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**PROMOTING SOCIAL RESILIENCE COHESION
IN MAHMUTBEY, İSTANBUL**

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Master's Thesis

Supervisor

Prof. Dr. Aykut KARAMAN

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DEDICATION

This thesis is dedicated to my parents, whose unconditional love, support, and sacrifices have been the foundation of my academic and personal journey. Their encouragement has inspired me to pursue my goals with determination and integrity.



ABSTRACT

PROMOTING SOCIAL RESILIENCE COHESION IN MAHMUTBEY, İSTANBUL

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Rapid population growth worldwide has resulted in environmental, economic, and social challenges that have transformed Cities into dynamic yet increasingly fragmented systems. Therefore, cities are becoming more dynamic and complex than predictable systems. This thesis examines how resilience theory can be applied to enhance social systems within the urban context. In 1973, C.S. Holling presented the theory of 'resilience,' which indicates the ability of the system to absorb disturbances and maintain its functionality, combined alongside Kevin Cunningham's framework for engaging urban design resilience strategies that identify key social resilience objectives, including improved connectivity, equitable access to public spaces and fostering social cohesion to address Mahmutbey social challenges. This research employs a multi-method approach, combining a literature review of social resilience frameworks, in-depth case study analysis, and site-specific application to Mahmutbey through developed implementations of strategies to address the neighborhood's fragmented social fabric and insufficient public spaces while aligning it with resilience theory principles. These strategies are designed for Mahmutbey and provide a replicable framework for addressing similar urban challenges for other neighborhoods in different contexts. The findings contribute to a broader discourse on resilience theory by demonstrating applicability at the neighborhood scale. Also, it provides policymakers and urban designers with a framework for fostering social resilience in diverse urban contexts.

Keywords: Social Resilience, Urban Resilience, Urban Development, Resilience Theory, Green Spaces

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1. INTRODUCTION

This chapter starts by outlining the persistent global challenges of rapid urbanization, environmental degradation, and social fragmentation that demand resilient urban design. It found urban resilience and social resilience as integral to sustainable urban development and introduced the Mahmutbey neighborhood in Istanbul as the focal case study for this thesis. The chapter also presents essential concepts such as “social cohesion,” “adaptive resilience,” “public amenities,” and “urban fragmentation” to elevate the current condition of Mahmutbey and foster its resilience in the social aspects, such as implementing the concepts of adaptive cycle, Panarchy which is crucial to understand what are the strategies should be implemented to enhance overall social resilience of Mahmutbey, while clearly stating the research questions, objectives, and contributions specifically the translation of resilience theory into practical strategies for existing urban neighborhoods such as the Mahmutbey neighborhood in Istanbul, Turkey.

1.1 OVERVIEW

The rapid urbanization with the expanding populations in cities imposes huge problems of resource depletion, climate change, and social disintegration. These issues place extreme stress on achieving sustainable practices and urban infrastructure. Today, more than 56% of the world’s population lives in cities, and it is predicted that up to 70% of the world’s population will live in cities by 2050. (World Bank, 2023). The aim of this research is to approach neighborhood-scale social resilience to alleviate these issues. Specifically, Mahmutbey is considered the case study due to its location and historical background. This research also contributes to the role of urban neighborhoods’ conception of resilience by suggesting possible solutions and strategies to create more sustainable urban growth and a healthy community.

The discourse on urban planning and design that develops between other disciplines has primarily addressed the challenges of the 21st century of urban planning and design, which now increasingly focuses on carbon emissions, in addition to climate change. However, planning and design in urban areas are now essential aspects in reducing the negative environmental impacts of urbanization. The focus has served new perspectives toward sustainable urbanization on public and non-motorized transportation systems; clean energy

uses recycling, green space, and environment-friendly building materials. Among other suggested urban models worldwide, the neighborhood scale has been recognized as the basis for sustainable urbanization.

The essential link between a city's sustainability and the health of its component units. Urban resilience appears to be one of the components of sustainability in the planning literature (Ahren, 2012). Resilience and sustainability were once understood as similar concepts in the sustainability agenda (Carpenter et al., 2001; Fiksel and Croxton, 2015). Some perspectives state that resilience and sustainability are so identical that they can be considered interchangeable. These perspectives on resilience and sustainability differ only in name, with both concepts applying to the exact dimensions: ecological, economic, social, and spatial (Zhang & Li, 2018). With that, the necessity of resilience in our cities is defined. The following relevant question is: What are some ways to design for resilience? To reduce the chances of a building being poorly resilient or losing resilience over time, this research is centered on how the theory of resilience, focusing on social resilience on a neighborhood scale, can be upheld and implemented to maintain a resilient approach for a neighborhood. The applied scale focuses on the neighborhood scale, as resilience work has only begun at the municipal scale but has not advanced clearly at this scale to any significant degree. Considering how urgent climate change is, it is recommended that resilience efforts take place concurrently at all levels.

Therefore, on the neighborhood scale, I outline some reasons for selecting it to analyze, understand, and implement social resilience strategies to enhance the neighborhood's social aspects.

Starting up resilience work on the neighborhood level in this research is a distinctive approach to understanding the challenges communities and neighborhoods face and what solutions to implement regarding social resilience strategies to enhance overall social resilience on the neighborhood scale. Therefore, no prior practice exists regarding how this may be done. Nevertheless, in Istanbul, the discussion of assuring sustainability-oriented neighborhoods has primarily focused on recent urban project constructions; little has been said about densely populated urban areas built in the last decades of the twentieth century. This study also aimed to constrain its findings to newly developed central city

neighborhoods, pondering their sustainability since they cannot undergo transformation soon, and the emphasis on social concern is essential for this study.

1.2 LITERATURE REVIEW

Studies have extensively examined resilience across social, economic, ecological, and spatial dimensions (Carpenter et al., 2001; Fiksel & Croxton, 2015). This research builds on these foundational studies by focusing specifically on the neighborhood scale, where resilience research remains disintegrated and underdeveloped. It addresses unique challenges such as social cohesion and sustainability in rapidly urbanizing areas such as Mahmutbey. However, this study exploring resilience at a neighborhood scale has not advanced beyond fragmented and Limited methods.

