sustainability of public spaces environmentally, healthily, and socially. Secend, it ignored population differences such as gender and age, which reduces the comprehensiveness of proposed designs for different population groups. Thired, it relied on population satisfaction as the sole indicator of quality, which may lead to recommendations that achieve temporary satisfaction but lack overall sustainability.

In another study mady by **Rao, Shumanet al 2022,** they addressed the role of public spaces as community gathering centers in high-density residential

areas. The study investegated how these spaces affect social cohesion and support interaction between residents of the area. They take into account the cultural differences of the population, the ability of these spaces to develop the culture of the community and increase the sense of belonging and identity. It also emphasizes their role in meeting the needs of the local community in a crowded urban environment. This study recomended the importance of designing these spaces strategically to make them more inclusive and responsive to the needs of the local community. It emphasized the role of the physical characteristics of the spaces in achieving this.Also, they confirmed that the success of the urban space is linked to human needs based on the activities that are practiced within the space. The study highlights the importance of future research to develop a human-centered urban design that is based on evidence and is in line with diverse social and cultural activities.

However, their employed methodology faced certain limitations regarding divers needs. Despite the selected criteria effectively addressed key aspects such as accessibility, social interaction, and comfort, they fell short in accommodating the diverse needs of the population, particularly regarding cultural diversity, age groups, environmental and economic considerations, and the absence of a framework for measuring long-term impact. Enhancing these aspects in future studies could significantly improve the inclusivity and effectiveness of proposed solutions.

Moreover the study, made by **Fakinah Edward 2019**, aims to improve and develop public spaces in residential neighborhoods to meet the needs of indeviduals and enhance their urban and environmental quality. The study hightlited the importance of design aspects such as closure, appropriate size for humans, and a sense of security as factors that contribute to the success of urban space. The study hightled incorporating principles of comprehensiveness, ensuring that the design is meaningful, comfortable, safe, and ultimately enjoyable.These princibles were translated into design decisions to make the

urban space in residential areas attractive and meaningful.

Although the study focuses on enhancing social interaction, it does not pay enough attention to intangible social needs such as building trust among indeviduals and strengthening community relationships. Additionally, it overlooks the importance of indeviduals privacy within the space. Achieving a balance between public privacy and indevidual privacy is essential to improve the psychological and emotional well-being of users.

Also the study conducted by **Wojciech Bonenberg 2015**, utilized a socio-spatial analysis of public spaces in residential areas. This approach focused on examining social factors related to indeviduals' needs. That emphasized the understanding of spatial organization and social behaviour patterns are essential in designing residential public spaces promoting social interaction, inclusivity, and safety.The socio-spatial analysis framework evaluates factors such as accessibility, spatial planning, and environmental quality. These factors highlight their impact on individuals' interactions and sense of belonging.

However, this study faces shortcomings in its reliance on social and spatial aspects as it neglects the psychological needs that provide psychological support for indevidualsIt also does not offer adequate privacy for individuals who require personal space. Despite of the succeeful of The study in developing spaces that encourage social interaction, it does not provide the appropriate environment for deep and sustainable interactions between indeviduals.

Previous studies have aimed to enhance the quality and functionality of public spaces in residential areas, with a focus on safety, comfort, and social interaction. However, these studies encounter challenges in addressing individual needs, including personal privacy, cultural diversity, and environmental considerations. Moreover, some studies exhibit shortcomings in achieving the principles of social sustainability, as demonstrated in Tables 1,2.

Table 1: Assessment of Previous Studies' Fulfillment of Human Needs, .

Previous studies / Human Needs	Nuo Chen et al. 2024	Rao, Shuman et al. 2022	Fakinah Edward 2019	Wojciech Bonenberg 2015
Comfort	✓	✓	✓	✓
Protection	✓	✓	✓	✓
Subsistence	✗	✗	✗	✗
Participation	✓	✓	✓	✓
Understanding	✗	✓	✗	✓
Affection	✗	✓	✓	✓
Identity	✗	✓	✗	✗
Creation	✗	✓	✗	✗

Table 2: Evaluation of Previous Studies in Relation to Social Sustainability Principles

Previous studies / sustinability principles	Nuo Chen et al. 2024	Rao, Shuman et al. 2022	Fakinah Edward 2019	Wojciech Bonenberg 2015
Population Density	✗	✓	✗	✓
Accessibility	✓	✓	✓	✓
Mobility	✓	✓	✗	✓
Integration	✗	✓	✓	✓
Choice&Diversity	✗	✓	✗	✗
Mixed-Use	✗	✓	✗	✗
Safety&Security	✗	✗	✓	✓
Social Capital	✗	✓	✓	✓
Environmental Quality	✓	✗	✓	✓

A review of previous studies highlights gaps in balancing human needs and social sustainability in urban space design. Many studies focus on social aspects while neglecting environmental and material factors, long-term evaluation, and the balance between interaction and privacy. The shortcomings of each study can be illustrated in the figure1**.** To create successful urban spaces, a holistic approach is needed, ensuring sustainability, inclusivity, and a high quality of urban life. This is done by finding a three-way relationship that brings together

the design criteria of urban spaces and their physical components in their role in meeting human needs and maintaining the principles of social sustainability. From this relationship, a methodology have been reached through which the urban space is evaluated. Aiming at increasing the vitality of the urban space, improving its performance and enhancing social interaction between individuals. This is what will be discussed in the coming chapters.

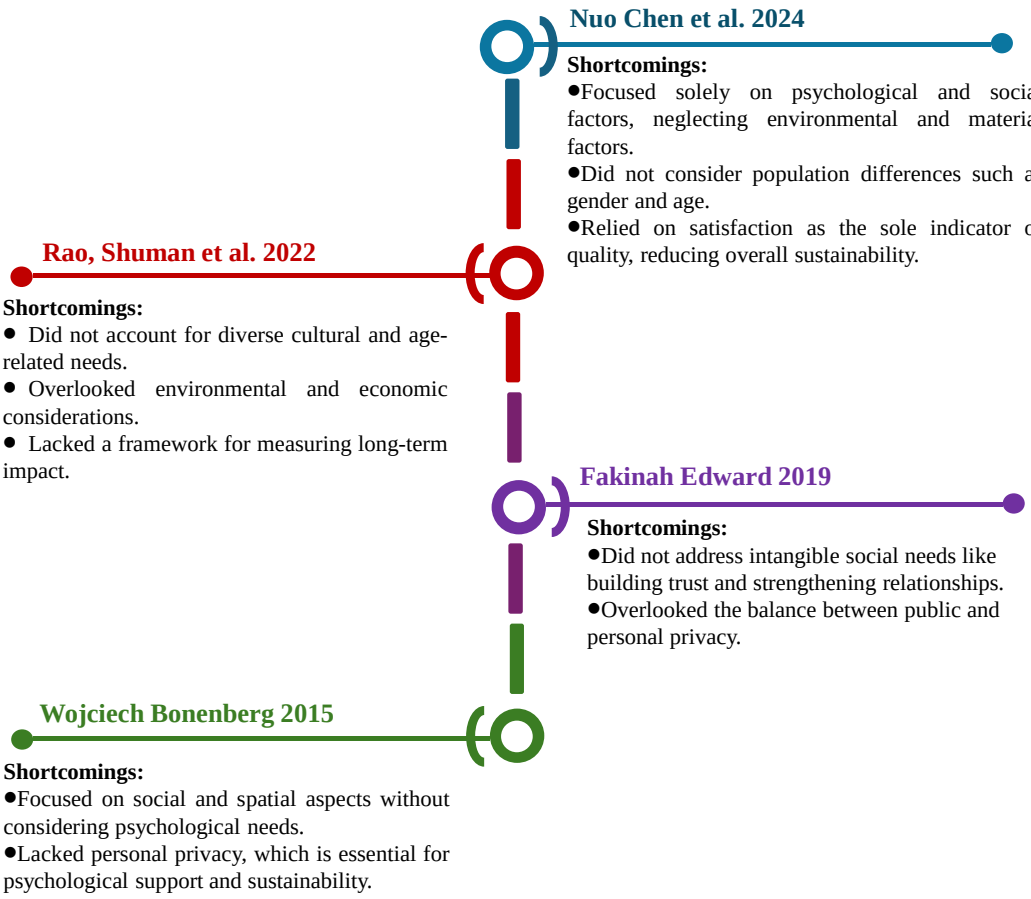


Figure 1: Deficiencies in previous studies.

3. The research objectives

The research aims to emphasize the importance of urban spaces in human life due to their impact on improving the life quality of individual’s and their sense of identity. The primary objective of the study is to develop a methodology for achieving successful and sustainable design of urban spaces within residential

areas. Then, explore their role in meeting the individuals' needs. This can be accomplished through the following:

- **Analyzing and studying the characteristics and design principles of urban spaces** to identify the factors that influence the success of urban space design.
- **Examining the diverse needs and requirements of users** that must be met within urban spaces to make them socially active, while investigating the reasons why indeviduals may not use their urban spaces.
- **Understanding the concept of sustainability, particularly social sustainability**, and its role in bridging design standards with human needs, stressing the importance of adhering to these principles during the design process.

4. Research Scope

This study focuses on the examination of urban spaces within residential areas, and highlight their role in shaping individual identity.

5. Research Methodology

The research is based on three fundamental, parallel, and interconnected methodologies to achieve the study's objectives:

➢ 5.1 The Inductive approach

This methodology is based on an inductive approach to provide a background on the subject, which includes the following:

5.1.1 Understanding urban spaces, their types, significance, and key components.

5.1.2 Identifying the human needs that must be met within the urban environment to create vibrant and socially active spaces.

5.1.3 Ensuring the efficiency of these spaces by incorporating social sustainability and its principles in the design process.

- **5.2 Analytical approach**

After reviewing the literature and evaluating existing theories, a methodology has been proposed in the form of a table that enables us to design an urban space that meets users' needs while considering the principles of social sustainability. This approach serves as a means to provide a high-quality physical environment.

- **5.3 Analytical and Applied Approach**

Analysis of Selected Urban Space Models and Their Adequacy in Meeting Individual Needs While Adhering to Social Sustainability Principle

5.3.1 The table developed in the previous phase was used to create a questionnaire administered to indeviduals of three areas in Cairo. The areas under investigation were: Al Rehab City, Sixth of October City and Swiss Housing Project

5.3.2 The information sought from the questionnaire aimed to identify the types of spaces in the selected areas and assess their effectiveness in meeting human needs and aligning with social sustainability principles.

5.3.3 This was accomplished by gathering responses from users of these spaces, which helped evaluate the efficiency of urban spaces in the chosen areas.

6. Thesis Organization

The work in this dissertation is organized in seven chapters as follows:

Chapter one explores the core concepts of urban design, focusing on the definition and classification of urban spaces within a city. It highlights the

importance of these spaces to communities, cities, and individuals. Special attention is given to urban spaces in residential areas, analyzing their physical components and the factors influencing their design.

The main aim of **Chapter Two** is to explore the connection between urban space design standards in residential areas and the human needs these spaces should meet. It also examines their role in supporting social sustainability. The chapter is divided into two parts. Part One examines human behavior in urban spaces, including its concept, types, and influencing factors. It explores the activities people engage in and reviews theories related to human needs in urban environments, aiming to clarify how design standards help fulfill these needs. Part Two explains the concept of sustainability and its main pillars, with a focus on social sustainability. It clarifies this concept and connects it to urban space design principles, highlighting the role of open residential areas in achieving social sustainability goals.

Chapter three presents an analytical study of three urban spaces within residential areas to test and further develop the methodology derived from the theoretical study in previous chapters. By the end of this chapter, a proposed methodology will be established, which can be used to assess urban spaces within residential areas.

Chapter four evaluates case studies of urban spaces within residential areas in Egypt, identifying design deficiencies and proposing solutions to address the issues affecting these spaces. The aim is to enhance their quality and effectiveness, fostering a vibrant, socially active, and sustainable community.

The fifth and final chapter highlights the conclusions extracted from the thesis and suggests the recommendations of this study.

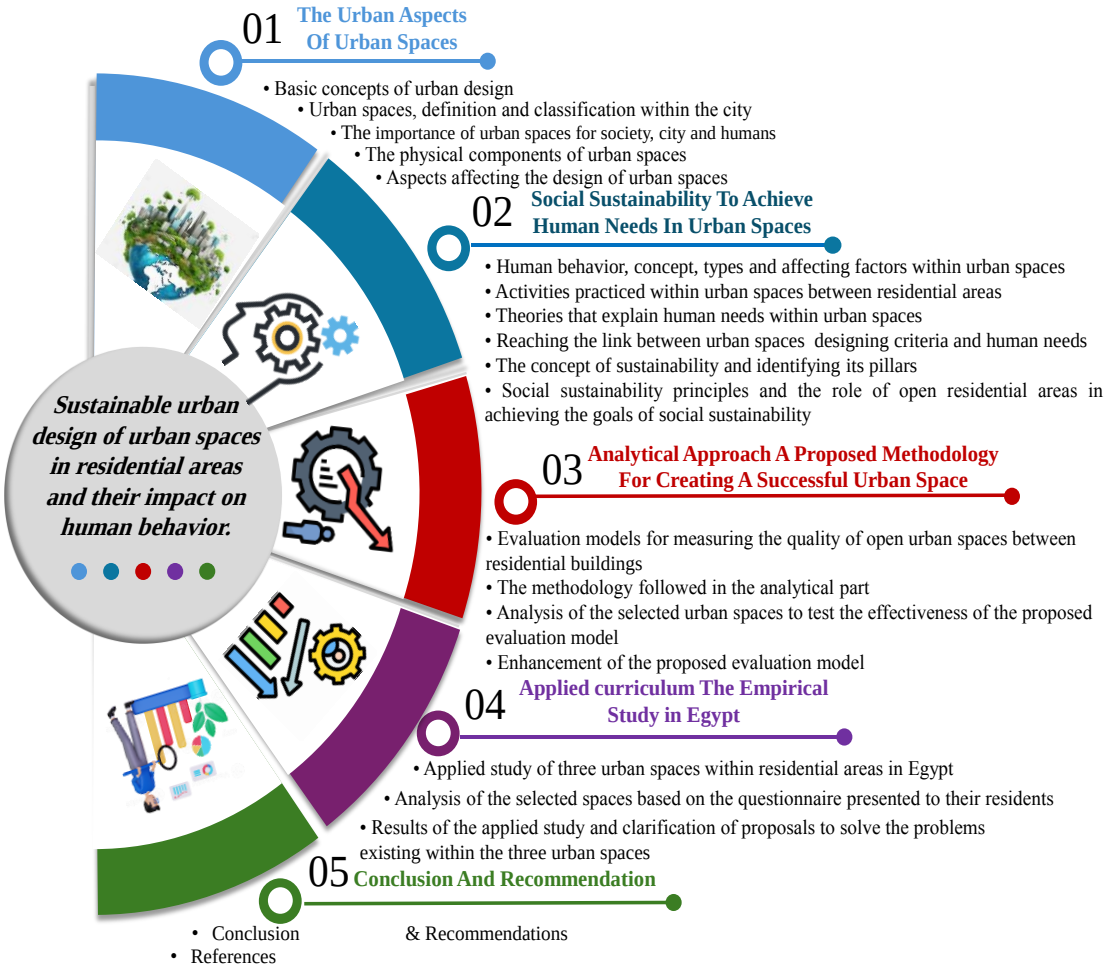


Figure 2: Thesis Structure

CHAPTER 1

URBAN SPACE DESIGN STANDARDS IN RESIDENTIAL AREAS

Introduction

Urban design and planning strive to create spaces that encourage social interaction and strengthen community engagement. Urban sociologists emphasize that urban spaces are not just physical areas but also platforms for social integration and participation. Poorly designed spaces can negatively impact human behavior. Thoughtfully designed urban spaces foster stronger connections between people and their surroundings. This inturn promotes mental, physical, and emotional well-being, alleviating depression, and nurturing healthy development for children. This chapter will delve into the essential role urban design plays in shaping the physical and social environment of cities, highlighting its impact on the well-being of individuals and communities.

The analysis commences with a definition of urban spaces, followed by an examination of their varied forms, functions, and intrinsic characteristics. A systematic classification within the urban fabric will be presented to elucidate their contribution to the structural composition of cities and their role in shaping patterns of human interaction. Furthermore, the study will underscore the interrelationship between urban spaces and critical urban planning dimensions, including transportation infrastructure, land use distribution, and principles of environmental sustainability. Moreover, this chapter will investigate the pivotal role of urban spaces in promoting social integration, supporting economic activities, and facilitating cultural expression. It will

analyze how the design and configuration of urban environments can enhance overall quality of life, contribute to mental and physical well-being, and strengthen community engagement.

At last, this chapter concludes by outlining key design criteria for successful urban spaces, including accessibility, connectivity, inclusivity, sustainability, aesthetics, and functionality — all aimed at creating environments that support human interaction, well-being, and long-term usability. To sum up the following points are discussed:

- Urban Design: Concept, Significance, and Contemporary Imperatives.
- Urban Spaces: Definitions and Key Classifications.
- The Role of Urban Spaces in Enhancing Social Cohesion, Urban Growth, and Human Well-Being.
- Integrating Urban Spaces within the Urban Fabric: Classifications and Functions.
- Physical Elements Shaping the Identity and Quality of Residential Open Spaces.
- Key Design Principles for Creating Inclusive and Functional Urban Spaces.

1.1 Urban design concept

Urban design is the process of shaping the urban environment to establish harmony between the built environment and public spaces. This section provides a definition, examines the factors driving its necessity, and explores its core objectives.

1.1.1 Urban Design Definition There are several definitions to urban design and they are summarized in Table 1-1. Childs said that urban design is an interdisciplinary aspect that shapes our settlements to be sustainable, convivial, bright and inspiring one. Also, Biddulph supported this concept and highlighted that the designers have to involve the political and humanitarian nature in urban design. Moughtin saw urban design as the art of city building, that primly focus on the creation of built forms that express

Table 1–1: Definitions of urban design.

Rowley,1994	Urban design is viewed as an intermediary discipline between architecture and planning. It focuses on addressing social and emotional needs while creating safe, healthy, and effective public spaces.
Thomas W. Schurch 1999	The definition of urban design is often unclear, but it is fundamentally concerned with managing urban environments and shaping the spaces within them. This process should include participation and emphasize democratic engagement.
Moughtin, J. [1999] 2003	Urban design is seen as the art of building cities, primarily focusing on creating built forms that reflect the social and communal values of the inhabitants.
Childs, M 2010	Urban design is a multidisciplinary aspect that shapes our settlements to be sustainable, enjoyable, vibrant, and inspiring.
Biddulph, M 2012	Urban design is a practical and creative activity that deals with built forms.
Carmona, M 2016	Carmona emphasizes that urban design addresses urban space at all levels, not only the physical environment but also the processes that shape it. It engages with all available means to form and manage the environment.

social and collective values of the residents.

Based on these studies it can be defiend as the art of creating places through shaping of physical environment. This collaborative study determines the nature of buildings and the spaces between them. Design process is not only about creating new places from scratch; but also involves developing existing spaces

in an effort to improve and bring benefits to investors, developers, and the wider community. It can be described as the use of people's knowledge and technology to manage and adapt the environment in sustainable ways that meet the social, political, economic, aesthetic, and spiritual needs of users. Figure 1-1 shows the main aspects of urban design and its focus on people, connections, and collaboration.

Based on which urban design can be considered as a multidisciplinary field focused on creating connections between various urban configurations. It addresses both detailed aspects of streets and the broader region. The process centers around human needs, involving decision-makers and designers, and relies on participation for success. It also requires understanding local administrative structures and the role of urban designers within them.

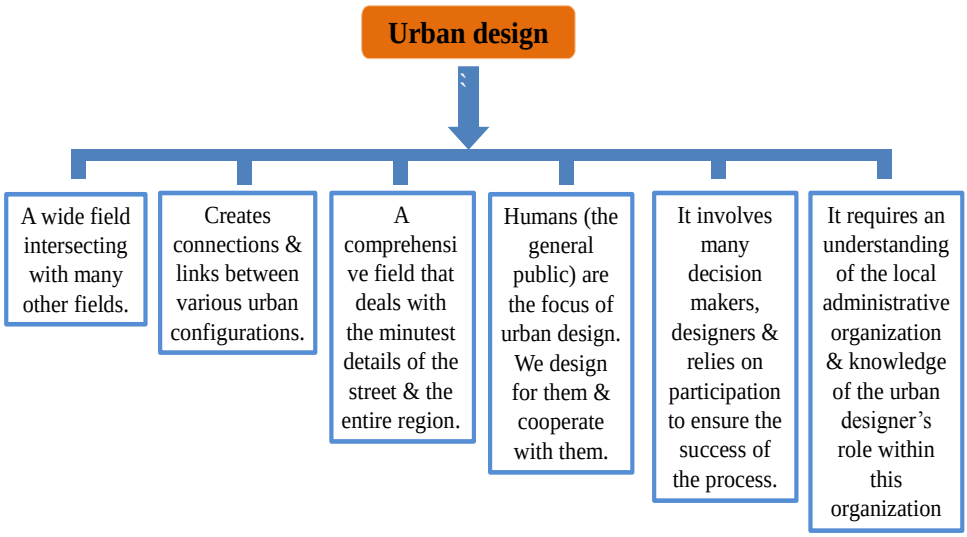


Figure 1-1 Key Aspects of Urban Design.

1.1.2 The Rising Significance of Urban Design

The global population is growing rapidly, and cities that are primarily focused on their physical configuration often overlook the social dynamics

and human needs of their users. Despite the high population density, existing urban spaces are characterized by poor quality and fail to fulfill their economic, social, recreational, and cultural functions. Therefore, there is a need to approach urban design comprehensively, considering all aspects. New urban form elements have been identified, paying attention to surfaces, facades, and components within the space, such as benches, trees, lighting, and other amenities that help humanize urban design vocabulary. There are several factors have contributed to the growing focus on urban design (Madanipour, A 2010, Saaty, T., & De Paola, P. 2017). The key factors behind the rising importance of urban design in planning and development are as follows and summarized in Figure 1-2.

1.1.2.1 Rapid Urban Growth:

Urban environments have expanded significantly, with city elements growing uncontrollably. This has led to individuals feeling insignificant and powerless over their homes, neighborhoods, and cities. Built environments have increased at the expense of open spaces.

1.1.2.2 Neglected living environments:

Despite improvements in housing conditions in some countries, the surrounding open spaces remain neglected and often consist of barren, unused lands unsuitable for public use.

1.1.2.3 Privatization:

Due to widespread economic transformations, privatization has proliferated, resulting in the loss of public life. Cities have become empty deserts with few spaces for people to gather. Social interactions have been reduced to formal events held in closed, private venues.

1.1.2.4 Loss of Place Identity:

The pursuit of quick profits and maximum utilization of attractive locations has led to a focus on material aspects and the destruction of many historical sites that no longer generate revenue. Consequently, individuals feel a lack of belonging and a sense of disconnection within their cities.

1.1.2.5 Alienation:

The rapid pace of modern life has distanced cities from their indeviduals. Life has become too fast-paced for people to keep up with, and it is not surprising that some individuals withdraw from community participation and isolate themselves in their personal worlds.

1.1.2.6 Rootless Professionalism:

In some cases, the problem stems from the designers themselves. Some designers create spaces for people they do not know, without taking the time to engage with or understand their needs. They often approach communities with pre-designed plans, disregarding the specific requirements of the place and its indeviduals

1.1.2.7 Class Disparity:

In most cities, the contrast between wealthy and poor environments is striking. While differences between social classes are inevitable, it is essential to consider the needs of the poorer segments of society in a way that aligns with their financial capabilities.

These reasons have underscored the need for a greater focus on urban design, particularly environmentally, economically, and socially sustainable urban development. Additionally, the design of high-quality urban spaces is recognized as a vital tool for achieving social sustainability and improving the quality of life (Amin, A 2002). Successful urban environments contribute to stronger communities and a greater sense of belonging. Therefore, urban

design and the enhancement of urban spaces should become an integral part of national planning and development policies.

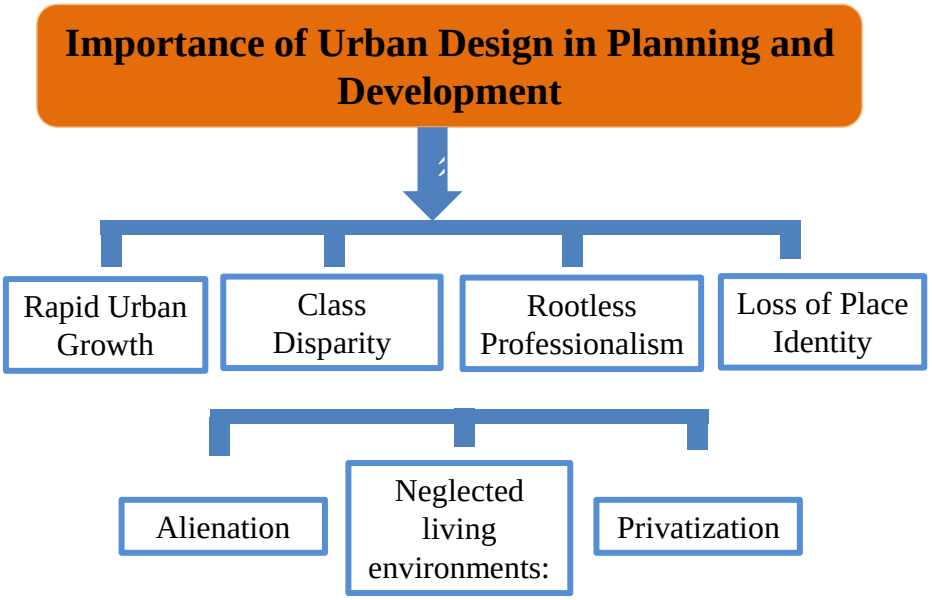


Figure 1-2 Key Aspects behind the rising importance of urban design in planning and development.

1.1.3 The Objectives of Urban Design

Urban design aims to achieve a diverse set of objectives for multiple users. Beside addressing the needs of community indeviduals and fostering social connections in streets and public squares. Numerous studies have discussed the fundamental goals of urban design, including those by Lynch, K (1981) who focused on vitality and efficiency. Jacobs, A., & Appleyard, D (1987) highlights livability and community. Carmona, M (2010) emphasizes sustainability and integration. Lang, J (2005) stresses accessibility and safety, and many other researchers who have identified the core objectives of urban design As shown in the Figure 1-3 Each scholar contributes essential principles for creating functional and sustainable urban spaces.

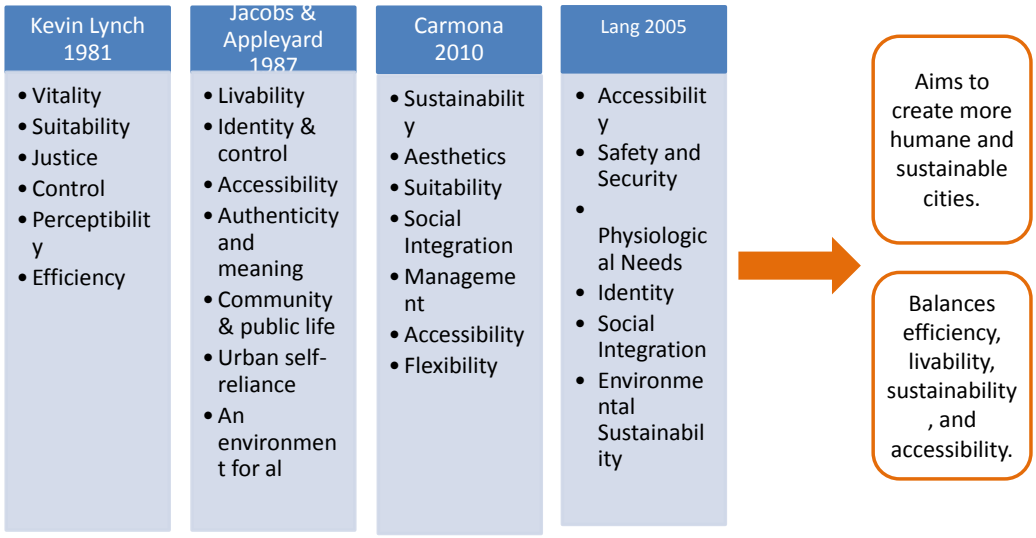


Figure 1-3: Scholars' visions for urban design objectives.

The literature highlights the importance of addressing individual needs in an integrated and sustainable manner to promote public participation and enhance identity. These objectives aim to tackle future challenges, but planners may face difficulties due to factors like social and economic conditions. To create a livable urban environment, several key objectives have been proposed, emphasizing equality, justice, and user involvement in the design process. These objectives aim to enhance livability, promote diverse opportunities, foster identity and belonging, ensure equitable access, and encourage social interaction through clear, culturally authentic designs, as summarized in Figure 1-4.

A well-designed city must ensure **liveability** by providing a safe, clean, and comfortable environment that respects residents' privacy and promotes well-being (Jacobs & Appleyard, 1987). Beyond physical comfort, urban design should offer a **diversity of opportunities** that enrich everyday life, stimulate creativity, and encourage social interaction. It is also essential for individuals to feel a sense of **identity and control** within their community; this can be achieved by creating environments that support participation,

expression, and shared responsibility, thereby reducing alienation. Additionally, cities should possess **authenticity and clarity**, where their layout is understandable and reflective of cultural and ethical values, presenting the urban fabric as a readable and engaging narrative (Lang, 2005). Equity in access to opportunities and services is a fundamental principle, ensuring fairness for all social groups, regardless of economic status (Lynch, 1981). Finally, the city must actively **encourage social life** by fostering inclusive public spaces that invite all individuals to participate in community life and strengthen social bonds.

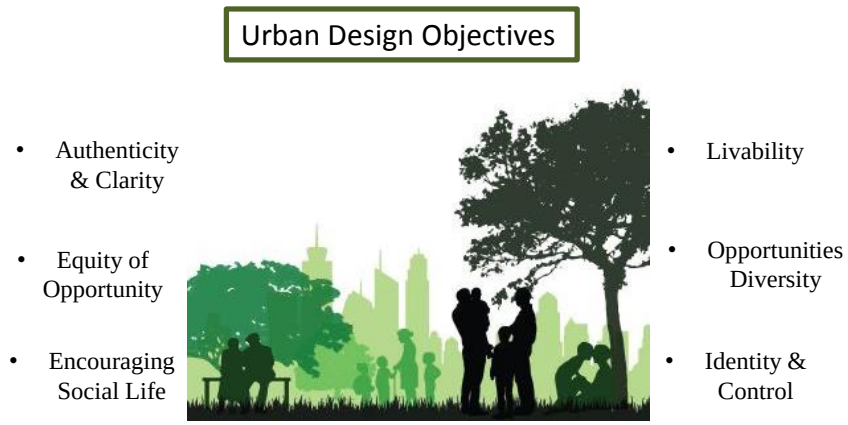


Figure 1-4: The Objectives of Urban Design.

Urban design should balance individual and collective needs, preserving identities and promoting social openness. Its main goal is to create pleasant, people-centered cities that meet spiritual and material needs while ensuring sustainable economic, cultural, and environmental growth.

1.2 Urban space and its properties

In recent decades, there has been a growing focus on urban open spaces. The greatness of any civilization is measured by the grandeur of its cities, which is reflected in the quality of its public spaces, streets, and urban squares.

1.2.1 Urban Spaces Definition.

Urban spaces are integral to urban sustainability, contributing socially, politically, economically, and to public health. Defined as open, publicly accessible areas (Madanipour, 1996), they facilitate social interactions on both individual and collective levels (Carr, S., M. Francis, L. G. Rivlin, and A. M. Stone.1992). In urban planning, public spaces encompass streets, parks, recreational zones, and squares, serving as essential outdoor areas within the built environment that nearby residents can access and utilize (Tonnelat, S 2010; CEQR, 2014).

Generally, urban space can be defined as the area between buildings, the façades of surrounding structures, with the city as its floor and the sky as its partial or complete ceiling. It accommodates a variety of voluntary activities for city indeviduals. A successful urban space must create an external environment capable of fostering interaction between individuals and their surroundings. Also encouraging socially active behaviour. Each space has a unique character that distinguishes it, based on the function it was designed to serve.

1.2.2 Significance of Urban Spaces.

Urban spaces are essential in shaping communities and influencing behavior. They define a city's identity and structure while fostering interaction and engagement. The following section emphasizes the significance of urban spaces and their essential role in society growth, city development and promoting human well-being.

1.2.2.1 The Importance of Urban Spaces for Societal growth:

Revitalizing Public Life is achieved through high-quality urban spaces that encourage outdoor interaction and social gatherings, fostering a sense of comfort and belonging while providing venues for participation and dialogue

(Alexander, C., Ishikawa, S., & Silverstein 1997). These spaces **promote social cohesion** by bringing together people of diverse ages, cultures, and social backgrounds, encouraging mutual understanding and communication (Jennings, V., & Bamkole, O 2019). They also **support cultural diversity** by offering venues for events like festivals and markets that strengthen social ties and build a collective identity. Moreover, urban spaces serve as platforms for **community activities**—such as festivals and markets—that strengthen social bonds and collective identity. Finally, **Achieving Social Justice** is reflected in the accessibility of these spaces to all segments of society, ensuring equal opportunities and reinforcing fairness (Low, S., & Smith, N 2005). Together, these objectives highlight the critical role of urban spaces in fostering inclusion, cohesion, and vibrant community life. The importance of urban spaces for societal growth can be shown in the Figure 1-5.

1.2.2.2 The Importance of Urban Spaces For city development:

Improving the Urban Environment is achieved through urban spaces that enhance air quality, regulate temperature, and provide healthy green cover (Milena, M 2024). **Supporting Good Urban Planning** comes from their role in organizing movement and completing the city's form. **Boosting the Local Economy** is driven by their ability to attract businesses, increase property values, and support investment. **Enhancing the City's Urban Landscape** is reflected in their visual appeal and positive impact on public perception (Lynch, K 1960).

Finally, **Achieving Environmental Sustainability** is supported by green areas that purify the air, host biodiversity, and mitigate heat effects (Miller, R. W., Hauer, R., & Werner, L 2015). The importance of urban spaces for city development can be shown in the Figure 1-6

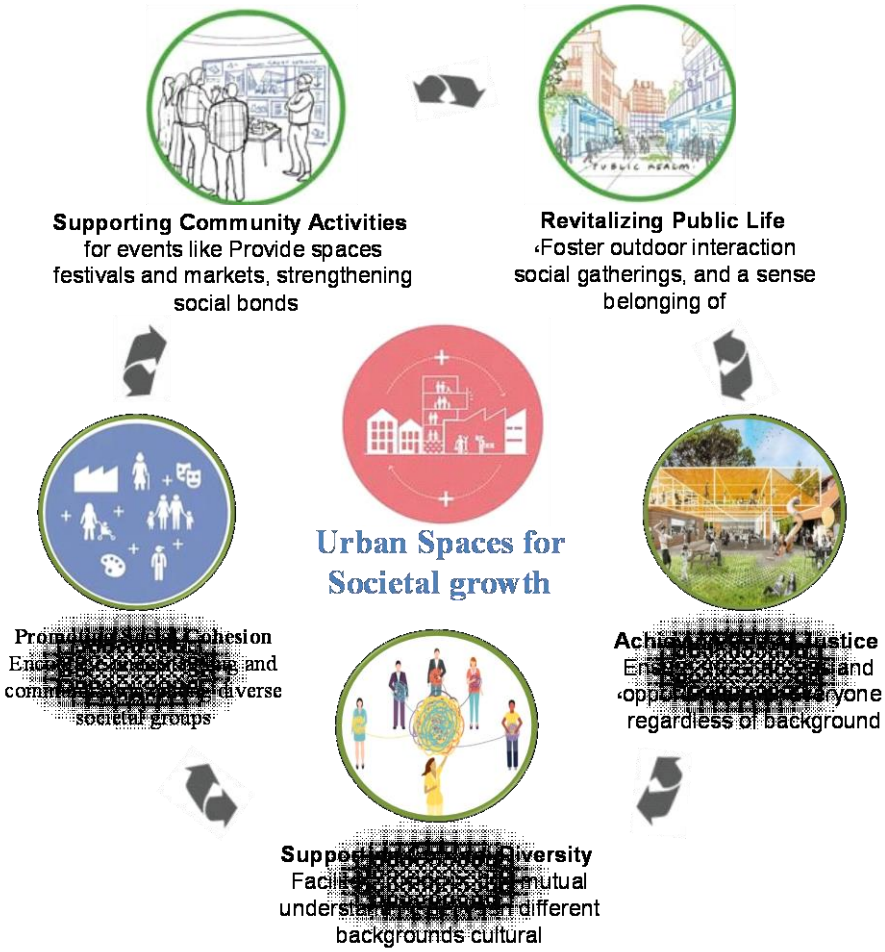


Figure 1-5: The importance of urban spaces for societal growth.

In general, urban spaces are essential for improving living conditions in cities and their overall development. Good planning of these spaces creates a more attractive environment, enhancing the comfort and happiness of its users.

Figure 1-6: Urban spaces and their essential role in city development

1.2.2.3 The Importance of Urban Spaces for humans:

Urban spaces are vital for human life, shaping behavior and interactions with the environment. Proper design is key to promoting a healthy, balanced lifestyle that connects people with nature and the community.

Social Interaction is a core function of urban spaces, as they create open environments that support communication, movement, and daily social encounters. **Enhancing Physical Health** is promoted through opportunities for walking, jogging, and cycling, helping reduce risks of chronic diseases (Alzahrani,A 2022). Additionally, **Supporting Mental Well-being** is achieved through exposure to greenery and natural elements that relieve stress and improve emotional balance (Jennings, V & Bamkole, 2019). **Rest and Recreation** are also key benefits, where carefully designed spaces offer calm settings for relaxation. Furthermore, **Facilitating Intergenerational Interaction** allows people of different ages to connect, fostering social cohesion and value exchange. Together, these aspects highlight the essential

role urban spaces play in enhancing human health, well-being, and social connectedness, as illustrated in Figure 1-7.

Figure 1-7: Designing urban spaces that are vital for human comfort and social interaction. Source: https://pin.it/5cSKLhmK8.

1.2.3 Classification of Urban Spaces

There are various classifications of urban spaces based on their function, as defined by Alzahrani et al (Alzahrani, A 2022).and Carr et al (Carr, S., M. Francis, L. G. Rivlin, and A. M. Stone 1992)., based on ownership as noted by Matthew Carmona (Carmona, M 2010), or based on size as mentioned by Stanley et al (Stanley, B. W., Stark, B. L., Johnston, K. L., & Smith, M. E 2012). All these classifications aim to meet indeviduals' needs and improve the quality of life. They are categorized as follows:

1.2.3.1 Carr's Classification Based on Function (Carr, S., M. Francis, L. G. Rivlin, and A. M. Stone 1992):

Urban spaces encompass various forms, each contributing uniquely to city life. These include public parks, plazas, memorials, markets, streets, playgrounds, community open spaces, greenways, indoor markets, neighborhood spaces, and waterfronts. Together, they support recreation, social interaction, cultural activities and enhancing urban vitality. This can be illustrated in Figure 1-8.

1.2.3.2 Matthew Carmona's Classification Based on Social and Cultural Perspectives or Ownership (Carmona, M 2010):

Urban spaces can be classified into four types: positive spaces, negative spaces,a mbiguous spaces and private spaces. Each type plays a distinct role in shaping the urban environment and its impact on society. This can be summarized in Figure 1-9

1.2.3.3 Stanley et al.'s Classification Based on Size and Proportion in the City (Stanley, B. W., Stark, B. L., Johnston, K. L., & Smith, M. E 2012):

Stanley et al. categorized urban spaces based on size and function, including food production areas for agriculture, recreational spaces for leisure, parks and gardens, squares as public open spaces, streets and pathways, transport facilities, and incidental spaces, which are unplanned areas. Each type contributes uniquely to the urban environment, as summarized in Figure 1-10.

These classifications aid in the comprehensive planning of open spaces (Nochian et al., 2015) and offer unique perspectives on residential urban areas. Carr categorizes spaces into public parks, playgrounds, community spaces, and discovered spaces, contributing to sustainability. Carmona classifies spaces as positive (well-planned), negative (neglected), or ambiguous (functionally inadequate). Stanley et al. provide a functional framework, dividing spaces into recreational areas, parks, streets, and supporting facilities to assess their effectiveness in meeting residents' needs. This framework helps identify specific types of urban spaces within residential areas.

Carr's urban spaces Classification

Public Parks: Including major parks, communal parks, and small neighbourhood gardens.

Markets: Including spaces like farmers' markets.

Greenways and Trails: Connected recreational and natural areas.

Plazas and Squares: Such as central squares and corporate plazas.

Streets: Pedestrian sidewalks, pedestrian malls, transit and city pathways.

Community Open Spaces: Gardens and public parks.

Memorials : Dedicated spaces for commemorative monuments.

Playgrounds: Such as schoolyards

Arcades/Indoor Markets: Indoor plazas or downtown shopping centres.

Found Spaces/Neighborhood Spaces: Everyday open spaces or found spaces within urban settings.