Resilience and sustainability demonstrate similar definitions, but their implementation in urban design practices remains restricted, especially for fast-growing areas such as Mahmutbey. Furthermore, most of the research on neighborhood resilience to date has concentrated on new urban design projects. Still, it fails to analyze how existing communities adapt when facing industrial development challenges.

This research's literature review delves into the theoretical and social aspects of resilience, the existing guidelines, and the successful applications of these methods in Mahmutbey; the following part states the current issues of Mahmutbey, the problem statement, and the research gaps.

1.3 RESEARCH GAPS AND PROBLEM STATEMENT

Despite the growing attention to urban resilience, several critical gaps persist, threatening metropolitan areas' capacity to adapt to and recover from challenges, including climate change, rapid urbanization, or other community challenges. Unresolved gaps have the potential to intensify environmental decline while increasing societal challenges and worsening the future sustainability of urban neighborhoods.

Mahmutbey neighborhood was chosen as the case study for this research due to its strategic location and current challenges, such as the lack of adequate green areas, public amenities, and environmental development approaches used in this neighborhood. Further, social

cohesion and community well-being are neglected in urban design frameworks due to the lack of and limited integration of social resilience.

Finally, even though resilience theory is well-established in academic discourse, its practical application at the neighborhood scale remains limited in utilization, leaving urban areas like Mahmutbey vulnerable to the negative consequences of rapid urbanization, including social fragmentation and environmental degradation. These gaps highlight the necessity of implementable frameworks that could improve and enhance sustainability and resilience at the neighborhood scale, considering social and physical factors. The current focus on these issues for this study are:

- a. **The Neglect of Existing Urban Fabric:** The available literature and practices of urban planning in Istanbul focus intensively on new urban projects and ignore the recently developed central city neighborhoods. Such disregard impacts the sustainability and resilience of this area. In response, the research maintains a sharp look at the newly developed neighborhood of Mahmutbey and appraises its resilience without threats of immediate massive transformations. The research focuses on such existing neighborhoods and thus intends to fill the gaps in the understanding of how social resilience can be promoted in rapidly urbanized areas such as Mahmutbey.
- b. **Infusion of Social Resilience in Urban Design:** Closely tied to neglect of the existing urban fabric is the limited infusion of social resilience into urban design frameworks, especially in rapidly urbanizing neighborhoods like Mahmutbey; their inclusion is one of the least considered areas in such general studies. The available studies on the subject under consideration are biased in favor of the issues of social, economic, and ecological resilience. Incorporating social resilience into urban design practices moves forward by proposing a framework that integrates features of cohesive and resilient communities. This signifies a more integrated approach to urban resilience, characterizing the meaning of consideration of social equity, community participation, and local governance, among others, simultaneously with the physical and environmental factors.

Therefore, it will be of the utmost importance that studies combine these elements in the future to implement social resilience in urban design effectively. Case studies clearly demonstrate this, including industrial zones turning into community centers.

- c. **Resilience Theory Applied in the Real World:** While the theoretical conception of resilience is now part of academic discourse, its practical application at the neighborhood scale remains relatively infrequent. As a result, by bridging the difference between theory and practice, this research promotes and develops a framework and strategies that translate these concepts into practical strategies for urban planning and design, taking public space design and social resilience as the key concepts of this research. In doing so, it attempts to provide practical tools and strategies to make explicit the leap from theory into practice in the identification of small-scale strategies for potential interventions to enhance resilience at the neighborhood level.
- d. **Effects of Fast Urbanization on Social Cohesion:** Finally, the rapid urbanization pace degrades social cohesion and community networks. An issue has been raised on how these weakening trends can be addressed after degradation sets in highly urbanized areas. Hence, this study investigates how Mahmutbey's accelerated urbanization has affected social cohesion and examines possible ways that can be built and implemented to strengthen its networks of communities. By promoting inclusive urban policies and service accessibility, the study also demonstrates how existing urban neighborhoods can recover and still sustain a feeling of community and social cohesion initiatives, with the primary constraint of its parks being connected within the neighborhood to foster social resilience, which is a crucial part of this study.

Social cohesion, understood as the degree of social connectedness, mutual trust, and shared identity among neighborhood residents, is central to creating resilient urban communities. This research highlights social cohesion as an essential objective for fostering Mahmutbey's urban transformation.

- e. **SWOT Analysis of Mahmutbey:** To systematically assess the current state and future potential of social resilience in Mahmutbey, a SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis was conducted. This analytical tool enables a structured evaluation of the internal and external factors influencing the neighborhood's capacity for social cohesion, sustainable development, and resilience in response to the challenges raised by new and rapid urban developments.

Strengths and weaknesses reflect inherent characteristics within Mahmutbey, such as its strategic location, demographic diversity, and gaps in social infrastructure. Opportunities and threats represent broader contextual dynamics, including urban policy trends, redevelopment prospects, rapid urbanization, and social fragmentation risks.

Table 1.1: Swot Analysis of Mahmutbey, Prepared by Author.

Strengths	Weaknesses
- Strategic location with major transportation hubs	- Lack of integrated green/public spaces
- Diverse demographic composition	- Fragmented social networks; weak social cohesion
- Existing municipal interest in urban improvement	- Limited community participation in planning, Insufficient public amenities
- Historical identity and community heritage	- Neglect of existing urban fabric in policy focus
- Potential for multimodal transport connections	- Poor accessibility/connectivity between spaces
Opportunities	Threats
- Application of resilience and social cohesion frameworks	- Rapid, unmanaged new urban projects
- Redevelopment of vacant/underused spaces	- Further social fragmentation
- Community engagement in park/public space design	- Loss of historical and cultural identity
- Integration of sustainable mobility and green corridors	- Environmental degradation
- Use of international best practices and policy models	- Inequitable access to public resources

The SWOT analysis synthesizes findings from literature, site analysis, and municipal reports to provide an evidence-based foundation for developing targeted strategies and actionable recommendations in subsequent chapters (See Table 1.1). It ensures that proposed interventions are aligned with the neighborhood's needs and assets and with social resilience frameworks and strategies for the Mahmutbey neighborhood.

1.4 RESEARCH OBJECTIVES AND CONTRIBUTIONS

This research directly addresses these gaps by presenting a developed framework for integrating social resilience into urban design at the neighborhood scale, filling a critical void in urban planning literature and practice. Specifically, it focuses on identifying and analyzing the social resilience challenges in Mahmutbey and the social network systems of the neighborhood. The research is based on other studies and frameworks that will be developed to boost both social cohesion and community well-being. The research advocates for social resilience urban planning approaches, incorporating green space development with public facility developments. The developed framework utilizes real-world scenarios, which have also been applied to Mahmutbey to validate the practical implementation of the proposed methods. This research contributes valuable sustainable urbanization and social resilience knowledge by introducing strategies to strengthen urban neighborhood resilience. The study adds essential knowledge to urban planning literature within the Turkish urban design context. It delivers practical guidance to policymakers and urban designers who work to create sustainable and resilient cities.

1.5 RESEARCH QUESTIONS

In alignment with the objectives of this research, with green space integration to improve connectivity and community-centric policies for urban social resilience, the following research questions are addressed in this research:

- a. How can integrating green spaces and multimodal transport systems enhance Mahmutbey's social and environmental resilience?
- b. How can we design more resilient spaces, with the role of community-centric policies and participatory planning, that strengthen neighborhood cohesion and adaptive capacity?
- c. How can adaptive land-use strategies be applied to promote sustainable social, economic, and ecological outcomes in rapidly urbanizing neighborhoods like Mahmutbey?

This chapter concludes the rationale for focusing on Mahmutbey by emphasizing issues such as fragmented public spaces, limited connectivity, and the absence of cohesive green

corridors. It reiterates the study's commitment to promoting social resilience through design interventions. Having established the research problem statement and the necessity for integrating these concepts, such as social capital, diversity, redundancy, and adaptive planning, into urban design, the next chapter covers a comprehensive overview of the Mahmutbey neighborhood, such as historical background, current and future plans for the neighborhood, the transportation system and its demography.



2. BACKGROUND

2.1 HISTORY OF MAHMUTBEY, BAĞCILAR



Figure 2.1: Satellite Imagery of Mahmutbey Neighborhood Location (Google, 2024).

Bağcılar experienced rapid growth as the migration between Anatolia and Istanbul increased in the 1970s. It has become one of the most populous districts of Istanbul, a mosaic of Turkey in terms of its demographic structure. It became a district through a law published in the Official newspaper dated June 3, 1992, and numbered 21247, Bağcılar (Tarakçı & Olcay, 2024). Mahmutbey, Bağcılar, and Kirazlı villages, with the Papasköy farm, are among Istanbul's historical settlements. In the late Ottoman period, Mahmutbey, one of the largest settlements in the region, was designated as a township. The first name of Mahmutbey township was Kalfaköy (Tarakçı & Olcay, 2024). In 1914, Kalfaköy, with a population of over 300, was first renamed Mahmudiye and later Mahmutbey (Bağcılar Belediyesi, 2020) as shown in Figure 2.1. Since the 1970s, because of the advantageous transportation, the TEM and E-5 highways have been popular targets for industrial adaptations that have left the city center. Rapid changes in land use were impacted by the Basın Ekspres Road, which was built in the 1980s to connect TEM and E-5 highways. The Mahmutbey neighborhood is one of the neighborhoods along the Basın Ekspres Route, as shown in Figure 2.2.



Figure 2.2: Highways Surrounding Mahmutbey, Prepared by Author.

Industrialization in the region began taking hold in the 1970s and developed throughout the 1980s. As the population expanded, the basin route remained in the center of the city; by the 2000s, numerous office, hotel, and residential projects had been introduced in the area, and efforts to decentralize industry had been started under the direction of several master plans (Olçay, 2020). With Fordist production entering a crisis towards the mid-1970s, the service sector began to replace factories that were closed due to the situation in the industry or relocated to regions where costs were low. In this context, deindustrialization caused factors to collapse, which led industrial cities to shut down factories and start the era of replacement labor by technology and led to the movement of job opportunities outside of the center of the city (Hall, 1998). However, the old functions are sector-based on the production of goods, while the new functions are related to the creation, modification, and use of data.

Advanced economies are moving from the manufacturing sector to the service-based industry in the terms of employment and shares of the gross national product (Hall, 1997). and the start culminating in the inception of high-quality mixed-use, residential-business-oriented urban projects in early 2013 in Mahmutbey. The Figure 2.3 shows the distribution of manufacturing areas and space-based service areas.



Figure 2.3: Industrial and Commercial Areas in Mahmutbey, Prepared by Author.

Despite the work that has been accomplished, a significant number of vacant properties in the Mahmutbey area will undergo development during the next decade. As shown in Figure 2.3, the current commercial and industrial areas of Mahmutbey. The practical information gathered from the ongoing transformation of Bağcılar will tremendously aid resilient urban growth in Mahmutbey. Furthermore, it will also contribute to raising the level of discourse

on resilient urban development in general. This neighborhood rapidly urbanized as people moved from rural to urban areas due to the affordable land cost and the availability of workspaces. This rapid urbanization has resulted in the creation of one of Istanbul's most densely populated areas, which has affected the neighborhood, such as the lack of adequate social and technological infrastructure.

2.2 BAĞCILAR DISTRICT PLANS FOR MAHMUTBEY

There are no official projects to be established by the local governments for new investment in any form in Mahmutbey at the moment. Still, there are some minor development plans in the neighborhood. The decentralization of industry in this region began with measures implemented in the 2000s. The practice of different master plans and tens of residential, office, and hotel developments became a practice in the region. There are activities of non-polluting industrial running in some areas of Mahmutbey, which lies east of the route. In this sense, the demand and potential for continuing production in the region are present. The Basın Ekspres Route and surroundings reflect both industrial and post-industrial characteristics. Zoning restrictions exist for non-production facilities on the east side of Basın Ekspres in the area in which the Mahmutbey neighborhood is situated, where non-production facilities have started to appear within the last two decades. However, on over nine urban projects that would fall under the luxury mixed-use development category, these developments are being developed randomly without a sense of communication with each other in the context of urban design. The private investors have already started construction of these projects, as shown in Figure 2.4, and the current projects being built. Still, there are many vacant lands in the neighborhood that the Bağcılar municipality has categorized, such as parks, health, streets, and mixed-use, but most of these vacant lands have not been developed yet.