Waterfronts: Spaces located along urban water bodies.

Figure 1-8: Carr's Classification. .

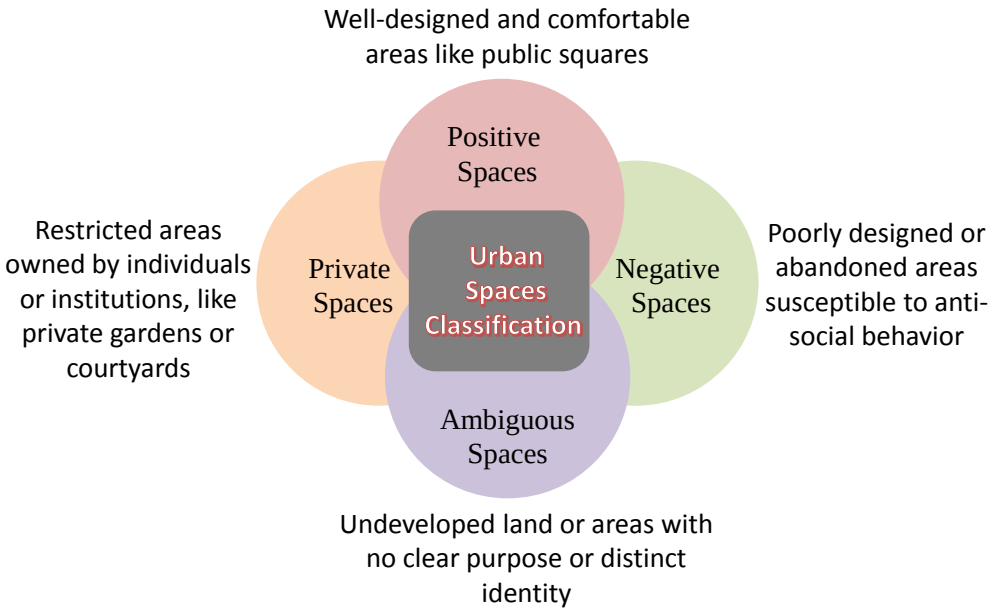


Figure 1-9: Matthew's Classification.

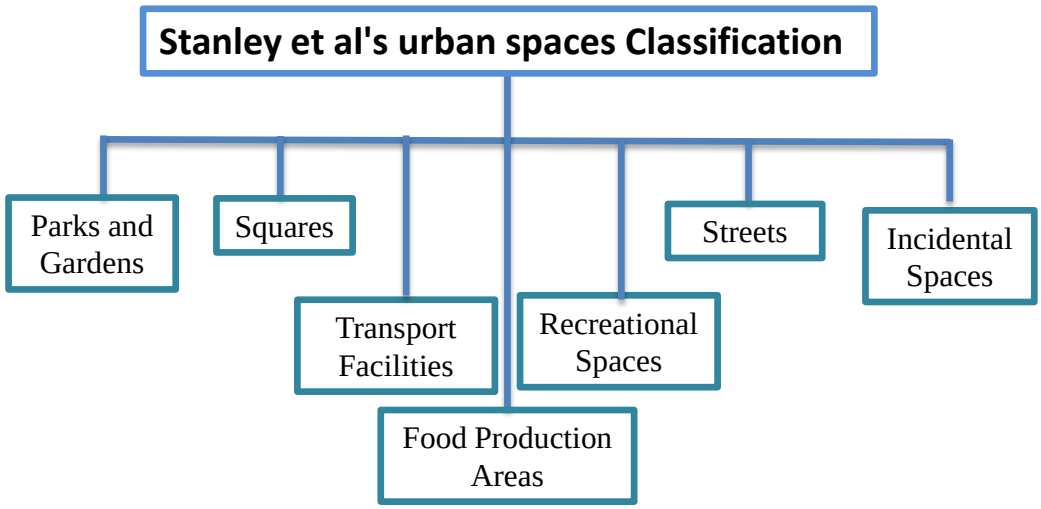


Figure 1-10: Stanley et al's Classification.

1.3 Classification of open areas in cities

Open spaces are vital components of urban life, offering accessible environments that foster social interaction and contribute to social, economic, and environmental well-being. Their roles vary according to size and location, forming an integral part of the urban fabric as follows in Figure 1-11

(Talen, E 2012). The figure classifies urban spaces into five types: private residential areas, sports spaces, pathways, semi-private shared spaces, and central public spaces, each serving different functions to improve urban life and community interaction.

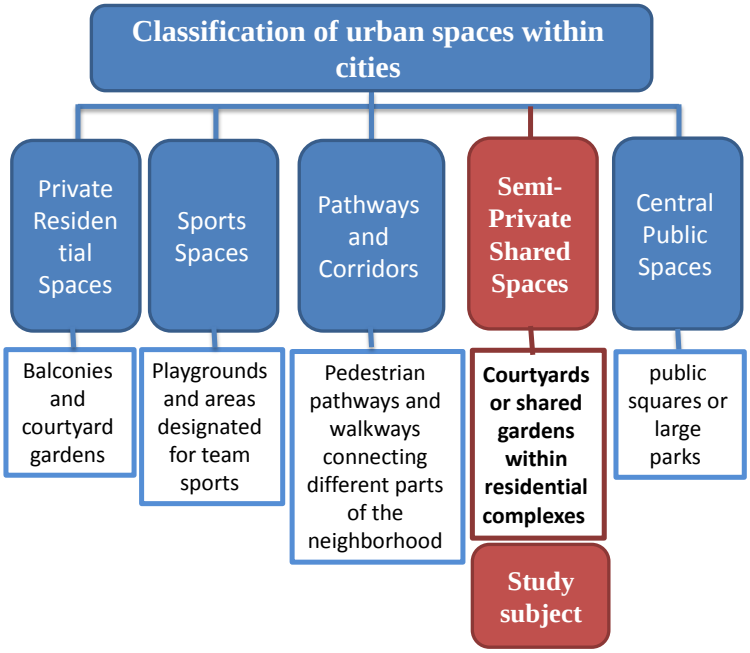


Figure 1-11: Classifying urban spaces within cities.

➢ 1.3.1 Semi-private shared spaces

Semi-private shared spaces within residential complexes are a crucial aspect ofHousing Project planning and design. They contribute to improving the quality of life by creating a balance between built and open spaces. These spaces vary in privacy levels, function, design, and size, as illustrated in Figure 1-12. The following part provide a detailed explanation of these classifications.

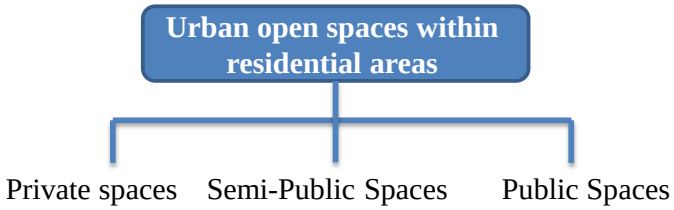


Figure 1-12: Types of rban open spaces within residential areas. .

A) Private spaces:

These are open spaces within the residence that are exclusively used by the family and are not accessible to outsiders. They provide privacy and reflect the personality of their users. These spaces offer relaxation and tranquillity. There are two types of privet spaces named courtyards and balconies and terraces as demonstrated in Figure 1-13.

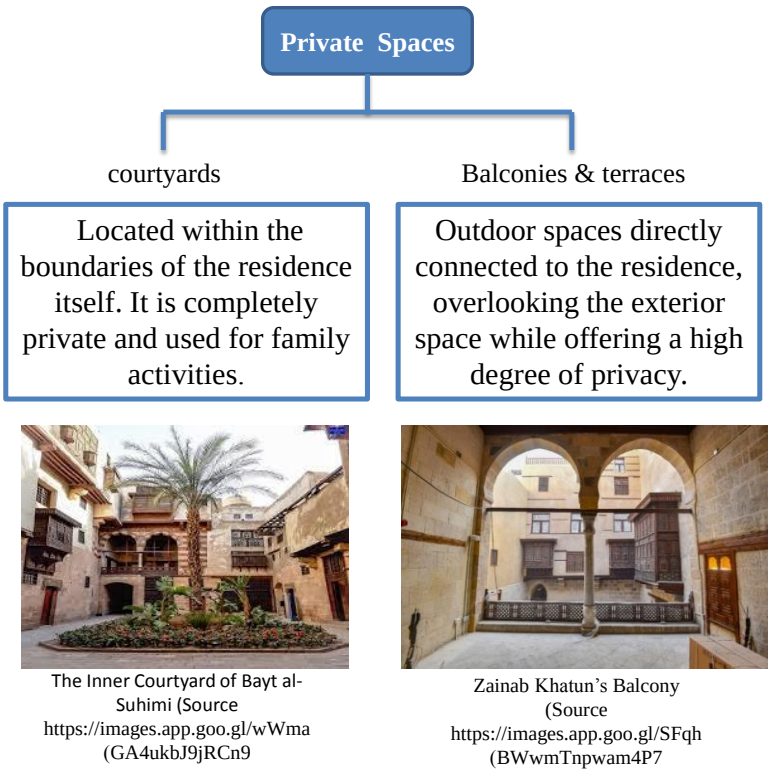


Figure 1-13: Types of privet spaces.

B) Semi-public spaces:

these are limited to a specific group of users, such as indeviduals of housing complexes. They function as transitional areas between private and public spaces. Regarding the semi public spaces which is the prime focus of this research, includes common spaces and community gardens as illustrated in Figure 1-14.

Semi public Spaces **Study subject**

Common Spaces and Community Gardens

These are enclosed areas or spaces located between a group of residential buildings and are accessible to a specific group of individuals. They are managed by the residents themselves or by the state. They enhance socialization and interaction among the residents of the adjacent residential buildings.

An Urban Space in Al-Rehab City (Source https://images.app.goo.gl/dTe3(DkeAy85FqmTb8

Figure 1-14: semi public spaces.

C) Public Spaces:

These are large open areas designated for gatherings and social activities. All indeviduals of the residential community can access and use them. They play an important role in recreation, seating, and hosting social activities. There are two types of public spaces named public squares and plazas and public parks as demonstrated in Figure 1-15.

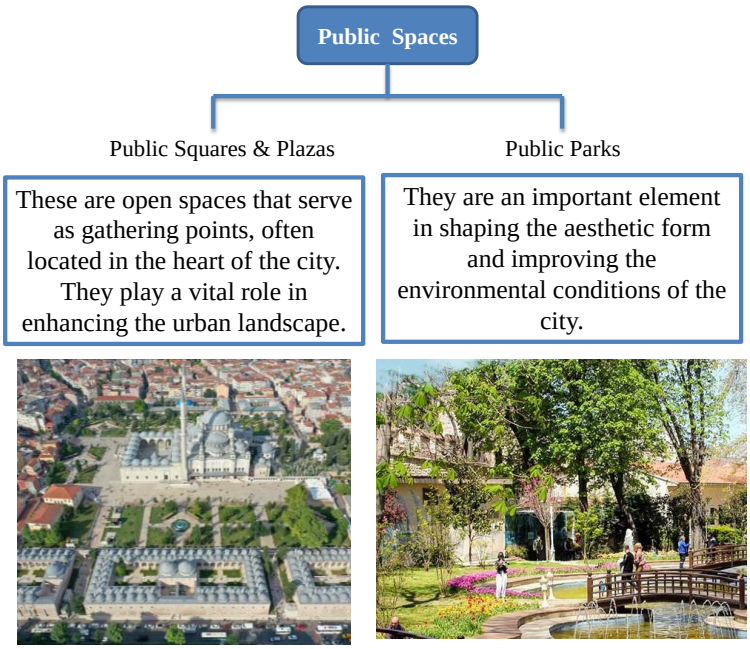


Figure 1-15: types of public spaces.

After categorizing urban open spaces within residential areas into private spaces, semi-public spaces, and public spaces, the study has been focused on **semi-public spaces**. These spaces act as transitional zones between private and public areas, significantly influencing urban structure and social interaction, making them essential for urban and social analysis.

1.4 Components of residential open areas

The physical components of urban spaces determine their form, characteristics, and distinctive identity. They also contribute to specific design decisions that play a fundamental role in enhancing the quality of the urban environment, making it more attractive and sustainable. In this part, the study will focus on key physical elements that define and form residential open areas, including: flooring, walls, ceiling, furniture and equipment.

1.4.1 Flooring

Flooring plays a crucial role as it forms the base of urban spaces where various activities take place. The flooring must be prepared and designed to accommodate the activities and uses intended for it, whether for pedestrian or vehicular movement (cars, bicycles). Flooring helps delineate movement patterns within the space and creates a comfortable experience, which reflects on individuals' interaction with their surrounding environment (Francis, M. 2003). The impact of floors in urban space appears as follows Figure 1-16.

The impact of floors in urban space:

- Guiding movement
- Creating sub-spaces
- Organizing movement flow
- Enhancing safety
- Improving comfort and aesthetics
- Defining boundaries and pathways
- Integrating with the natural environment
- Creating a sensory experience
- Encouraging sustainable movement

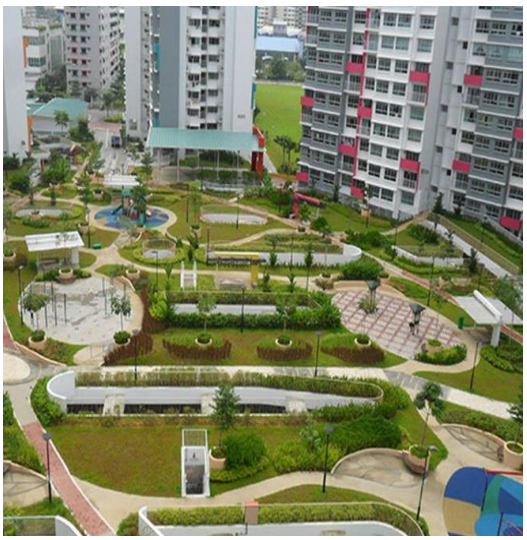


Figure 1-16: The impact of the flooring in urban space.

1.4.2 Walls

Walls refer to the vertical element that defines the space and can either be natural, such as vegetation, or physical, such as the walls of buildings surrounding the space. Walls play a crucial role in shaping urban spaces in several ways shown in Figure 1-17

The role of walls in urban space:

- Defining the space
- Influencing spatial orientation
- Controlling light and shadow
- Aesthetics and human scale
- Providing privacy and separating spaces
- Sustainability and natural ventilation
- Framing social activities

Figure 1-17: The role of walls in urban space.

1.4.3 Ceiling

The ceiling refers to the upper boundary of the space, which is often the sky, though parts of the space may be covered for protection or to suit specific uses. The impact of the ceilings in urban space shown in Figure 1-18

The impact of ceiling in urban space:

- Influencing the aesthetic composition of the space
- Controlling the flow of light
- Impacting acoustics and environmental comfort
- Shaping the spatial experience
- Organizing and dividing the space
- Evoking cultural identity

Figure 1-18: The impact of the ceilings in urban space.

- **1.4.5 Elements of Coordination and Beautification (Furniture and Equipment)**

Coordination and beautification elements enhance both the functionality and aesthetic quality of urban spaces, contributing to their overall success. They also foster social interaction among individuals.(Clare, C, M et Carolyn,F 1997) Below is an explanation of these elements:

- **Seating**: Seating makes the space more comfortable, improving the urban experience for users and increasing the likelihood of prolonged use of the space. Even if attractive features are present in an urban space, seating is essential to encourage people to visit and stay.
- **Natural Elements:** Natural elements significantly contribute to enriching the space on multiple levels, whether aesthetically or functionally. This includes plants, trees, and water features. These elements improve air quality, reduce pollution, and mitigate noise.
- **Furniture**: This general term refers to the furniture and other equipment that complement urban spaces. Lighting fixtures, poles, trash bins, and other elements are among the equipment enhance the image and identity of the space. Therefore, careful attention must be paid to the appropriate integration of these elements to create an urban space that meets quality standards and expectations.

1.5 Principles Design of residential open areas

Numerous efforts have been made to establish design principles for urban spaces that ensure comfort, balance, functionality, and visual appeal. Dunnett et al. (Dunnett, N., Swanwick, C., & Woolley, H.2002) identified key motivations influencing individuals' use of these spaces, including:

- Enhancing enjoyment of the surrounding environment.
- Facilitating comfortable social interactions.
- Providing an escape from stress.
- Supporting individual activities like walking or exercising.
- Hosting events that attract visitors.

These factors contribute to the effectiveness and appeal of urban spaces. When discussing design principles, Vikas Mehta (Mehta. v 2014) emphasized the importance of safety, comfort, control, and sensory enjoyment in urban design, while Nemeth et al (Nemeth. J, and Schmidt, S 2011) identified users,

management, and ownership as key components of public space. However, these frameworks do not fully account for the physical elements that shape user behavior. Therefore, this section outlines design principles for creating successful urban spaces by addressing human needs through functional, social, and environmental considerations, ultimately fostering secure, attractive, and desirable urban environments. Figure 1-19 illustrates the principles of designing residential open spaces, including protection and safety, comfort in various aspects, and enjoyment, all of which contribute to enhancing quality of life and promoting the use of these spaces. The principles are as follows:

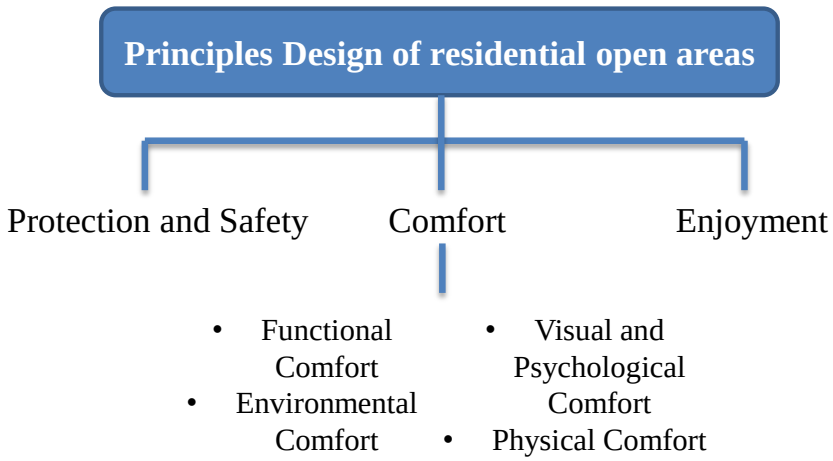


Figure 1-19 Principles Design of residential open areas.

1.5.1 Protection and Safety

This principle refers to providing individuals with a sense of security in residential open areas, which encourages them to use these areas and spend longer periods of time engaging in activities. Protection and safety can be achieved through various aspects: shielding from weather elements such as wind, rain, cold, dust, and noise. Additionally, providing safety through the presence of security personnel and other means can help users feel secure within the urban space in residential open areas. Effective design can also incorporate the orientation of entrances and exits, ensuring they are controlled

to prevent unauthorized access and contribute to crime deterrence (Mehta. V 2014).

1.5.2 Comfort

Comfort is a crucial principle that must be considered when designing urban spaces in residential open areas. It is essential to achieve both physical and psychological comfort for indeviduals and visitors. Comfort can be addressed on multiple levels:

- **Functional Comfort:** This involves providing amenities and physical components that facilitate individuals' engagement in activities within the urban spaces in residential open areas. For example, separating relaxation areas from those requiring movement and generating noise is important.
- **Environmental Comfort:** This can be achieved by using trees and canopies to protect against weather condition, thereby enhancing users' comfort and enjoyment of nature.
- **Visual and Psychological Comfort:** This involves creating harmony among colors and utilizing natural materials to enhance feelings of comfort and psychological stability. A diversity of visual elements can create an enjoyable and stimulating environment for users (Jacobs, A., & Appleyard, D. 1987).
- **Physical Comfort:** This entails providing comfortable furniture and setting that suit the intended functions. Ensuring ease of movement and navigation within the space is also critical, especially for individuals with disabilities.

1.5.3 Enjoyment

This principle is related to the design of urban spaces in residential open areas that offer a comfortable and appealing experience for users. This

principle refers to the legibility of the space, as described by Lynch (Lynch, K 1960) meaning that the shape, color, or arrangement of the space makes it easily identifiable by users. Achieving enjoyment must follow the establishment of comfort principles, ensuring that users have a positive experience within the urban environment.

1.6 Design criteria of residential open areas.

This section explores design standards for high-quality urban spaces. Studies focus on psychological (Alexander, C., Ishikawa, S., & Silverstein, M 1997), physical (Cullen, 1961), or combined aspects (Whyte, William H 1980, Gehl, J 1987). Key factors for successful residential open spaces are classified into four dimensions: geographical, physical, administrative, and behavioral-psychological.

➢ 1.6.1 Geographical Aspects

This part introduces the features of the residential open areas such as location and accessibility that contribute to the creation of a good residential open areas.

1.6.1.1 Location:

Location is one of the major factors that direct people to use such a specific residential open areas. There must be a walking distance of no more than 200 meters (التنسيق الحضارى 2008). For these spaces to function effectively, it is necessary to provide different uses for different age groups and within close proximity to them. This helps to create a void throughout the day (Shaftoe, H 2008, Li X, Li Y, Jia T, Zhou L, Hijazi IH 2021)

1.6.1.2 Accessibility

Accessibility is seen as a key feature of residential open areas (Madanipour, A 2010). It is an essential point that contributes to the success of the residential open areas. Location and access affect each other, accessibility is not limited to physical access only, but also visual access. The

following are walking distance guidelines for urban spaces Table 1-2

Table ١-2: Walking Distance Guidelines for residential open areas, Source: (Childs, M 2004)

	Notes	**Length**
Walking Trip	-average length that people would walk to a plaza -comfortable walking distance	- 275m - 600m
Bicycle Trip	-5 minutes bike ride -10 minutes bike ride	- 1200m - 3200m
Automobile Trip	-5 minutes automobile trip -10 minutes automobile trip	- 800m - 2400m

➢ 1.6.2 Physical Aspects

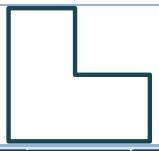
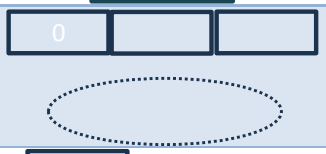
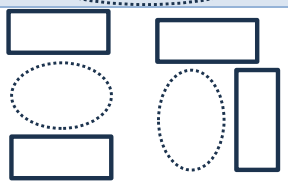
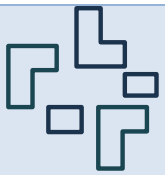
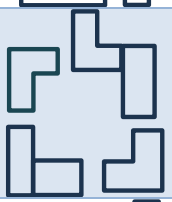
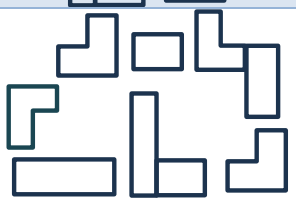
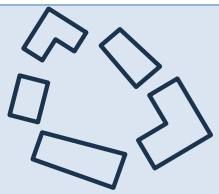
This part introduces the attributes related to physical aspects of residential open areas as form, size and visual complexity.

1.6.2.1 Form of a space:

The form of the residential open area is a key physical aspect, playing a crucial role in shaping people's perception. The shape of the area and its limitations can generate a different feeling for the users. The individual perceives the built environment as a „whole" rather than with its „singular parts, and the features of the spaces help them to compose this image easily and clearly.

The shape and determinants of the space help users feel contained, enclosure and give them a sense of security. Carmona et al (Carmona, M., Heath, T., Oc, T. & Tiesdell, S 2003) pointed to the principles of enclosure that affect the quality of residential open areas, as shown in Table 1-3.

Table 1-3: principles of enclosure, Source Carmona, M., Heath, T., Oc, T. & Tiesdell, S 2003.

1.	The singular building does not defining a space	
2.	Single row buildings are the weakest determinant of space	
3.	To define the square, buildings can be situated "at right angles" to each other, but there must be a shift to prevent monotony	
4.	Buildings should be placed in a way that helps to use imaginary lines to enhance the relationship between buildings and each other	
5.	Buildings can be grouped around a central space with open corners	
6.	A stronger sense of enclosure can be created when buildings turning the corners	
7.	Sub-spaces should be created to encourage people to participate and give a sense of mystery Separate spaces should be avoided, and sub-spaces should be linked together	
8.	It is important to pay attention to the design of openings into the space to encourages people to walk through them rather than pass by it	

1.6.2.2 Size of a space

The size of the residential open area is determined based on the location, the required uses and the feeling to be conveyed to the user. Beside size balance must be achieved because very large areas are unfriendly and very small areas may cause claustrophobic. Many scholars have made recommendations about the ideal dimensions of the areas as shown in Table 1-4

Table 1-4: Recommended dimension for an urban space.

Size of spaces	Notes	Dimensions	Reference
Small public spaces	- intimate scale and a pleasant human scale	- 12 to 24 m - 22 m	- Lynch,1971 - Alexander, 1977
large public spaces	- Historical enclosed squares -Maximum distance for following events	- 100 m - 70 to 100 m	- Lynch,1971 - Gehl, 1987

When designing the residential open area, the visual perception and the density of the surrounding buildings must be taken into account. As the National Urban Coordination Agency determines that the urban space within residential areas serves between 900-1200 people, and the per capita share is between 0.08 - 0.3 m2 (2008التنسيق الحضارى).

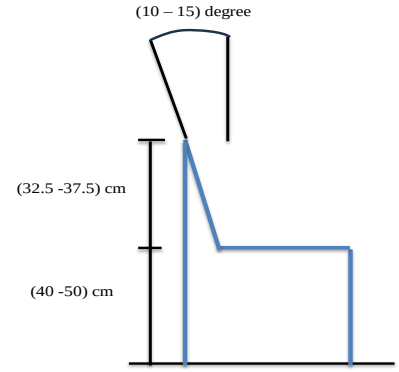
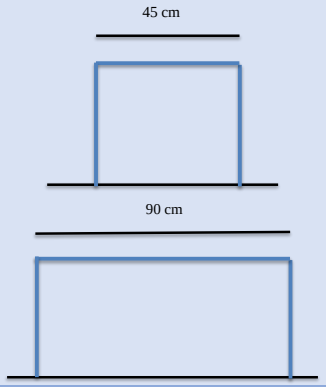
1.6.2.3 Visual and aesthetic elements

Visual and aesthetic elements are important components of a successful space (Marcus, C. C., & Francis, C. 1998). These elements must be consider avoiding the semi public space remaining empty. These items are identified as follows: Seating; hard and soft landscaping; furniture; shelter and protection (microclimate); subspaces. human scale and. Lighting.

a) Seating:

William Whyte (Tibbalds, F. 2001) suggests that the success of residential open areas relies on both location and seating availability. Seating encourages people to gather and rest, taking forms like benches, chairs, steps, and plant bed borders, ensuring diversity and balance. Table 1-5 presents key seating recommendations.

Table 1-5: Seat Dimension Recommendations, Source: Childs, M 2004.

length	- 40 -50 cm - Backrest height (32.5cm-37.5cm) There should be an angle of 95°-100° between the seat surface and the backrest.	
depth	- 45 cm for single-loading seats - 90 cm for double-sided seating The seat surface slopes backwards at an angle of 10°	

The seating pattern is crucial and should align with the area's activities and users, as shown in Figure 1-20. Seats with backrests suit the elderly, while enclosed seating enhances social interaction. Tables and weather protection further improve usability.

Seat with .backrests Source:https://pin.it/5xbk2GmpQ

Seat with a table. Source: https://pin.it/67QYldVtN

Seat with a natural shelter. Source: https://pin.it/1KeFcWwF6.

Seat with shelter. Source: https://pin.it/SQDDITz89

Figure 1-20: Examples of seating in residential open areas.

Seating materials should suit the environment. Wood is warm and comfortable, while metal and hard materials can be less inviting. Concrete, tile, and stone offer temperature adaptability (Childs, M. 2004). Overall, seating is a key element of a successful space, as summarized in Figure 1-21.

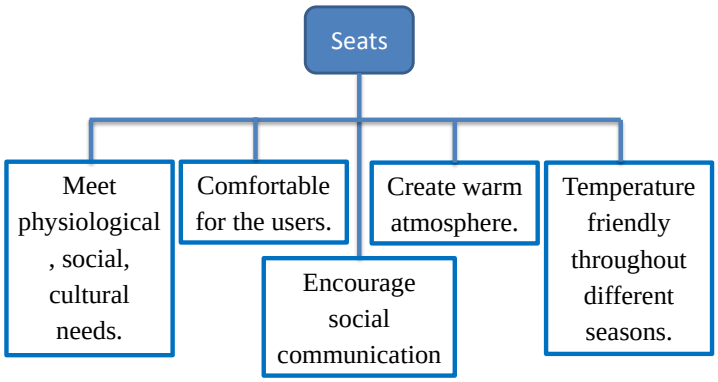


Figure 1-21: The role of seating within the urban space.

b) Vegetation element

Vegetation element is an essential part of urban space design, significantly enhancing both the functionality and visual appeal of the built environment. It plays an important role in the following:

- The success of a space and improvement of psychological and mental health of users (Carmona, M., Heath, T., Oc, T. & Tiesdell, S, 2003, Shaftoe, H 2008).
- Provides relaxation and pleasure (Shaftoe, H 2008).
- Variety of colors, texture, height and shade.
- Improved visual appearance of the space.

c) Furniture

Urban furniture refers to all equipment within residential spaces—such as lighting, benches, planters, bollards, and fountains—that shape the area's identity. Thoughtful, balanced design is essential to ensure environmental harmony and strengthen local character (Carmona, M., Heath, T., Oc, T. & Tiesdell, S 2003).

d) Shelter And Protection

User comfort is key to successful residential spaces, as discomfort leads to underuse. Climatic factors like sunlight, shade, temperature, rain, wind, and humidity are crucial role (Carmona, M., Heath, T., Oc, T. & Tiesdell, S 2003). Spaces should balance sunlight and shade, offering warmth in winter and shelter from heat and wind. Wind improves comfort in hot areas but can be disruptive in colder ones (Marcus, C. C., and Francis, C 1998). Thoughtful building placement, street design, and landscaping enhance ventilation and usability, making climatic considerations essential for effective urban space design.

e) Subspaces

The primary goal of subspaces in large residential open areas is to encourage use and foster a sense of belonging by providing enclosed spaces. They should be appropriately sized and can be defined through natural elements or level changes. Design must consider psychological needs, where elevation signifies privilege and depth conveys intimacy. Additionally, maintaining visual access and ensuring a strong connection between subspaces and the main space is essential ((Marcus, C. C., and Francis, C 1998).

f) human scale

Human scale is crucial for the success of residential open spaces, as these areas are designed primarily for people (Tibbalds, F 2001). To create a comfortable environment, urban design must consider human proportions. Surrounding buildings help establish scale, while physical elements like furniture and paving materials enhance the sense of enclosure.

g) Lighting

Lighting in residential open spaces includes both daytime and nighttime illumination, shaping a comfortable and inviting environment (Ünver,A 2009). Natural daylight enhances warmth and vitality, while night

lighting improves security and encourages exploration. As a key physical element, proper lighting significantly contributes to the success of urban spaces.

➢ 1.6.3 Managerial Aspects

The managerial aspect focuses on how public spaces are maintained, playing a vital role in their success. Ensuring safety and comfort is essential, as fear discourages use. Effective management should provide security, activities, and facilities that encourage people to engage with residential open areas.

1.6.3.1 Uses and Activities

Residential open areas accommodate diverse users of different ages and cultures. To ensure success, it is crucial to understand their interests. Jan Gehl (Gehl, J 1987) classifies urban activities into three types: **necessary activities,** such as commuting and errands, which occur daily; **optional activities**, like sitting or playing, which depend on desire and favorable conditions; and **social activities**, which involve interaction, such as gatherings and children's play. Effective design should consider these activities, offering diverse options to meet user preferences.

1.6.3.2 Maintenance

To maintain the quality of the urban space in residential open area, periodic maintenance must be provided to the elements in the space (Lopes, Miguel & Camanho, A.s 2013). Like regular cleaning and gardening and other factors that greatly affect the comfort of users and reflects their reaction to the space, people will care for the environment if they see that management cares.

➢ 1.6.4 Behavioural and Psychological Aspects

After getting acquainted with the geographical, physical and managerial Aspects of urban space in residential open area, we must not overlook the

importance of the behavioural and psychological aspects. These aspects play a great role in the success of the urban space in residential open area. It helps in achieving behavioural and psychological satisfaction of the users.

1.6.4.1 Comfort

It refers to the user's feeling of comfort when present in an urban space in residential open area. This can be achieved through providing suitable climatic conditions and physical elements that contribute to the continuous presence of users within the urban space in residential open area. Good management of the space also contributes to achieving this (Zhang, J., & Yu, L 2021).

1.6.4.2 Safety and Security

Security and safety are fundamental human needs, ranked second in Maslow's hierarchy (Maslow, A.H. A 1943) after physiological needs. Comfort, safety, and security are interconnected—when individuals feel comfortable, they also feel secure. This can be achieved through a well-designed physical environment that enhances safety in residential open spaces. Additionally, protection from external threats and privacy considerations help reduce fear. Studies highlight the role of urban spaces in crime prevention and mitigation (Ceccato,V 2020).

1.6.4.3 Relaxcation

Relaxation is closely tied to "psychological comfort," with studies showing that individuals seek places where they feel at ease (Seresinhe, C. I., & Moat, H. S 2022). This can be achieved through the thoughtful use of natural or man-made elements, separating the space from noisy areas, and providing visual access to the environment. These factors enhance relaxation and psychological comfort, improving the effectiveness of urban spaces in residential open areas.

1.6.4.4 Engagement with the Environment

Participation, whether passive or active, is essential for the success of urban spaces in residential areas. **Passive participation** occurs when individuals observe others, enhancing vibrancy and attracting more people while fostering a sense of security (Shaftoe, H 2008). **Active participation** involves direct interaction with the space and its users, strengthening social connections and making the environment more dynamic and engaging.

Encouraging individuals to shift from passive to active participation is crucial. Carmona et al. (Carmona, M., Heath, T., Oc, T. & Tiesdell, S 2003) Highlight that successful urban spaces in residential areas offer varying levels of engagement by strategically designing elements to foster social interaction. This approach creates opportunities for conversation and deeper community involvement.

After identifying the criteria for designing urban spaces in residential open areas, these criteria can be explained in the following Table 1-6.

Conclusion

Urban design significantly contributes to improving quality of life, with a focus on residential urban spaces as a starting point for enhancing the urban environment and public health. These spaces encourage social interaction, helping to build a cohesive and active community. Figure 1-22 outlines key design standards, categorized into four main aspects.

Geographical Aspects: These include factors related to the geographical location and accessibility of the urban spaces within residential areas, which directly impact the design of spaces.

Table 1-6: Design criteria of residential open areas.

1.6.1 Geographical Aspects		
1.6.1.1 Location		- Central Locations - Multiple Activities
1.6.1.2 Accessibility		- Reachable -Available to all
1.6.2. Physical Aspects		
1.6.2.1 Form of a Square		- Various shapes to suit the users and the job - Should be defined (by buildings, walls, and natural elements) - create feelings to users such as intimacy and security
1.6.2.2 Size of a Square		- not too large, not too small - well-proportioned - pleasant human scale
1.6.2.3 Visual and aesthetic elements	**a. Seating**	- Provide a variety of seating - Its dimensions are convenient to use - Use appropriate materials
	b. Vegetation element	- use the advantage of seasonal changes in the environment to create diversity in color and texture - Using natural elements to create sub-spaces for the convenience of users - Use the natural elements to provide shelter.
	c. Furniture	- Use properly designed furniture that is appropriate for the site - Avoid excessive use of furniture - Enhancing the local identity by using furniture that matches it
	d. Shelter and protection	-Introduce the appropriate amount of sunlight - Organize surrounding buildings, streets, and landscape elements to improve air quality
	e. Subspaces	- separate clearly from the main space - There are places to sit and places for activities - use elevated plazas to stay away from traffic, noise etc - Level changes should be considerately designed for the disabled users
	f. Human scale	- define the space with the surrounding buildings - The sense of enclosure
	g. Lighting	- Let natural light enter the space as appropriate - Provide good night vision for safet - The contribution of lighting elements in creating the identity of the place

1.6.3. Managerial Aspects	
1.6.3.1 Uses and Activities	- provide a variety of uses and activities - Consider the diversity of users
1.6.3.2 Maintenance	- provide a professional personnel - provide quick-repairs - provide regular cleaning
1.6.4. Behavioral And Psychological Aspects	
1.6.4.1 Comfort	- easy access to site - Weather protection - Provide natural elements and appropriate physical elements - provide well-managed environment
1.6.4.2 Safety and Security	- provide a security personnel - provide activities that the space will be used all day - Provide good lighting throughout the area at night
1.6.4.3 Relaxcation	- provide a variety of natural elements - provide comfortable seating places - provide subspaces
1.6.4.4 Engagment With the Environment	- provide scenes to be observed - use seating elements - provide activities

Physical Aspects: These refer to the form, size, and visual elements of a space, including seating arrangements, furniture, .vegetative element, shelters, and lighting features. They also encompass subspaces within larger urban areas and other components that define the urban environment and impact its quality.

Managerial Aspects: These refer to factors that regulate the management of activities within the space. Besides development and maintenance processes were regulated for urban spaces within residential areas. All these factors contribute to the development and sustainability of the urban environment.

Behavioral and Psychological Aspects: These address the impact of the urban environment on individuals' behaviours and psychological needs. This includes feelings of safety, user comfort, and the ability to engage in social interactions within urban spaces in residential areas.

This leads to the creation of a balanced urban environment that provides a high level of comfort and sustainability, supporting the social and

environmental health of residential communities.

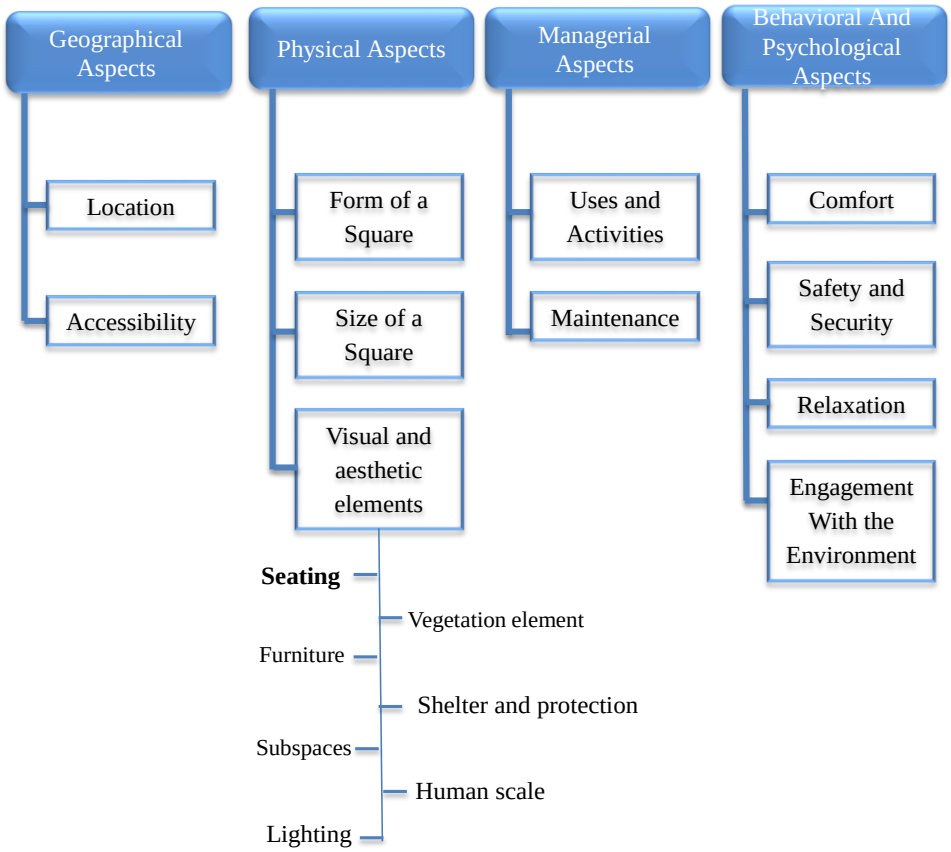


Figure 1-22: Design aspects of residential open are

CHAPTER 2

SOCIAL SUSTAINABILITY TO ACHIEVE HUMAN NEEDS IN URBAN SPACES

Introduction

Urban spaces are dynamic environments where people live and interact. For success, they must meet diverse needs across cultures, genders, and ages. Social sustainability ensures long-term practicality by linking urbanization to well-being, creating safe, inclusive, and well-planned environments with equal opportunities and quality services for current and future populations.