Figure 2.4: Current Construction Projects in Mahmutbey, Prepared by Author.

2.2.1 Current and Future Transportation Plans

Considering Istanbul's increasing population and developments, the current transportation system is one of the most significant critical issues. The solution to this problem is the dissemination of the rail system network, which has become a necessity. The municipality continues to work on disseminating rail systems throughout Istanbul to solve the transportation problem and connect the neighborhood with the surrounding area and other parts of the city.



Figure 2.5: Current Transportation System in Mahmutbey, Prepared by Author.

The main backbone of the system will be formed together with the existing and ongoing rail system lines. In addition, other planning Works are carried out in this context to make the system more effective, as Bağcılar Belediye stated in 2023. Currently, the transport system on the territory of Mahmutbey is one of the key stations on the network of the Istanbul metro, connecting important lines, see figure 2.5. There is an M3 Line that stretches from Kirazlı to Başakşehir and the Olympic area, which connects to the M7 Line at the Mahmutbey Station. There is an M7 Line, which starts from Kabataş, runs through Mecidiyeköy, and reaches Basaksehir, where the M2 Line, at the Mecidiyeköy station, attracts, ensuring comfortable and massive passenger transportation from one end of the city to the other. It

provides increased accessibility to the passengers, and it has vital connections between the critical areas of Europe.

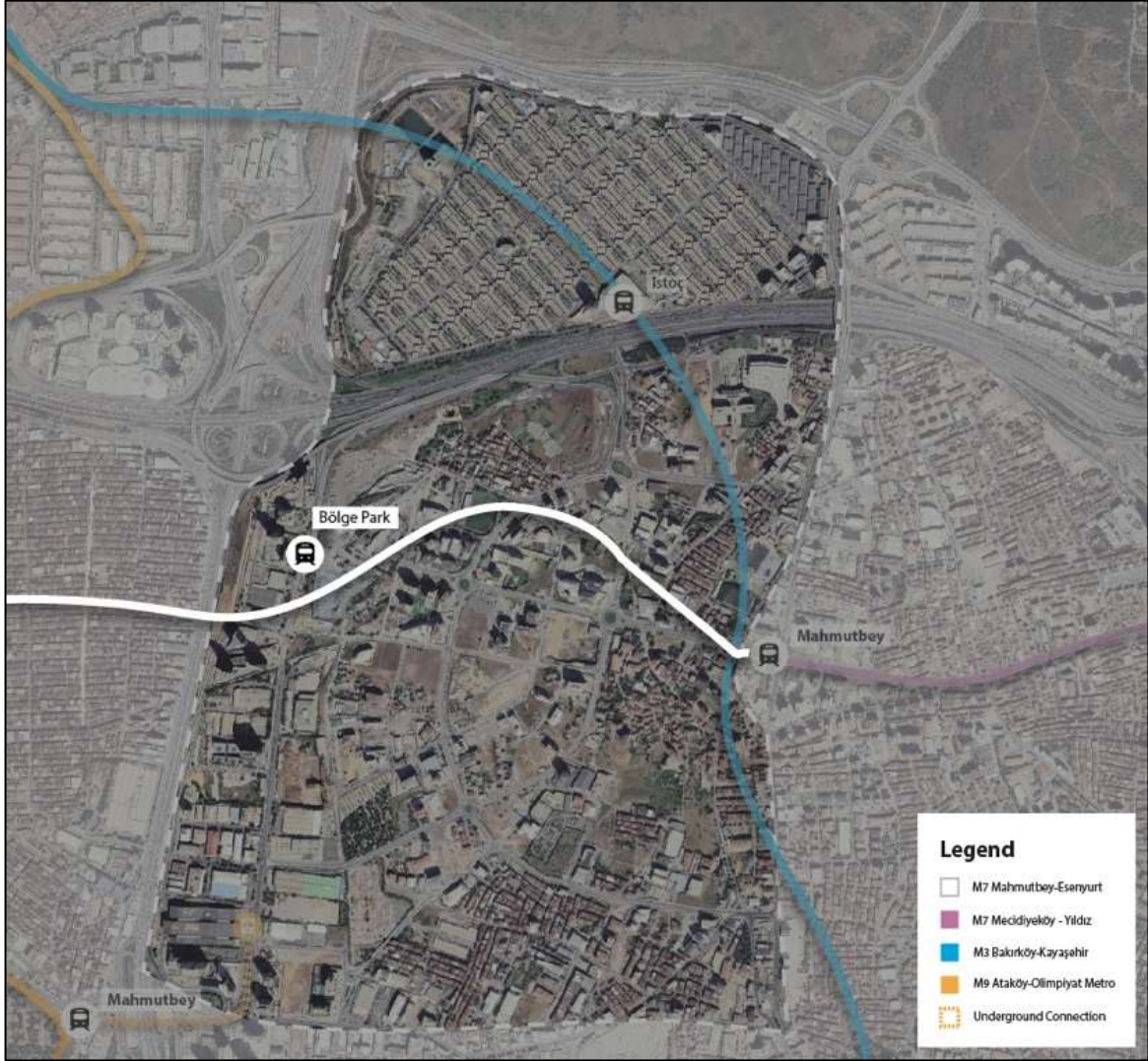


Figure 2.6: Future Transportation System of Mahmutbey, Prepared by Author.

Regarding the future transportation system, Mahmutbey's position will further rise with the new metro lines and their extensions, as shown in Figure 2.6. The M9 Line, to be opened in 2026, starts from Mahmutbey and goes to Bahçeşehir and Esenyurt; it will be a vital line for Mahmutbey (Belediye Bağcılar, 2023). That line will attract the existing M3 Mahmutbey and M7 lines, connecting them and substantially improving commuting possibilities. The automatic driverless M7, which now reaches Mecidiyeköy-Kabataş, has a positive effect on the east-west connection. M11 will connect Halkalı with the Istanbul Airport. In this junction again, with lines M3 and M7, within the current plans to achieve the closure of the ring and

the multiplication of the role of Mahmutbey as a supercritical transport hub which puts the bölge Park an essential position for the neighborhood of Mahmutbey, furthermore, with an increased overall efficiency in terms of time and service area of the metro network in Istanbul, especially for bağcılar district to serve its residents.

2.3 RELEVANCE TO SOCIAL RESILIENCE

The transportation system of Mahmutbey is considered the main key element for this research. This transportation system is located around the planned parks, such as Bölge Park, which will transform it into a significant point for socializing and as a public space to foster the neighborhood's resilience.

2.3.1 Social and Demographic of Mahmutbey

In Mahmutbey, with 25.180 residents living in this neighborhood, and because of the challenges that Mahmutbey faces, the opportunity to encounter similar issues and contribute to the resilient urban design, which also can be a lesson to be learned from this area and could provide valuable insight for other similar urban areas see figure 2.7.

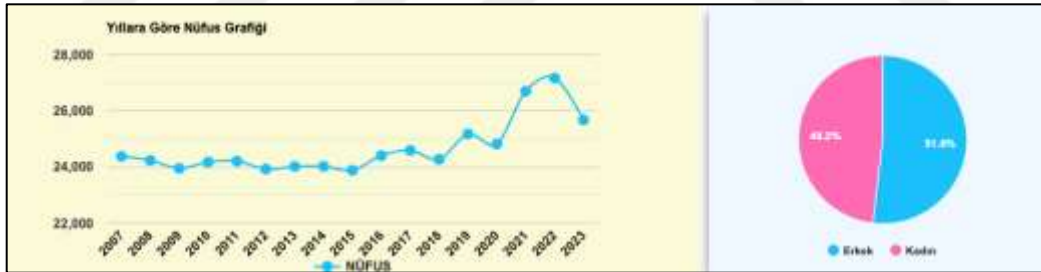


Figure 2.7Population and Urban Development of Mahmutbey Neighborhood, (Nufusune, 2025).

2.3.2 Identified Challenges and Issues

With the current plans for the transportation of Mahmutbey, issues regarding the neighborhood's resiliency regarding the proper public spaces and connecting these transportation systems within the neighborhood abound.

3. LITERATURE REVIEW

The last chapters outlined a series of goals and objectives of urban design in urban resilience theory. However, comparing those objectives with those in urban resilience theory requires more research to be done to pinpoint social capital in urban public spaces and to go through the existing theory on urban public spaces. Therefore, this part examines the literature on resilience and its social aspect. The literature study is relevant to architecture, urban planning, and landscape architecture, all of which are connected to resilience theory. To establish resilience theory in the context of landscape architecture, the following four categories are proposed as essential: engaging, responsive, adaptive, and transformative. Later on, they will be applied to Mahmutbey to overcome the existing issues and to foster its social resilience with the existing guidelines and framework to be developed and implemented.

3.1 CONCEPTUAL FOUNDATIONS OF RESILIENCE THEORIES

Holling introduced in his paper in 1973 the term "Resilience." This concept was first used, unlike traditional ecological viewpoints that only consider a single, focused equilibrium. Holling (1973, p. 14) defined stability as "the ability of a system to return to an equilibrium state after a temporary disturbance," establishing resilience apart from stability." He characterized resilience as "an indicator of system persistence, its capacity to withstand disruption and change while maintaining the same connections between populations or state variables. This means that after a disturbance occurs, the system would eventually return to that one state. Holling challenged this view by suggesting that ecosystems can have multiple states and that their ability to absorb disturbances, adapt, and still function is what defines their resilience.

As Folke and colleagues (2002, p. 5) highlight, resilience is the opposite of vulnerability, which is understood here as "A tendency of social and ecological systems to experience harm when confronted with external stresses and shocks." Since its development in ecology, resilience has enriched its meaning and expanded its application area across the physical, social, and natural sciences, from physics to psychology (Klein, Nicholls, & Thomalla, 2003; Pendall, Foster, & Cowell, 2010; Taşan-Kok, Stead, & Lu, 2013). After that, it spread into other fields with other definitions under the umbrella of ecology, including the physical and

material sciences, cultural anthropology, and environmental psychology. It was widely adopted in the Social Science field in the 1980s and was also applied in the field of disaster management, Economics, Geography, Political Sciences, regional and Planning Studies (Klein et al., 2003; Taşan-Kok et al., 2013). Furthermore, A series of theories developed later on, such as:

- a. The transformative resilience theory encompasses the contributions of C.S. Holling in "Resilience and Stability of Ecological Systems" and "Understanding Complexity of Economic, Ecological and Social Systems," as well as the collaborative work of Gunderson and Holling in "Panarchy: Understanding Transformations in Human and Nature." Additionally, it includes the insights of Walker and Salt in "Ecology and Society: Resilience, Adaptability and Transformability in Social-Ecological Systems." Theoretically, resilience theory will have evolved landscape architecture from an ecological to a more comprehensive viewpoint..
- b. Responsive Resilience theory is the literature used by contemporary landscape architects to support social urbanism and landscape architecture theory. The literature review does not directly reference C.S. Holling's work, yet it does refer to the key principles and concepts of the resilience theory. Following the identification of responsive resilience theory, landscape architects have significantly improved their understanding of resilience theory.
- c. Adaptive resilience theory encompasses literature on its application in planning, landscape architecture, and other social-ecological research areas. The Stockholm Resilience Center and the Resilience Alliance both make significant contributions in this category. These organizations have employed several authors to apply resilience theory in decision-making and policy-making.
- d. The frameworks and guidelines outlined in the Landscape Architecture Case Study Method (LAF, 2019) and the Sustainable SITES Initiatives: Guidelines and Performance Benchmarks 2009 (SITES 2009) support the concept of "engaging resilience." The frameworks and guidelines enumerated were utilized in the application to formulate the social resilience guidelines pertinent to this project's case study analyses.