This chapter focuses on balancing human needs and social sustainability in urban space design. It is divided into two parts: **the first part** examines human behavior, including its definition and types, reviews key theories on human needs, and identifies essential design considerations. It concludes by linking human needs to the design criteria for residential urban spaces.**The second part** focuses on sustainable development and its key pillars, with an emphasis on social sustainability and its vital role in improving quality of life in residential urban spaces. It identifies essential principles for designing urban open spaces and links these principles to the design criteria for successful residential urban spaces**.** In conclusion this chapter includes the following sections:

- Analyze human behavior, identifying its types and characteristics within the context of urban spaces.
- Explore human needs as they manifest within urban environments.
- Establish the relationship between human needs and residential space design standards to ensure well-being and livability.
- Define the concept of sustainability along with its fundamental pillars**.**

- Emphasize social sustainability and examine its crucial role in enhancing the quality of life within residential urban spaces.
- Identify the core principles required to achieve social sustainability in urban design.
- Relate social sustainability principles to residential design for sustainable urban environments.

2.1 The concept of human behaviour

Human behavior encompasses the actions and interactions of individuals shaped by psychological, social, and environmental factors. In urban design, understanding behavior helps create spaces that enhance interaction, well-being, and a sense of belonging. This section is structured as follows:

- **2.1.1 Definition of human behaviour**

Human behavior results from continuous interaction between individuals and their environment, shaped by social experiences (Plato (Author), Donald J. Zeyl (Translator) 2012). On the other hand, Aristotle argued that human behavior is shaped by genetic factors passed through generations, inherently influencing individuals based on their group affiliations (Pakaluk, Michael 2005). Based on these assumptions, human behavior is shaped by both genetic factors and environmental influences. However, behavior in urban spaces can become chaotic, often due to poor design (Stevens, Quentin 2006). Therefore, residential areas should be designed to accommodate users' needs while considering social and cultural differences, fostering organized and constructive behavior.

Human behaviour can be defined as the complex result of interactions between social, cultural, environmental, and genetic factors. This relationship is further influenced by a range of physical, social, and psychological factors that govern the use of spaces and individuals' interactions within them.

➢ 2.1.2 Types of human behaviour

Human behaviour is shaped by the daily activities of individuals. These behaviours can be classified into two types: innate behaviour, which is performed naturally without being learning, and acquired behaviour, which individuals learn from others (سعد مجمد الحميد عبد1980). The acquired behaviour can be categorized into: individual and collective behaviour. As illustrated in figure 2-1.

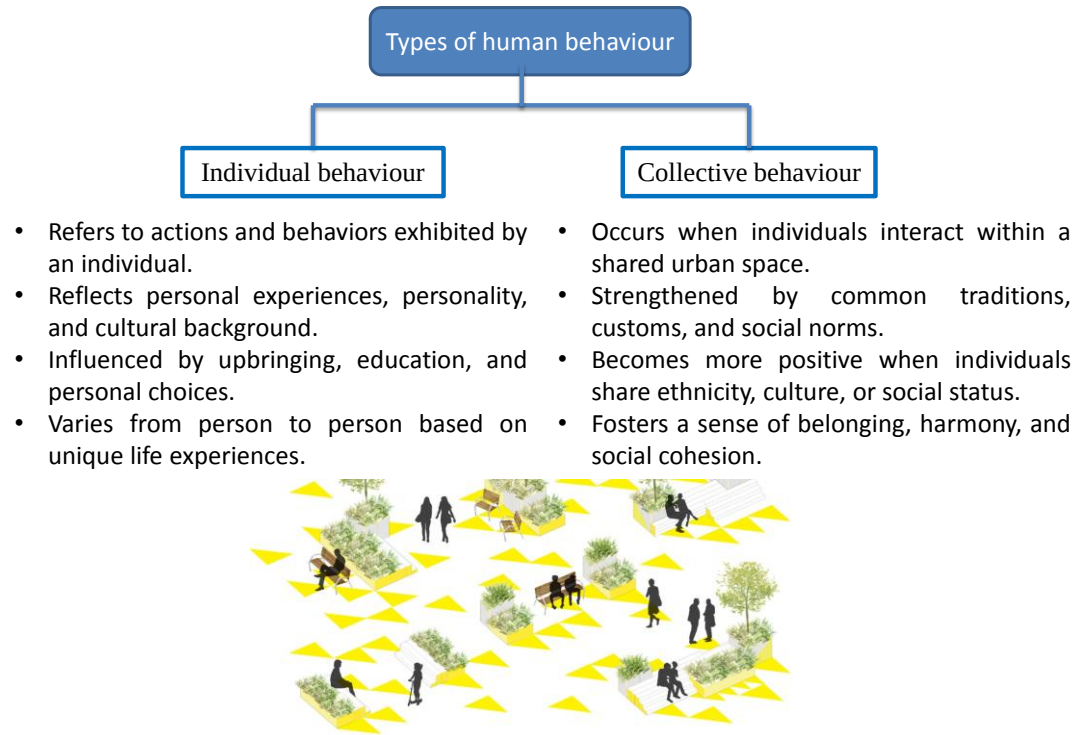


Figure 2-1 Types of human behaviour. .

➢ 2.1.3 General influences on human behaviour in the urban spaces

Humans interact with their surroundings, and their behavior is shaped by various factors that influence their overall experience within these spaces. These influences vary from one community to another due to changes in culture, customs, and traditions in each society. They can be illustrated as follows in Figure 2-2:

All these factors significantly influence human behavior in relation to their

surroundings. Well-designed residential open spaces encourage social interaction, strengthening community relationships and enhancing social life. Additionally, they contribute to psychological and physical well-being, while poorly planned spaces can increase stress levels.

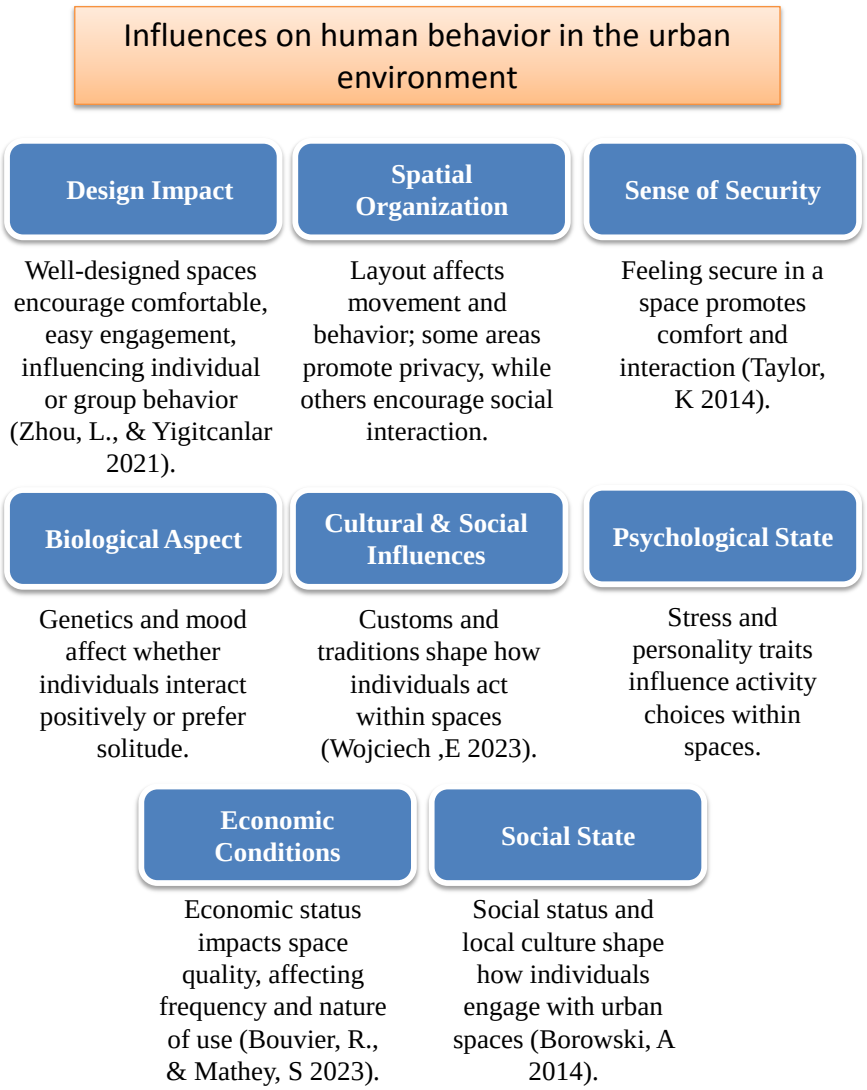


Figure 2-2: Influences on human behaviour in the urban environment

➢ 2.1.4 Human Activities within Urban Spaces

Humans activities in urban spaces are depend on the nature of the area and its design. These activities can be social, recreational, commercial, or functional.

These activities can be summarized in Figure 2-3.

Human Activities within Urban Spaces

Social Activities

These include social interactions between individuals they contribute to strengthening social relationships and provide an interactive environment among people (Gehl, J 2010).

source:https://pin.it/6XEQMTX1e

Commercial Activities

These involve activities such as markets, stores, and exhibitions, which help stimulate the local economy and create a vibrant environment (Talen, E 2022).

source:https://pin.it/7mXovTcsB

Recreational Activities

These are activities aimed at relaxation and enjoyment of time. They contribute to improving mental health and relieving stress (Chang, PJ., Lin, Y. & Song, R 2019).

source:https://pin.it/3ZSxkInTA

Functional Activities

These refer to daily activities that meet individuals' basic needs, such as commuting, working, and accessing services. They enhance the overall quality of life (Katz, B., & Bradley, J 2013).

source:https://pin.it/5LIhEdVP0

Figure 2-3: Human Activities within Urban Spaces. .

2.2 Human needs within urban spaces

Addressing human needs in urban spaces is key to enhancing well-being, social interaction, and inclusivity. This section explores the various human needs that shape urban spaces and their impact on the overall urban experience.

➢ 2.2.1 Theories that dealt with human needs

Many theories have explored models for identifying basic human needs to better understand human behavior, a key aspect of the design process. This understanding helps determine what should be included in urban spaces to meet users' desires and needs. Some of the most notable theories are as follows.

2.2.1.1 Maslow's Hierarchy of Needs :

Maslow's theory is one of the most famous theories explaining human needs (Maslow, A.H 1943, Almeida, A. M., & Ferreira, F. A 2023). This theory consists of a hierarchy that ranges from basic needs to more complex needs as shown in Figure 2-4.

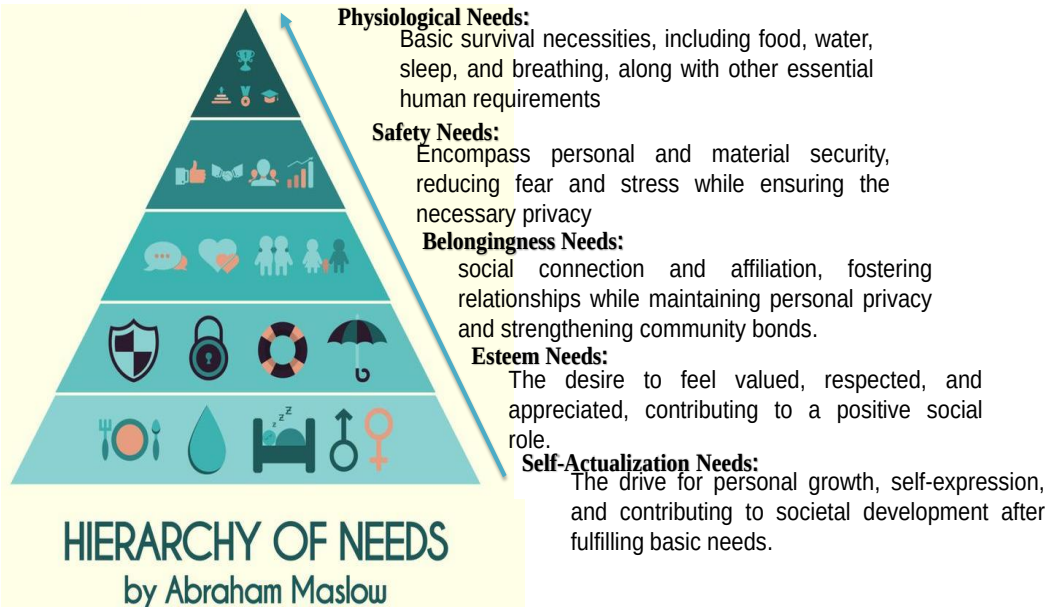


Figure 2-4: Maslow's Hierarchy of Needs. Source: https://pin.it/3gc4HTPmO.

2.2.1.2 Alderfer's ERG Theory

Alderfer's theory was developed by American psychologist Clayton Alderfer as shown in Figure 2-5. In this theory (Alderfer, Clayton P 1969), Alderfer modified Maslow's hierarchy of needs making it more flexible and adaptable to a broader range of human needs. ERG stands for three types of fundamental needs that Alderfer identified in his framework: Existence, Relatedness, and Growth (Yazdani, Mohsen, & Abedi, Hamid 2023).

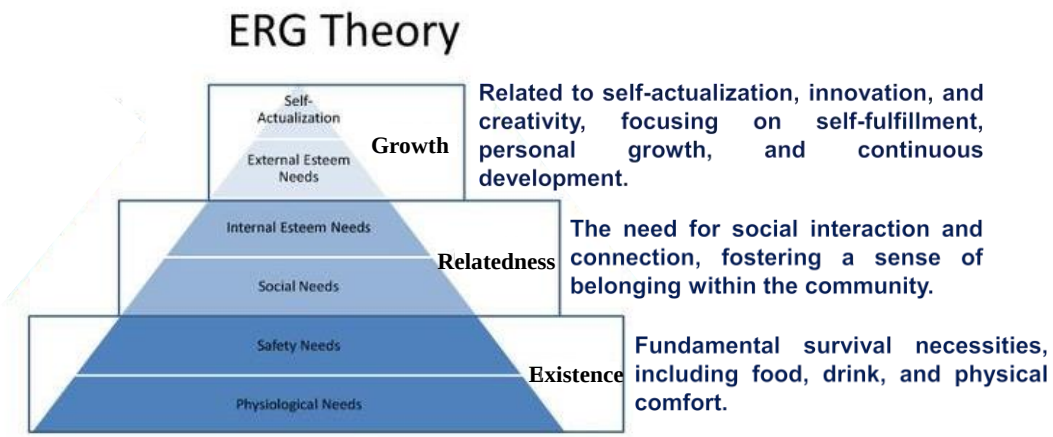


Figure 2-5: Alderfer's ERG Theory. Source: https://pin.it/2Njz95ngS.

In Maslow's theory, a person can achieve their needs in a hierarchical manner, whereas in Alderfer's theory, it is more flexible. It allows individuals to meet their needs and move between different levels without being constrained by a specific order. This flexibility helps to prevent frustration. Alternative phrasing if a person is unable to fulfill a certain type of needs, they can transit to another level. This is a key characteristic that sets this theory apart from Maslow's.

2.2.1.3 Human Development by Manfred Max Neff

Meeting human needs is essential and indispensable for achieving a dignified life for individuals. Max Neef states that these needs are applicable to all cultures and societies (Max-Neef, M. A 1991, Gasper, D 2023). They are not

solely material but also encompass psychological and social aspects as shown in Figure 2-6. These needs are demonstrated as followed.

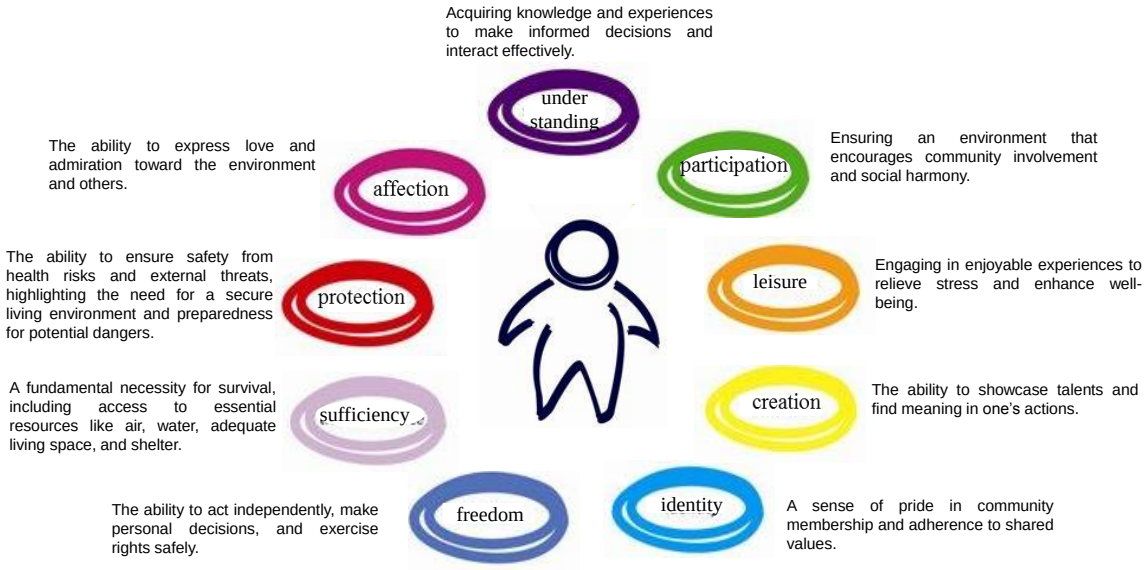


Figure 2-6: Max Neef's Theory.

Manfred Max-Neef's model of human needs offers a more developed framework that focuses on quality of life rather than purely material aspects. The model is more comprehensive and flexible, emphasizing the interaction between human needs and community development. This approach promotes both individual and collective growth. Despite its simplicity, applying it in practice can be challenging due to the lack of a clear hierarchy of needs, which can leave planners and designers uncertain about how to prioritize these needs.

2.2.1.4 Self-Determination Theory SDT:

Self-Determination Theory (SDT) is based on the idea that individuals tend to respond more positively when their psychological needs are met (Ryan, R. M., & Deci, E. L 2017). Therefore, this theory identifies the motivations and mechanisms of self-determination in individuals as shown in Figure 2-7.

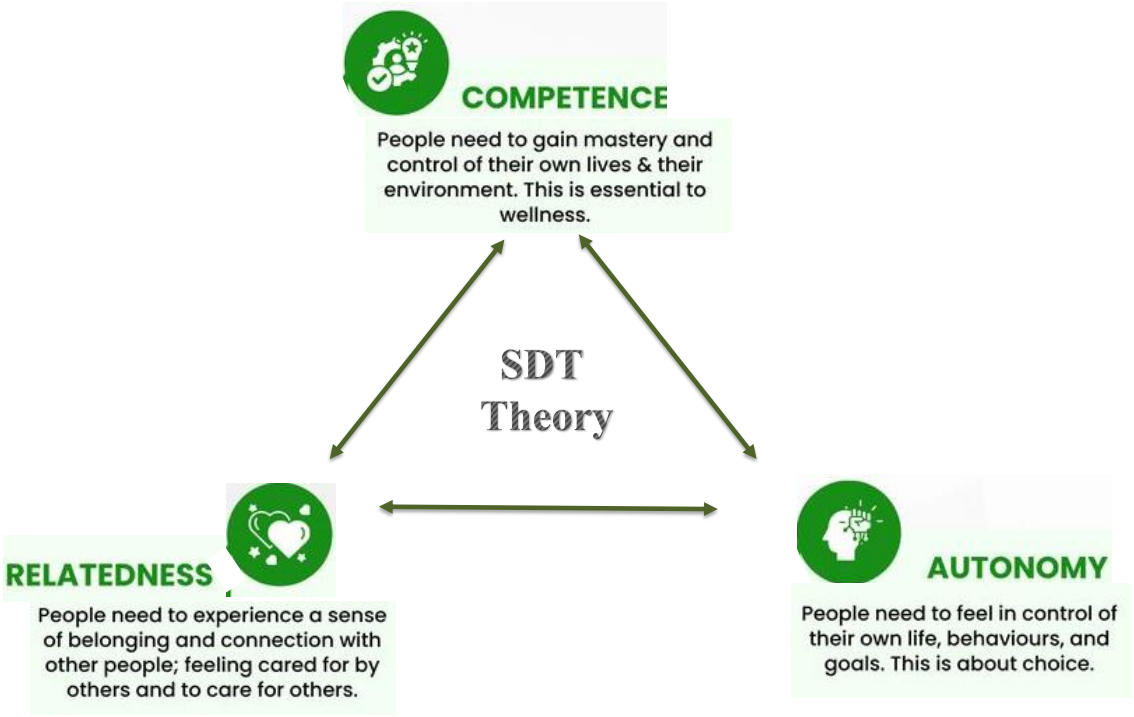


Figure 2-7: Self-Determination Theory.

However, some aspects of the theory are theoretical and cannot be easily measured. Moreover, the theory requires a deep understanding of the individual's internal psychological dimensions. Additionally, not all individuals possess the same level of intrinsic motivation, which necessitates intervention to enhance this drive.

2.2.1.5 McClelland's three needs Theory:

McClelland's theory of human needs focuses on personal motivations and incentives (McClelland, D. C 1961). It is based on the idea that individuals are drawn to achieve goals through three needs as shown in Figure 2-8

Figure 2-8: McClelland's theory of human needs.

After examining the relationship between these factors and the built environment, we can say that human behaviour is influenced by the physical characteristics and surrounding environment of urban spaces.

➢ 2.2.2 A Comparative analysis of human needs theories and their identification in urban spaces

The table 2-1 presents a comparative analysis of five major theories explaining human needs: Maslow's Hierarchy of Needs, Alderfer's ERG Theory, Max-Neef's Theory, Self-Determination Theory (SDT), and McClelland's Three Needs Theory. Each theory highlights a specific aspect of human needs, but relying on just one of them is not sufficient to understand the complete structure of these needs. Therefore, it is essential to adopt a more integrated perspective that encompasses all aspects of human needs, which can then be used as a stronger foundation for analysis and practical application. A set of fundamental human needs shared across societies has been recognized and cannot be ignored. These needs are Creation, Identity, Participation, Understanding, Affection, Comfort, Protection and Subsistence.

Table 2-1. Comparison of theories of human needs

Theory / Human Needs	Maslow's Theory	Alderfer's theory (ERG)	Max Neef's theory	Self-Determination Theory (SDT)	McClelland's Three Needs Theory
concept	Lower needs must be met before moving to higher levels	Satisfying needs from any level possible	No fixed hierarchy, needs interact and influence each other	Focuses on meeting these needs to achieve self-motivation	Not hierarchical, interacts according to individual context
Physiological Needs	✓	✓	✓	-	-
Safety & Security	✓	✓	✓	-	-
Social Connection & Interaction	✓	✓	✓	✓	✓
Recognition & Self-Respect	✓	✓	✓	✓	✓
Growth & Achievement	✓	✓	✓	✓	✓
Community Involvement	✓	✓	✓	✓	✓
Leisure	-	-	✓	-	-
Autonomy & Independence	✓	✓	✓	✓	✓
Disadvantages	• Not flexible enough to account for the complexities of life • May not apply to all cultures	•May be less clear than Maslow's theory •Difficult to quantify	•May be complex in practical application •Difficulty in accurately measuring needs	• May ignore physical needs • Needs further research to apply across cultures	•Lacks focus on basic needs • Can sometimes be difficult to measure

Subsistence
Protection
Affection
Identity
Creation Understanding
Participation
Affection
Comfort

.

2.2.2.1 Subsistence:

Subsistence in urban spaces refers to ensuring that individuals can meet their needs efficiently and comfortably within their environment. This requires providing essential services and infrastructure that minimize unnecessary movement, as insulated in Figure 2-9. Achieving this involves:

- Integrated urban design that fulfills individual needs within a cohesive space.
- Universal accessibility, considering all users, including those with disabilities.
- Stakeholder collaboration among planners, designers, and policymakers to develop self-sufficient environments.

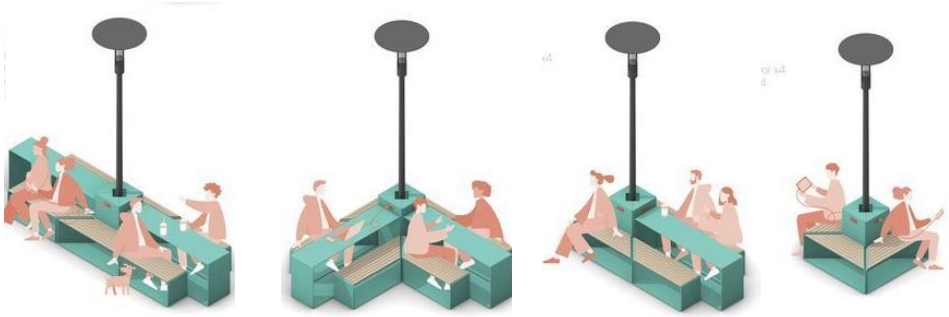


Figure 2-9: Providing what suits users' needs. Source: https://pin.it/5w5iR5oWF

2.2.2.2 Protection:

Protection involves safeguarding individuals from natural and human-induced risks, as illustrated in Figure 2-10. This is achieved through:

- Continuous monitoring to protect the space from internal and external threats.
- Utilizing design elements for protection against natural factors.
- Enhancing lighting systems to reduce nighttime accidents.
- Distributing green spaces to improve safety.

- Integrating smart design with technology and community participation.

Figure 2-10: Weather protection Source: https://pin.it/2D3hagnUX.

2.2.2.3 Affection:

Affection reflects the human need for emotional comfort and social connection, which should be considered in built environment design. This can be achieved through:

- Implementing flexible designs to balance interaction and privacy needs.
- Integrating natural elements to enhance psychological comfort.
- Respecting cultural and social diversity to ensure inclusivity as it shown in Figure 2-11.

Figure 2-11: Design that enhances psychological comfort to increase the sense of affection. Source: https://pin.it/5qGbOtE8Z.

2.2.2.4 Understanding:

The need for understanding refers to the ability to easily recognize and navigate a space, enhancing user interaction and sense of belonging. This can be achieved through:

- Clear and logical design for a coherent and organized environment.

- Creating subspaces to support diverse functions and improve usability:

2.2.2.5 Participation:

Participation involves engaging individuals in the design and planning of urban spaces, fostering responsibility and adaptability. This can be achieved through:

Participatory planning to enhance ownership and community connection.

Designing interactive spaces to promote collective use.

Raising awareness about the importance of participation in design, maintenance, and preservation.

2.2.2.6 Identity:

Identity Identity in urban design involves reflecting the community's culture and heritage to foster a sense of connection. This can be achieved through:

- Addressing community needs while preserving local identity and heritage.
- Utilizing local materials to express the place's character.
- Designing interactive spaces to strengthen collective identity..

2.2.2.7 Creation:

Creation in urban design fosters innovation while balancing aesthetics and functionality to meet users' needs. This can be achieved through:

- Incorporating creativity without overwhelming the design.
- Utilizing modern techniques like 3D modeling and AI for future adaptability.
- Integrating natural elements to enhance mental well-being and creativity.
- Prioritizing human comfort to create an environment conducive to innovation.

After identifying the human needs that must be met within urban spaces in residential open areas and understanding the design criteria for these spaces from the previous chapter, we can determine the methods for addressing these needs are detailed in table 2-2.

After presenting Table 2-2, we can identify the design elements that influence meeting the needs of users and clarify them in Table 2-3. Through this table, we can arrange the basic needs based on our ability to fulfill them more easily, as well as those that require more in-depth design interventions to improve. This arrangement is illustrated in Figure 2-12.

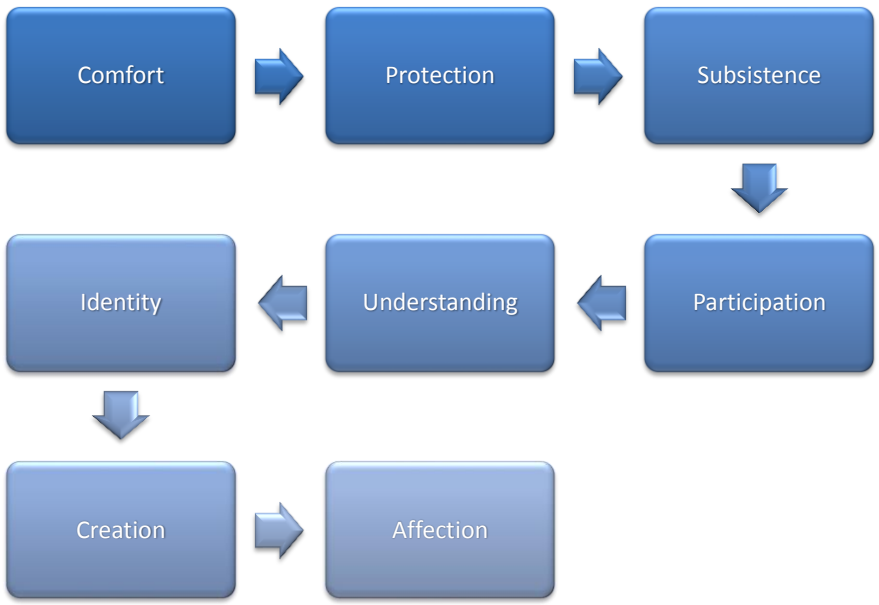


Figure 2-12: Arrange human needs according to how they are met.

Table 2-2. How to achieve human needs within urban spaces in residential areas. .

Design Criteri / Human Needs		Affection	Creation	Identity	Understanding	Participation	Subsistence	Protection	Comfort
Geographical Aspects	Location	-	-	The space's location encourages use, fosters interaction, and strengthens user connection.	-	The space's location is easily accessible to all social groups, promoting inclusivity and participation.	The space is appropriately situated and accessible to everyone, ensuring equal opportunities for use.	Easy access to a space encourages individuals to stay, fostering a sense of safety and security.	The proximity of the space increases users' comfort and convenience in reaching it.
	Accessibility	-	-	-	Ease of access to the space through the design of pathways and signage to facilitate navigation.	Designing spaces that are easily accessible and promote collective use of the area.	Ensuring full accessibility for all, including individuals with disabilities.	Enhancing the sense of safety by designing an accessible space free from obstacles and risks.	Providing easy access to all points within the space for all users.
Physical Aspects	Form of a Square	-	-	-	The clarity of the space's form and composition enhances users' ability to perceive and navigate it.	Allocating areas for games, sports, and social activities that bring together individuals of different age groups.	An integrated design of urban spaces that meets individuals' needs without requiring excessive movement.	The proportions and dimensions of the space provide a sense of enclosure, enhancing the feeling of safety within it.	-

-	-	-	Integrating natural elements like trees, , and water features enhances psychological comfort and fosters an emotional connection to the space.
-	Seating design incorporates modern and innovative techniques to enhance and inspire creativity.	-	Integrate natural elements into the physical space to boost mental well-being and stimulate creativity.
-	-	Utilizing Vegetation element that reflect the community's identity and culture strengthens nse of connection.	Utilizing designs and physical elements that reflect the local culture and character of the place to foster a sense of belonging.
-	-	-	Using materials Sourced from the surrounding environment to ensure ease of recognition and understanding.
-	Seating is designed for large gatherings, fostering social interaction and engagement.	-	The furnishings and materials play a role in encouraging individuals to engage and interact with one another.
The size of the space is sufficient to accommodate the number of users and their various activities.	Seating is inclusive, suitable for all age groups, and tailored to the space's activities.	-	The elements used meet the needs of individuals and are tailored to their requirements
-	Providing comfortable seating areas under canopies to protect users from sunlight and rain.	Strategically distributing green spaces and leveraging vegetation to create safer environments.	Leveraging design elements to provide protection from natural factors.
-	Incorporating furniture that enhances user comfort, such as cushioned seats and shaded seating areas.	Plants enhance user comfort in urban spaces by improving air quality and creating a relaxing environment.	The materials and elements within the space are designed to ensure user comfort.
Size of a Square	setting	Vegetation element	furniture
	Behavioural and psychological aspects:		

-	Creating Small Gathering Areas to Promote Social Interaction, Such as Open Green Spaces.	Designs that Respect Cultural and Social Diversity to Ensure Comfort for All Groups in the Environment.
-	Creating Sub-spaces that Foster an Inspiring Atmosphere Encouraging Innovation and Creativity.	Focusing on Human Comfort, as Creativity Emerges When the Environment is Comfortable and Suitable for Human Use.
-	Designing Sub-spaces that Facilitate Interaction Among Indeviduals and Enhance Collective Identity.	Considering the Human Scale Achieves a Sense of Belonging Within the Space and Fosters a Connection to Local Identity.
-	Establishing Sub-spaces to Accommodate Various Uses, Enhancing Understanding and Integration of the Space.	A Clear and Logical Design that Creates a Cohesive and Organized Environment, Respecting Human Scale, Making it Easier to Recognize and Perceive.
-	Providing Flexible Sub-spaces that Allow for Social Gatherings and Activities, Encouraging Individuals to Integrate with Others.	-
-	Sub-spaces are Diverse to Suit the Activities Taking Place Within the Space.	-
Enhancing safety with surveillance systems and emergency exits.	-	-
Ensuring protection from weather conditions and external factors to increase users' sense of comfort.	Sub-spaces Provide Privacy for Individuals in Need, Offering a Sense of Comfort.	Considering the Human Scale in Space Design Helps Achieve Comfort for Users.
Shelter and protection	subspaces	human scale

-	Flexible Designs that Accommodate the Diverse Needs of Individuals, Encouraging Positive Social I	-	-	
-	-	-	-	
-	-	-	-	
Good Lighting on Pathways and Signage to Clearly Guide Individuals.	-	-	-	
-	-	Integrating Smart Design with Modern Technologies and Engaging the Local Community in Space Management.	-	
-	The Design and Organization of the Space Encourage a Variety of Activities, Catering to All Tastes.	Collaboration Among Various Stakeholders, including Urban Planners, Architects, and Public Policy Makers, to Create Self-Sustaining Spaces.	-	
Implementing Good Lighting Systems to Reduce the Risk of Accidents at Night.	-	Commitment to Regular Maintenance to Prevent Deterioration. Engaging the Local Community in Space Management.	-	
Providing Soft Lighting, Whether Natural or Artificial, That Ensures Clear Visibility Without Straining the Eyes.	-	Regular Maintenance to Ensure Continuous Cleanliness of the Space, Impacting Individuals' Sense of Comfort Within It.	The Materials and Elements Used Within the Space Provide Comfort to Users.	
lighting	Uses & Activities	Maintenance	Comfort	
Managerial Aspects			Behavioural & Psychological Aspects	

-	-	-
-	-	-
-	-	Involving Users in All Stages of the Design and Planning Processes to Enhance Their Sense of Belonging to Their Space and Community
-	-	A Clear and Logical Design that Makes the Environment Cohesive and Organized, Facilitating Recognition and Perception.
-	-	Raising Awareness of the Importance of Participation in Planning, Design, Maintenance, and Long-Term Preservation of the Space
-	-	-
Continuous Monitoring of the Space to Protect Against Internal and External Threats.	-	-
Safety and Security, with the Presence of Security Personnel, Enhance Users' Sense of Comfort.	Controlling Noise and Temperature to Provide a Comfortable Environment.	-
Safety & Security	Relaxcation	Engagement with the Environment

Table 2-3: illustrating the role of design criteria for urban spaces in meeting human needs. .

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Design criteria \ Human Needs			Comfort	Protection	Subsistence	Participation	Understanding	Identity	Creation	Affection
Geographical Aspects	Location		✓	✓	-	✓	-	✓	-	-
	Accessibility		✓	✓	✓	✓	✓	-	-	-
Physical Aspects	Form of a Square		-	✓	✓	✓	✓	-	-	-
	Size of a Square		✓	-	✓	✓	-	-	-	-
	Behavioural and psychological aspects:	setting	✓	✓	✓	✓	-	-	✓	-
		Vegetation element	✓	✓	-	-	-	✓	-	-
		furniture	✓	✓	✓	✓	✓	✓	✓	✓
		Shelter and protection	✓	✓	-	-	-	-	-	-
		subspace	✓	-	✓	✓	✓	✓	✓	✓
		human scale	✓	-	-	-	✓ -	✓	✓	✓
		lighting	✓	✓	-	-	✓	-	-	-
Managerial Aspects	Uses & Activities		-	-	✓	-	-	-	-	✓
	Maintenance		✓	✓	✓	✓	-	-	-	-
Behavioural & Psychological Aspects	comfort		✓	-	-	-	-	-	-	-
	Safety & Security		✓	✓	-	-	-	-	-	-
	Relaxcation		✓	-	-	-	-	-	-	-
	Engagement with the Environment		-	-	-	✓	✓	✓	-	-

This table can serve as a fundamental reference throughout the study to assess urban spaces based on their ability to meet various human needs. It can also be utilized to analyze the extent to which design elements align with requirements for comfort, safety, social interaction, and the enhancement of identity and sense of belonging. Furthermore, the table contributes to guiding design proposals toward the creation of a more integrated urban environment that is responsive to human needs, ultimately ensuring an improved quality of life in urban spaces.

2.3 Sustainability concept

The concept of sustainability in urban aims to ensure reSource efficiency, resilience, and long-term livability while minimizing negative impacts on the environment. This section explores the principles of sustainability and their role in shaping sustainable urban spaces.

➢ 2.3.1 Sustainable development Definition

Sustainability is rooted in the definition established by the World Commission on Environment and Development (WCED) in the 1987 Brundtland Report (Brundtland, G 1987), which emphasizes meeting present needs without compromising future generations' ability to meet theirs. It promotes community development that balances current needs with reSource preservation for the future. Sustainable development ensures both present and future goals are met, aiming to enhance well-being by providing the material, social, and economic conditions necessary for a good quality of life (Alaimo, L.S., Maggino, F. 2020). We can say that sustainability is a process that significantly impacts all aspects of life. It seeks to avoid problems that may arise in the future by conserving available reSources and utilizing them optimally to achieve economic efficiency, maintain environmental integrity, and ensure social cohesion.

➢ 2.3.2 Sustainability pillars

Sustainable development is based on five interconnected pillars within an interactive framework that ensures the efficient regulation, organization, and management of reSources (Randers, Jorgen & Rockström, Johan & Stoknes, Per & Goluke, Ulrich & Collste, David & Cornell, Sarah 2018). These pillars are summarized in Figure 2-13.

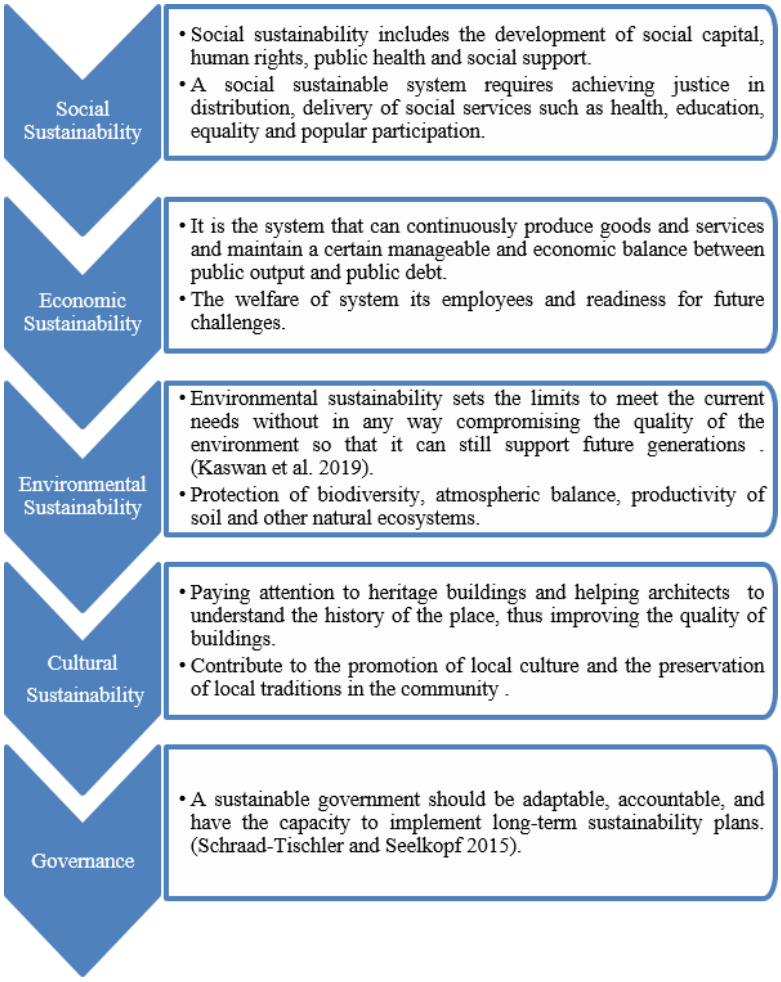

Figure 2-13: The pillars of sustainability. .

Sustainability cannot be achieved across its various pillars in isolation; it requires meeting at least the minimum requirements for integration and balance among them. The interested pillar is social sustainability due to its

effectiveness and significant role in achieving quality in the built environment and its impact on urban space in residential areas quality. Furthermore, it enhances urban spaces' ability to meet the needs of individuals and the community.

The relationship between social sustainability and the physical environment, represented urban spaces in residential open area is mutually influential. The quality of the spaces directly contributes to social sustainability. Therefore, it is essential to pay more attention to social sustainability and recognize the importance of integrating its principles into the development processes of urban spaces in residential open area.