These existing resilience theories, with their aim and concepts, set clear goals and strategies to achieve them and be applied in real life. In the following part, I delved into the main objectives and strategies for resilience theories.

3.2 GOALS AND STRATEGIES OF RESILIENCE THEORIES

Resilience theory sets out wide-ranging goals and strategies to enhance the system's capacity to endure change while preserving its structure, function, identity, and feedback mechanism (Walker and Salt 2006, 154). To achieve the goals and strategies, the theory addresses the "natural resource management has undergone a paradigm shift from top-down, command-and-control optimization to encouraging self-organization and resilience," involving planners and resource managers in the framework and governance of the Adaptive Environmental Assessment and Management (AEAM) and educating policymakers and decision-makers about the research findings of resilience theory (Resilience Alliance 2013). Policy and decision-making processes are subject to the influence of landscape architects and designers. To incorporate resilience theory into their work, they should include the design of complex adaptive systems, cross-scale interactions, and nonlinear dynamics. Designs are, in their best sense, much more than just paper visualizations; they are social-ecological art pieces. However, even though designs may be artistically illustrated, how well do they implement the resilience theory?

Policymakers and decision-makers must prioritize systems, thresholds, and scales in order for designs to effectively implement resilience theory. The prioritization hierarchy is crucial in the system's ability to exemplify resilience at different spatial and temporal scales (Folke et al., 2002, p. 21). The following chapters highlight studies by architects, landscape architects, and other designers who have utilized the guidelines and frameworks of resilience theory in the field of urban design.

3.3 CORE DIMENSIONS OF URBAN RESILIENCE

While from specific points of view, resilience and sustainability have appeared closely aligned due to their standard dimensions that consist of (social, economic, ecological, and spatial), there are differing arguments holding that they are considerably distinct (Zhang & Li, 2018). Based on what is presented in the literature, resilience is categorized into three

major dimensions: social, economic, and environmental. In academic discussions, social resilience is addressed regarding social organizations and the diversity inherent in societies. Economic resilience is framed as safeguarding economic assets against financial disturbances and stresses.

Ecological resilience is discussed with reference to the capacity of a system to withstand disturbances, reduce adverse impacts, and maintain or restore its equilibrium. Apart from these three dimensions, a relatively newer dimension of resilience is emerging: spatial resilience, which is also reflected in the resilience literature. Table 3.1 gives an overview of the characteristics of these four dimensions. The information presented in the table is adapted from (Siavash, 2016), which itself was based on (Kahn, 1995).

Table 3.1: Associated Qualities and Stressors of Resilience (Adapted from Siavash, 2016), Which Itself Adapted Data From (Kahn, 1995).

Dimensions	Attributes	Stressors
Social Resilience	Empowerment, Equity, Cultural Identity, participation, Accessibility, Sharing,	Political Instability, Civil Disturbance, Poverty, Unaffordability
Economic Resilience	Development, Innovation, Productivity, and Growth	Financial Crisis and Economic Disruptions
Environmental Resilience	Integrity of Ecosystems and Carrying Capability	Climate change and the loss or extinction of biodiversity
Spatial Resilience	Interactions, Adaptive Capacity, Historical Memory, System Size	Complex System Planning, Uncertainty, Variable Complexity

While understanding the characteristics of these dimensions related to urban resilience, the primary dimension for this research is social resilience. In the following section, the term will be clearly explained with its forms of capital and resources.

3.3.1 Social Resilience

Social sustainability is " the formation of robust neighborhoods that fulfill residents' health and shared requirements over an extended period, while Residents are enabled to have equitable access to green areas and healthy spaces, and they can select from various modes of transportation and enjoy a superior standard of living" (Sustainable Sites Initiative, 2009).

Social resilience is rooted in the social system's ability to foster trust, reciprocity, collaboration, and expertise amongst social systems on different scales. The success of the connections among the social systems formerly ultimately dictated the value of social resilience (Putnam, 2000). The first role of social resilience is the capacity to learn from each other or expand one's awareness of one's surroundings and adjust to alterations, reliant on the functionality of social systems (Putnam, 2000).

The second role involves reciprocal norms that allow individuals or groups to form connected networks within their social systems. Besides that, the third role of social resilience is centered on collaboration between individuals and groups based on the social system they belong to as representatives of it. Yet, the partnership between individuals and groups can generate new social systems. The last function is fostering trust, which allows people within a particular social system to strengthen their unity, as social ties result in people being more closely connected than before (Putnam, 2000). Therefore, social resilience allows societies to monitor changes and recognize how they can be less affected by alterations that increase social vulnerability.

Through perceiving the roles of social resilience, an improved comprehension of the success or failure of social systems can be achieved. The exchange of knowledge is the first aspect and depends on the success of social capital, which will be explained in the following section. Social Resilience, in relation to community networks and adaptation, is preserved in three dimensions:

- a. Coping capacities, which means the capability to recover from setbacks.
- b. The second dimension is adaptive capacities, which describe the ability to learn from experience and adapt to upcoming challenges.

- c. The third one is transformative capabilities, which involve the ability to participate in the decision-making procedure and thus alter institutions (Keck & Sakdapolrak, 2013).

Moreover, Social resilience is argued to rely on the availability and accessibility of resources (Platts-Fowler & Robinson, 2016; Breton, 2001; Chaskin, 2008). In Table 3.2, the resources are associated with different types of social capital.

Table 3.2: Forms of Capital and Resources, Adopted, Based on Breton, 2001; Chaskin, 2008; Platts-Fowler and Robinson.

Forms of Capital	Types
Social Capital	Networks, Contacts, Relationships, Bridging / Bonding, Trust
Human Capital	Income, Education, Skills, Knowledge
Cultural Capital	Identity, Values, Assumptions
Physical Capital	Infrastructure, Services (Social, Health, Spiritual, Etc.)

Social cohesion is also what this study focused on, which means having the condition and unity, consistency, and a strong connection among different parts forming a single whole. As taking Mahmutbey as the case study with all its various parts such as both the vertical and the horizontal interactions among members of society as characterized by a set of attitudes and norms that includes trust, a sense of belonging and the willingness to participate and help, as well as their behavioral manifestations (Chan, To, & Chan, 2006), (see Figure 3.1).

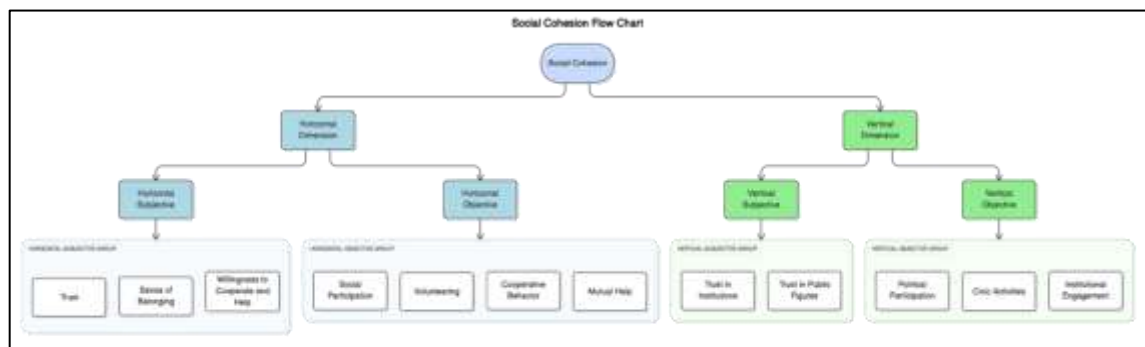


Figure 3.1: Social Cohesion Diagram, Adopted From (Chan, To, & Chan, 2006).

3.3.2 Economic Resilience: Stability and Growth Factors

The second Dimension of urban resilience, economic resilience, becomes a point of debate for many, particularly concerning the capacity to adapt to or recover from adverse economic shocks and pressures, such as elevated unemployment rates and reductions in discretionary spending or taxation. Siavash (2016) characterizes economic resilience as the capacity to withstand alterations and shocks in the economy from internal or external forces while maintaining the ability to allocate resources more efficiently. Recently, the term "resilience" has been used in economic literature in three different contexts.

- a. The first, which means the capacity to quickly recover from a shock, is related to the adaptability in the economic structure; it enables recovery after experiencing shocks (Briguglio et al., 2006).
- b. The second is the capacity to endure the impact of the shock by absorbing or mitigating its negative consequences. Briguglio et al. (2006) point out that a multi-skilled, adaptable workforce can function as a mechanism for shock absorption, which allows for the relatively straightforward reallocation of resources to sectors with stronger demand in response to adverse external demand shocks impacting specific economic activities.
- c. The capacity to avoid the shock is considered the third sense, regarded as observing the economy's vulnerability. Unlike the other senses, it is more inherent, according to Briguglio et al. (2006).

In conclusion, economic resilience refers to the system's capacity to recover and adapt in the long run, avoiding disruption and ensuring its adaptability and stability.

3.3.3 Ecological Resilience: Environmental Sustainability

The third dimension of urban resilience is Ecological resilience, which refers to the ecosystem's capacity to absorb disturbances and continue functioning without getting into an alternative state, the extent of disturbance an ecosystem can undergo before shifting to an alternate set of controls (Holling, 1973). These are intermingled concepts in socio-ecological systems in which the focus is the combined resilience of humans and nature (Folke, Colding, & Berkes, 2003).

Ecological resilience, as defined by Sharifi and Yamagata (2018), is an adaptable and flexible approach to fostering city-level robustness. It emphasizes the need to design systems with safety margins to withstand impacts by absorbing shocks, preserving operational capacities, and reducing general losses.

According to Folke, Colding, and Berkes (2003), the capacity of the system to maintain desired conditions and alter them into more desirable equilibriums when necessary is the key to effective management. Effective management requires a social-ecological system (SES) institutional capacity to respond to environmental feedback, integrate diverse types such as knowledge, foster functional diversity, and create opportunities for self-organization to sustain essential ecosystem facilities (Folke, Colding, & Berkes, 2003).

Recovery is the nurturing of memory for ecosystems by protecting their species, habitats, and biodiversity to allow reorganization and renewal of ecosystems in the face of disturbances (Folke, Colding, & Berkes, 2003). More particularly, Zurlini, Petrosillo, Jones, and Zaccarelli (2013) define ecological resilience as the capability for the system to reorganize under a wide range of disturbances and still abate some functions; the way to evaluate the system's ability to learn, adapt, self-organize, and absorb change; additionally, assess the development of learning and adaptation capacity.

Transition refers to the fact that one can learn to accept uncertainty and exist amidst alteration. It involves learning from crises, expecting the unexpected, and managing cross-scale dynamics to keep things resilient (Folke, Colding, & Berkes, 2016). Resilience-building in socio-ecological systems includes "experience, learning features, self-organization, and creation of opportunities to manage adaptively in a world characterized by change" (Folke, Colding, & Berkes, 2016).

In recovering from the perturbation, the ecological system's resilient property may change such that it pushes the system toward new equilibrium states while retaining its basic properties. This proposition agrees with the concept that, operationally, a resilient system has to absorb shocks in front, keep the system functioning, and, if needed, transform to push it to another, better, more desirable state.

3.3.4 Spatial Resilience: Urban Form and Infrastructure

The fourth dimension of urban resilience is Spatial resilience, which is the system's ability to reorganize socially and ecologically while absorbing turbulences and holding to the core functions, feedback, and structures; this concentrates on land variables and processes (Cumming, 2011). It is conceptualized as the interplay between spatial heterogeneity, connectivity, and scale, together with spatial feedback and adaptive capacity, all of which may affect the capability system to experience change without irreversibly losing critical features and functions. In an urban context, spatial resilience underlines the significance of maintaining the integrity and functionality of places among various disturbances, encompassing both physical and non-physical characteristics such as robustness, coherence, flexibility, the capacity and ability to innovate and transformation (Dastjerdi et al., 2021). The concept may be found in the degree of interconnectedness, for example, of urban physical structures, public spaces, access networks, and landmarks, among others, up to which the resilience of the urban spaces may be assured (Dastjerdi et al., 2021).