2.4 Social Sustainability concept

Assefa and Frostell (2007) argued that social sustainability is the ultimate goal of development, whereas economic and environmental sustainability serve merely as tools to achieve it. Similarly, Cuthill (2010) emphasized that environmental issues are inherently social, as it is people who are managed to regulate the natural environment, rather than nature itself. Likewise, the economy exists to serve individuals and fulfill their social needs, positioning sustainable development as a fundamentally social concept. Omman and Spangenberg (2002) highlighted the critical role of social sustainability, not only as a core pillar of sustainable development but also as a fundamental prerequisite for achieving the economic and environmental dimensions. This section explores its importance and the role of residential open areas in achieving social sustainability goals.

➢ 2.4.1 The importance of incorporating social sustainability in the urban design process

Integrating social sustainability into urban design fosters inclusive, livable, and resilient cities by promoting social interaction, cultural identity,

and equitable access to reSources (Dempsey, N., Bramley, G., Power, S., & Brown, C.., 2011). Prioritizing social factors strengthens communities and enhances quality of life. Key aspects include:

Enhancing Social Interaction and Community Engagement

Well-designed public spaces encourage social cohesion by fostering interactions among residents through parks, plazas, and community centers (Colantonio & Dixon, 2011).

Ensuring Accessibility and Inclusivity

Urban design should provide equitable access to essential services, transportation, and green spaces, ensuring that all individuals, including marginalized groups, can benefit from urban reSources (Cuthill, 2010).

Promoting Mixed-Use Development

Integrating residential, commercial, and recreational spaces within walkable neighborhoods enhances convenience, reduces urban sprawl, and strengthens local economies (Bramley et al., 2009).

Supporting Cultural Identity and Sense of Belonging

Urban spaces that reflect cultural heritage and community values contribute to residents' sense of identity and attachment to their environment (Omman & Spangenberg, 2002).

Balancing Environmental and Social Sustainability

Social sustainability should work alongside environmental efforts, ensuring that urban growth does not compromise community well-being but rather enhances it (Dempsey et al., 2011).

➢ 2.4.2 The role of residential open areas in achieving social sustainability goals.

Cities must balance economic growth, environmental protection, and social cohesion for a sustainable future. With rapid population growth

straining urban services, integrating sustainability is essential. While cities drive progress, unsustainable management can harm the local environment.

Rapid population growth has expanded cities at the cost of residential open spaces, increasing social distance and weakening cohesion (Dave, S 2010). Urban spaces foster interaction, enhance quality of life, and meet cultural and psychological needs. Prioritizing social sustainability ensures high-quality spaces that strengthen communities, promote outdoor activities, and support well-being—key to sustainable development (Dempsey, N., Bramley, G., Power, S., & Brown, C 2009).

➢ 2.4.3 Social Sustainability Principles.

After emphasizing the importance of addressing urban spaces in residential open areas it is essential to identify the principles of social sustainability. This attributed to their significant role in achieving social sustainable development. These principles have been discussed by a group of scholars as presented in Table 2-4:

Table 2-4. Principles of social sustainability after reviewing the literature.

literature review	Impact on Urban Space	Principle	social sustainability Principles
Dempsey et al., 2009	Urban space design plays a key role in ensuring the availability of green areas and public facilities that are accessible to everyone. This approach reduces the feelings of marginalization and increases the satisfaction with the urban environment.	Social Justice	Accessibility
Maryam ,A, Raffaello, F 2017	Encourages the design of plazas, pedestrian pathways, and community gathering areas, promoting interaction among indeviduals and creating more stable and cooperative communities.	Social Cohesion	Social Capital Population Density
Cervero, R., & Kockelman, K 2021	Facilitates the design of integrated public transportation networks and walking paths that connect residential neighborhoods to essential services, enhancing accessibility and reducing the need for long-distance travel.	Accessibility to Services	Mobility Safety & Security
Saffron, I 2021,Talen, E 1999	Urban spaces can be designed as multifunctional areas that include spaces for cultural celebrations and local markets, fostering peaceful coexistence and cultural exchange.	Cultural Diversity	Mixed-Use Choice & Diversity
(Nabatchi, T., & Amsler, L. B 2014	Indeviduals can be engaged in designing public parks and open areas, reflecting the needs of the local community and increasing the level of connection between indeviduals and the built environment.	Community Participation	Environmental Quality Integration

The table links social sustainability principles to urban concepts, showing how they translate into design strategies. For example, **social justice** aligns with **accessibility**, ensuring equal access to public spaces. **Social cohesion** fosters **social capital** through interactive spaces, while **cultural diversity** supports **mixed-use** and **diversity**, creating inclusive environments. This connection highlights how social values shape sustainable urban design. It was decided to use the following principles in designing urban spaces in residential open areas as follows in figure 2-14.

After identifying the key principles for designing urban spaces in residential areas, the focus shifted to exploring how specific design elements can support their implementation. Table 2-5 explains how urban design contributes to achieving each social sustainability principle. Based on this, Table 2-6 outlines the relationship between urban design elements and social sustainability principles, providing a clearer framework for understanding their interaction. Figure 2-15 then ranks these principles according to the degree to which they can be fulfilled through existing design criteria, helping to distinguish between well-addressed community needs and those requiring further intervention.

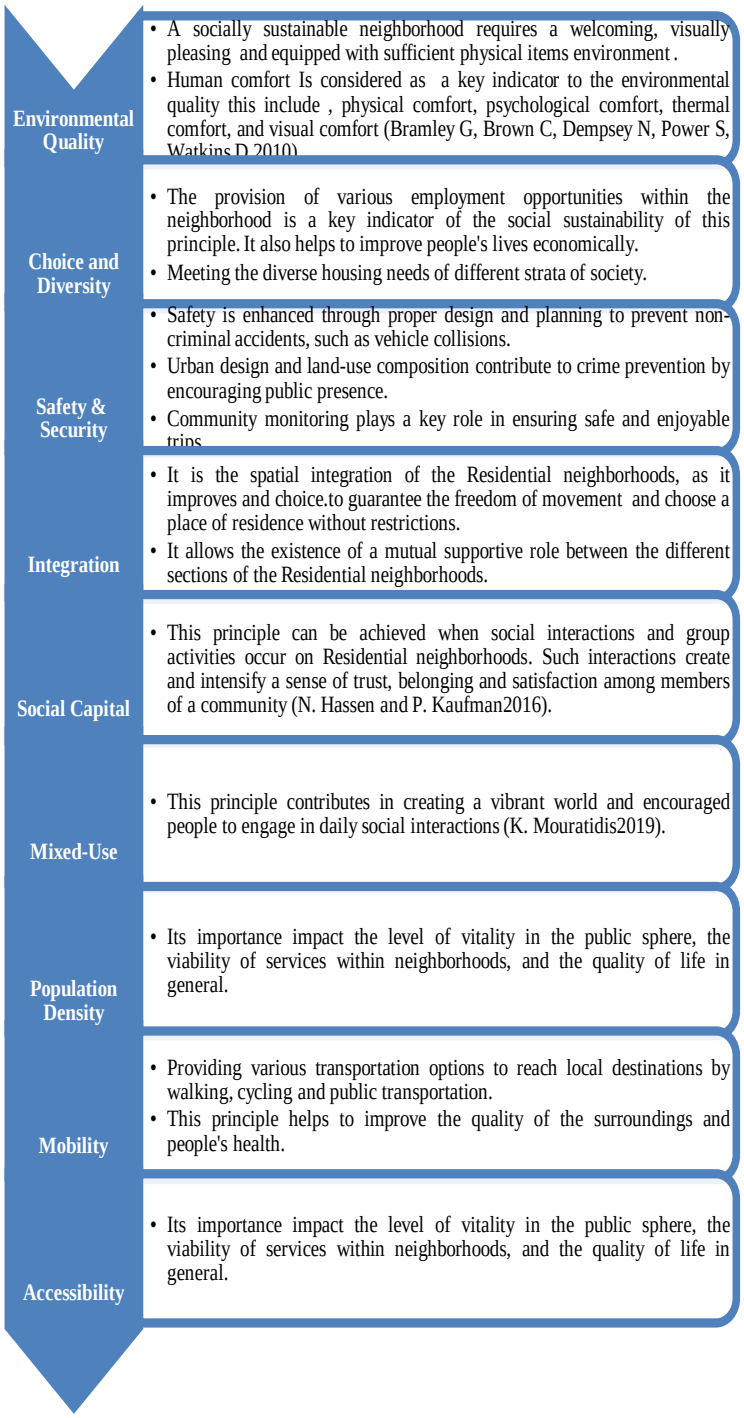

Figure 2-14: The Role of Social Sustainability in the Urban Design Process.

Table 2-5: How to achieve Principles of Social Sustainability within urban spaces in residential areas. .

Social Sustainability / Design Criteria			
Accessibility	The Location of the Space Facilitates Easy Access for All Users	Providing shaded pathways, stairs, and ramps for smooth, comfortable access for all	The Shape and Boundaries of the Space Affect Its Accessibility.
Mobility	The Location of the Space Provides Multiple Access Options.	Accessibility to All Spaces Within It and the Ability to Engage in All Activities.	-
Population Density	Planning the Space in an Appropriate Location to Suit the Expected Populatin Density.	Easy Access to the Space for All Indeviduals.	
Mixed-Use	-	-	-
Social Capital	-	-	The design fosters engagement, creating a vibrant and active space
Integration	Choosing Central Locations Close to Public Amenities.	Easy Access to and Use of the Space Contributes to Achieving Spatial and Visual Integration	-
Safety & Security	The Proximity of the Urban Space to Its Users Increases Their Sense of Safety and Protection	-	-
Choice & Diversity	A Suitable Location for the Urban Space Helps Meet the Needs of Various Population Groups	-	The space's boundaries and shape offer diverse activity options.
Environmental Quality	-	-	-
	Location	Accessibility	Form of a Square
	Geographical Aspects		Physical Aspects

-	-	-	-
-	-	-	-
Planning the Space to Be Sized Appropriately for the Users.	-	-	-
-	Providing Multiple Seating Options to Enhance Mixed Use.	Utilizing vegetation coverto Create Diverse Spaces for Versatile Use.	-
-	Utilizing Seating Elements to Encourage Social Interactions and Group Activities.	-	Strategic seating arrangements foster interaction, enhance social capital, and encourage longer stays.
-	-	Using vegetation cover to Create an Integrated Space That Harmonizes With Its Surroundings.	Using Appropriate Furnishing Elements Creates a Neighborhood Integrated With Its Surroundings.
-	-	Appropriate Use of Flooring Types to Suit the Activities Conducted, Ensuring Safety.	-
-	Offering Diverse Seating Choices to Accommodate Various Activities for Individual	-	Providing Furnishing Elements to Suit All Needs and Offer Diverse Options for Users.
The space's dimensions enhance environmental quality, creating a welcoming atmosphere.	-	Creating a Welcoming and Enjoyable Environment for Users Through Variety in Flooring Types.	Furnishings enhance visual and psychological comfort, encouraging people to stay and enjoy the space.
Size of a space	Setting	Vegetative element	furniture
	Behavioural and psychological aspects		

-	-	-
-	Sub-spaces offer variety and comfort, encouraging interaction and continuous use.	-
-	Providing Open Spaces to Accommodate Users and Avoid Congestion.	-
-	Designing Sub-spaces of Various Sizes to Encourage Individuals to Engage in Different Activities Within the Main Space.	-
Regular surveillance and maintenance enhance safety, fostering social integration and interaction.	-	Respecting the Human Scale in Space Design Enhances the Sense of Trust, Belonging, and Satisfaction With the Space.
-	The Presence of Sub-spaces Enhances Freedom of Movement and Choice Between Spaces Based on the Activity the Individual Wishes to Perform.	The Elements and Materials Used Within the Space Ensure Integration With the Surrounding Environment .and Suit the Human Scale
Utilizing Shaded Elements Over Seating and Along Pathways Increases Protection From Weather Conditions	-	-
-	Well-designed diverse options enhance benefits, encourage outdoor activities, and provide restful spaces.	-
-	-	Using Architectural Elements That Align With the Human Scale to Enhance a Sense of Familiarity and Connection.
Shelter and protection	: subspaces	human scale

-	-	-	-
	-	Periodic Maintenance to Ensure the Continued Quality of the Space	-
-	-	-	Providing Comfort Amenities Within the Space Enhances Environmental Quality and Encourages People to Use the Space.
Providing Appropriate Lighting (Natural or Artificial) Encourages Individuals to Spend Time in the Space and Engage in Daily Social Activities.	Offering activities and uses within the space encourages longer stays and supports mixed-use functionality.	-	-
-	Offering diverse activities for various community groups attracts more users and fosters greater social interaction.	-	-
-	-	-	-
Providing Sufficient, High-Quality Lighting Throughout the Urban Space to Improve Visibility and Reduce Undesirable Activities, Thus Enhancing the Sense of Safety	-	Periodic Maintenance. Surveillance Systems to Enhance Safety.	-
-	The Availability of Various Options for Activities Within the Space Creates a Vibrant and Socially Active Environment	-	
Orienting buildings for natural light reduces artificial lighting needs, creating a healthy environment. Smart lighting enhances efficiency.	-	-	Devices for Measuring Air Quality to Ensure Comfort and Maintain the Space's Quality Over Time.
lighting	Uses & Activities	Maintenance	Comfort
	Managerial Aspects		Behavioural & Psychological Aspects

-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
Encouraging Social Interaction and Motivating Individuals to Spend Time in the Space.	-	-	-	-	-	-	-	-
Increasing the Presence of Individuals in the Space Creates a Neighborhood Integrated With Its Surroundings.	-	-	-	-	-	-	-	-
The Continued Presence of Individuals in the Space Enhances Community Surveillance, Ensuring Safety and Security.	-	-	-	-	-	-	-	-
The Presence of People in the Space Contributes to Creating a Socially Sustainable Community and Makes the Environment Welcoming and Safe.	Physical elements should enhance enjoyment and create an inviting space, encouraging longer stays.	Ensuring safety and security enhances environmental quality, providing physical and psychological comfort.	Proper planning, continuous monitoring, and community surveillance ensure safety and security.	-	-	-	-	-
Engagement with the Environment	Relaxcation	Safety & Security						

Table 2-6: illustrating the role of design criteria for urban spaces in meeting principles of social sustainability. .

Design Criteria \ Sustainability Principles			**Population Density**	**Accessibility**	**Mobility**	**Integration**	**Choice & Diversity**	**Mixed-Use**	**Environmental Quality**	**Safety & Security**	**Social Capital**
Geographical Aspects	Location		✓	✓	✓	✓	✓	-	-	✓	-
	Accessibility		✓	✓	✓	✓	-	-	-	-	-
Physical Aspects	Form of a Square		-	✓	-	-	✓	-	-	-	✓
	Size of a Square		✓	-	-	-	-	-	✓	-	-
	Behavioural and psychological aspects:	setting	-	-	-	-	✓	✓	-	-	✓
		Vegetative element	-	-	-	✓	-	✓	✓	✓	-
		furniture	-	-	-	✓	✓	-	✓	-	✓
		Shelter and protection	-	-	-	-	-			✓	✓
		subspace	✓	-	✓	✓	✓	✓	-	-	-
		human scale	-	-	-	✓	-	-	✓	-	✓
		lighting	-	-	-	-	-	✓	✓	✓	-
Managerial Aspects	Uses & Activities		-	-	-	-	✓	✓	-	-	✓
	Maintenance		-	-	✓	-	-	-	-	✓	-
Behavioural & Psychological Aspects	comfort		✓	-	-	-	-	-	✓	-	-
	Safety & Security		-	-	-	-	-	-	✓	✓	-
	Relaxcation		-	-	-	-	-	-	✓	-	-
	Engagement with the Environment		-	-	-	✓	-	-	✓	✓	✓

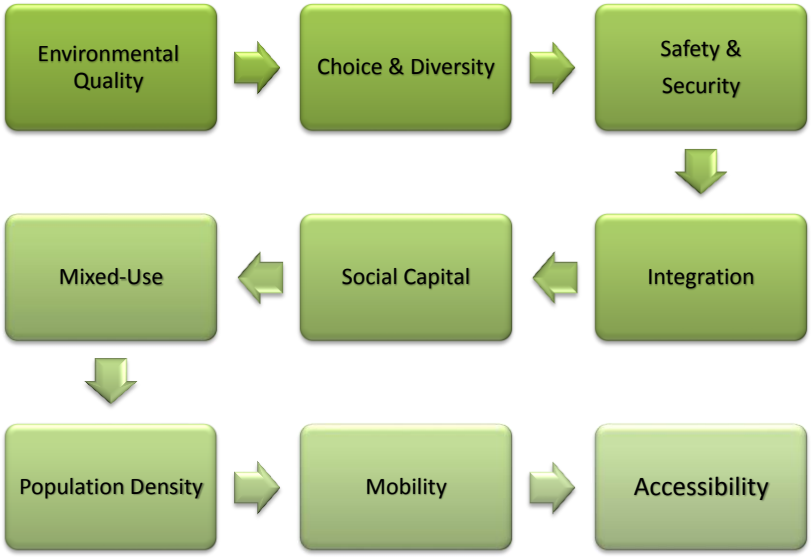

Figure 2-15: Arrange principles of social sustainability according to how they are met.

Conclusion

Integrating human needs with social sustainability in residential urban spaces is essential for creating a cohesive, sustainable environment. These spaces help individuals express themselves, fulfill their needs, and foster community engagement, promoting a sense of belonging and safety. Therefore, urban space design in residential areas must ensure both the quantity and quality of spaces to meet individual needs, as deficiencies can negatively impact the city.

Therefore, achieving the integration of human needs and social sustainability is not merely a step toward improving daily life; it contributes to the creation of more balanced and adaptable residential environments. This provides a strong foundation for building communities capable of achieving sustainable development and enhancing the well-being of both current and future generations.

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CHAPTER 3

A PROPOSED METHODOLOGY FOR CREATING A VIBRANT AND SUSTAINABLE URBAN SPACE IN RESIDENTIAL OPEN AREAS.

This chapter is divided into five sections. Section 1 reviews existing evaluation and improvement models for open urban spaces, emphasizing their role in creating vibrant and active environments. Section 2 outlines the proposed methodology for the analytical study, detailing the approach used to assess urban spaces. Section 3 examines the selected case studies, demonstrating the application of the proposed evaluation model based on theoretical research, and explains how the model can assess urban spaces in residential areas. Section 4 discusses the results and key findings from the case study analysis. Finally section 5 highlights the link between design criteria, human needs, and social sustainability, proposing an evaluation model to measure the quality and social effectiveness of urban spaces in residential areas, ensuring alignment with sustainability principles. . This chapter presents the following points:

- Presenting of models for evaluating the quality of urban spaces in residential open areas and identifying their criteria.
- Analytical methodology.
- Case study analysis.
- Outcomes from the case studies.
- Presenting the proposed model.

3.1 Presentation of Models for Evaluating the Quality of Open Urban Spaces Between Residential Buildings

Various models, including those by Jan Gehl, Vikas Mehta, Smith, Yuang, and Clement, assess urban space quality by evaluating social, environmental, and activity-based factors. These frameworks guide designers in balancing human needs and social sustainability, enhancing life quality and community integration. Successful urban spaces promote social interaction, well-being, and connectivity with their surroundings.

➢ 3.1.1 Jan Gehl Model

Jan Gehl (1987) identified 12 criteria for assessing open public space quality, grouped into three main pillars: protection, comfort, and enjoyment, as shown in Figure 3-1.

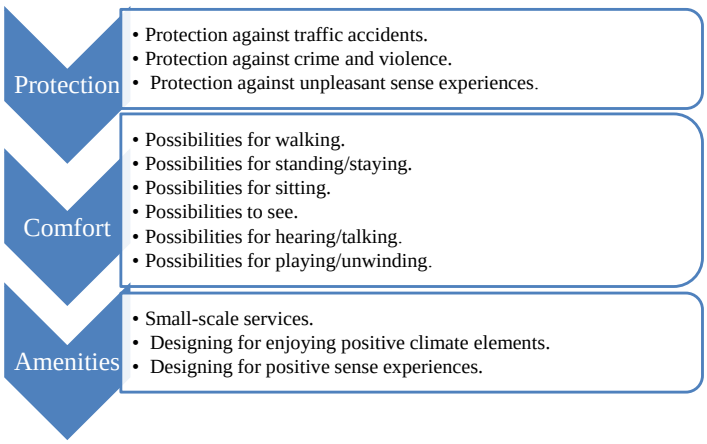

Figure 3-1: Jan-Gehl model.

Regarding **protection**, Gehl emphasized safeguarding individuals from risks and crime, ensuring they feel safe in urban spaces. Without safety, other qualities cannot be effectively maintained. The next step is ensuring user **comfort** in the space, whether walking, standing, or conversing. Comfort should

be maintained day and night to promote continuous 24/7 use. A high-quality urban space enhances **pleasure** by offering a human-scale environment, allowing users to appreciate the climate and enjoy aesthetic and sensory experiences. For vibrant, well-designed spaces, integrating protection, comfort, and enjoyment is essential.

Jan Gehl's vision for a successful city emphasizes meeting individual needs, encouraging outdoor engagement, and ensuring safety, comfort, and enjoyment in urban spaces.

➢ 3.1.2 Vikas Mehta Model

Mehta (2014) combined Carr et al.'s (1992) model of responsive, democratic, and meaningful spaces with Gehl's (1987) model. This approach categorizes outdoor activities into five key dimensions figure 3-2.

Figuer 3-2: Vikas Mehta model.

An urban space supports collective activities, promoting **inclusiveness** by meeting user needs. It ensures access, occupancy, and usability while remaining flexible to evolving functions. Urban spaces support **meaningful activities** by meeting user needs, ensuring access, and adapting to evolving functions. They foster social interaction and reinforce identity by addressing both basic (e.g.,

shopping) and specific (e.g., self-expression) needs, as Maslow (Maslow, A.H 1943) emphasized. Safety and security are crucial, with design and regular maintenance improving these aspects.**Safety and security** are crucial in urban spaces. A well-designed environment and regular maintenance enhance safety, along with a continuous presence of people. The comfort level individuals experience throughout the day reflects the space's safety. **Comfort** is influenced by safety, environmental conditions, and functional elements, with weather protection enhancing well-being (Mehta, V 2007). **Pleasure** in these spaces is shaped by sensory stimuli like light, sound, and color (Heath, T., Smith, H., & Lim, B 2000), encouraging engagement. Lynch (Lynch, K 1960) highlighted that urban spaces enhance the city's mental image and provide comfort.

To sum up, Mehta's framework serves as a theoretical model for evaluating open urban spaces, ensuring they are meaningful, support diverse activities, and provide a sense of safety, physical and psychological comfort, and environmental well-being.

➢ 3.1.3 Smith et al. Model

A list of quality principles and requirements were developed to ensure the highest quality and efficiency of urban spaces (Smith, R 2006). These principles and standards are outlined in Figure 3-3.

Liveability ensures the quality of urban space by promoting health, mobility, and environmental sustainability. **Character** gives a space a unique identity, fostering a sense of belonging through design and physical elements. **Connection** enhances social interaction, making the space more appealing and encouraging repeated use. **Mobility** ensures easy and inclusive access for everyone, including the elderly and individuals with disabilities. **Personal freedom** allows individuals to express themselves, make choices, and engage socially. **Diversity** provides flexibility and a range of activities, stimulating curiosity and exploration

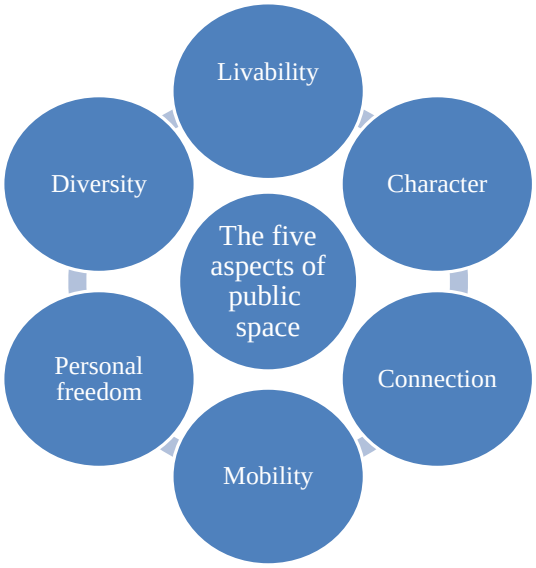

Figure 3-3: Smith et al model for evaluating urban spaces.

The Smith et al. framework focuses on designing a **physical** environment that meets users' needs and desires, enhancing urban space quality and fostering successful, healthy communities.

➢ 3.1.4 Ewing & Clemente Model

Ewing & Clemente (Ewing, R., & Clemente, O 2013) identify eight key urban design qualities: imageability, enclosure, human scale, transparency, complexity, coherence, legibility, and linkage. The first five have been effectively measured to evaluate and improve urban space quality, Figure 3-4.

Imageability refers to the ability to recognize and recall a space, contributing to its coherence, comfort, and identity, which positively affects psychological and physical well-being. **Enclosure** involves how vertical elements define an urban space, creating a sense of containment that influences perception and interaction. **Transparency** is the extent to which people can perceive the space, its components, and the activities taking place. **Human scale** ensures that urban elements align with human proportions, enhancing comfort and connection, achieved through appropriate building heights and natural elements.

Complexity involves the visual richness of a space, shaped by diverse elements and activities, creating a dynamic environment that fosters engagement and interest.

Ewing & Clemente's framework influences individuals' choices to visit, stay, and interact in public spaces. These five intangible qualities enhance perception, comfort, and spatial experience when effectively integrated into urban design.

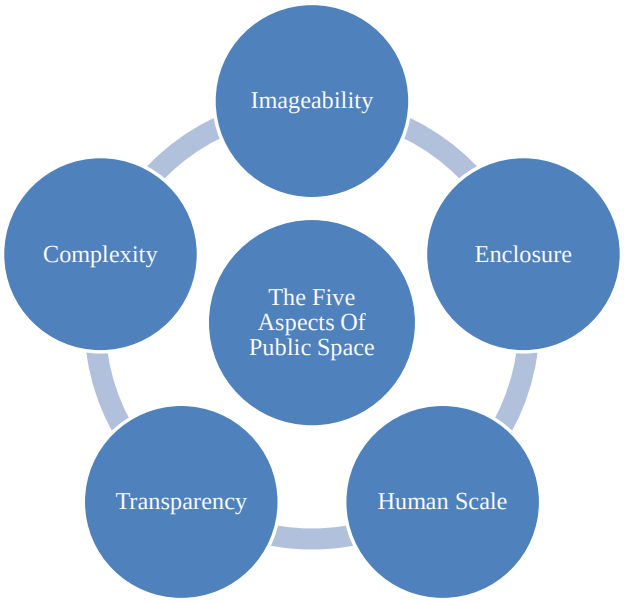

Figure 3-4: Ewing& Clemente model for evaluating the quality of urban spaces.

➢ 3.1.5 The Project for Public Spaces (PPS):

The Project for Public Spaces (PPS) is a multidisciplinary non-profit organization focused on revitalizing public spaces to build strong communities (URL: https://www.pps.org/. PPS). PPS identifies four key qualities of successful public spaces (Figure 3-5):

Access and linkages refer to the ease of access and connection to surrounding areas, with a space being successful when it is highly visible and accessible. **Comfort and image** focus on providing a positive atmosphere with

physical comfort, including safety, security, cleanliness, and facilities for various activities. **Uses and activities** attract people by offering diverse options, increasing participation and social interaction. **Sociability** emphasizes the sense of belonging and encourages interaction with neighbors, newcomers, and strangers alike

PPS concluded that successful urban spaces must exhibit the four aforementioned attributes. As a result, urban spaces become comfortable, visually appealing, and socially active areas where people meet, interact, and build a sense of community.

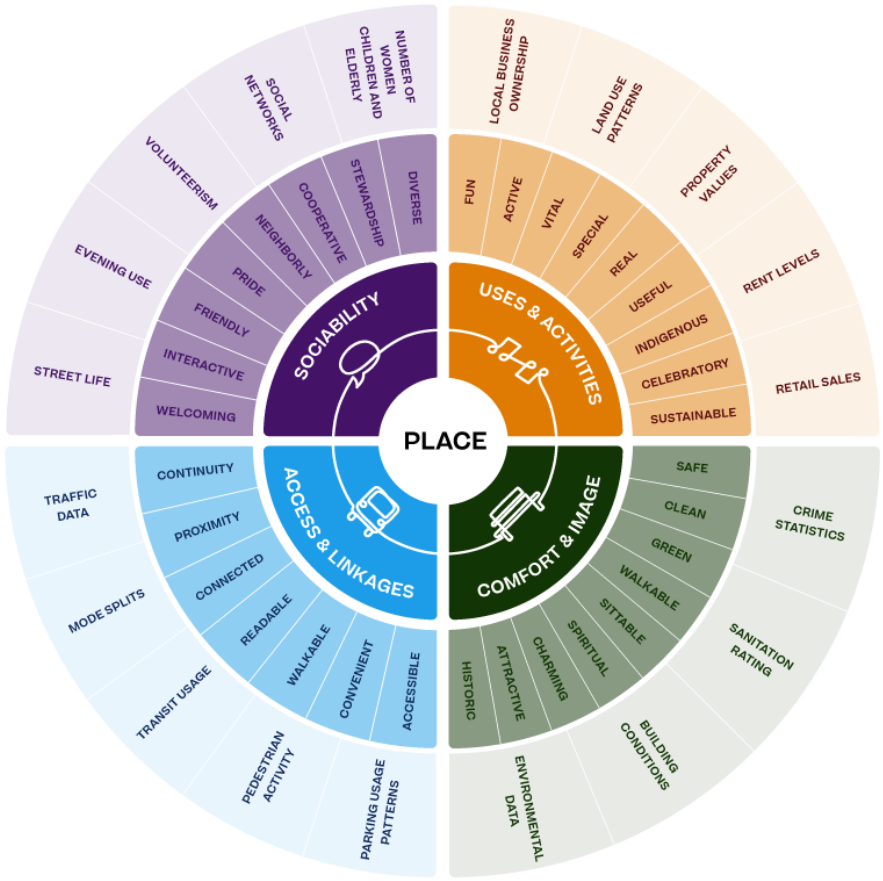

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Figure 3-5: pps for a good urban spaces. Source, URL:https://www.pps.org/

Building on these models, a comprehensive framework integrates their key elements to enhance urban space quality. It prioritizes high-quality design, social interaction, comfort, and safety, aligning with social sustainability goals. To establisha criteria for evaluating the quality of urban public spaces as shown in figure 3-6.

Model	Accessibility & Linkages	Comfort & Image	Activities & Engagement	Sociability & Community
Jan Gehl Model	• Prioritizes pedestrian and cyclist movement.	• Safety • Comfort.	• Diverse activities	• Lively public spaces
Mehta Model	• Accessibility.	• Comfort • Environmental quality • Psychological comfort	• Meaningful activities.	• Social sustainability • User participation.
Ewing & Clemente Model	• Urban connectivity • Spatial legibility.	• Enclosure • Human scale.	• Complexity design to foster activities.	• Sense of place • Interaction.
Smith et a Model l.	• Accessibility to enhance user needs.	• Physical and environmental comfort.	• - aligns activities with community.	• Improve community • Integration.
PPS Model	• Ease of access • Integration with surroundings.	• Safety & security • Cleanliness • Aesthetics.	• Diverse activities.	• Sense of belonging • Social interactions.

Urban space evaluation

Inclusiveness | Comfort | Uses & activities | sociability

Protection | Pleasurability

Figure 3-6: Comparing models for evaluating the quality of open urban spaces.

3.2 Analytical Methodology

This section discusses the proposed methodology for the analytical part as follows:

➢ 3.2.1 Objective

This study aims to develop a new model for evaluating urban spaces in residential areas, enhancing their effectiveness and overall city image. By analyzing selected urban spaces and collaborating with individuals from diverse cultural backgrounds, the study establishes an optimal model to improve urban space quality.

➢ 3.2.2 Case Studies:

To establish the proposed model, the researcher utilized the evaluation framework outlined in Tables 2-3 and 6-2, based on the theoretical study. The framework examines the relationship between external urban spaces in residential areas and residents' social interactions, as well as the extent to which these spaces fulfill social sustainability principles. Urban spaces were evaluated using a numerical rating scale from one to five. The three selected spaces for evaluation were as follows:

1. Residential areas in North Central Brno – Czech Republic.
2. La Cité des 1000 Logts – Algeria.
3. Madinaty – New Cairo, Egypt.

3.2.2.1 Reasons for Selecting the Case Studies:

The researcher selected the three diverse urban spaces for the following reasons:

- Focus on urban spaces within residential communities to align with the research objectives.

- Presence of social life in the selected spaces.
- Suitability of the size and location of the spaces for usage.
- Selection of urban spaces that address the criteria outlined in the proposed evaluation model.

➢ 3.2.3 Measureing Tool

Urban space design criteria are effective tools for enhancing the life quality in urban spaces in residential open areas. These criteria enable the fulfillment of human needs, as outlined in Table (2-3), and the implementation of social sustainability principles to make spaces sustainable and socially active, as detailed in Table (2-6). The study utilized these two tables to examine their effectiveness in evaluating the previously mentioned urban spaces in residential areas. This evaluation aimed at determineing the suitability of using these tables for assessing other spaces or modifying them when necessary.

The collected data were analyzed, reviewed, and each criterion was recorded on a measurement scale, as illustrated below:

●●●	●●	●
Excellent	**Fair**	**Poor**

The indicator ●●● represents the ability of the square to meet the requirements to a large extent, while the indicator ●● shows that the requirements are met to a moderate extent. On the other hand, the indicator ● reflects the failure to meet the requirements.

➢ 3.2.4 Data and information Sources:

1. Researches, periodicals and scientific thesis.
2. Scientific books.
3. Official websites.
4. Satellite images from google earth

3.3 Analysis of Selected Case Studies

This section analyzes selected case studies to assess urban spaces in residential areas, focusing on their responsiveness to human needs and adherence to social sustainability principles.

➢ 3.3.1 Residential Areas in North Central Brno – Czech Republic

3.3.1.1 Description

Brno, located in the Czech Republic, is a medium-sized city with a population of approximately 400,000, making it the second-largest city in the country. It represents a typical example of a post-industrial and post-socialist city in Central Europe. The studied area is situated in the northern central part of Brno and is characterized by a regular distribution of buildings, featuring an orthogonal urban fabric. The investegated residential area is located in a closed urban block consisting of six-story buildings, as detailed in Figure 3-7. The study evaluated the quality of the urban space and assessed the residents' satisfaction with their public spaces.

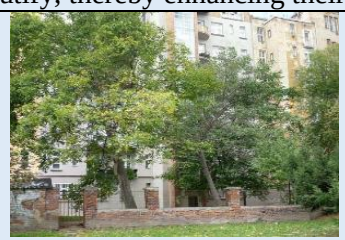
Source: https://maps.app.goo.gl/SvoyGNKJKJ66wk6x9

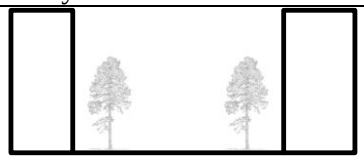
Figure 3-7: Urban space in the residential area of Brno.

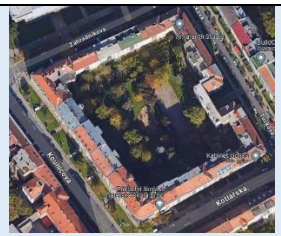
3.3.1.2 Data Analysis

The collected data were analyzed (Jiri. P, Maxmilian. W, Lubos. F 2015, Wittmann. M, Kopáčik. G, Antonin. V, Petrová. K, Marcela and Kilnarová. P 2018, Kilnarová, P & Wittmann, M 2017) and applied to the proposed evaluation scale to assess the quality of the studied residential area. This analysis determined the extent to which the space meets human needs, as presented in Table 3-1. Beside, evaluation of its alignment with the principles and objectives of social sustainability was also presented, as detailed in Table 3-2. This process was conducted to assess the effectiveness of residential area and validate the proposed evaluation model.

Table 3-1: Bruno's analysis of urban space in terms of achieveing human needs

Human Needs	The ability of urban space to satisfy human needs in north of downtown Brno Czech Republic
Comfort	**Location, Accessibility**: The proximity of the space and its direct view of the residential building helped users easily comprehend and perceive it, encouraging them to frequent and utilize it.
	Seating: The availability of comfortable seating encouraged individuals from all age groups, young and old, to spend time in the space and use it.
	Furniture: Providing diverse amenities contributed to offering various options for entertainment and leisure, which has been achieved to the users' satisfaction.
	Subspaces: The space under study lacks sub-spaces that enhance users' sense of privacy and comfort while engaging in their personal activities.
	Human scale: Considering human scale in the proportions of the space and the physical elements used contributed to users feeling comfortable within it.
	Shelter and protection: The presence of vegetation and trees in the space enhanced users' comfort by reducing temperatures during summer months, encouraging year-round use.
	Comfort, Relaxcation The interior design of the urban space contributed to users feeling relaxed and psychologically comfortable. The surrounding buildings helped block external noise from traffic movement.
	Maintenance: Users of the urban space expressed a desire to participate in its maintenance and cleaning, viewing the space as their own home to preserve and beautify, thereby enhancing their comfort within it.
	 Figure 3-8: Plant element to increase the feeling of comfort and relaxation. Source: Kilnarová, P & Wittmann, M 2017.
Protection	**Location**: Users feel protected due to the location of the space, ensuring its use by residents all day.
	Accessibility: The location of the urban space impacts its accessibility, facilitating its use and contributing to a sense of safety and security within it.

	Form of a Space: The enclosed design of the urban space enhances users' sense of containment and protection.
	Shelter and protection: The proportions of the space allow for sufficient shading, while the presence of vegetation and trees provides protection from sunlight and weather conditions, encouraging users to remain in and utilize the space. However, there is a need for surveillance systems to further enhance residents' sense of safety and security.
	 Figure 3-9: Enhancing shade and safety in urban spaces through vegetation and surrounding buildings.
	Lighting: Daylight entering the space helps create a secure environment for users. However, the lack of nighttime lighting reduces their feeling of safety during nighttime hours.
	Safety & Security: The urban space under study is regularly maintained, and its enclosed nature provides users with protection from external threats.
Subsistence	**Location**: The urban space is located within 200 meters of its users, overlooking their residential building.
	Accessibility: The ease of movement between the urban spaces ensures equal access for all individuals to different areas, allowing them to benefit from and use the spaces. This has been achieved in the studied urban space.
	Form of a Space: The studied urban space achieves integration and connection with the surrounding urban areas, promoting self-sufficiency for its users.
	Size of a Space: The shape and dimensions of the urban space (80x95) contribute to making it comfortable and safe for users, as it is an enclosed space that provides a sense of containment and intimacy.
	Seating, **Uses & Activities**: The urban space provides reasonable seating arrangements that facilitate use by individuals and offer variety in the activities conducted within it.
	Subspaces: As the studied space is a single enclosed area, it does not provide subspaces that allow individuals to engage in diverse activities within.

	 Figure 3-10: Closed space that does not help in having various activities. Source: https://maps.app.goo.gl/SvoyGNKJKJ66wk6x9.
Participation	**Form of a Space**: The shape of the space has supported residents in social activities due to their easy perception of the space and the sense of familiarity it fosters.
	Furniture: The good design and the furnishings within the space have facilitated interaction and active participation among users.
	Uses & Activities: The design of the studied urban space and the elements within it adequately address the different needs of individuals, whether for optional or social activities.
	Subspaces: The space lacks subspaces that could be provided through the use of natural elements or level changes, which forces users to use a single space, diminishing their sense of privacy and distinction.
	Maintenance: The space undergoes regular maintenance by the city, and residents express a willingness to participate in the maintenance process, contributing to the creation of a vibrant and cooperative community.
Understanding	**Accessibility**: Due to the proximity of the space and its direct view of the residential building, it became easier for users to understand and perceive the space, which encouraged them to spend time in it and use it..
	Form of a Space: The shape and dimensions of the urban space contributed to users' easy perception of it and their sense of containment within it.
	Furniture: When individuals can understand and freely engage in activities within an urban space, it creates an effective and active environment. The physical elements in the studied space contributed to this engagement.
	Human scale: The environment operates more efficiently when people are able to understand and perceive it, increasing opportunities for interaction and relationship-building with others. The studied urban space helped achieve this, making residents feel like they are living in their second home and facilitating good relationships with neighbors
Identity	**Subspaces:** Subspaces allow diverse individuals to engage in activities, but this was limited due to their absence in the main urban area.

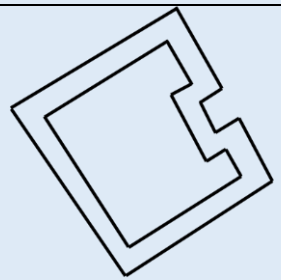
	Furniture: The urban space lacks elements that contribute to defining the local identity of the place.
	Engagement with the Environment: Interacting with both the positive and negative aspects of the environment fosters a sense of connection to the community, strengthening individuals' sense of belonging and identity. The analyzed urban space contributed to a strong feeling of home among users, encouraging close relationships with neighbors and enhancing social capital, trust, and mutual support.
Creation	**Seating**,: The sitting elements within the space facilitate traditional activities but do not fulfill users' need for creativity.
	Furniture: Creating attractive environments using the appropriate elements encourages individuals to actively use the space and interact with one another. This was achieved satisfactorily within the studied urban space.
	Subspaces: Subspaces help individuals feel a sense of privacy, encouraging creativity and innovation, but this was not available in the studied urban space.
	 Figure 3-11: Studied Urban Space Lacks Subspaces, Hindering Privacy and Innovation**.**
Affection	**Subspaces**: The lack of variation in the urban space resulted in a lack of relatively enclosed areas for users, which could have provided a sense of privacy and influence.
	Engagement with the Environment: The well-designed square strengthened residents' connection with the outdoor environment and nature, promoting social interaction and active engagement with the space.
	Uses & Activities The good design of the space encourages social interaction and the execution of numerous social activities, showing the cohesion between residents and between residents and their surrounding environment. This was achieved in the studied urban space.

Table 3-2: Bruno's analysis of urban space in terms of achieving principles of social sustainability

principles	**The ability of urban space to satisfy principles of social sustainability in north of downtown Brno Czech Republic**
Environmental Quality	**Size of a Space**: The dimensions of the urban space and the surrounding buildings allow daylight to enter, creating a safer environment for users.
	Furniture: To achieve high environmental quality, the space must be suitable for accommodating all user activities by providing physical elements that encourage participation and various social activities, thus creating a high-quality social environment. This has been satisfactorily achieved within the space.
	Shelter & protection, **Safety & Security**: To achieve environmental quality, it is essential to provide protection from external factors such as sunlight, wind, and other climatic conditions. This has been achieved, as the enclosed space with its proportions helps protect users.
	 Figure 3-12: The urban space Enclosed Outdoor Space Designed for Human Comfort and Protection. Source: https://maps.app.goo.gl/SvoyGNKJKJ66wk6x9**.**
	Uses & Activities: The environment functions more efficiently when individuals can understand and perceive it, which increases opportunities for interaction and relationship-building. The studied urban space has contributed to this, making residents feel like they are living in their second home and fostering good relationships with neighbors.
	Human scale; It was considered in the proportions of the urban space and its elements, encouraging users to engage in various activities and interact with others. This increased the quality and effectiveness of the outdoor environment.
	Engagement with the Environment: Passive participation (sitting within the space) or active participation (engaging in activities and interacting with others) reflects the success of an urban space. It enhances an individual's sense of contributing to their community. The enclosed design and green areas of the studied space created a high-quality environment, improving the social space for users.
Choice &	**Location**: The location of the urban space directly overlooking the residential space helps meet the needs of different

Diversity	categories of the population due to the ease of access to it.
	Setting, **Furniture**: Diverse elements like seating and greenery support activities for all ages, enhancing recreation and meeting user needs—successfully achieved in the studied space. This has been successfully achieved, with residents effectively utilizing the available reSources to meet their needs.
	Subspaces: The studied space lacks subspaces that contribute to a sense of privacy and comfort for users during individual activities, reducing opportunities for personal engagement in activities.
	Uses & Activities: The activities and practices taking place within the space are sufficiently diverse to achieve an acceptable level of choice and variety for users.
Safety &Security	**Lighting**: To achieve adequate protection, sufficient lighting must be provided within the space to enhance visibility during both day and night, encouraging people to use the space. However, the lack of appropriate lighting has reduced users' sense of safety and security within the studied urban space.
	Maintenance, **Safety & Security**: Regular maintenance of the space helps keep it clean and prevents criminal behavior. Residents have expressed a willingness to participate in maintenance activities and contribute to preserving their urban space as their home, enhancing their sense of safety and security.
	Vegetative element, **Shelter & protection**Enclosure enhances comfort and safety by offering protection and a sense of security, though further elements are needed to maintain user presence.
	 Figure 3-13: Vegetation and Urban Enclosures as Integrated Elements of Environmental Comfort and User Protection**.** . Source: Kilnarová, P & Wittmann, M 2017.
Integration	**Location**: The location played a key role in fostering integration and connection with the surrounding urban areas.
	Accessibility: Easy access to and use of the space facilitated spatial and visual integration.
	Vegetative element, **Furniture**: The urban space meets the needs of a diverse group of users, including children and the elderly, through the provision of green areas and seating, fostering social integration.

	Subspaces: The space supports diverse user needs and encourages interaction, though adding subspaces could further enhance participation.
Social Capital	**Form of a space**: The space's form and proportions promote social interaction, as seen in the studied area where it fosters neighborly connections.
	Setting, **Furniture**: Residents used elements like furniture and greenery to connect and share, supported by the space's clear layout and sense of enclosure.
	Shelter & protection: Social integration occurs when people feel safe in urban spaces that provide security measures. The studied space is well-maintained, and its enclosed design offers users protection from external threats.
	Uses & Activities: Despite the inadequate quality of the physical elements within the studied urban space, the relationships among residents are acceptably strong, and they engage in social activities and mutual participation.
	Engagement with the Environment The space enhanced social capital by fostering belonging, trust, and strong neighborly relationships.
Mixed-Use	**Uses & Activities**: Successful urban spaces equipped with appropriate physical elements encourage individuals to use the space, increasing activities within it. However, this was not sufficiently achieved in the studied space.
	Setting, **Vegetative element**: The studied urban space is well-suited to the population density and the activities conducted within it, maintaining the space's vitality.
Population Density	**Location**, **Accessibility**: Easy access to the space has made it a livable and socially vibrant urban area
	Size of a space: Prioritizing flexibility and adaptability to accommodate various events and gatherings has been acceptably achieved in the studied urban space.
	Comfort: Available amenities improve environmental quality and promote active space use.
Mobility	**Location**: The location of the space makes it convenient for residents to use it for various daily activities.
	Accessibility Ease of movement between urban spaces ensures equitable access for all individuals to benefit from and use different spaces. This has been achieved in the studied urban space.
	Subspaces: The space lacks subspaces, forcing users to use one space, which reduces the presence of multiple options that encourage increased interaction and participation**.**
Accessibility	**Location**, **Accessibility**: The residential building overlooks the urban space, providing physical and visual access, making it easier for residents to use it.
	Form of a space: Since the studied space is enclosed, it facilitates movement and transitions within it and allows users to easily perceive and navigate the space.

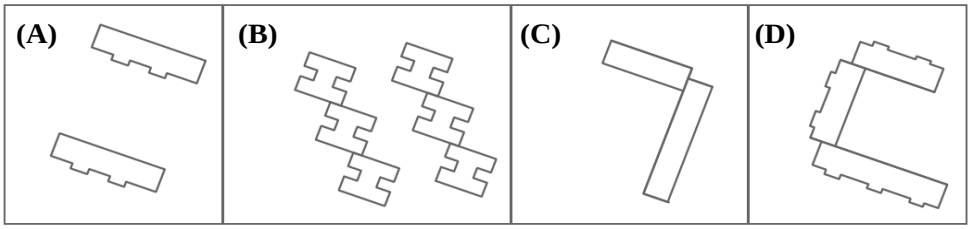
➢ 3.3.2 La Cité des 1000 Logts – Algeria.

3.3.2.1 Description

Like many cities globally, Algerian cities are witnessing continuous population growth driven by rural-to-urban migration. This influx has created a pressing demand for increased housing production. In response, the Algerian government has initiated variousHousing Projects nationwide. One such initiative is the ZHUN housing model, designed to offer modern, adequate, and affordable housing for residents.

The selected residential project is located in the Z.H.U.N area of Biskra, a medium-sized city in southeastern Algeria, approximately 430 km south of Algiers. The "La cité des 1000 logts," shown in Figure 3-14, was chosen as one of the most significant and renowned neighborhoods in the city and one of the key residential projects west of Z.H.U.N. The total area of the site is approximately 24,663 hectares. It consists of 123 buildings, providing a total of 1,000 housing units in a dense urban fabric near downtown Biskra. The area includes various building configurations, featuring rectangular blocks and H-shaped blocks, as shown in Figure 3-15 (Bendjedidi. S. Bada. Y & Meziani. R 2018,Naceur. F 2013).

Figure 3-14: Urban space in the residential area la cité des 1000 logts in Algeria Source:, https://maps.app.goo.gl/xKwPSj5K4TD7qGMD8.



(A) I-shaped blocks arranged linearly (B) H-shaped blocks (C) L-shaped blocks (D) U-shaped blocks

Figure 3-15: Building formations within the study area. .

The investegated residential area have an L-shaped building block on one side, while the other side is delineated by vegetation elements, as illustrated in Figure 3-16.

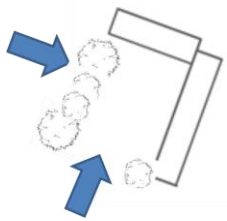
Figure 3-16: The urban space under study Source: https://maps.app.goo.gl/xKwPSj5K4TD7qGMD8.

3.3.2.2 Data Analysis

The collected data was analyzed (Bendjedidi. S. Bada. Y & Meziani. R 2018, Naceur. F 2013) and applied to the proposed evaluation scale to assess the quality of the studied residential area. This analysis aimed at determineing the extent to which the space meets human needs, as presented in Table 3-3, and to evaluate its compliance with the principles and objectives of social sustainability, as shown in Table 3-4. This process was conducted to assess the effectiveness of the space and validate the proposed evaluation model.

Table 3-3: Bruno's analysis of urban space in terms of achieveing Human needs

Human needs	The ability of urban space to satisfy human needs in la cité des 1000 logts In Algeria
Comfort	**Location**, **Accessibility**: The proximity of the space and its direct view of the residential building helped users easily understand and perceive it, encouraging their presence and use of the space.
	Seating: A well-designed space that users can perceive and comprehend, along with clear boundaries, fosters a sense of comfort and usability, provided suitable physical elements are available. However, the studied urban space lacked this, causing discomfort among users during their presence.
	Furniture: Appropriate and comfortable furniture elements encourage individuals to stay in the space. The absence of such elements in the studied urban space negatively affected users' sense of comfort while present.
	Comfort, **Relaxcation**: The lack of diverse and well-organized amenities in the space led to users feeling uncomfortable, thereby hindering their participation in social activities satisfactorily.
	Subspaces, **Human scale**: Due to the lack of proper planning and furnishings, the large spaces between the blocks in the studied urban space appeared overly expansive and open, leading to a loss of the human scale and users' sense of comfort.
	Shelter & protection: The design of the studied urban space is unsuitable for the region's hot and dry climate. The space is overly open and insufficiently shaded, failing to provide the desired level of comfort for users.
	Maintenance: Maintaining the cleanliness of the urban space is essential to ensure its continued use and preserve its aesthetic appeal. Users of the studied urban space did not feel comfortable, leading to neglect. Most children's play activities turned into destructive behavior, further degrading the space.
	Comfort, **Relaxcation**: The furniture in the studied space did not contribute to user comfort. It primarily consisted of paved outdoor areas with limited green spaces that inadequately supported users' comfort.
	 Figure 3- 17: Residents do not feel comfortable due to the lack of cleanliness. Source: Naceur. F 2013

Protection	**Location**: Users feel protected due to the space's location facing their residential building, giving them reassurance about their loved ones' safety while they play in the space. **Maintenance**: Vandalism by children becomes a Source of problems and conflicts. The lack of regular maintenance in the space has worsened its overall condition, further reducing residents' sense of safety and security within it.
	Accessibility: The accessibility of the urban space enhances its usability and contributes to users' sense of security and safety.
	Form of a space: The shape and boundaries of the urban space help users feel contained and protected. In the studied space, this sense of containment is achieved through an L-shaped block on one side and vegetation defining the other side.
	 Figure 3-18 : Built form and greenery define the space, enhancing users' sense of enclosure and comfort.
	Shelter & protection: The primary goal of a successful urban space is to ensure user comfort. The studied space lacks elements that enhance users' sense of comfort and security.
	Lighting: Priority must be given to safety by ensuring adequate lighting within the space. The absence of proper lighting in the studied space reduced users' sense of safety and security.
	Safety & Security: The openness of the studied urban space to external areas and the presence of individuals from outside the neighborhood diminished users' sense of security.
	Maintenance: Vandalism by children becomes a Source of problems and conflicts. The lack of regular maintenance in the space has worsened its overall condition, further reducing residents' sense of safety and security within it.
Subsistence	**Location**: The project consists of diverse formations of blocks arranged to overlook open urban spaces directly adjacent to residential buildings, ensuring a distance not exceeding 200 meters.
	Accessibility: The arrangement of the blocks, as illustrated, creates urban spaces that directly overlook the residential blocks. Among the urban space models within the study area (Figure 3-14), the focus is on urban space (C), which facilitates easy access to its designated urban space.

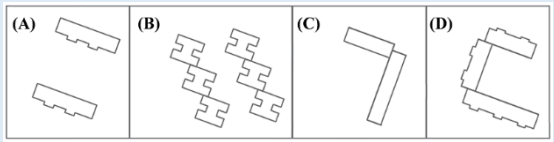
<table>
<tr><td rowspan="6"></td><td> 

Figure 3-19: Models of urban spaces within the study area.</td></tr>
<tr><td>Form of a space: The spatial organization of the residential blocks is based on openness to the adjacent urban spaces, enabling both physical and visual access to these spaces.</td></tr>
<tr><td>Seating, Furniture: The lack of physical elements such as seating and vegetation, with the space consisting mainly of paved areas and minimal green spaces, has resulted in limited options for users to engage in diverse activities.</td></tr>
<tr><td>Subspaces: The absence of sub-urban spaces has led to the inability of the space to adapt to different users' needs and a lack of the required sense of privacy.</td></tr>
<tr><td>Uses & Activities: The lack of planned furniture, gathering areas, and the ability to perform activities suitable for older age groups has resulted in the space being predominantly used by children, creating an urban space that does not meet the needs of all its users.</td></tr>
<tr><td> 
Figure 3-20: The space is not prepared to accommodate the residents' needs. Source: (Naceur. F 2013)

Figure 3-21: The physical components of the space are not conducive to activities. Source: (Naceur. F 2013)</td></tr>
<tr><td>Participation</td><td>Form of a space: The urban space under study is characterized by the ability to perceive its boundaries, encouraging individuals to use it for social interaction with others, provided that the necessary physical elements are available, which the studied space lacks.</td></tr>
<tr><td></td><td>Seating: The absence of appropriately arranged seating reduces the practice of stationary activities within the space,</td></tr>
</table>

	forcing older adults to bring their own chairs, old rugs, or cardboard boxes to sit on.
	Furniture: Providing diverse amenities and selecting physical elements that cater to users' needs enhance the variety of activities in the space and offer diverse options for entertainment and recreation, which has not been sufficiently achieved in this space.
	Subspaces, Uses & Activities: The design of the space does not take into account the users' needs and requirements, depriving them of the ability to choose and engage in a variety of activities.
Understanding	**Accessibility**: The ease of access to and use of the space (dynamic activities) contributes to achieving spatial and visual integration to a relatively acceptable degree.
	Form of a space: The shape and dimensions of the urban space, along with the presence of vegetation, contribute to the relative containment of the studied space, aiding in its perception and understanding.
	Furniture: The space's design and physical elements primarily facilitate movement rather than recreation, limiting opportunities for free and comfortable engagement in activities.
	Human scale: Human Scale: Clear spatial perception and direct visibility from residential buildings encourage residents to use and navigate the space, enhancing engagement.  Figure 1-22: The parameters of the space relatively helped the population feel contained and protected. Source: https://maps.app.goo.gl/xKwPSj5K4TD7qGMD8
Identity	**Subspaces**: Poor urban space design negatively impacts an individual's sense of belonging to the community and reduces their connection to their identity. The low-quality design of the studied space has not succeeded in providing an outdoor living environment that fosters a sense of belonging among residents.
	Furniture: Successful urban spaces contribute to fostering a sense of community belonging. The studied space lacks the furniture and physical components that help establish the local identity of the place.
Creation	**Furniture**: Creating attractive environments with appropriate elements encourages active usage of the space and

	stimulates interaction among individuals, which has not been achieved satisfactorily in the studied space.
	Subspaces: Subspaces enhance individuals' sense of privacy, which in turn fosters creativity and innovation, but such subspaces are absent in the studied urban space.
	Uses & Activities: The existing elements in the space primarily support dynamic activities, while stationary activities are minimal, leaving users' creative needs unfulfilled.
Affection	**Subspaces**: Poor design quality, coupled with the absence of subspaces, has weakened users' sense of privacy and agency.
	Engagement with the Environment: The poor design of the studied urban space, along with its lack of connection to nature and the surrounding environment, discourages users from social interaction and active participation in the environment.
	Uses & Activities: The space lacks the features necessary to encourage social interaction and attract people to spend time outdoors and participate in community activities.

Table 3-4: Algeria's analysis of urban space in terms of achieveing principles of social sustainability .

principles	**The ability of urban space to satisfy principles of social sustainability in la cité des 1000 logts In Algeria**
Environmental Quality	**Shelter & protection**: To achieve environmental quality, it is essential to provide protection from external factors such as sunlight, wind, and other climatic conditions. The studied urban space is highly exposed and inadequately covered.
	Safety & Security: Safety must be prioritized by ensuring adequate lighting within the space. The lack of proper lighting has resulted in an unhealthy and uncomfortable environment for users.
	Comfort, **Relaxcation**: The interior design of the urban space should create a visually appealing and welcoming atmosphere that fosters a sense of relaxation and psychological comfort for users. However, this has not been achieved in the studied urban space.

	 Figure 3-23: Lack of Visual Comfort and Relaxation in the Studied Urban Space. Source: (Naceur. F 2013)
	Human-scale: Considering human-scale proportions within the space and its physical elements strengthens the user's connection to the environment and encourages positive interaction. The lack of proper planning and furniture in the studied space has caused the large areas between buildings to feel excessively vast and open, resulting in a loss of human-scale perception and comfort.
	Uses & Activities: To achieve the desired quality of the designed space, it must offer opportunities for everyone to engage in their activities effortlessly. However, the space lacks the necessary features and elements to support this, leaving users uncomfortable during their time there.
Choice & Diversity	**Setting**: The absence of properly arranged seating reduces the potential for stationary activities within the space. As a result, elderly individuals often resort to bringing their own chairs, old rugs, or cardboard for seating.
	Furniture: The absence of essential physical elements, such as seating and vegetation, has resulted in a paved area with minimal greenery, providing few options for users to engage in various activities.
	Subspaces: The lack of subdivided areas within the studied space limits the ability of individuals to perform different activities easily.
	Uses & Activities: The existing elements in the space mainly support dynamic activities, while stationary activities occur infrequently. This lack of diversity in activities limits the overall usability of the space.
Safety &Security	**Location**: The location of the space significantly influences users' perception of safety and security. The studied space is open and lacks secure supervision, leading to increased risks of intrusion and incidents of theft and assault, which diminish residents' sense of safety. While the proximity of the space to residential areas could enhance security, this advantage was not fully realized.
	Shelter & protection: To foster a sense of safety and security within urban spaces, proper security measures must be implemented. However, the studied space failed to achieve this, as incidents of theft and assaults frequently occur,

	often involving perpetrators from outside the neighborhood, reducing residents' sense of safety and security.
	Safety & Security: Ensuring users feel safe in the space requires protection from external factors and weather conditions, either through the urban space design itself or through the inclusion of appropriate physical elements. This was not achieved in the studied space.
	Maintenance: Vandalism by children contributes to conflicts and deteriorates the overall condition of the space, and the lack of regular maintenance exacerbates this, further reducing residents' sense of security.
Integration	**Furniture**: The decline in social cohesion among residents and between residents and their environment stems from neglecting proper urban space design. The studied space lacked the features necessary to encourage social interaction and attract people to spend time outdoors and participate in community activities.
	Subspaces: Weak design and the lack of furnishings within the space have led to its primary use as a transit area rather than a recreational space, thereby reducing opportunities for active interaction and social participation among users.
	Landscaping: Providing green spaces in urban environments and incorporating a balance of hard and soft landscaping elements enhances social bonds among residents and improves their environmental and psychological well-being. This was inadequately achieved in the studied space, limiting opportunities for interaction and engagement.
	Uses & Activities: The design of the space and its elements has resulted in most users utilizing it for transit, followed by a smaller proportion of children engaging in play activities, and only a very limited number of users participate in sports or relaxation activities within the space.
Social Capital	**Form of a space**: Poor urban space design negatively impacts individuals' sense of community belonging and diminishes their connection to their identity. The low-quality design of the studied space failed to provide an outdoor living environment that fosters social interaction among residents.
	Setting: The studied urban space lacks suitable furniture, and the absence of properly arranged seating forces elderly users to bring their own chairs, old rugs, or cardboard to sit on. This situation reduces the occurrence of collective activities within the space.
	Furniture: Equipping urban spaces with appropriate physical elements enhances individuals' sense of community belonging, encouraging social interaction, relationship-building, and the exchange of experiences. The studied space did not adequately facilitate this.
	Shelter & protection: Social integration occurs when individuals feel safe and protected within a well-maintained urban space with adequate security measures. However, the studied space lacks maintenance and is subject to vandalism by children, undermining users' sense of security. Despite this, interactions among residential block

	occupants occur, as they often visit each other and use the space during weekends, leading to a slight increase in social interaction.
Mixed-Use	**Setting**, **Vegetative element**: Neglecting physical elements that provide comfort to users has led to limited options for entertainment and recreation, reducing users' presence in the space for stationary social activities.
	Uses & Activities: Prioritizing flexibility and adaptability to accommodate various events and gatherings is crucial, and this was achieved to an acceptable extent in the studied urban space.
Population Density	**Location**, **Accessibility**: Appropriate density is a key factor in creating a livable urban space that thrives with social vitality. Accessibility should be ensured to fulfill the intended purpose of the space. The studied urban space meets these requirements, allowing users to access and utilize it easily.
	Size of a space: The size of the urban space must correspond to the population size and the activities conducted within it, while maintaining comfort for users. The studied space is proportionate to the resident density and activities, supporting user comfort.
Mobility	**Location**, **Accessibility**: Ease of access to urban spaces enables individuals to navigate and use them freely, encouraging interaction with neighbors, especially when physical elements are provided to support a variety of social activities, thereby enhancing relationships among residents.
Accessibility	**Location**: The project consists of a variety of block formations arranged in an organized manner, overlooking open urban spaces. These spaces are directly visible from the surrounding residential buildings, maintaining a distance of no more than 200 meters.
	Accessibility: The location of the urban space plays a crucial role in encouraging individuals to visit and engage in various activities. In the studied case, the urban space directly overlooks its associated residential buildings, enhancing its accessibility and usability for residents.
	Subspaces: Sub-spaces within urban areas provide opportunities for individuals from diverse backgrounds to meet and engage in various social activities that suit their needs. This, however, was not achieved satisfactorily in the studied space due to the lack of subdivided areas within the main urban space.

➢ 3.3.3 Madinaty – New Cairo, Egypt

3.3.3.1 Brief Description

Madinaty is one of Cairo's premier developments, designed to create an integrated community that meets both present and future resident needs. It aims to reduce population density in residential open areas and attract residents away from Cairo's congested zones. Covering 6.33 million square meters (8,000 acres), the project has been developed in phases since 2006. Located along the Cairo-Suez Road at kilometer 33, Madinaty is part of Egypt's new cities initiative, addressing the growing preference for self-sufficient communities with comprehensive services that fulfill all human needs.

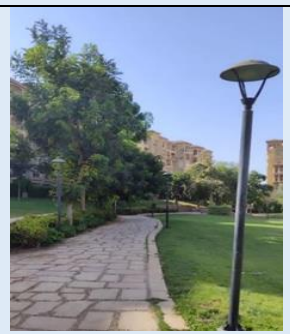
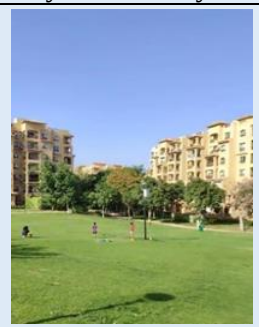
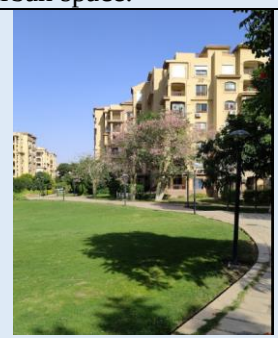
The analyzed residential area is an open space enclosed by seven-story residential buildings, as shown in Figure 3-24. The study assessed the urban space's quality and examined residents' satisfaction with their living environment (Ghonimi, I & Awaad, A 2018; Sherine F 2023; Rasha, A & Dalia, A 2023).

Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA

Figure 3-24: Urban space in the residential area in Madinaty

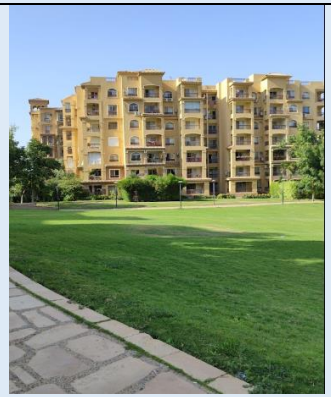
The collected data was analyzed using the proposed evaluation scale to assess the space's quality, alignment with human needs Table 3-5, and social sustainability principles Table 3-6, validating the proposed model. (Ghonimi, I & Awaad, A 2018; Sherine F 2023; Rasha, A & Dalia, A 2023)

Table 3-5: Madinaty's analysis of urban space in terms of achieveing human needs

Human Needs	The ability of urban space to satisfy human needs in Madinaty
Comfort	**Location, Accessibility:** The urban space is located within close proximity to its users, at a distance of no more than 200 meters, as it directly overlooks their residential buildings. This proximity enhances users' comfort in utilizing the space.
	Furniture, Shelter & protection: The provision of physical and qualitative comfort features has increased individuals' desire to spend time in outdoor urban spaces and engage in various activities.
	Comfort: The urban space design provides protection from weather conditions, contributing to users' comfort and encouraging them to perform daily activities within the space.
	Relaxcation: The shape and dimensions of the urban spaces visible from residential buildings make them comfortable and safe for use, providing a sense of enclosure and intimacy.
	Human scale: Considering human-scale proportions in the dimensions of the space and the physical elements used within it contributes to users' comfort. This has been successfully achieved in the studied urban space.
	MaintenanceThe studied space, being part of a gated community, benefits from regular maintenance of its components and the availability of trash bins, thereby maintaining cleanliness and enhancing users' comfort.
	Safety & Security: The walkable, safe design encourages movement, reduces car use, and enhances users' well-being and sense of security.This has contributed to users' sense of safety and security within the studied urban space.
	 Figure 3-25: Diversity in floor finishes  Figure 3-26: Relying on the green cover for seating  Figure 3-27: Overlooking buildings enhanced space accessibility. Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA

<table>
<tr><td rowspan="8">Protection</td><td>Form of a Square: The city was designed to promote pedestrian movement and reduce car usage, contributing to reduced pollution and improved air quality. The distribution of spaces within the study area offers protection from external and climatic factors, enhancing users' sense of safety and promoting their physical and mental well-being.</td></tr>
<tr><td>Safety & Security: People naturally gravitate towards clustering to create more cohesive environments. In this case, buildings were arranged parallel to the urban space, fostering a sense of protection and enabling continuous use throughout the day.
The selected city is designed as a garden city, enclosed by boundaries and equipped with high levels of safety and security measures, which are reflected in the urban space under study.</td></tr>
<tr><td>Location, Accessibility: The location of the urban space offers a high degree of protection for its users by separating vehicular traffic from pedestrian movement.</td></tr>
<tr><td>Shelter and protection: Attention to the design of buildings overlooking the urban space is evident, along with physical elements such as vegetation and trees. These features provide shade, protect from weather conditions, and create a safe environment that encourages users to spend time in the space.</td></tr>
<tr><td>Lighting: Lighting units are adequately distributed throughout the studied urban space, ensuring usability throughout the day and night while enhancing users' sense of safety and security.</td></tr>
<tr><td>Maintenance: Regular monitoring and maintenance of the space ensure cleanliness and protection from external encoachments, providing a safe environment and encouraging continued use by the community</td></tr>
<tr><td> 
Figure 3-28: Regular garbage collection patrols.
Source: Rasha, A and Dalia, A 2023.
 
Figuer 3-29: Use lighting units for safety at night
Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA</td></tr>
<tr><td>Subsistence</td><td>Location, Accessibility: The distribution of urban spaces within the study area achieves integration and connectivity among them. They are adequately provided to a satisfactory extent, meeting the needs of the users.</td></tr>
</table>

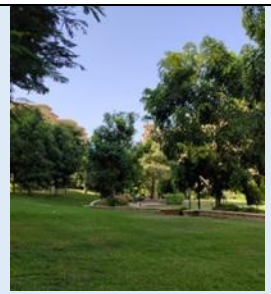
	Seating: The urban space caters to the needs of a diverse group of users, including children and the elderly. It is thoughtfully designed and equipped with physical elements such as greenery, appropriate paving, and lighting units, making it suitable for various activities and fostering social integration. **Uses & Activities**: The distribution of urban spaces in the study area has facilitated a variety of activities while maintaining the required level of privacy for users.
	Subspaces: The city as a whole is designed to include urban spaces for each residential cluster, which is reflected in the studied space. There are both subspaces and a central gathering area, allowing for diverse activities according to users' preferences**.**
	 Figure 3-30: The space is balanced and protected by the clustering of residential buildings around it. . Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA
Participation	**Form of a Square:** The studied urban space contributes to fostering social engagement, being suitable for outings and hosting various events. Its comprehensible layout enhances users' sense of familiarity and connection.
	Furniture: Providing well-designed urban spaces equipped with suitable furnishing elements enhances interaction and social engagement, encouraging active participation among users. This is achieved to an acceptable extent in the studied urban space.
	Uses & Activities: The design of the studied urban space and its elements adequately considers the diverse needs of individuals, including optional and social activities. Most users of the space are children and the elderly.
	Subspaces: The urban spaces within the study area are available to an extent that promotes interaction and social participation, allowing users to perform daily activities while maintaining a sense of privacy and distinction.
	Maintenance: Continuous maintenance of the space ensures its sustained usability for various activities. The studied space is

	equipped with components that support cleanliness, such as garbage bins, and undergoes regular maintenance due to its location within a gated community. This helps create a vibrant community that encourages participation in daily social interactions.
Understanding	**Accessibility**: The visual accessibility of the studied urban space has enhanced the clarity of its urban areas and access points, simplifying its use and contributing to spatial and visual integration.
	Form of a Square: The orientation of buildings towards the external space and the ease of access have facilitated its consistent use and perception.
	Furniture, **Human scale**: Good design and the availability of physical elements that support understanding and comprehension of the urban space and respects the human scale enable individuals to perform activities with ease. The studied urban space has successfully provided such features.
	 Figure 3-31:The residential building overlooks the urban space direction  Figure 3-32: The distribution of urban spaces makes it easy for users to understand them Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA
Identity	**Location**: The design of madinty adopts a European style, aiming to make it distinctive. However, the urban spaces within the city, including the study area, do not adequately reflect the local identity of the country, as the primary design goal was to highlight the city's uniqueness.
	Furniture, **Vegetative element**: Achieving good urban space design while incorporating locally Sourced elements fosters a sense of belonging among users and reinforces local identity. The studied urban space utilizes local and site-fabricated materials, such as natural stones for pathways, greenery, and solar-powered lighting units, which encourage communication and the

	exchange of experiences among users.
	Subspaces: Suburban spaces contribute to a sense of belonging by providing users with a degree of privacy to engage in their social activities. This has been achieved to an acceptable extent in the studied urban space.
	Egagement with the Environment: Engagement with the environment, whether positive or negative, enhances individuals' sense of being part of their community, strengthening their identity and belonging. The design elements of the urban space contribute to this. However, despite its vibrant design, the studied space is part of a city built in a European style to showcase its uniqueness, which has diminished the users' sense of local identity.
Creation	**Seating**, **Furniture**: The studied urban space is characterized by its good design and inclusion of elements that encourage active use and interaction among users. This fosters creativity and innovation among them.
	Subspaces: Proper distribution of urban spaces, whether primary or secondary, combined with good design, promotes creativity and innovation due to the sense of privacy it provides. The studied urban space exhibits qualities that support this.
	Human scale: Good urban space design that respect human scale transforms poorly performing spaces into vibrant places. The physical elements within the studied space have contributed to this transformation, achieving a satisfactory experience for users.
Affection	**Uses & Activities**: The well-designed plaza enhances residents' connection with the external environment and nature, encouraging users to interact with others and actively engage with their surroundings when desired.
	Engagement with the Environment: Good design and physical elements within the space provide an environment conducive to passive participation (simply sitting in the space) or active engagement (performing activities and interacting with others). This demonstrates the success of any urban space. As a result, the studied area has created a high-quality environment and an improved social space for its users.

Table 3-6: Madinaty's analysis of urban space in terms of achieving principles of social sustainability

principles	The ability of urban space to satisfy principles of social sustainability in Madinaty
Environmental Quality	**Furniture**: The design of the urban space under study considers human scale through its spatial dimensions and physical elements, encouraging users to engage in daily activities and fostering a sense of familiarity, which enhances the quality and effectiveness of the environment. This has been successfully achieved. Most users, including children who find it ideal for their activities, and the elderly who enjoy its relaxing and tranquil nature, benefit from the space.
	Shelter & protection: To achieve environmental quality, it is essential to provide protection from external factors such as sunlight, wind, and other climatic conditions. This has been achieved through the distribution of urban spaces in Madinaty, which has helped reduce air pollution, improve air quality, and mitigate the effects of urban heat islands. Consequently, this has created a better environment and improved public health for users.

	 Figuer 3-33: Exploiting trees for protection from weather factors. Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA.
	Human-scale: Considering the human scale in the proportions of the space and the physical elements used within it contributes to a sense of comfort for users, enhancing their connection with their environment and encouraging positive interaction with it. This has been achieved in the urban space under study.
	Comfort, **Relaxcation**: The urban space under study has provided comfort for users, strengthening their connection with the surrounding environment and enabling them to form relationships and interact with others.
	 Figure 3-34 :Comfort and Social Interaction in a Well-Designed Urban Environment in madinaty. Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA.
	Uses & Activities: The urban space under study has been equipped with components that encourage residents to engage in individual and group activities, contributing to the creation of a socially high-quality environment.
Choice & Diversity	**Setting**: The limited availability of fixed seating within the space and reliance on green cover has made the area highly suitable for children to play and engage in various activities. It provides opportunities for physical activity, strolling, and enjoying the surrounding nature..
	Subspaces, **Uses & Activities**: : Madinaty is characterized by providing urban spaces suitable for outings and hosting various

	types of events**.** The urban space under study contributes to this by being easily perceivable, which enhances users' sense of familiarity within it.
	Furniture; The well-designed urban space, along with its physical elements, provides diverse options for users of all ages to engage in their preferred activities. This has been achieved acceptably in the urban space under study. Providing an adequate number of primary and secondary urban spaces contributes to users feeling comfortable while engaging in their desired activities. This has been achieved in the urban space under study**.**
Safety &Security	**Location**: The distribution of primary and secondary urban spaces within the study area has enhanced users' sense of safety, security, and comfort, as it is directly adjacent to their residential spaces.
	Shelter & protection: The distribution of spaces within the study area has provided protection from external and climatic factors, thus promoting a sense of safety and ensuring the physical and health well-being of users.
	Lighting: Lighting units are adequately distributed within the urban space under study, ensuring that individuals can remain in the area throughout the day, thereby enhancing their sense of safety and security within the urban space.
	 Figure 3-35: Appropriate distribution of lighting enhances safety and encourages longer user presence.Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA
	Safety & Security: Well-designed urban spaces with proper security measures enhance the sense of place while reducing crime and fear. The urban space studied is located within a gated community, featuring continuous security elements and surveillance, which protect users from external threats and increase their sense of safety and security.
Integration	**Location**: The distribution of urban spaces within the study area has achieved integration and interconnectivity between them, with satisfactory availability levels.
	Accessibility: The visual accessibility of the urban space under study has enhanced the clarity of urban spaces and their access points, making them easier to use and thus achieving spatial and visual integration.

	Furniture, **Vegetative element**: Uses & Activities: The urban space meets the needs of a diverse group of users, including children and the elderly. It is designed appropriately and equipped with physical elements such as vegetation, suitable paving, and lighting units, making it suitable for various activities and achieving social integration.
	Subspaces: Providing well-designed urban spaces with appropriate furnishing elements enhances interaction and social participation, encouraging active engagement among users. This has been achieved acceptably in the urban space under study.
	 Figuer 3-36: Dividing the main space into sub-spaces using landscaping. Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA
Social Capital	**Form of a square**: The shape, proportions, and distribution of the space encourage individuals to spend time there and use it for various activities, making the space vibrant and socially active. This was relatively achieved in the urban space under study.
	Setting: The biggest reliance on seating integrated into the edges of pedestrian pathways and green cover within the space makes it predominantly used by children for activities like playing football and by the elderly for leisurely walks.
	Shelter & protection: The urban space under study is located within a gated city, providing users with a sense of safety and protection. Regular surveillance and maintenance protect users from external threats, encouraging social integration and interaction among them.
Mixed-Use	**Setting**, **Vegetative element**: During the design process of urban spaces, furnishing elements should be carefully selected to reflect the needs of individuals and the activities carried out within the space, ensuring their comfort. This has been achieved satisfactorily in the space under study, allowing for a variety of activities and practices.
	Uses & Activities: The urban space under study is distinguished by its ability to accommodate various types of events while ensuring comfort for users during their activities.
Population	**Location**, **Accessibility**: Appropriate density is a crucial factor in creating a livable urban space that is socially vibrant.

Density	Accessibility must also be ensured to fulfill the intended purpose of the design. This has been achieved in the urban space under study, making it easily accessible and usable for its intended users.
	Size of a space: The size of the urban space should be determined based on the population and the activities conducted within it, while ensuring comfort for users. The urban space under study is well-suited to the population density and the activities it supports. It features secondary spaces as well as a central gathering space, contributing to user comfort.
Mobility	**Location, Accessibility**: Easy movement between urban spaces ensures equitable access for all individuals to utilize and benefit from different spaces. This has been achieved in the urban space under study, where areas are designed to create greener, walkable communities, encouraging people to use and occupy the urban spaces.
	Subspaces: The city as a whole is designed to include urban spaces for every residential cluster, and this applies to the urban space under study. It includes secondary spaces and a central gathering space, promoting diverse activities and facilitating smooth transitions between all spaces, ensuring equitable access for all individuals.
	 Figure 3-37: Walkable design and subspace variety support inclusive access and diverse use.. Source: https://maps.app.goo.gl/21kFVKuD2w99WffCA
Accessibility	**Location**: The location of the space significantly impacts its accessibility. In the space under study, the separation of vehicular and pedestrian traffic has improved access to the spaces and enhanced the sense of safety and security within them.
	Accessibility: The overlooking of buildings onto the external space and the ease of access to it have enhanced its visibility and encouraged continuous use.

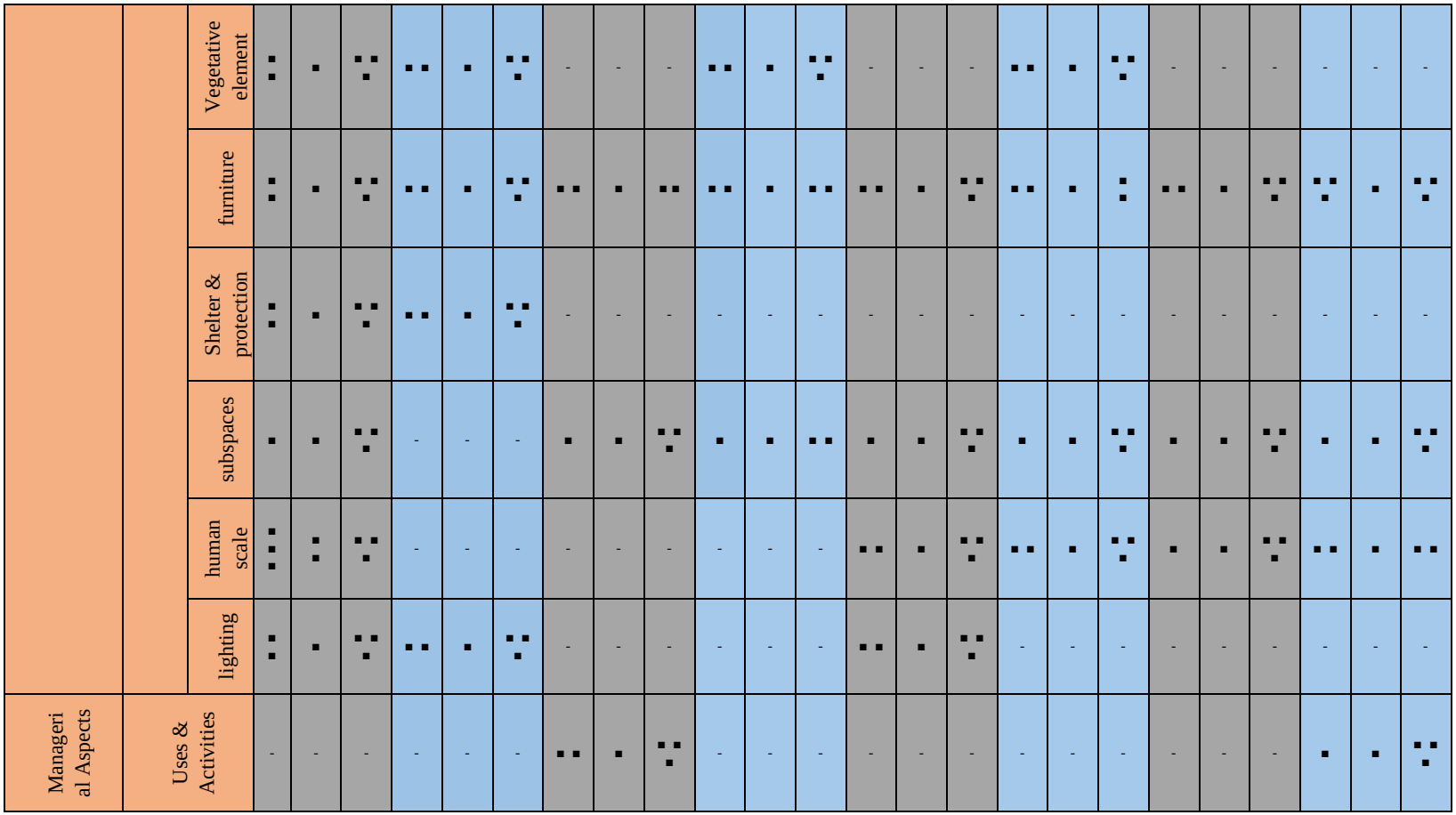
3.4 Results from Case Studies

Users perceive the same urban space in residential area differently based on their culture, education level, and individual needs. Efforts must be made to bridge these perspectives in an attempt to reduce the distance between residents and increase their interaction with their environment and each other. It can be argued that the urban space is not just a place designed to suit individual activities; but it is a space where individuals feel safe to engage in both planned and unplanned interactions with others. Futher, it is the space that encourages individuals to accept the presence of others around them, interact with them, and share common needs and interests. This, in turn, fosters increaseing interaction with their external environment and with one another

After studying the three areas and assessing how they meet human needs and consider the principles of social sustainability, the three residential areas can be summarized as follows in Table 3-7, which illustrates the role of residential open area design criteria in meeting basic human needs within the three studied residential open area. Table 3-8 shows the extent to which the principles of social sustainability are achieved within these spaces through urban space design criteria in the three areas.

Table 3-7: The three urban spaces in terms of meeting human needs within the space.

Design Criteria / Human Needs			Comfort			Protection			Subsistence			Participation			Understanding			Identity			Creation			Affection		
			brono	Algeria	Madinaty	Brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty
Geographical Aspects	Location		⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	-	-	-	⁘	⁘	⁘	-	-	-	-	-	-
	Accessibility		⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	-	-	-	-	-	-	-	-	-
Physical Aspects	Form of a Square		-	-	-	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	-	-	-	-	-	-	-	-	-
	Size of a Square		-	-	-	-	-	-	⁘	⁘	⁘	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Behavioral and psychological setting		⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	-	-	-	-	-	-	⁘	⁘	⁘	-	-	-


Managerial Aspects
Uses & Activities
lighting
human scale
subspaces
Shelter & protection
furniture
Vegetative element

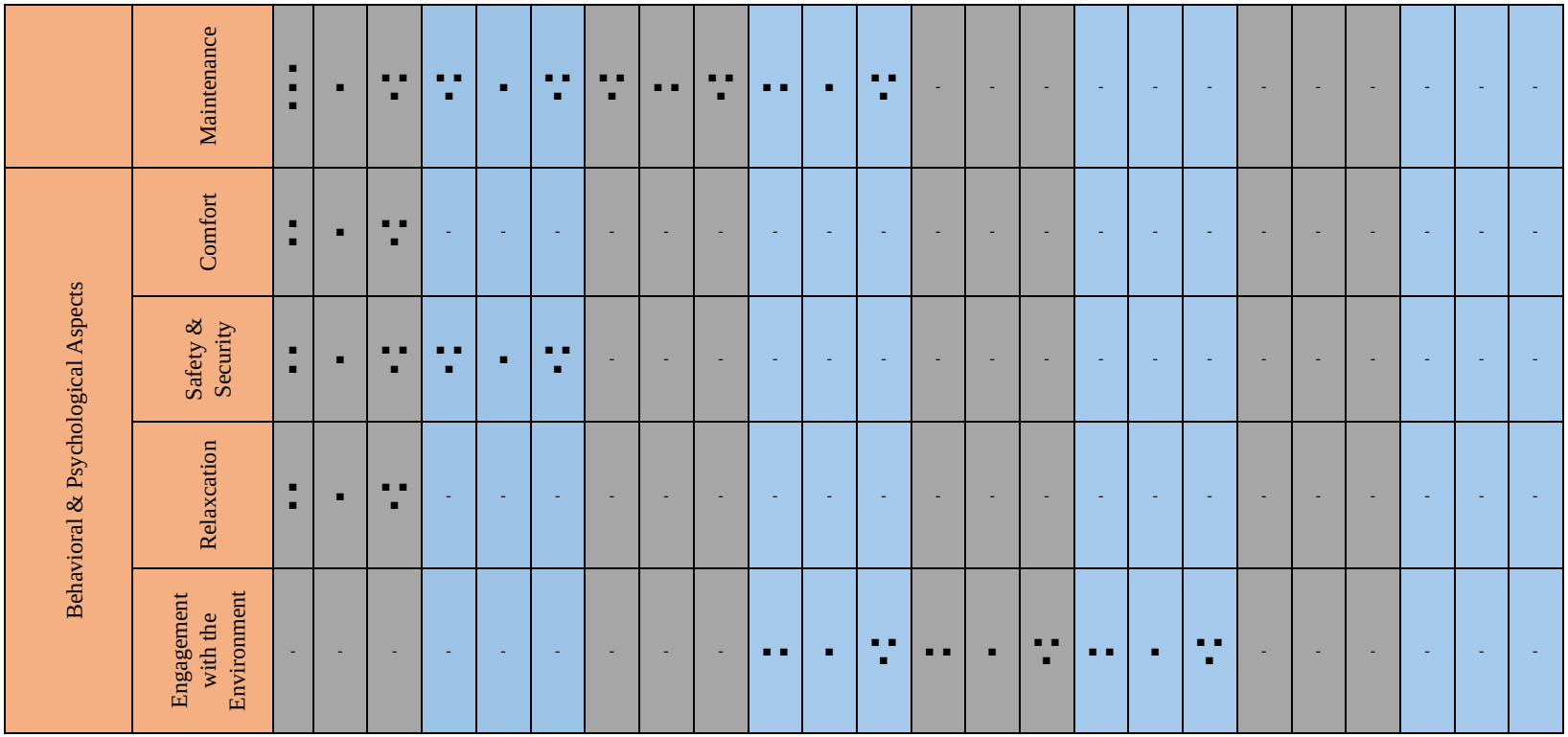
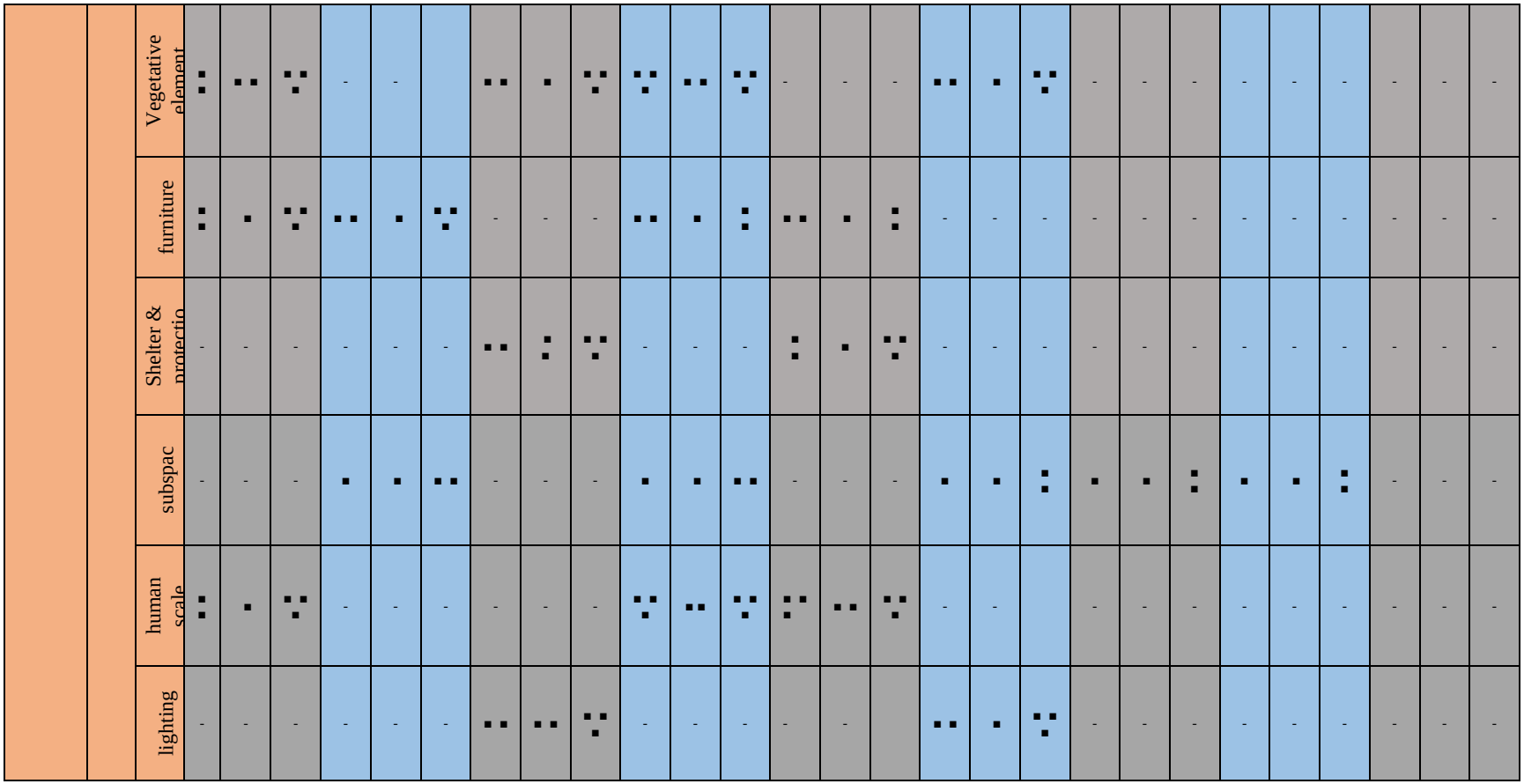
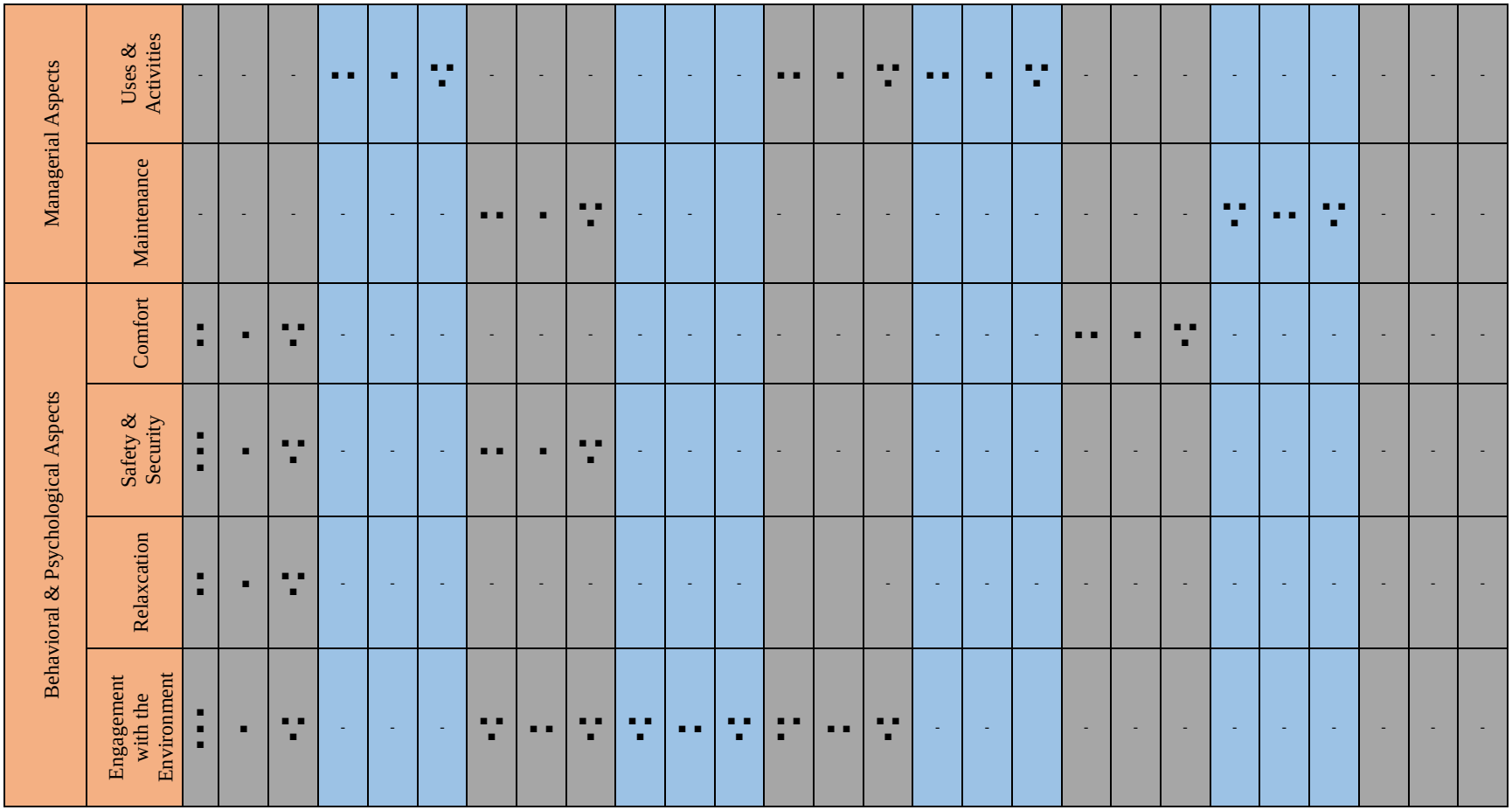

Behavioral & Psychological Aspects
Maintenance
Comfort
Safety & Security
Relaxcation
Engagement with the Environment

Table 3-8: The three urban spaces and their compliance with the principles of social sustainability.

Design Criteria / Social sustinability		Environmental Quality			Choice & Diversity			Safety & Security			Integration			Social Capital			Mixed-Use			Population Density			Mobility			Accessibility		
		brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty	brono	Algeria	Madinaty
Geographical Aspects	Location	-	-	-	∴	∴	∴	∴	∴	∴	∴	∴	∴	-	-	-	-	-	-	∴	∴	∴	∴	∴	∴	∴	∴	∴
	Accessibility	-	-	-	-	-		-	-	-	∴	∴	∴	-	-	-	-	-	-	∴	∴	∴	∴	-	∴	∴	.	∴
Physical Aspects	Form of a Square	-	-	-	∴	∴	∴	-	-	-	-	-	-	∴	:	∴	-	-	-	-	-	-	-	-	-	∴	∴	∴
	Size of a Square	⁝	∴	∴	-	-		-	-	-	-	-	-	-	-	-	-	-	-	∴	.	∴	-	-	-	-	-	-
	al and psycholo setting	-	-	-	∴	:	∴	-	-	-	-	-	-	∴	.	∴	∴	.	∴	-	-	-	-	-	-	-	-	-


Vegetative element
furniture
Shelter & protectio
subspac
human scale
lighting


Behavioral & Psychological Aspects
Engagement with the Environment
Relaxcation
Safety & Security
Comfort
Managerial Aspects
Maintenance
Uses & Activities

Urban spaces in residential areas form an interactive environment that meets a range of basic human needs, contributing to improving the quality of life and enhancing social interaction. The design of these spaces is based on a set of criteria that align with basic human needs, and the principles of social sustainability. By integrating these criteria into the design process, spaces can be created in a way that make individuals feel safe. Beside enricheing a sense of belonging, supported interaction and participation, and providing psychologically comfortable environment. This consideration aligns with the principles of social sustainability.

The urban space in **the northern part of downtown Brno, Czech Republic**, has created a vibrant and socially active environment. Strong social relationships have developed among the residents both within the space. They exchange social visits and participate in events, which has strengthened their social bonds. This is reflected in the urban space, as the residents contribute both materially and morally to its maintenance and development. As a result, the urban space in residential area has become a valuable and safe place for effective social practices among the residents

The urban space in **la cité des 1000 logts in Algeria** reinforces the earlier conclusion. Despite the absence of adequate physical elements that fulfill the residents' needs and contribute to making the space visually and functionally successful. The social relationships and interactions among the residents are highly evident and well-established. Therefore, attention to the cultural and social aspects of the residents plays a crucial role in the success of the urban space, in addition to the availability of elements that provide comfort and safety during its use. The effectiveness of the urban space can be increased by focusing on its development and improvement. This can be achieved equipping it with physical elements that enhance its overall appearance, such as various furniture elements (vegetation elements, furniture, lighting units, and appropriate paving).

. The urban space in **Madinaty, New Cairo,** includes physical elements that provide a unique sense of place, creating a positive and sustainable environment. It has contributed to improving the mental health and physical well-being of its residents. The well-designed space and its easy accessibility have attracted residents to use it. However, social relationships among the residents and the bonds between them are not as strong as in the previous urban spaces, which highlights the need for the space to contribute to strengthening relationships among residents to increase the vibrancy and effectiveness of the space. This can be achieved by designing and distributing furniture elements in a way that encourages residents to talk and interact with one another. Efforts should be made to create events and activities that encourage individuals to gather and engage with each other. Children can be used to bridge distances between families by promoting competitions and providing spaces where these activities can take place.

3.5 Proposed Evaluation Model

The analysis of the three previous case studies of urban spaces in residential areas revealed that achieving comprehensive quality in these spaces requires a thorough understanding of the dynamic interaction between three essential factors: design criteria for urban spaces (DS), human needs (HN), and the principles of social sustainability (SSD). This highlights the need to establish a triangular relationship that integrates these factors cohesively, representing a unified analytical framework. This framework serves as an effective tool to guide design and evaluation processes, ensuring the creation of balanced environments that seamlessly integrate functional, social, and cultural dimensions. Moreover, it has been confirmed that neglecting any of these elements results in spaces that fail to fully achieve their intended social or functional objectives. For instance, a visually appealing design might be implemented, yet it may fail in addressing users' fundamental needs or fostering

social connections, and vice versa. This underscores the importance of adopting a methodology that integrates these three factors to effectively evaluate the quality of urban spaces in residential open areas, as illustrated in Figure 3-38.

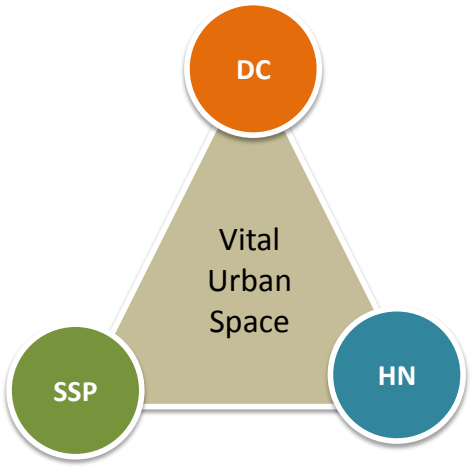


Figure 3-38: The interrelationship between urban design, human needs, and social sustainability in achieving a vital urban space. .

Thus, linking these three factors is a crucial step to ensure that urban spaces in residential areas can enhance life quality. For example, design criteria enable the creation of practical solutions that meet human needs, while the principles of social sustainability ensure that these solutions are long-lasting and capable of supporting social interaction and community integration. This approach demonstrates how urban spaces in residential areas can be more than just physical areas, evolving into dynamic platforms that support life quality and foster social interaction. Through this integration, design criteria ensure the provision of safe and versatile environments. Thus current and future human needs were fullfilled, while maintaining a commitment to achieving long-term social sustainability that fosters cohesive and thriving communities. Table 3-9 illustrates the role of design criteria for urban spaces in residential areas in achieving both human needs within these spaces and meeting the principles of social sustainability. Through this table, it is evident that common design criteria

can be identified to address various human needs while considering the principles of social sustainability during the fulfillment of these needs.

For example, human needs for protection can be met by ensuring the clarity of the urban space's location, ease of access, and usability, along with the planning and design of the space that considers the needs of various population groups. Additionally, elements such as natural lighting, shading, seating, and green spaces play a significant role in creating an environment that makes individuals feel comfortable and at ease. At the same time, these elements support the principle of social sustainability by enhancing environmental quality (e.g., reducing heat through plants), ensuring safety and security (e.g., good lighting), managing population density (e.g., easy access to the space with an appropriate size for the number of users), and providing mobility options (e.g., ensuring the space is usable by everyone in a way that suits their needs, enhancing their sense of comfort).

Another example that clarify when users' needs for protection are met, principles of social sustainability are achieved. For example, Environmental Quality can be achieved by providing weather protection elements, a healthy environment is created for users. This implicitly supports environmental sustainability. Regarding safety & security, designs that enable monitoring of the space with sufficient lighting and surveillance cameras also satisfy it. Further, Social Capital can be achieved when individuals feel protected within the space. There engagement in social activitiesis enlarged leading to enhancement in their social relationships and mutual trust. The feeling of protection can be enhanced through designing a space with ease in accessibility. This include people with disabilities and the elderly people. The relationship between the three elements can be illustrated through Table 3-10.

Table 3-9 Urban Space Design Standards: Balancing Human Needs and Social Sustainability. .

Affection	Creation	Identity	Understanding	Participation	Subsistence	Protection	Comfort	HN	SSP / DC	Environmental Quality	Choice & Diversity	Safety & Security	Integration	Social Capital	Mixed-Use	Population Density	Mobility	Accessibility
-	-	✓	-	✓	✓	✓	✓	Geographical Aspects	Location	-	✓	✓	✓	-	-	✓	✓	✓
-	-	-	✓	✓	✓	✓	✓		Accessibility	-	-	-	✓	-	-	✓	✓	✓
-	-	-	✓	✓	✓	✓	-	Physical Aspects	Form of a space	-	✓	-	-	✓	-	-	-	✓
-	-	-	-	-	✓	-	-		Size of a space	✓	-	-	-	-	-	✓	-	-
-	✓	-	-	✓	✓	✓	✓		[setting]	-	✓	-	-	✓	✓	-	-	-
-	-	✓	-	✓	-	✓	✓		[Vegetative element]	✓	-	✓	✓	-	✓	-	-	-
✓	✓	✓	✓	✓	✓	✓	✓		[furniture]	✓	✓		✓	✓	-	-	-	-
-	-	-	-	-	-	✓	✓		[Shelter and protection]	-	-	✓	-	✓	-	-	-	-
✓	✓	✓	✓	✓	✓	-	✓		[subspaces]	-	✓		✓		✓	✓	✓	
✓	✓	✓	✓	-	-	-	✓		[human scale]	✓ -	-	-	✓	✓	-	-	-	-
-	-	-	✓	-	-	✓	✓		[lighting]	✓	-	✓	-	-	✓	-	-	-
✓	-	-	-	-	✓	-	-	Managerial Aspects	Uses & Activities	-	✓	-	-	✓	✓	-	-	-
-	-	-	-	✓	✓	✓	✓		Maintenance	-	-	✓	-	-	-	-	✓	-
-	-	-	-	-	-	-	✓	Behavioral & Psychological Aspects	Comfort	✓	-	-	-	-	-	✓	-	-
-	-	-	-	-	-	✓	✓		Safety & Security	✓	-	✓	-	-	-	-	-	-
-	-	-	-	-	-	-	✓		Relaxcation	✓	-		-	-	-	-	-	-
-	-	✓	✓	✓	-	-	-		Engagement with the Environment	✓	-	✓	✓	✓	-	-	-	-

Table 3-10: Proposed evaluation model. .

Sustainability Principles / Human Needs	Environmental Quality	Choice and Diversity	Safety & Security	Integration	Social Capital	Mixed -Use	Population Density	Mobility	Accessibility
Comfort	Physical Aspects: (Behavioral and psychological apects[human scale]) Behavioral and Psychological Aspects :(Comfort - Relaxtion) Managerial Aspects: (Uses and Activities - Maintenance)	Physical Aspects: Behavioral and psychological apects[furnature - subspaces])	Geographical Aspects: (Location) Physical Aspects: (Behavioral and psychological apects[furnature-subspaces -Shelter and prtection])	–	Physical Aspects: (Behavioral and psychological apects[furnature])	Physical Aspects: (Behavioral and psychological apects[furnature]) Managerial Aspects: (Uses and Activities)	Geographical Aspects: (Accessibility) Physical Aspects: (Size of a Square)	Physical Aspects: (Form of a Square-Behavioral and psychological apects[sitting-Shelter and prtetion])	Geographical Aspects: (Accessibility)
Protection	Physical Aspects: (Behavioral and psychological apects[Shelter and protection-lighting]) Behavioral and Psychological Aspects: (Safty and Secyrity).	–	Physical Aspects: (Behavioral and psychological apects[Shelter and protection-lighting]) Psychological Aspects :(Safty). Managerial Aspects: (Maintenance)	–	Physical Aspects: (Behavioral and psychological apects[lighting]) Psychological Aspects:(Safty and Secyrity).	–	–	Physical Aspects: (Behavioral and psychological apects [Shelter and protection)	Geographical Aspects: (Location-Accessibility) Physical Aspects: (Form-Behavioral and psychological apects[Shelter] Behavioral & Psychological Aspects:Safety
Subsistence	`	Physical Aspects: (Behavioral and psychological apects [furnature - subspaces]). Managerial Aspects: (Uses and Activities)	–	Geographical Aspects: (Location) Physical Aspects: Behavioral and psychological apects[furnature])	–	–	–	Geographical Aspects: (Location) Physical Aspects: (Behavioral and psychological apects[sitting-subspaces])	Geographical Aspects: (Location-Accessibility) Physical Aspects: (Form)
Participation	Physical Aspects: (Behavioral and psychological apects[furnature-	Physical Aspects: (Form - Behavioral and psychological	–	Physical Apects: (Behavioral and psychological apects[Vegetative	Physical Aspects: (Form of a Square-Behavioral and psychological	Physical Aspects: (Behavioral and psychological apects[furnature])	–	–	–

	human scale])	apects[sitting-furnature-subspaces]) Managerial Aspects: (Uses and Activities)		element Behavioral and Psychological Apects: (Engagement with the Environment) Managerial Apects :Activities	apects[sitting])	Managerial Aspects: Maintenance			
Understanding	Physical Apects: (Behavioral and psychological apects[furnature]) Psychological Aspects: (Engagement with the Environment).	–	–	Geographical Aspects: (Accessibility) Physical Aspects: (Form)	–	–	–	Physical Aspects: Behavioral and psychological apects[furnature]	Geographical Aspects: (Location)
Identity	–	–	–	–	Physical Aspects: (Behavioral and psychological apects[furnature) Behavioral and Psychological Apects: (Engagement with the Environment)	Physical Aspects: (Behavioral and psychological apects[furnature])	–	–	–
Creation	–	Physical Aspects: (Behavioral and psychological apects[furnature]) Behavioral and Psychological Apects : (-Relaxcation)	–	–	–	Physical Aspects: (Behavioral and psychological apects[furnature-subspaces])	–	–	–
Affection	Psychological Aspects : (Engagement with the Environment)	–	–	Behavioral and Psychological Aspects : (Engagement with the Environment).	–	–	–	Physical Aspects: Behavioral and psychologcal apects[subspace Behavioral and Psychological Aspects : (Comfort-Engagement with the Environment).	–

Conclusion

This chapter has covered several previous studies related to the evaluation of urban spaces in residential open areas.These studies were presented analytically to understand how to make effective urban spaces in residential open areas. It has been shown that to achieve the desired quality of urban spaces in residential open areas and ensure they fulfill their intended purpose, three key aspects must be considered. These factors can be summarized as follows:

1. **Physical Components** that are represented by the elements that creat the space, such as its shape, size, and proportions, which influence users' sense of comfort within it.
2. **Non-Physical Components** including the location of the space, its accessibility, its ability to engage in various activities, and the sense of comfort and integration with the environment.
3. **Social Compatibility** refers to the relationship between the residents, their neighborhood ties, and friendships, as well as how they behave and interact within urban spaces in residential open areas. The case studies have shown that a level of social adaptation between residents is essential for the success of urban spaces in residential open areas.

These factors are essential for meeting human needs while taking into account the principles of social sustainability, as they serve as the link between them. Therefore, the proposed evaluation model has been modified to transform the urban space in residential open areas into a vital, socially active, and sustainable space. Thus, the proposed evaluation model can be used to assess the quality of different urban spaces and verify how well they meet human needs and achieve social sustainability principles. In order to design urban spaces in residential open areas that promote Inclusiveness, Pleasurability, Protection, Comfort, Uses & Activities, and Sociability. Consequently, the proposed

evaluation model has been adjusted to align with the findings from the analysis of the three case studies, as shown in Figuer 3-39.

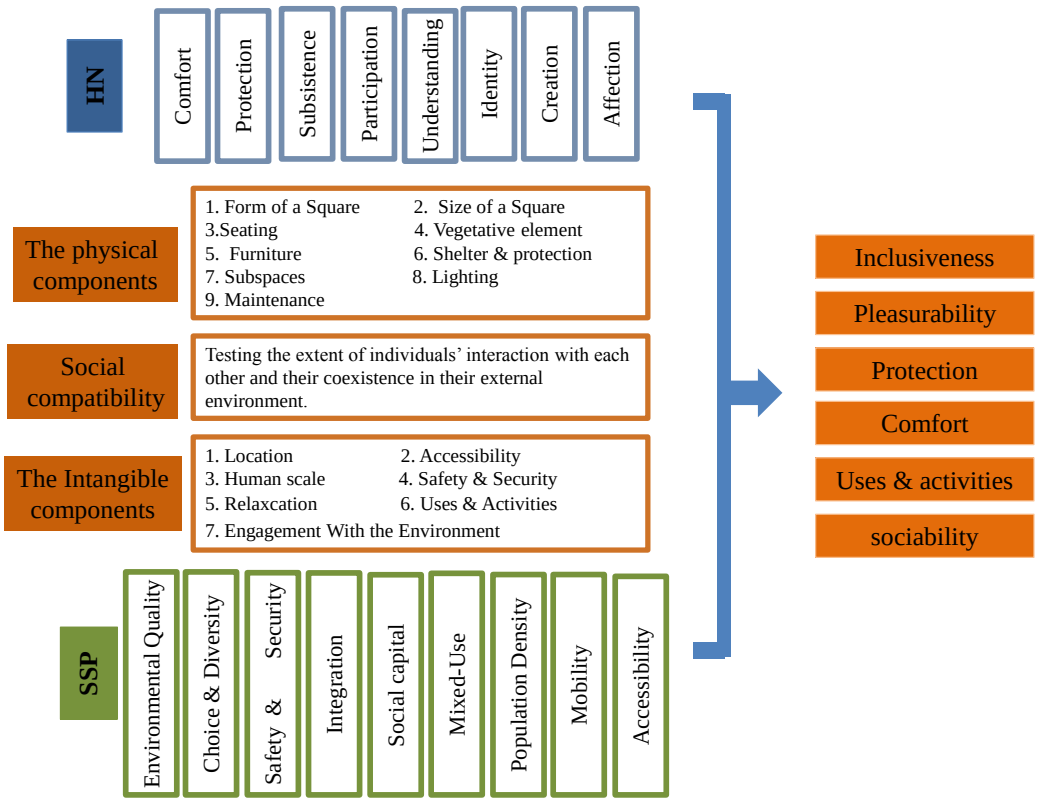


Figure 3-39: Criteria for evaluating urban spaces in residential areas.

CHAPTER 4

THE EMPIRICAL STUDY IN EGYPT

Introduction

The main purpose of this chapter is to clarify the applied aspect of the research, which is based on evaluating certain urban spaces within residential areas in Egypt. This process was carried out through the proposed model derived from the theoretical and analytical studies in the previous chapters. The applied aspect involves studying the reciprocal relationship between urban spaces and residents' activities. Besides evaluating how well these spaces meet their needs and behavior. Futher assessing their alignment with social sustainability principles. The evaluation results can determine whether the urban spaces require develoment to enhance their performance and efficiency. This study is a crucial step in achieving the research objective of identifying design criteria that make urban spaces vibrant and socially active. The methodology of the applied section was presented by showcasing case studies, the reasons for their selection, and the final results reached. This chapter includes the following section:

- Purpose of the applied study.
- Case studies and selection reasons.
- Methods of obtaining and analyzing data.
- The applied case studies’ analysis.
- Using the proposed model to evaluate the quality of the three urban spaces.

- Proposed Solutions for Enhancing the Efficiency and Functionality of Urban Spaces.

4.1 The aim of the empirical study

Maintaining the quality of urban spaces is essential for improving urban life quality. Good design of these spaces meets the various needs of users, contributing to community building by enhancing social interaction and creating a cohesive social network. A field research approach was adopted as one of the most important research methods, especially in social, behavioral, and psychological studies, which focus on understanding human needs and what should be provided to meet those needs. The aim of this empirical can be summrised as following.

- Connecting the theoretical study with the practical field, with the applied study acting as a reinforcement of the previous theoretical analysis.
- Evaluating certain urban spaces within residential areas in Egypt to understand how well they meet individuals' needs, utilizing the proposed evaluation model.
- Assessing the quality of the selected urban spaces and determine if they need development or improvements.

4.2 The empirical case studies in Egypt

The empirical study involves selecting several urban spaces in residential areas and evaluating them based on the proposed model. Besids exploring the reciprocal relationship between urban spaces, user behavior and activities within these spaces. The selected areas are then compared to derive the key findings from this empirical study. The samples are of three urban spaces in the following areas:

1. Swiss Housing Project in Nasr City
2. Urban Spaces in Groups 76 and 77 of Rehab City
3. The 7th district in 6th of October city

4.3 Reasons for case studies' selection

The areas were selected based on the following reasons:

- A selection of residential areas with different economic and social levels to achieve diversity and inclusivity in the case studies.
- All case study areas are situated within residential communities, covering a 25-year period, to fulfill the objectives of the research**.**
- The selected areas have been established for a sufficient period of time to ensure the coexistence and interaction between residents and their specific urban space, allowing for an assessment of its ability to meet residents' needs.
- The urban spaces are located within the Greater Cairo area, ensuring the same environmental, political, and living conditions to facilitate comparison.
- The diversity of residential areas in terms of ownership and project development institutions, allowing for a comparison of each space's ability to meet users' needs and its interaction with residents.

4.4 Methods of obtaining and analyzing data

4.4.1 Theoretical information

- Research papers, journals, and academic theses
- Scientific books
- Official websites
- Satellite images from Google Earth
- Field visits to case study locations

4.4.2 Questionnaire form

The questionnaire was designed and administered to users of the three urban spaces under study. The interrelationship between urban spaces and individual behavior, as well as their interaction with one another, was explored. The questions focused on four main aspects: geographical, physical, managerial and behavioral/psychological. These questions aim to understand the extent to which urban spaces meet user needs and consider the principles of social sustainability. This is illustrated as follows:

Geographical Aspect:

Relevant Questions: Questions (3), (4) and (6).

Analysis: The questions related to the proximity of the space and its visibility from the place of residence (Questions 3 and 4) reveal the ease of access to the space and its impact on users. Geographical factors affect how the space is used and the level of interaction between users and the space. Question (6), which concerns the clarity of the spatial form, helps in determining how geographical factors influence the user experience.

Physical Aspect:

Relevant Questions: Questions (10), (11), (12), (14), (16) and (15).

Analysis: Questions related to the availability of seating, the quality of physical elements such as lighting, furniture, and plant elements (Questions 10, 11, 12, 14, 15, 16) indicate the impact of the physical design of the space on user comfort, activity, overall experience, and regular maintenance.

Managerial Aspect:

Relevant Questions: Questions (16), (17), (19) and (20)

Analysis: Questions regarding cleanliness and maintenance of the space (Questions 16, 17, 19 and 20) highlight the administrative factors affecting user

satisfaction. Regular maintenance plays a significant role in maintaining the quality of the urban space, enhancing the user experience, and ensuring its long-term sustainability.

Behavioral/Psychological Aspect:

Relevant Questions: Questions (7), (8), (9), (13), (18), (21), and (22).

Analysis: Questions related to the user's sense of belonging (Question 7), psychological comfort (Question 8), and safety (Question 9) assess the psychological and emotional impact of the space. Protection from weather factors (Question 13) are direct indicators of how the design addresses both comfort and sustainability. Question (18), regarding the role of plants in improving mental health, is an important indicator of the psychological influence of the space. Questions concerning interaction and social participation (Questions 21, 22) help evaluate the role of the space in fostering social relationships and community engagement

Therefore, the survey significantly contributes to assessing the impact of urban design on user needs across geographic, physical, administrative, and psychological dimensions. It also helps evaluate the extent to which social sustainability principles are integrated by ensuring a healthy, comfortable, and safe environment that fosters social interaction and psychological well-being. These dimensions encompass the following factors:

Accessibility: Ensures both physical and visual access, allowing all users to reach and benefit from the space.

Design: Influences user comfort and behavior, promoting social interaction and community engagement.

Physical Composition: Incorporates appropriate furnishings and elements to enhance comfort and protect users from environmental factors.

Management: Maintains safety, lighting, and cleanliness, ensuring continuous usability and a positive experience.

Community Participation: Strengthens social bonds, fostering a sense of belonging and encouraging community activities.

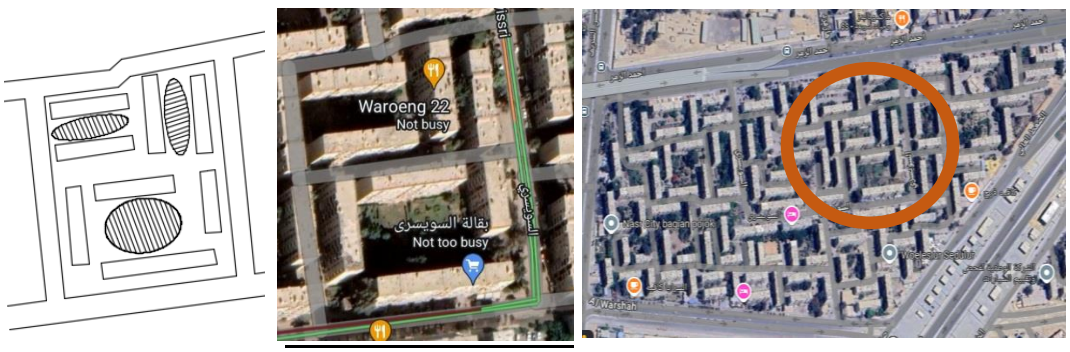
4.5 The applied case studies' analysis

This section presents a detailed analysis of the selected case studies to evaluate the spatial and functional aspects relevant to the research objectives. Each case is examined based on predefined criteria. The insights gained from this analysis contribute to a deeper understanding of the extent to which the spaces meet human needs and reflect the principles of social sustainability.

4.5.1 Swiss Housing Project in Nasr City

4.5.1.1 Brief description

Swiss District is one of the residential areas located in Nasr City, within the boundaries of the Tenth District. It was built in the 1980s with a grant from Switzerland, which is why it was named accordingly. The district's planning is based on a grid layout, with wide streets leading to clear entrances to the buildings. The buildings are characterized by simple façades, with a height of 6 stories. The urban spaces are well-distributed and overlooked by residential buildings, facilitating access and usability. This enhances air quality and reduces the impact of weather conditions, as illustrated in Figure 4-1 (Aly, D., Dimitrijevic, B2022, Merham M, Marwa A 2019).



· Source: https://maps.app.goo.gl/idA99A4oTosRGh4t5.

Figure 4-1: Urban space in the residential area of Swiss Housing Project in Nasr City.

4.5.2 Urban Spaces in Groups 76 and 77 of Rehab City

4.5.2.1 Brief description

Al Rehab City is one of the cities in New Cairo, established in the 1990s in 1997, with the goal of accommodating 200,000 residents. It is located in the northeastern part of New Cairo (at the intersection of the Cairo-Suez Road). It is one of the first cities designed and built by the private sector. The main objective of its development was to create a vibrant, integrated community with a mix of housing types, varying in size and density, resulting in a safe, diverse, and socially active environment. It provides a suitable living environment for residents seeking a comfortable lifestyle, along with all the services they need .

The city offers a comprehensive lifestyle that accommodates various social, recreational, and commercial activities. It consists of 10 neighborhoods, each featuring diverse residential clusters surrounded by open spaces filled with greenery and trees. These areas are interspersed with pedestrian pathways equipped with seating, providing a safe and healthy environment for residents. This setup contributes to enhancing the quality of life, promotes social interaction, and helps foster a cohesive community, as illustrated in Figure 4-2

The urban spaces in Al Rehab City have been distributed in a way that balances population density with residents' need for accessible open spaces. These spaces are a fundamental element of the city’s master plan, designed to provide recreational areas, green spaces, and pedestrian walkways (Sleem, S.; Mandour, A. & Diab, M., 2022; Ibrahim, H., 2016.

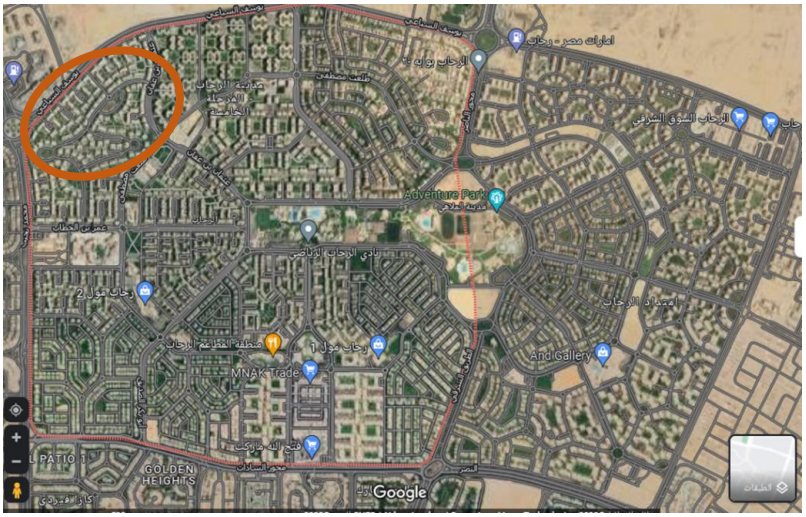


Figure 4-2: Urban Spaces in Groups 76 and 77 of Rehab City. Source: https://maps.app.goo.gl/C8kM3QyZkX7y1xLJA.

The urban spaces under study in Group 76 and Group 77, with access through Gate 17. They are bordered by Yousef El Sebai Street to the north, Saad Zaghloul Street to the south, Othman Bin Affan Street to the east, and Mohamed Farid Street to the west, as illustrated in Figure 4-3.

. Source: https://maps.app.goo.gl/8pjStxcCCoog31Xw9

Figure 4-3: Urban Spaces in Groups 76 and 77 of Rehab City.

4.5.3 The 7th district in 6th of October city

4.5.3.1 Brief description

The Sixth of October City is one of the first-generation new cities, established in 1979. It is located in the southwest of Greater Cairo's desert, approximately 32 kilometers west of Cairo, and is part of Giza Governorate. The city was developed to alleviate pressure on the Nile Delta region and encourage migration to new cities. Subsequent cities such as Tenth of Ramadan, Al-Amriya, and El-Shorouk were established, paving the way for new horizons in Egypt's urban expansion. Sixth of October City comprises 12 residential neighborhoods, varying in character, living standards, and available services (Zeinab A., Abdel Monteleb A., & Omar H., 2022).

The urban space under study is located in the 7th districtof Sixth of October City, as shown in Figure 4-4. This district is distinguished by its organized urban planning, which plays a significant role in enhancing residents' quality of life by providing a comfortable and safe environment. The streets within and surrounding the district are lined with green belts filled with trees and plants, which help reduce pollution and mitigate weather effects. The urban spaces within the district offer relaxation areas and enable individuals to gather and engage in social activities, fostering social interaction among residents.

Source: https://maps.app.goo.gl/iV1dBSLWJ2dd6oe76

Figure 4-4: Urban space in the residential area in the 7th district in 6th of October city.

4.6 Analysis of Survey Results

A user survey was conducted to assess how urban spaces meet daily needs. The analysis will identify strengths and areas for improvement, guiding recommendations to enhance user experience, support social sustainability, and elevate the city's overall image.

A total of 105 users from the three urban spaces participated in the survey, representing both genders and various age groups. Table 4-1 below illustrates the distribution of the users who completed the survey.

Table 4-1: Distribution of respondents according to gender.

Age group	Gender	Number of participants	
15-20	Male	55%	30
	Female	45%	
20-40	Male	59%	29
	Female	41%	
40-60	Male	58%	30
	Female	42%	
+60	Male	58%	16
	Female	42%	

The survey results are presented as follows:

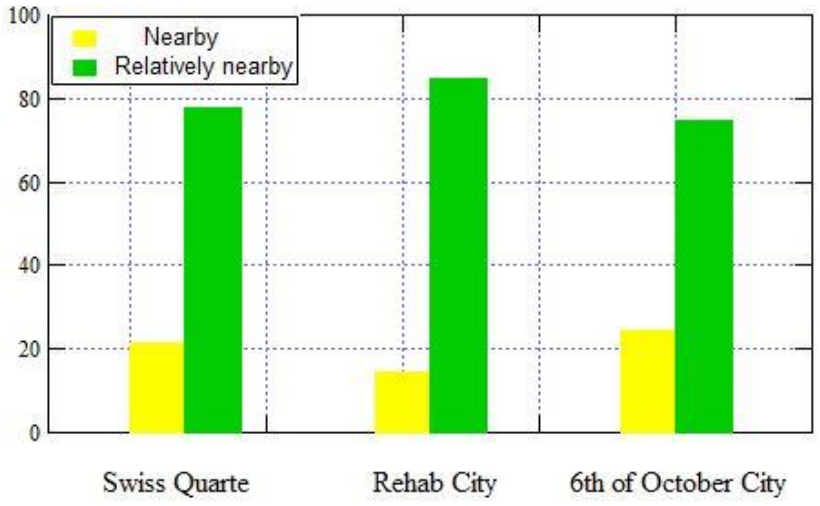


Figure 4-5: **3.** Demonstrates the proximity of urban spaces to users'.**(Geographical Aspect)**

The chart in Figure 4-5 illustrates the proximity of urban spaces to their users, which enhances ease of access and encourages individuals to utilize these spaces.

The majority of urban space users confirmed the proximity of these spaces to their residences. Accordingly, the urban spaces in the three areas are appropriately distributed to ensure ease of access on foot, serving all users effectively

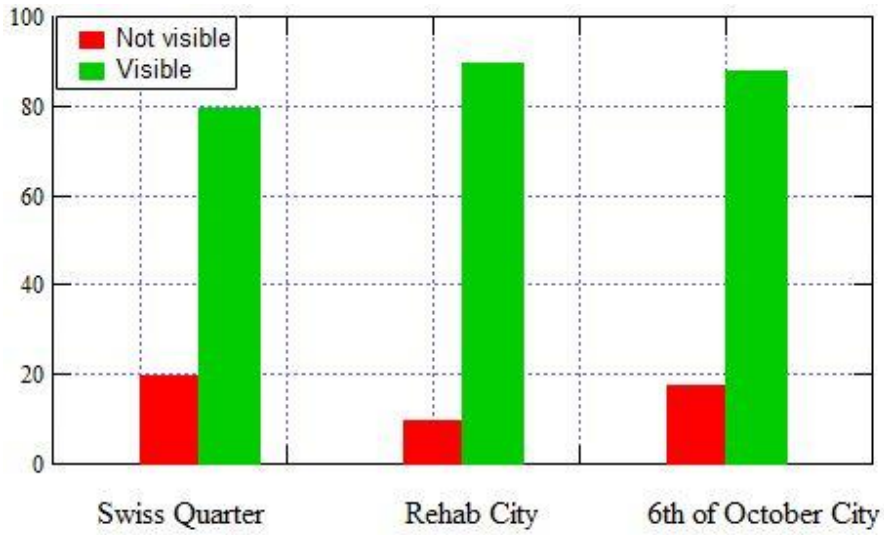


Figure 4-6: **4.** Depicts users' ability to view their designated urban space.**(Geographical Aspect)**

The chart in Figure 4-6 shows that the majority of users can see their designated urban space from their residences. Al-Rehab neighborhood surpasses the other areas in this aspect due to its well-planned urban design, which ensures the presence of urban spaces and green areas visible from all residential units. This facilitates their accessibility and use by the residents as shown in Figure 4-7

Figure 4-7: Convenience of viewing and accessing the urban space in Groups 76 and 77 of Rehab City. Source: https://maps.app.goo.gl/8pjStxcCCoog31Xw9.

A small percentage of residents find it difficult to view the urban space, with the highest percentage observed in Swiss Housing Project. This is attributed to the distribution of urban spaces being concentrated on only one side of the residential buildings as shown in Figure 4-8.

Figure 4-8: Urban spaces on one side of the residential buildings in Swiss Housing Project.Source: https://maps.app.goo.gl/idA99A4oTosRGh4t5.

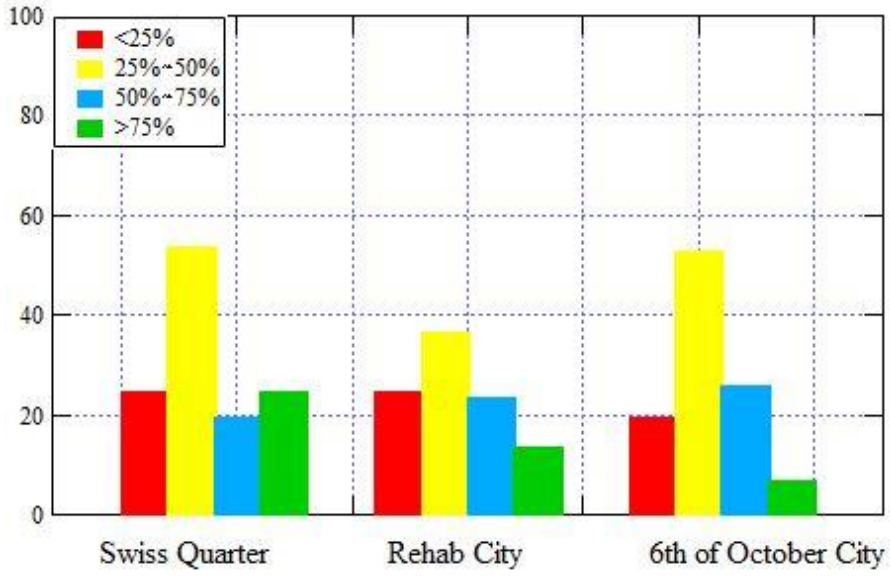


Figure 4-9: **5.** The percentage of time spent by residents in using the space weekly**. (Physical Aspect)**

The chart in Figure 4-9 shows variation across each area. A large proportion of residents in Swiss Housing Project, around 50%, spend time in their dedicated urban space. Therefore, it is crucial to focus on the physical elements within the space and provide more activities that can be engaged in, to encourage residents to remain within it and foster social interaction among them.

The lifestyle of the residents in Al-Rehab city leads them to not spend a significant amount of their leisure time within the urban space, due to their busy daily routines. Most of the space usage is by children. Therefore, it is necessary to encourage residents to spend more time in the space by organizing outdoor activities that will motivate them to stay longer and make use of the available open areas.

Residents of the 6th of October area spend a reasonable amount of their weekly time within the urban space. Approximately 50% of the residents spend 25%-50% of their week in the space, engaging in various social activities such as talking to neighbors or spending quality time with family.

The clarity form of the space and the users' perception of it help them feel comfortable and secure within the space. It is a strong indicator that can be used to assess the quality of the urban space.

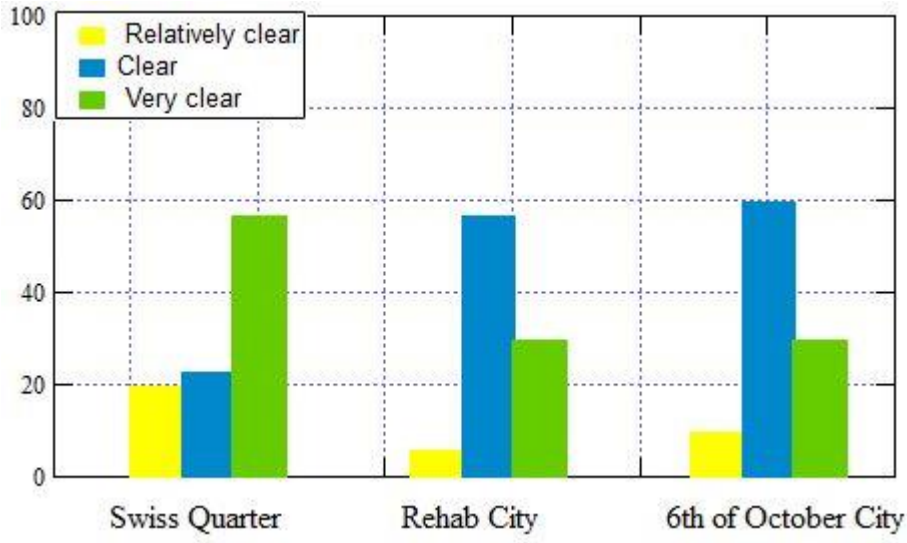


Figure 4-10: **6.**The clarity of the form of the urban space for the residents. **(Physical Aspect)**.

Around 60% of the residents of the Swiss neighborhood reported a high level of spatial clarity, indicating a well-planned urban design that enhances wayfinding as shown in Figure 4-10. The studied urban space is enclosed by buildings on all sides, with strategically placed vegetation marking the entrances, which facilitates residents' recognition of the area, as shown in Figure 4-11.

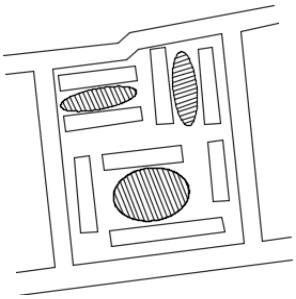


Figure 4-11: Urban space defined by buildings and trees.

In the 7th districtof 6th of October City, 60% of residents found the urban space easy to perceive, and around 30% confirmed its clear boundaries, encouraging them to spend time there as shown in Figure 4-12. These findings are consistent with those from Groups 76 and 77 of Rehab City, where residents also reported clear and easily perceived spaces that enhance their sense of safety and enclosure.

Figure 4-12: Urban space in the 7th district in 6th of October city.Sourse: https://maps.app.goo.gl/iV1dBSLWJ2dd6oe76.

This indicates the well-planned urban spaces in Groups 76 and 77 of Rehab City, with the use of clear lines and harmonious geometric shapes that are easy to perceive as shown in Figure 4-13.

Residents' perception of the urban space is reflected in their sense of enclosure within it. The graphical analysis of the three neighborhoods indicates that residents generally feel a high or moderate degree of enclosure, with only a very small percentage feeling a lack of enclosure within the space.

For 70% of the residents in Swiss Housing Project, the urban space provides a moderate sense of enclosure due to its easy perception as illustrated in Figure 4-14. To enhance residents' sense of enclosure, efforts should focus on improving the quality of life through community services and social support.

Figure 4-13: Urban space under study in Groups 76 and 77 of Rehab City.
Source: https://maps.app.goo.gl/8pjStxcCCoog31Xw9.

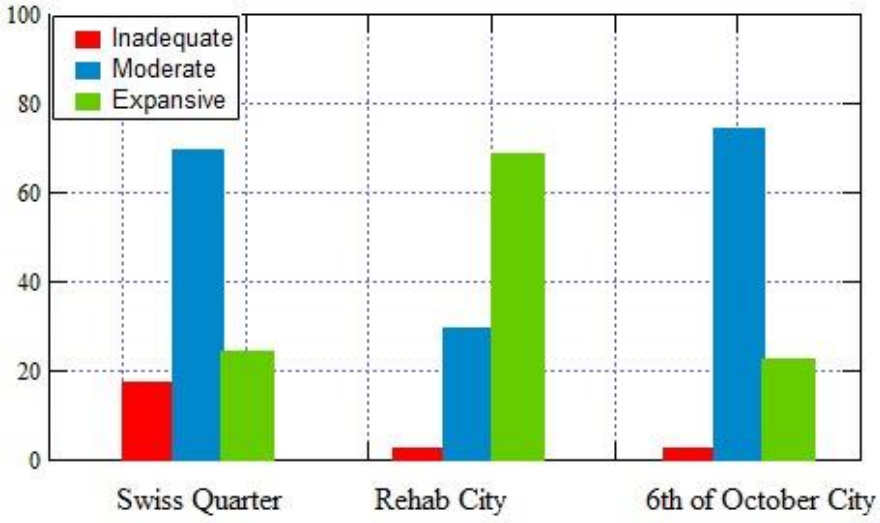


Figure 4-14: **7.** Users' sense of inclusion within the space.
(Behavioral/Psychological Aspect)

70% of the residents in Groups 76 and 77 of Rehab City feel a strong sense of enclosure due to the well-designed urban spaces that encourage social interaction and enhance the sense of belonging and comfort as shown in Figure 4-14.

Approximately 80% of the residents in the the 7th district in 6th of October city feel a moderate sense of enclosure. The urban space is overlooked by balconies from residential buildings, which enhances residents' connection to their external environment and facilitates communication among them.

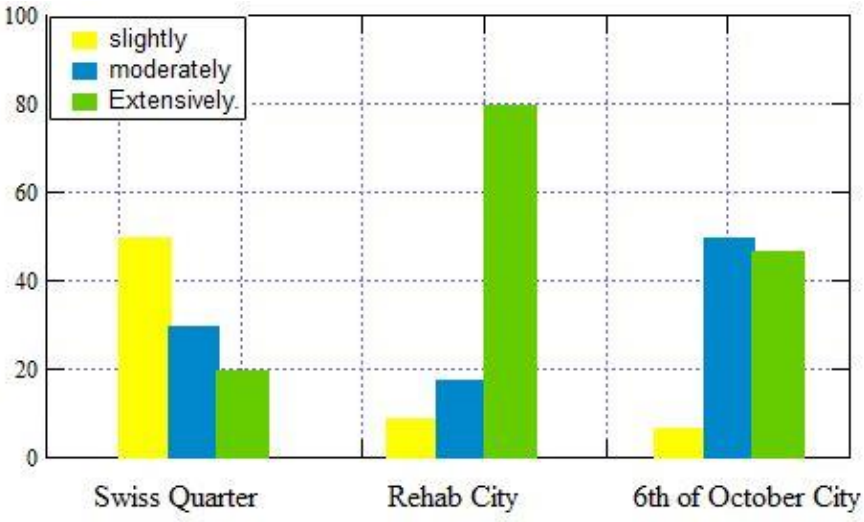


Figure 4-15: **8.** The level of residents' psychological comfort. ..
(Behavioral/Psychological Aspect)

The physical components within the space (furnishings, vegetation elements, and paving) play a significant role in enhancing residents' sense of comfort and enjoyment within the urban space.

The urban space under study shown in Figure 4-15 in Swiss Housing Project lacks attention to its physical components, resulting in the majority as shown in Figure 4-16. 50% of the residents, expressing a lack of comfort while being in the space. Meanwhile, 30% reported a moderate sense of comfort, and only a minority, 20%, felt a high level of comfort.

Figure 4-16: The condition of the urban space in Swiss Housing Project and the paving elements within it.

Urban space in Groups 76 and 77 of Rehab City achieves the highest percentage of residents feeling comfort, with 80% of residents experiencing a high level of comfort. This is attributed to the well-designed urban space and the inclusion of physical elements and components as shown in Figure 4-17. This helped to create an environment promoting relaxation and enjoyment when being in the space.

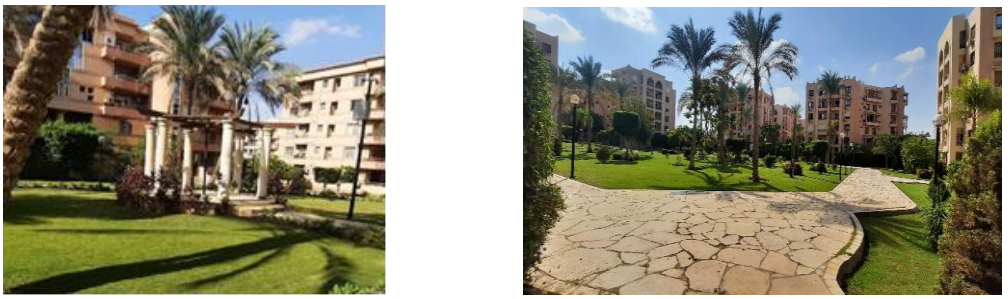


Figure 4-17: Vegetation elements, paving used, and other components within the space that contributed to residents' sense of comfort and enjoyment.

Residents of the the 7th district in 6th of October city showed variation in their level of comfort and enjoyment within the urban space. 50% feel a moderate level of comfort, while 45% experience a high level of comfort. The residents' sense of comfort can be increased by paying attention to the urban space and working on its improvement and development as shown in figure 4-18.

Figure 4-18: Urban space under study in the the 7th district in 6th of October city.

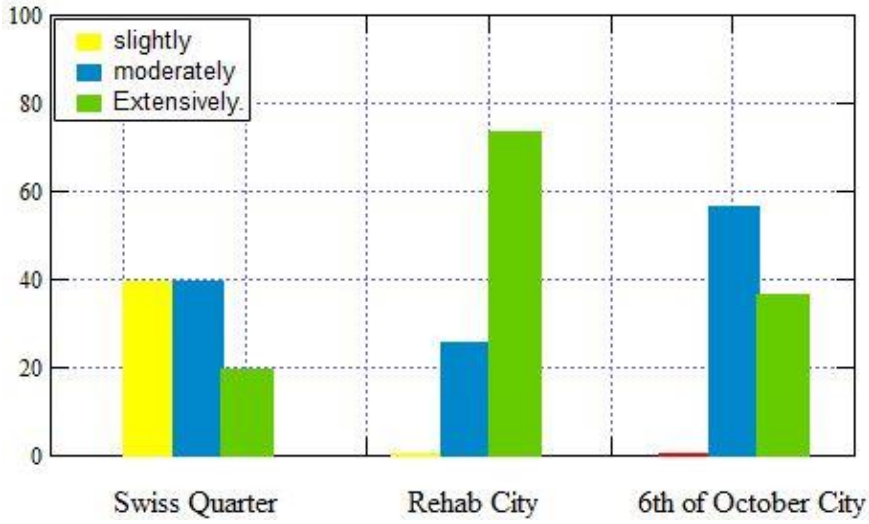


Figure 4-19: **9.** Extent of residents' sense of safety within the urban space. **(Behavioral/Psychological Aspect)**

The sense of safety is closely related to the design of urban spaces. To increase safety levels, it is essential to provide good lighting, effective surveillance, and clear open spaces that encourage social engagement and interaction between individuals. The previous graph Figure 4-19 shows the distribution of residents' sense of safety within the three urban spaces under study.

In Swiss Housing Project, there is a balance between the sense of safety, with the largest percentage, 40%, of residents feeling moderately or slightly safe. This is due to the poor interior design of the space and the lack of security elements, as well as insufficient nighttime lighting, which creates blind spots within the space, explaining residents' sense of insecurity.

In Al-Rehab city, the highest levels of safety are achieved, with nearly 80% of residents feeling safe while being in their urban space. This is attributed to the well-planned urban space and its appropriate design, where the spaces are distributed in a way that facilitates an unobstructed view of the area. Additionally, effective security surveillance and outdoor lighting contribute to this sense of safety.

In the the 7th district in 6th of October city, approximately 60% of residents feel a moderate sense of safety. There is a need to enhance residents' sense of safety by improving the design of the space and incorporating elements that contribute to ensuring safety for the residents.

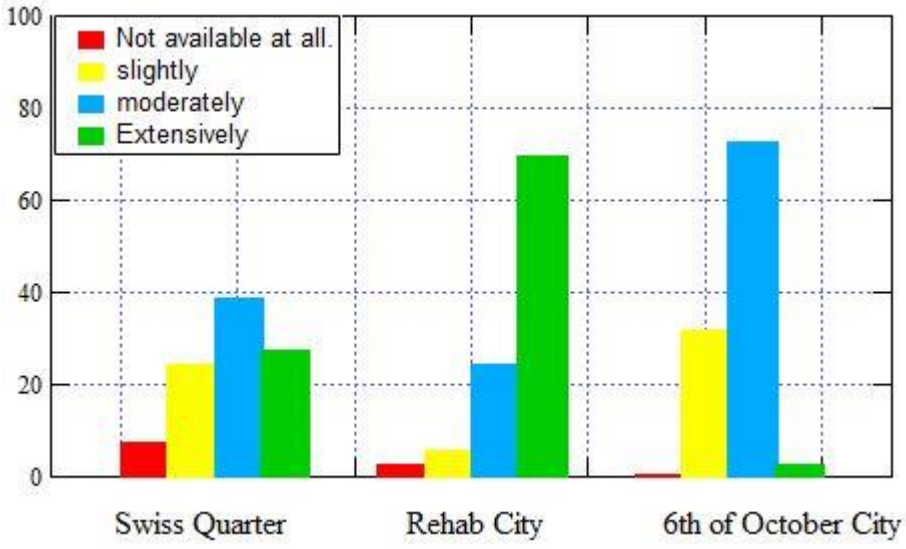


Figure 4-20: **10**The availability and quality of seating areas within the urban space**. (Physical Aspect)**

Figure 4-20 illustrates residents' opinions on the quality of seating areas available within their urban space, the availability of these areas, and an analysis of their opinions as follows:

In Swiss Housing Project, 40% of residents reported the availability of seating areas at a moderate level within the urban space, and they heavily rely on sidewalks and flower bed edges, which do not provide comfort during their use of the space. It is essential to focus on providing comfortable and suitable seating for residents' activities within the space, designing them in a way that complements the surrounding environment to make them more appealing.

In the Groups 76 and 77 of Rehab City, 70% of residents expressed that the availability of seating areas is at a high level, providing a more comfortable urban experience for the residents. It is important to maintain the high quality of

seating areas, increase them in alignment with the nature of the activities residents engage in, and regularly maintain and renew them. Figure 4-21 illustrates places used for seating.

Figure 4-21: Seating elements in the urban space in Rehab City.

Nearly 80% of residents in the 7th district in 6th of October city indicated that seating areas are available to a moderate degree due to the limited availability of comfortable seating. Therefore, it is essential to address this issue by improving the existing furnishings within the space to enhance residents' comfort when sitting. Figure 4-22 illustrates places used for seating.

Figure 4-22: Use sidewalks and shopfronts overlooking the void as seating spaces.

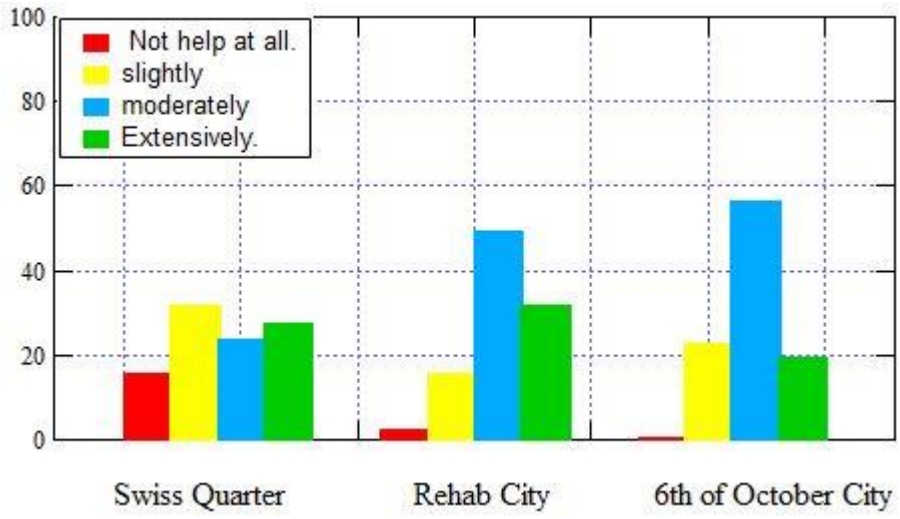


Figure 4-23: **11.** The contribution of furniture elements in influencing the interaction among individuals. **(Physical Aspect)**

The previous graph in figure 4-23 reflects the role of furniture elements in influencing individuals' interaction with each other and their participation in social activities together.

In Swiss Housing Project Figure 4-24, there is a variation in residents' opinions: 35% believe that the role of furniture in the space has a weak impact on interaction among individuals, 25% see a significant impact, 25% consider the impact of the furniture to be moderate, and 15% of residents stated that furniture elements do not contribute to their interaction with one another.

Figure 4-24: The incompatibility of the furniture in aiding residents' interaction with each other. .

Al Rehab City's social club offers various amenities, but residents had mixed views on furniture's role in social interaction. About 50% saw a moderate impact, 35% found it somewhat supportive, and 15% felt it had little effect. This indicates a need to improve furniture design and placement to enhance community interaction, Figure 4-25.

Figure 4-25: The indoor-outdoor connection in Al Rehab City's urban space is weak. .

In the 7th district in 6th of October city Figure 4-26, the highest percentage, approximately 60% of residents, reported that the furniture elements moderately help them interact with each other. About 20% of the residents believe that the furniture plays a significant role in enhancing their interaction with others. Meanwhile, 25% of the residents perceive the furniture as having a weak impact on fostering interaction.

Figure 4-26: Ground-floor commerce strengthens the building's connection to the urban space in Sixth of October. .

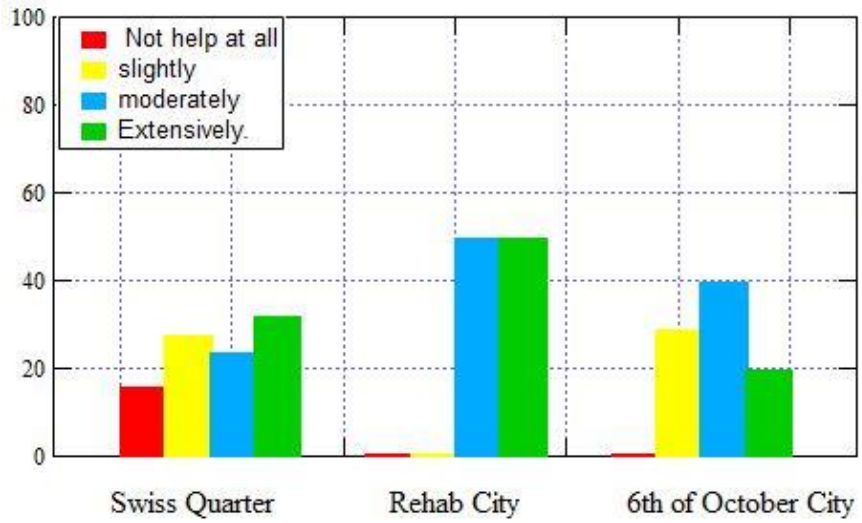


Figure 4-27: **12.** The contribution of seating areas and available furniture in facilitating activities within the space. .
(Behavioral/PsychologicalAspect).

Furniture design and the distribution of seating areas play a pivotal role in enhancing residents' engagement in desired and diverse activities within the urban space. The graph in figure 4-27 illustrates the role of furniture and seating areas in urban spaces and their impact on individuals' participation in activities within these spaces.

In Swiss District, the relatively balanced distribution of residents' opinions (weak, medium, and strong) indicates that the design of the space requires development and attention to increase residents' satisfaction. This improvement will help provide varying levels of comfort and enable diverse activities within the urban space.

In Rehab City, residents' opinions were evenly divided between high and medium regarding the contribution of urban furniture to their activities. This can be attributed to the urban space's design, which allows it to adapt to various activities of the residents. Further development can be achieved by strategically distributing fixed furniture in a way that maintains the urban space's efficiency and ensures its ongoing functionality.

In the 7th district in 6th of October city, 40% of residents highlighted the positive role of urban furniture in enhancing their daily use of the space. However, 35% of the residents expressed low appreciation for the furniture's role in facilitating their daily activities, while 25% expressed satisfaction with the existing furniture elements. Therefore, it is essential to focus on the interior design of urban spaces and arrange the furniture in a way that allows effective use of the space, meeting the needs of its users.

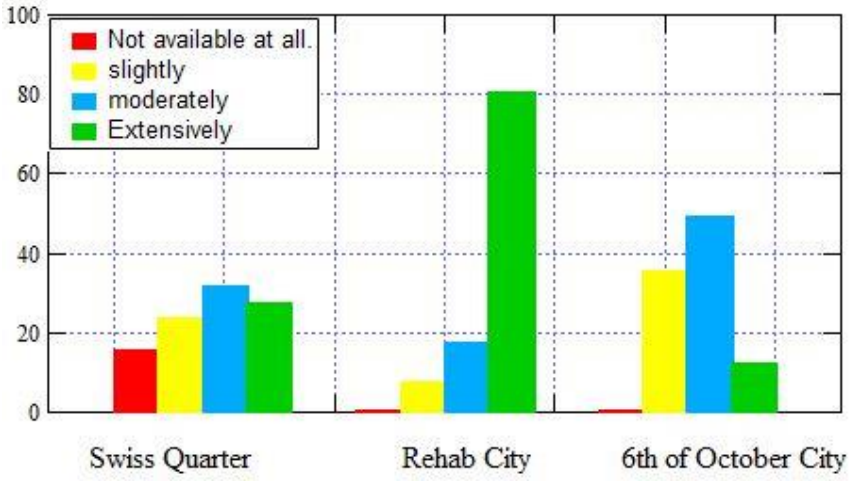


Figure 4-28: **13.** The extent to which weather protection measures are provided within the urban space. **(Behavioral/Psychological Aspect)**

The graph in figure 4-28 shows that Swiss District suffers from insufficient weather protection measures, as illustrated in Figure 4-29. Consequently, residents do not feel comfortable when present in the urban space.

Figure 4-29: The lack of adequate weather protection measures in the urban space of Swiss District.

The strategic layout of urban spaces in Groups 76 and 77 of Rehab City, enclosed by buildings, provides residents with high protection from

environmental factors, particularly weather conditions. These spaces shield against wind and offer shaded areas, while trees and greenery play a crucial role in reducing sunlight intensity, mitigating heat, and enhancing the microclimate, as shown in Figure 4-30.

Figure 4-30: The role of vegetation in providing shade to reduce air temperature. .

The residents of the 7th district in 6th of October city displayed variation in their perception of protection from environmental factors while inside the space. This is affected their sense of comfort within it as shown in Figures 4-31 and 4-32.

Figure 4-31: The surrounding buildings in certain spaces help provide shade and protection from the winds. .

Figure 4-32: Some spaces require further attention to provide protection from environmental factors. .

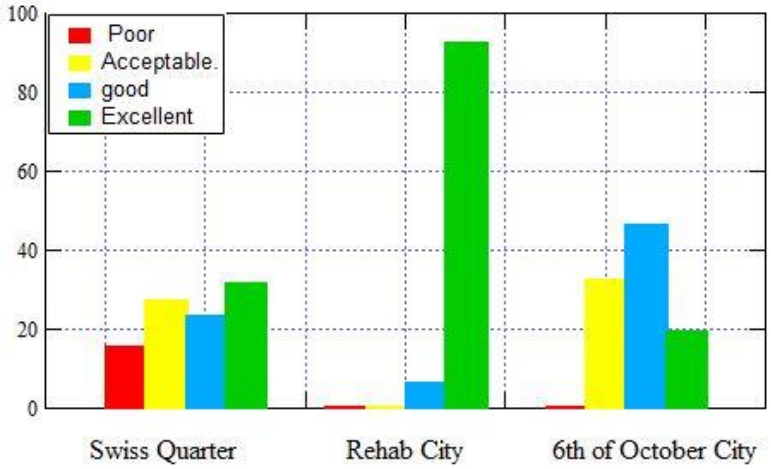


Figure 4-33: **14.** The lighting level of the urban space at night. **(Physical Aspect)**

The lighting in the urban space of Swiss Housing Project at night is insufficient, with only 30% of residents stating that the space is well-lit at night. 20% claiming it is lit adequately. The remaining respondents reported either average or poor lighting levels as shown in figure 4-33. This indicates the need for proper distribution of lighting units to avoid dark areas in the urban space, as insufficient lighting may reduce residents' presence at night due to feelings of insecurity.

The urban space in Groups 76 and 77 of Rehab City is well-lit, Figure 4-34, with 90% of residents feeling secure at night. Good lighting distribution enhances vibrancy, and regular maintenance ensures lasting efficiency.

Figure 4-34: lighting units present in the urban space in Groups 76 and 77 of Rehab City.

The urban space in the 7th district in 6th of October city has moderate lighting, with approximately 50% of residents confirming its adequacy.

Nighttime illumination primarily depends on commercial activities on the ground floors of surrounding buildings, as shown in Figure 4-35. To enhance the space's efficiency, it is crucial to ensure a well-planned distribution of lighting units in sufficient numbers, aligning with the space's usage and providing residents with a safe environment at night.

Figure 4-35: The reliance of night-time lighting in the space on commercial activity. .

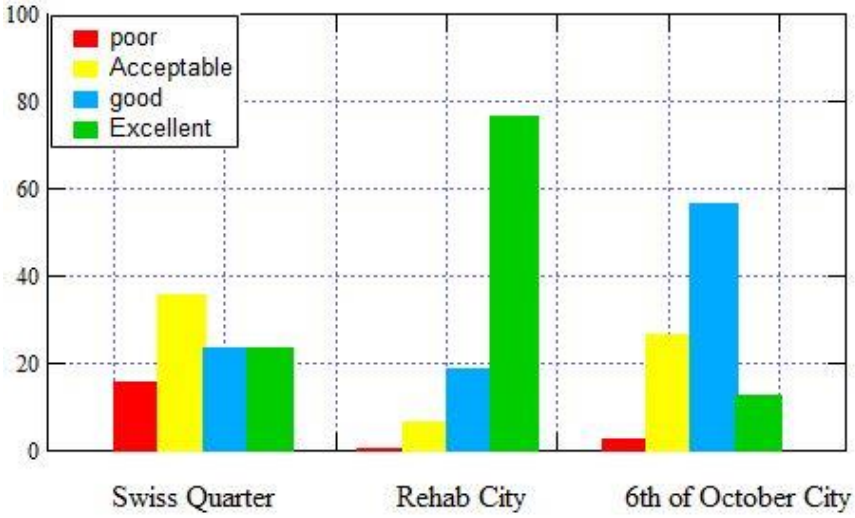


Figure 4-36: **15**. The evaluation of the furniture elements.**(Physical Aspect).**

The previous chart in figure 3-36 shows residents' opinions on the quality of furniture elements (seating, vegetation, lighting units, paving, etc.) within the urban spaces under study. We can conclude that to ensure the quality of urban spaces, it is essential to focus on how interior design elements affect the efficiency and effectiveness of the urban space.

In Swiss Housing Project, the quality of the physical elements in the urban space is not in good condition, as shown in Figure 4-37. There are no designated

seating units, leading residents to use vegetation for sitting, which is in poor condition due to lack of maintenance. Additionally, the absence of trash bins has resulted in poor cleanliness, discouraging residents from spending time in the space.

Figure 4-37: Condition of the elements that make up the urban space in Swiss Housing Project. .

In Rehab City, the urban space is characterized by a high level of excellence, as the majority of residents confirmed the excellent condition of the elements within the space. The materials used are sustainable, and regular maintenance is carried out to preserve their quality and efficiency. This is shown in Figure 4-38.

Figure 4-38: Condition of the elements that make up the urban space in Rehab City. .

The residents of the 7th district in 6th of October city showed moderate satisfaction with the physical components within the space. Figure 4-39 illustrates the existing elements in the space. This indicates the need to introduce seating areas and improve their quality. The use of local plant species, including shrubs and trees, is recommended. Furthermore, it is essential to distribute lighting units, trash bins, and other complementary elements in a manner that serves the users and enhances the overall value of the urban space.

Figure 4-39: Elements that constitute the urban space in the 7th district in 6th of October city.

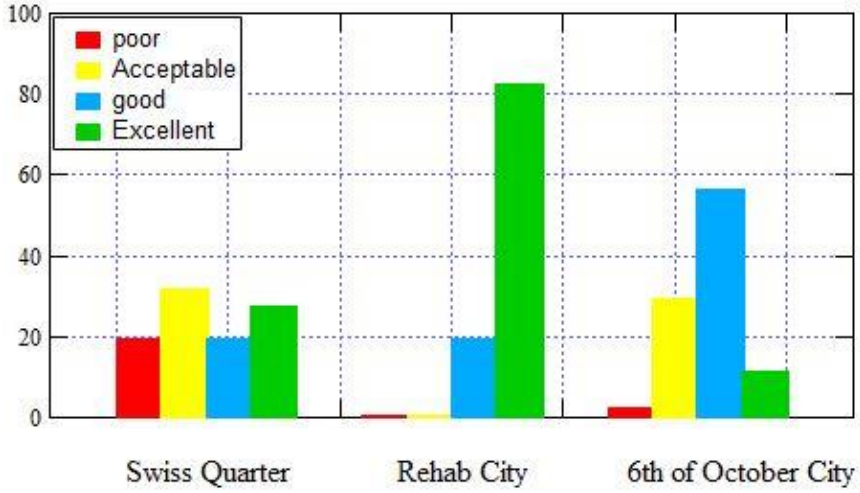


Figure 4-40: **16**. The evaluation of the space in terms of its cleanliness. **. (Physical Managerial Aspect)**

The chart in figure 4-40 shows the cleanliness levels of the three studied urban spaces, highlighting that organized layouts and effective maintenance plans contribute to a cleaner environment and encourage users to keep the space clean.

The urban space in Swiss Housing Project is characterized by an average cleanliness level. The absence of designated areas for waste collection, along with the lack of a maintenance and cleanliness plan, has led to a relative deterioration of the urban space.

On the other hand, urban spaces in Groups 76 and 77 of Rehab City are characterized by a high level of cleanliness. The spatial organization of the areas within Rehab City has facilitated the ease of performing regular cleaning

operations. The high cleanliness ratio indicates the presence of an effective management system that focuses on maintaining the cleanliness of the urban space.

The urban space in the 7th district in 6th of October city achieves a moderate level of cleanliness. It is essential to maintain the overall appearance of the space and ensure its cleanliness to encourage residents to do the same. Additionally, it is important to provide trash bins and establish a cleaning plan, either by the neighborhood or the residents, to sustain the cleanliness of the urban space.

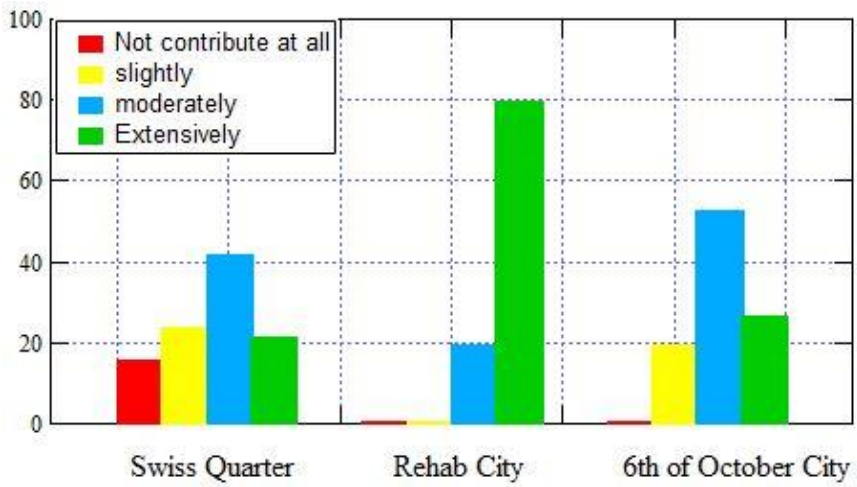


Figure 4-41: **17**. Residents' participation in maintaining the cleanliness of the urban space. **(Managerial Aspect)**

The chart in figure 4-41 reflects the residents' environmental awareness regarding the maintenance of public cleanliness and their level of participation in keeping the space clean. Participation refers to either ensuring cleanliness from the outset or contributing to maintaining the cleanliness of the space. A well-designed space and a high-quality living environment encourage positive environmental behavior among residents, thereby strengthening the connection between individuals and the urban space.

Approximately Around 45% of residents in Swiss Housing Project play a good role in maintaining the cleanliness of the urban space. A small percentage, 18%, do not contribute at all. The low level of participation is largely due to

poor urban space design, which does not effectively support the space's intended functions. As a result, this has led to reduced usage of the space by residents and a sense of detachment, with residents feeling less responsible for maintaining the urban space that belongs to them.

Urban Spaces in Groups 76 and 77 of Rehab City are characterized by a well-thought-out design aimed at enhancing community feeling and fostering a sense of belonging among residents. When residents feel connected to their urban space, it motivates them to take great care in maintaining it. As a result, 80% of the residents actively contribute to the cleanliness of the space.

50% of the residents who use the urban space in the 7th district in 6th of October city showed good participation in maintaining its cleanliness. The remaining percentage contributed moderately or to a lesser extent. This highlights the need to improve the design of the studied urban space. Organizing community awareness campaigns to encourage residents to maintain cleanliness is essential. Additionally, adding trash bins is necessary to help preserve the cleanliness of the space.

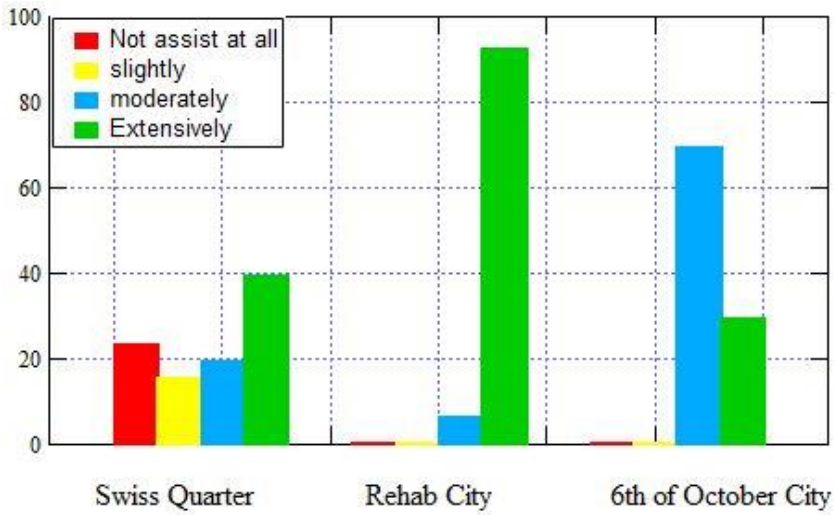


Figure 4-42: **18**. Contribution of the plant element in affecting the psychological state of the users. **(Behavioral/Psychological Aspect)**

The integration of Vegetative elements plays a vital role in achieving a balance between functional comfort and environmental sustainability. This can

be accomplished through the careful selection of appropriate plant types and the implementation of regular maintenance, aiming to enhance their effectiveness while preserving the integrity of the natural environment.

The distribution of plant elements in Swiss Housing Project is insufficient, and there is a lack of regular maintenance and monitoring. Residents' opinions vary.as shown in figure 4-42. Therefore, it is essential to prioritize the incorporation of plant elements in the design process to maximize their positive impact on residents' psychological health. Figure 4-43 illustrates the condition of landscape in the urban space.

Figure 4-43: Condition of vegetative element in the urban space of Swiss Housing Project.

The urban design in Al Rehab City heavily relies on providing open spaces and fostering interaction between users and their surrounding environment. Plant elements are a fundamental part of this design, offering residents a sense of psychological comfort and helping to reduce stress and mental pressure while they are in the space. As a result, nearly 95% of residents report a significant improvement in their mental well-being due to the presence of plant elements.as illustrated in Figure 4-44.

Figure 4-44: Condition of vegetative element in the urban space of Rehab City.

A large percentage of residents, around 70%, find that the plant element in the space helps them relax and enjoy a moderate level of comfort. It is essential to increase the focus on plant elements and make them an integral part of the architectural environment. Open urban spaces offer residents opportunities to interact with nature, which positively impacts their mental health. Figure 4-45 illustrates the condition Vegetative Element in the urban space of the 7th district in 6th of October city

Figure 4-45: shows how greenery in the urban space of the 7th district in 6th of October city contributes to residents' relaxation and mental comfort.

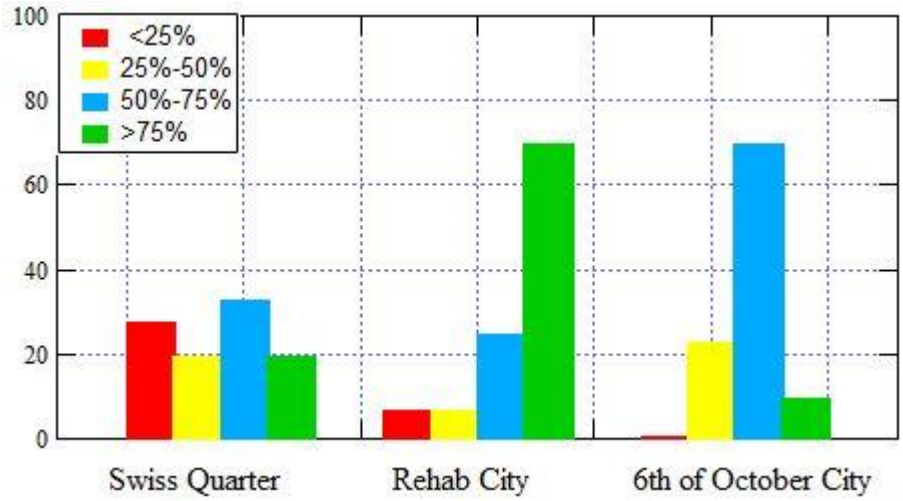


Figure 4-46: **19**. Availability of regular maintenance operations for the space and its components. **(Managerial Aspect)**

Routine maintenance activities conducted in urban spaces play a crucial role in preserving their condition and enhancing the longevity of the materials and physical elements within them. This can be achieved by selecting low-

maintenance materials, such as those that are resistant to environmental factors, and by using locally sourced materials. Additionally, the implementation of scheduled maintenance routines, involving cooperation between government, private sectors, and residents, can ensure continuous upkeep. The graph in figure 4-46 displays the availability of maintenance operations in the three studied urban spaces.

In Swiss Housing Project, 40% of the residents confirmed that the space does not undergo regular maintenance, leading to the deterioration of the urban space and a lack of desire from the residents to use or spend time in it.

In Groups 76 and 77 of Rehab City, the urban space stands out for having regular maintenance, with nearly 80% of the residents confirming that maintenance operations are continuously carried out on the space and its physical components.

In the 7th district in 6th of October city, approximately 70% of the residents indicated that maintenance operations are carried out at a moderate level in the urban space.

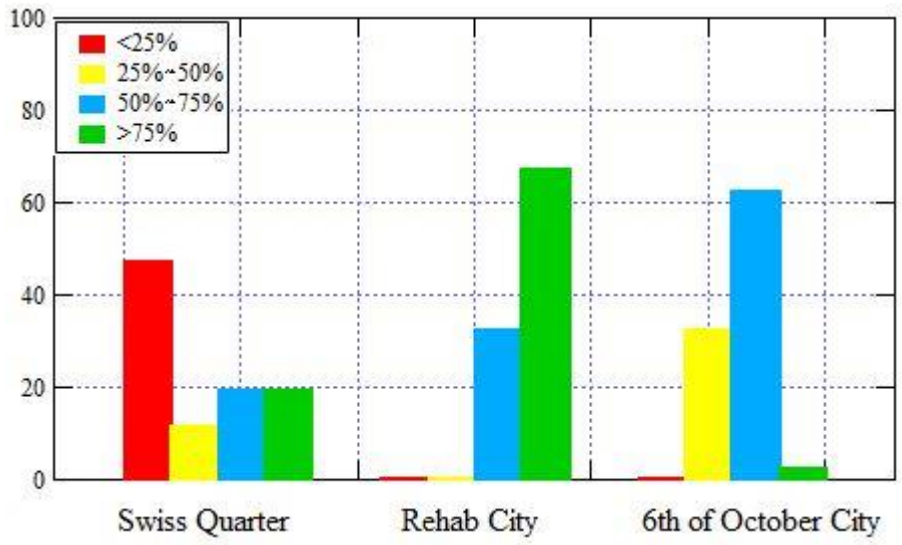


Figure 4-47: **20.** Percentage of cleanliness in the urban space.**(Managerial Aspect)**

The impact of maintenance operations, or the lack thereof, is reflected in the cleanliness of the urban spaces in the three study areas. In Swiss Housing Project, in figure 4-47, 50% of residents indicated that the cleanliness of the space is less than 20%, indicating a generally low level of cleanliness. The cleanliness level of the space is shown in Figure 4-48.


Figure 4-48: The cleanliness level of the urban space in Swiss Housing Project..

In Groups 76 and 77 of Rehab City, the cleanliness level of the urban space reaches 70%, indicating that the studied urban space enjoys a high level of cleanliness. The cleanliness level of the space is shown in Figure 4-49.


Figure 4-49: The cleanliness level of the urban space in Rehab City.

As for the urban space in the 7th district in 6th of October city, the cleanliness level ranges from 40% to 70%, indicating a good level of cleanliness. The cleanliness level of the space is shown in Figure 4-50.


Figure 4-50: The cleanliness level of the urban space inthe 7th district in 6th of October city. .

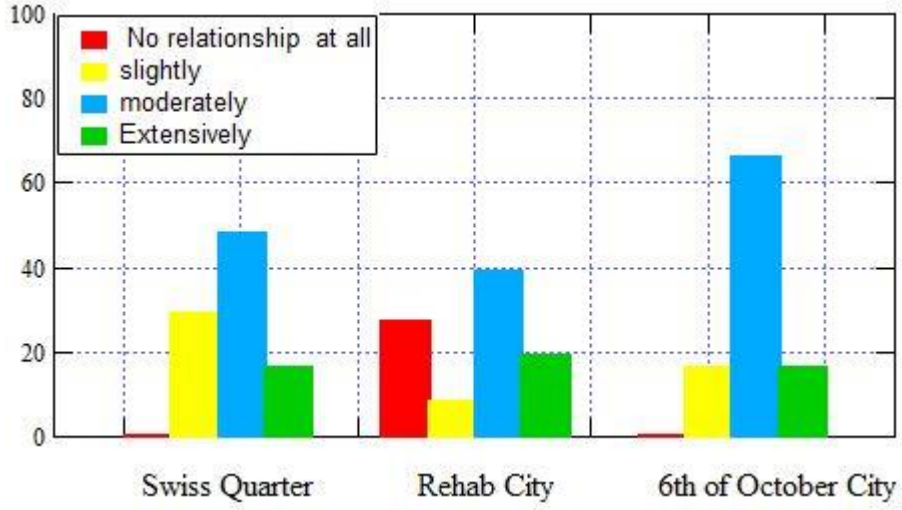


Figure 4-51: **21.** The level of residents' awareness and their relationships with each other.**(Behavioral/Psychological Aspect**.)

The chart in figure 4-51 represents the degree of residents' acquaintance with one another. Strengthening social relationships among residents requires a combination of effective space design that fosters daily interaction and provides opportunities for communication, as well as the provision of shared public spaces to reduce isolation. It is essential to create an environment that encourages the enhancement of connections among residents, making cities and communities more cohesive.

In Swiss Housing Project, 50% of the residents have a relationship with their neighbors. Despite the modest design of the space, communication among residents exists. This percentage can be increased and relationships among residents can be strengthened by improving the design elements of the space and equipping it with features that encourage individuals to spend more time there.

In Rehab City, only 40% of residents reported having a moderate level of acquaintance with their neighbors, and only 20% have excellent relationships with them. This percentage can be increased by creating more opportunities for residents to meet, which encourages conversation and interaction. This can be achieved by strategically placing furniture and providing designated seating

areas for group gatherings, allowing for direct interaction between residents. Additionally, incorporating playgrounds and outdoor social activity areas for children can enable residents to meet and engage in conversation.

70% of the residents of the 7th district in 6th of October city reported having a moderate level of acquaintance with each other. This is attributed to the presence of commercial areas overlooking the urban space, which provided an appropriate environment for residents to meet and engage in conversations. The level of acquaintance can be further increased by adding more community events and cultural activities that encourage residents to gather and interact.

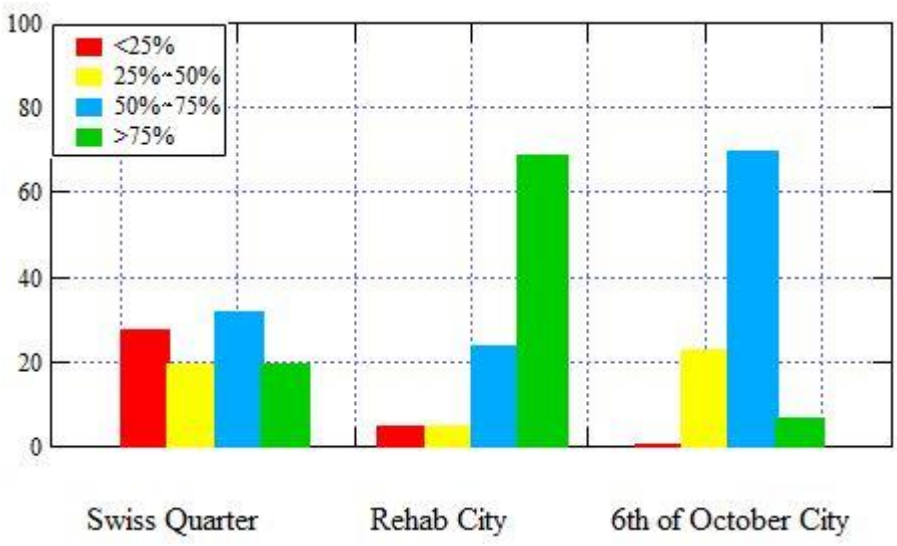


Figure 4-52: **22.**The level of user satisfaction with their respective urban space. **(Behavioral/Psychological Aspect**.)

After presenting the users' opinions about their urban space and analyzing the results. The final question for them is about their level of satisfaction with their urban space. The results are illustrated in figure 4-52.

In Swiss Housing Project, there is a relatively low level of overall satisfaction, mainly due to the issues and flaws in the urban space design, as previously mentioned.

The residents of the Groups 76 and 77 of Rehab City showed high levels of satisfaction, with the majority of users expressing strong contentment. This indicates the success of the urban space in fulfilling its intended function.

Residents of the 7th district in 6th of October city demonstrated a balanced level of satisfaction. Improvements related to the design of the space are necessary to further enhance user satisfaction.

4.7 Using the proposed model to evaluate the quality of the three urban spaces

This section assesses the three urban spaces under study using the proposed evaluation model outlined in Table 3-12. The aim is to identify the strengths and weaknesses of these spaces to enhance their ability to meet residents' needs, make the space socially active, and ensure sustainability. The quality of the three urban spaces is evaluated as shown in Table 4-2.

●●●	●●	●
Excellent	**Fair**	**Poor**

The indicator ●●● represents the ability of the space to meet the requirements to a large extent, while the indicator ●● shows that the requirements are met to a moderate extent. On the other hand, the indicator ● reflects the failure to meet the requirements.

.

Table 4-2: Evaluating the quality of urban spaces within the residential areas being studied.

Sustinability Principles / Human Needs	Environmental Quality			Choice and Diversity			Safety and Security			Integration			Social Capital			Mixed-Use			Population Density			Mobility			Accessibility		
	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city	Swiss Housing Projec	Rehab City	6th of October city
Comfort	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Protection	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Subsistence	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Participation	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Understanding	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Identity	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Creation	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘
Affection	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘	⁘

Conclusion

The main objective of this chapter is to evaluate and analyze the three urban spaces in Egypt based on the survey presented to the residents of these areas, as well as the evaluation model proposed in the previous chapter. The study presents the results of this analysis as follows:

The urban space in the Swiss Housing Project faces several challenges that hinder its functionality and social sustainability. Poor design and the absence of essential physical elements have led to its underuse and deterioration. The lack of shading and heat-resistant materials causes discomfort during the day, while inadequate lighting reduces safety at night, discouraging residents from frequent use. These issues compromise key sustainability principles such as environmental quality, safety, and accessibility. Enhancing the space with shaded seating, proper lighting, and multifunctional urban furniture can improve usability and create a more sustainable, inclusive environment.

The urban spaces in groups 76 and 77 of Rehab city embody sustainable design principles by ensuring accessibility, safety, and social interaction. The interconnected layout facilitates movement, while each residential unit overlooks a well-planned open space that provides opportunities for relaxation, recreation, and engagement with nature. Security measures enhance residents' sense of safety, while key design elements such as greenery, lighting, pavements, and seating improve comfort and usability. These physical components contribute to environmental quality and social well-being, meeting essential human needs such as safety, belonging, and interaction. However, while the space supports social sustainability by offering shared areas, strong neighborly connections are limited due to modern lifestyle demands. To foster greater community engagement, design interventions can include child-friendly recreational zones that encourage

parental interaction, flexible seating arrangements to facilitate conversations, and multi-use spaces that promote social gatherings.

The urban spaces in the 7th district in 6th of October city offer a moderate quality of design and functionality, providing a reasonable level of satisfaction among residents. However, improvements are needed to enhance their usability and sustainability. The lack of proper maintenance, along with insufficient seating, shaded areas, and green spaces, limits comfort and accessibility, reducing the space's appeal and discouraging outdoor activities. From a sustainability perspective, the current design only partially meets human needs related to comfort, relaxation, and social interaction. The absence of adequate shading and greenery impacts environmental quality and thermal comfort, making the spaces less inviting, especially during hot weather. Similarly, the limited seating options hinder opportunities for rest and social engagement. To enhance sustainability and better fulfill human needs, urban design interventions should prioritize durable and well-maintained furniture, strategic planting for shade and aesthetic enhancement, and multi-functional spaces that support social interactions and outdoor activities.

After presenting and analyzing the results, Table 4-3 outlines proposed solutions to address the issues identified within the three urban spaces—Swiss Housing Project, Groups 76 and 77 of Rehab City and 7th district in 6th of October city. A visualization of these proposed interventions is presented in the subsequent section following the table. The proposed solutions focus on enhancing the efficiency and functionality of these spaces by addressing their geographical, physical, Managerial and Behavioral and Psychological aspects. The aim is to improve residents' experiences, ensure the spaces meet their needs and foster social interactions.

Table 4-3: Proposals for Enhancing the Quality of urban spaces within the residential areas Using Design Aspects.

1. **Geographical Aspects**

	Groups 76 and 77 in Al- Rehab City	Swiss Housing Project	7th district in 6th of October city
Location	The urban spaces in the three areas are generally accessible to all residents.		
Accessibility	Residents can easily reach the spaces, as they are available to everyone.		

2. **Physical Aspects**

		Groups 76 and 77 in Al- Rehab City	Swiss Housing Project	7th district in 6th of October city
1. Form of the space		The urban space is defined by the surrounding buildings and the elements of furniture present within it, and it is clearly demarcated for the residents.	The urban space's form is clearly recognized by the residents; however, utilizing plant elements to define entrances and partition the space internally could enhance the spatial experience and help to further clarify its shape.	
2. Size of the space		The size of the urban space in the three areas is appropriate for the residents and aligns with the human scale.		
3. Visual and aesthetic elements	Seating	Seating should be arranged to encourage interaction, using opposite, circular, or semi-circular layouts. Integrating seating within plant cover enhances comfort and enjoyment.	Providing seating that suits the activities of the residents is essential. The materials used should be appropriate, easy to clean, and environmentally friendly to enhance the comfort of the users. The design should allow flexibility so that the furniture can adapt to various needs, such as reading, relaxation, or meetings. Additionally, the seating should be designed in a way that ensures comfort for the back and knees.	

	Vegetative element	Integrating green spaces with seating areas and service facilities. Engaging the community in tree planting campaigns and plant maintenance. Using native plants that are drought-tolerant and climate-adapted.	Using plants for multiple purposes such as shading, pollution absorption, and air quality improvement. Introducing plants that adapt to different climatic conditions. Establishing a regular maintenance schedule including watering, pruning, and monitoring plant health. Encouraging residents to participate in plant maintenance.
	Furniture	The quality of the furnishings within the space is suitable for the activities required by the residents. Adding additional furniture elements can encourage residents to interact, fostering a social atmosphere for engagement.	Using furniture that is suitable for the activities conducted within the space is essential. The materials used should align with the identity and local nature of the city. It is also important to ensure that all elements and furniture accommodate diverse needs, taking into consideration the requirements of the elderly and individuals with disabilities..
	Shelter & protection	Expanding shaded seating areas enhances user comfort and protection from weather conditions. Regular lighting maintenance ensures safety and optimal functionality.	Installing shelters or trees provides shade and encourages residents to use the space. Proper lighting, especially at night, enhances visibility and safety. Seating should be positioned to minimize direct sunlight exposure. Integrating plant elements helps in temperature regulation and comfort.
	Subspace	Utilizing plant elements or changes in elevation can help createing sub-spaces that enhance privacy and comfort for users. Additionally, when designing these sub-spaces through elevation differences, it is crucial to consider the needs of individuals with disabilities, ensuring that the design remains accessible and inclusive.	

	Human scale	The human scale has been considered, which has strengthened the connection between individuals and their environment, encouraging positive interaction.	Considering the human scale when selecting furniture elements or any physical components within the space ensures the comfort of the users. This approach fosters a sense of belonging to the space and enhances the comfort experienced within it..
	Lighting	Ensuring adequate lighting minimizes dark areas and enhances usability. Implementing smart, sustainable lighting conserves energy while maintaining illumination.	Regular maintenance of lighting elements is essential for quality and functionality. Maximizing natural light reduces dependence on artificial Sources. Proper lighting distribution enhances security and encourages nighttime use.

3. Managerial Aspects

	Groups 76 and 77 in Al- Rehab City	**Swiss Housing Project**	**7th district in 6th of October city**
1. Uses and Activities	Designing suburban spaces to accommodate diverse users is essential. Enhanceing Social interaction by arranging furniture Organizing outdoor activities fosters community interaction.	Providing appropriate furniture that meets the diverse needs of users is essential. The design should account for the different activities and uses within the space. Effective management of the space is also necessary to ensure its preservation and maintain its quality over time.	
.2Maintenance	Periodic maintenance is essential to sustain the quality and functionality of the space.	Establishing a regular maintenance schedule ensures the quality of urban spaces. Providing essential elements like trash bins helps maintain cleanliness. Assigning a resident for maintenance improves space monitoring and issue resolution. Conducting awareness workshops encourages residents to care for the space, reducing maintenance needs.	

4. Behavioral and Psychological Aspects

	Groups 76 and 77 in Al- Rehab City	Swiss Housing Project	7th district in 6th of October city
1. Comfort	To enhance residents' psychological well-being, creating sub-spaces can foster a sense of privacy and comfort, positively influencing their behavior and the duration of their time spent in the space. Continuing to care for and maintain the components within the space will further contribute to improving users' sense of comfort.	Focusing on plant elements contributes to: Improving air quality.-Providing natural shade for protection against sun and rain.-Reducing noise pollution from moving activities. These factors enhance users' comfort, encouraging them to spend longer periods in the space. The presence of water features also helps cool the air and improve environmental conditions. Additionally, providing more comfortable and attractive furniture designs enhances the overall user experience.	
2. Safety & Security	Outdoor recreational activities encourage residents to stay longer, enhancing their sense of safety and security	Implementing safety measures to enhance public security. Organizing outdoor activities to promote continuous use and a safer environment. Ensuring adequate lighting, especially at night. Installing surveillance cameras for continuous monitoring. Encouraging residents to participate in space monitoring and report concerns.	
.3 Relaxation	Using natural barriers such as trees and elevation changes to divide the urban space into sub-spaces helps provide privacy and fosters relaxation.	Provide comfortable, shaded seating with views of nature and water features for relaxation. Use simple design elements, like local artwork, to enhance the aesthetic and promote relaxation. Strategically placed plant elements support residents' mental well-being. Utilize shaded trees and plants to reduce temperatures and create a cooler environment.	

4. Engagement With the Environment	Adding more artistic elements that achieve harmony with the surrounding environment.	This can be achieved by users feeling that they are interacting with the environment around them, establishing a connection with the environment through the provision of green urban spaces that allow visitors to engage with their surroundings. The use of natural materials fosters a bond with the environment.

Swiss Housing Project

after

before

before

Urban space improvements in the Swiss housing project were guided by the social, cultural, and economic context of its residents. Key developments included enhancing green spaces, upgrading public squares, providing safe areas for children and the elderly, improving lighting for safety, offering low-cost services, ensuring accessibility for all users, installing directional signage to guide users, and organizing social activities to encourage residents to engage with and preserve the urban space.

Groups 76 and 77 in Al-Rehab City

before

before

The urban modifications in Groups 76 and 77 in Al-Rehab City were primarily based on the arrangement and furnishing of public spaces in a way that encourages social interaction and engagement among residents, through the provision of communal seating areas and the design of open spaces that promote mixing and communication across different community groups

after

7th district in 6th of October city

before

after

after

before

after

In 7th district in 6th of October city, urban modifications focused on utilizing public spaces as natural extensions of ground-floor commercial activities, thereby activating outdoor areas. These spaces were further enhanced with service elements such as lighting units and waste bins to maintain cleanliness. In addition, awareness campaigns were conducted to encourage residents to take part in preserving and maintaining the cleanliness and sustainability of these urban spaces.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This thesis investigates the factors influencing the success of urban spaces within residential areas, emphasizing the critical role of addressing user needs in creating vibrant and sustainable environments. It explores the intricate relationship between open space design principles, human needs, and social sustainability, establishing a comprehensive framework that integrates these dimensions. Based on this analysis, a methodological approach was developed and validated through multiple case studies. The research findings culminate in a set of conclusions classified under the design aspects of urban spaces, summarized as follows:

Geographical Aspects:

Urban spaces within residential areas face common accessibility challenges, which can be summarized as follows:

- Unbalanced urban planning affects accessibility to urban spaces, limiting mobility and equitable use**.**
- Some areas experience disparities in the distribution of public spaces, leading to unequal access to urban services**.**
- Weak connectivity between public spaces and residential buildings reduces opportunities for social interaction and efficient space utilization.

Physical Aspects:

Some urban spaces in residential areas suffer from various issues, which impact community use.

- Poor distribution of urban furniture reduces opportunities for social interaction among residents.
- The absence of appropriate urban furniture decreases user comfort and negatively affects the quality of their experience.
- Inadequate design of open spaces weakens social interaction and community cohesion.
- Inflexible urban space design fails to meet diverse resident needs, diminishing its role as a sustainable focal point.
- The impact of physical elements on community behavior, as space design influences interaction levels and social engagement.
- Lack of urban furniture and lighting reduces user experience quality and sense of safety in public spaces.
- The absence of local identity in urban elements weakens the sense of place and reduces attachment to the environment.
- The lack of comfortable and suitable urban furniture reduces the quality of the urban experience**.**
- Insufficient protection from climatic factors in some urban spaces affects residents' comfort**.**

Managerial Aspects:

- Inadequate maintenance systems lead to infrastructure deterioration and a decline in the quality of public spaces**.**
- Lack of effective waste management planning reduces cleanliness and impacts the attractiveness of the urban environment**.**

- The absence of sustainable reSource management plans limits the operational efficiency of public spaces**.**
- Neglecting the needs of urban space users results in misuse, leading to their deterioration or abandonment.

Behavioural and Psychological Aspects

- Some urban spaces fail to provide a psychologically supportive environment for residents, reducing their willingness to stay for extended periods.
- The lack of green cover increases stress and reduces the sense of relaxation, negatively impacting residents' mental well-being.
- Poor distribution of urban furniture and amenities limits opportunities for social interactions and increases feelings of isolation.
- Variability in comfort levels within public spaces—some areas lack comfortable seating or shaded zones, reducing their usability for prolonged periods.
- The impact of urban spaces on community behavior—poorly designed spaces may weaken the collective sense of responsibility for cleanliness and maintenance.
- The influence of urban environmental quality on individual behavior—neglected and poorly maintained spaces can lead to feelings of frustration and a decline in positive engagement with the environment.

5.2 Recommendations

Based on the study's findings, a set of recommendations has been developed for designers, city authorities, residents and media sector regarding

the design of urban spaces within residential areas. These recommendations emphasize the importance of collaboration among all stakeholders to promote sustainable, safe, and inclusive urban environments that respond to user needs and foster community engagement.

Designers:

- Urban space planning must ensure a fair and balanced distribution of spaces to promote equitable access and usability for all community members.
- Urban planning must focus on achieving an integrated spatial relationship between residential and service areas to enhance daily life and support sustainable urban growth.
- Connectivity between public and residential areas must be strengthened through the implementation of safe pedestrian pathways and clearly defined movement corridors.
- Sustainable planning principles must be applied to optimize land use while addressing environmental and social considerations.
- Urban space design must integrate physical elements with the functional and emotional needs of users to ensure usability and satisfaction.
- High-quality and sustainable materials must be selected to enhance the longevity of urban spaces and minimize long-term maintenance costs.
- Public space lighting must be improved in a balanced and inclusive manner to create safe, comfortable, and socially engaging environments.
- Urban furniture must be strategically distributed to maximize comfort, accessibility, and functionality for different user groups.

- Materials that reflect and celebrate the local identity must be used to foster a strong sense of place and belonging among residents.
- Comfort-enhancing features such as seating and shaded areas must be incorporated to improve user experience and encourage prolonged use of the space.
- Urban spaces must be designed to accommodate the daily needs of residents, thereby increasing satisfaction and encouraging frequent use.
- A safe, inclusive, and encouraging urban environment must be created to support positive social interaction, reduce fear and insecurity, and strengthen community ties.

Local planning authorities:

- rban space management must be conducted effectively through regular maintenance and quality improvement to ensure long-term sustainability**.**
- Collaboration between stakeholders must be strengthened to maintain both the functionality and aesthetic value of urban spaces**.**
- Authorities must encourage resident engagement in planning and maintenance, cultivating a shared sense of responsibility and reducing vandalism**.**
- Local cooperation must be fostered to ensure maintenance practices uphold the urban environment's quality**.**
- Urban spaces must be designed to support sustainability and enhance residents' sense of social responsibility by encouraging sustainable behavior**.**
- Urban spaces are encouraged to be designed in ways that promote sustainable living and enhance social responsibility among residents**.**

Residents

- Environmental cleanliness standards must be upheld by avoiding littering, and by using recycling and waste separation systems.
- Green spaces must be preserved by avoiding damaging behaviors and supporting local greening initiatives.
- Constructive feedback to planners and authorities must be provided to ensure urban spaces meet safety, usability, and comfort needs.
- Unsafe conditions and inappropriate behaviors must be reported to contribute to a safer public environment.
- Participation in community-building activities must be promoted to strengthen social cohesion and shared responsibility.
- Urban furniture and infrastructure must be used appropriately and respectfully to maintain their function and longevity.
- Residents must collaborate in the co-design and improvement of shared spaces to ensure they are inclusive, functional, and responsive to community needs.
- Active participation in public space care must be embraced, including cleaning, minor maintenance, and issue reporting to foster responsibility.

Media Sector

- The media must play an active and strategic role in raising public awareness about the importance of preserving and properly using urban spaces. As a powerful tool of communication and influence, media outlets are encouraged to:
- Produce targeted awareness campaigns that highlight the value of public urban spaces and encourage responsible behavior among users.

- Promote a culture of collective ownership by reinforcing the idea that urban spaces are shared community assets that require cooperation and care.
- Collaborate with urban planning and design professionals to disseminate accurate information about the benefits of well-maintained urban environments.
- Utilize diverse media platforms (TV, radio, social media, print) to reach various demographic groups and tailor messages to different community needs.
- Encourage community participation by showcasing successful local initiatives and stories of citizen involvement in improving and protecting urban spaces.
- Highlight the environmental and social consequences of neglecting or misusing urban spaces, to foster a sense of responsibility and accountability.
- Support educational content related to sustainable urban living and the role of individual actions in enhancing the quality of the urban environment.

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الفصل الثاني يهدف إلى إقامة علاقة بين معايير تصميم المساحات الحضرية داخل المناطق السكنية واحتياجات الإنسان التي يجب أن تلبيها هذه المساحات. كما تم النظر في دور هذه المساحات في تعزيز مبادئ الاستدامة الاجتماعية. ينقسم الفصل إلى جزئين:

الجزء الأول يتناول سلوك الإنسان، بما في ذلك مفهومه وأنواعه والعوامل المؤثرة فيه داخل المساحات الحضرية. يستعرض هذا الجزء الأنشطة التي يشارك فيها الناس داخل هذه المساحات. كما يراجع النظريات التي تشرح احتياجات الإنسان في البيئة الحضرية. ثم يسعى إلى تحديد دور معايير تصميم المساحات الحضرية في تلبية هذه الاحتياجات.

الجزء الثاني يشرح مفهوم الاستدامة ويقدم لمحة عامة عن ركائزها، مع التركيز على الاستدامة الاجتماعية. تم توضيح مفهوم الاستدامة الاجتماعية ودمجه مع مبادئ تصميم المساحات الحضرية. كما يدرس دور المساحات المفتوحة السكنية في تحقيق أهداف الاستدامة الاجتماعية.

الفصل الثالث يقدم دراسة تحليلية لثلاث مساحات حضرية داخل مناطق سكنية لاختبار وتطوير المنهجية المستخلصة من الدراسة النظرية في الفصول السابقة. بنهاية هذا الفصل، سيتم تقديم منهجية مقترحة يمكن استخدامها لتقييم المساحات الحضرية داخل المناطق السكنية.

الفصل الرابع يقيم دراسات حالة للمساحات الحضرية داخل المناطق السكنية في مصر، مع تحديد أوجه القصور في التصميم وتقديم حلول لمعالجة المشكلات التي تؤثر في هذه المساحات. الهدف هو تحسين جودتها وفعاليتها، وتعزيز مجتمع نابض بالحياة، نشط اجتماعيًا، ومستدام.

الفصل الخامس والأخير يستعرض الاستنتاجات المستخلصة من الأطروحة ويقترح التوصيات الناتجة عن هذه الدراسة.

الملخص

تتناول هذه الدراسة دور المساحات الحضرية داخل المناطق السكنية، حيث تساهم في تشكيل سلوك الإنسان وتحفيز التفاعل الاجتماعي، مما يؤثر بدوره على جودة حياة الأفراد وتفاعلهم مع البيئة المحيطة. بناءً على ذلك، يجب على المخططين والمصممين أن يركزوا على تصميم هذه المساحات مع التركيز على الجوانب المتمحورة حول الإنسان، بدلاً من التركيز فقط على الصفات الفيزيائية. هذه الجوانب تشجع الأفراد على التفاعل مع المساحة أو الاستفادة منها. ولتحقيق الجودة المرجوة لهذه المساحات، من الضروري التركيز ليس فقط على مبادئ الاستدامة، خصوصًا الاستدامة الاجتماعية، ولكن أيضًا على احتياجات الإنسان.

على الرغم من ذلك، في بعض البلدان مثل مصر، هناك نقص في تصميم المساحات الحضرية داخل المناطق السكنية. هذا النقص يؤدي إلى سوء استخدامها، سواء من خلال إهمالها لصالح الشوارع والمساحات العامة أو من خلال تدهورها. وهذا يؤثر سلبًا على الأفراد والصورة العامة للمدينة. على الرغم من أهمية مراعاة هذه الجوانب، إلا أنه لم يتم أخذها جميعًا في الدراسات السابقة.

في هذه الدراسة، تم أخذ هذه الجوانب بعين الاعتبار لفهم احتياجات الأفراد التي يجب تلبيتها داخل هذه المساحات. من أجل تحقيق تصميم ناجح للمساحات الحضرية داخل المناطق السكنية وتحقيق رفاهية الإنسان. بالإضافة إلى ذلك، تستعرض الدراسة معايير تصميم هذه المساحات مع مراعاة مبادئ الاستدامة الاجتماعية. الهدف هو اقتراح منهجية لتقييم جودة المساحات الحضرية داخل المناطق السكنية واختبار حيويتها. العلاقة المقترحة بين احتياجات الإنسان ومبادئ التصميم والاستدامة للمساحات المفتوحة السكنية يتم ربطها من خلال تلبية هذه المتطلبات. لاختبار فعالية المبادئ المستبعدة، تم اختيار ثلاثة مساحات حضرية في مناطق سكنية في شمال وسط برنو - جمهورية التشيك، ومدينة "لا سيتي دي ١٠٠٠ لوجمون" في الجزائر، ومدينة مدينتي في القاهرة الجديدة، مصر، كدراسة حالة. استنادًا إلى النتائج التي تم الحصول عليها، تم التحقق من صحة النموذج المقترح واثبت فاعليته في تقييم المساحات الحضرية داخل المناطق السكنية وضمان وظيفتها واستدامتها. تم اختيار ثلاث مساحات حضرية في القاهرة: الحي السويس في مدينة نصر، مدينة الرحاب، ومدينة ٦ أكتوبر لاختبار قدرتها على تلبية احتياجات المستخدمين والالتزام بمبادئ الاستدامة الاجتماعية. ويتلخص ترتيب البحث كالآتي:

الفصل الأول يهدف إلى استكشاف المفاهيم الأساسية لتصميم المدن، مع التركيز على فهم وتعريف وتصنيف المساحات الحضرية داخل المدينة. يتناول هذا الفصل الأسباب التي تجعل المساحات الحضرية مهمة للمجتمعات والمدن والأفراد. تم إيلاء اهتمام خاص للمساحات الحضرية داخل المناطق السكنية، حيث يتم تحليل مكوناتها الفيزيائية والعوامل التي تؤثر في تصميم هذه المساحات.

جامعة طنطا
كلية الهندسة
قسم الهندسة المعمارية

التصميم العمراني المستدام للفراغات العمرانية بالمناطق السكنية وتأثيرها علي سلوك الإنسان.

رسالة مقدمة إلى قسم الهندسة المعمارية – كلية الهندسة – جامعة طنطا
إيفاءًا جزئياً لشرط الحصول علي درجة الماجستير
"الهندسة المعمارية"
مقدمة مـــــن

المهندسة/ أميرة جابر أبو الفتوح عطية
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