In conclusion, this multidimensional understanding of spatial resilience informs urban planners and policymakers to develop strategies for developing resilient urban environments that could adapt to the uncertainties and challenges facing the future. Furthermore, as mentioned, the key element of this research, social resilience, is explained previously as the first dimension in the chapter. The following section will explore social resilience theories in detail.

3.4 SOCIAL RESILIENCE THEORIES

Walker, along with Salt, their research on adaptability, transformability, and resilience in social-ecological systems, advances the theory of resilience by describing the movement of these systems toward a stable state. Cunningham (2013) outlines the positioning of systems within the three dimensions of the theory of resilience:

- a. A Framework for Engaging Urban Design that identifies "precariousness, latitude, and resistance." The width of the basin, or latitude, measures how much change a system can withstand before losing its ability to recover.

This basically indicates whether the system, such as the neighborhood, is stable or not while facing challenges, unstable and threatened to collapse, or able to withstand significant disturbances.

- b. Resistance is a measure of the basin's depth that reflects the degree of difficulty in changing the system.
- c. Instability indicates the system's present trajectory and proximity. There is a critical threshold between basins of attraction, and a system is more vulnerable to being pushed over it as it gets closer (Walker and Salt, 2006, 63).

To conclude these social resilience theories, we identify whether the system is stable or unstable and point out its distances in relation to the type of social network system, such as decentralized, centralized, or hierarchical. Within the following section, the existing social resilience is explained.

3.4.1 Transformative Resilience Theory

In 1973, Holling developed resilience theory to comprehensively understand the social, economic, and evolutionary systems and their circumstances on a global scale. Holling's work challenged the traditional methodologies that portrayed ecosystems as evolving through a steady sequence of successions, which means implying the linear progression towards climax from the equilibrium viewpoint of ecological systems to a multi-scale, non-equilibrium framework; Holling's research introduced resilience theory. (Cunningham, 2013, 10). Simply comprehended that transformability is a system's capability to adapt to survive. It is "the ability to develop essentially new systems when environmental, financial, or social (including political) circumstances make the present system unacceptable," according to Walker et al. (2004).

Walker et al. (2004) explain their notion of transformability, which they define as "defining and designing new stability environments by adding fresh elements and means of livelihood, and ways of making a living, thus changing the state of variables in the system, and often the scale that defines it." Differentiating between resilience and transformability According to Walker et al. (2004), a system's resilience isn't always an appealing characteristic. By asserting that "sometimes change is important, generally at greater scales, and then the

effective management demands overcoming the resilience in the system to precipitate changes at these scales. According to Walker and Salt (2006), resilience is defined as "the amount of change a system can undertake and remain within the same regime, essentially retaining the same function, structure, and feedback." Gunderson and other theorists have also influenced the development of Holling's resilience theory, in addition to Walker and Salt.

Walker et al. (2004) outline the attributes of transformability as follows: "novelty, diversity, and organization in human capital—diversity of functional types (varieties of education, expertise, and occupations); trust, strengths, and variety in institutions; and the speeds and the types of cross-scale communication, both within the Panarchy and with other systems." The Transformations understanding in Human and Natural Systems". Gunderson and Holling. (2001) outlined certain aspects that influence resilience theory across diverse dimensions and systems. This is referred to as the adaptive cycle. Gunderson and Holling demonstrate that within the adaptive cycle, some of the most essential characteristics of the ecological systems emerge from the interactions between the slow-moving and rapid processes, as well as between processes with significant spatial influence and those that are more localized (Gunderson and Holling, 2001).

Gunderson and Holling believe that these alterations in natural systems may also be predicted and managed; conversely, the modifications in the human and ecological systems involve more significant variables, and when forecasting, it is becoming more challenging and problematic. Walker et al. (2004) They identify the following attributes of transformability: novelty, diversity, and organization in human capital; varieties of education, expertise, and occupations; trust, strength, and variety in institutions; and speeds and types of cross-scale communication within the Panarchy and with other systems." The understanding of the Transformations in Human and Natural Systems" (2001), Gunderson and Holling outlined certain aspects which that influence resilience theory across diverse dimensions and systems.

This is referred to as the adaptive cycle. Gunderson and Holling demonstrate that within the adaptive cycle, some of the most essential characteristics of the ecological systems emerge from the interactions between the slow-moving and rapid processes, as well as between processes with considerable spatial influence and those that are more localized (Gunderson

and Holling 2001, 9). Gunderson and Holling believe these alterations in natural systems may also be predicted and managed; conversely, with the modifications in the human and ecological systems involved, greater variables are involved, and forecasting becomes more challenging and problematic.

Panarchy is a fundamental concept for comprehending transformation and reorganization processes inside a system. Therefore, it is prominently acknowledged in resilience literature. Initially introduced by Holling, Panarchy refers to the hierarchical arrangement of interrelated adaptation cycles operating across many spatial and temporal dimensions (Holling, 2001; Brian Walker et al., 2004). These are regarded as key units of complex adaptive systems, which also involve adaptive cycles, as well as the idea of Panarchy.

3.4.2 Adaptive resilience theory

Adaptability is characterized as the ability of individuals or entities to adjust to respond to changes or disturbances (Brian Walker et al., 2002). It is also defined as the capacity of the 'actors' within a society, as it is influenced by the system's social component (Brian Walker et al., 2004; Folke, 2006). The ability of individuals to build (Folke, 2006), influence, or manage (Brian Walker et al., 2004) the system's resilience is emphasized.

With regard to this, adaptive capacity is linked to society's learning and innovation capabilities (Carpenter et al., 2001; Chapin et al., 2009). The system's adaptive capacity is influenced by biological, economic, and cultural diversity, effective governance, and the learning capacity of individuals, institutions, and networks. (Chapin et al., 2009; Folke et al., 2002); invention and experimentation, as well as social, human, natural, and built capital (Chapin et al., 2009).

In the research of C.S. Holling, Gunderson, Walker, and Salt, socio-ecological systems become the basis for resilience theory. Organizations and Researchers that have applied the resilience theory to landscape architecture, planning, and various social-ecological research fields, such as the Stockholm Resilience Center and the Resilience Alliance, and the work of Walker and Salt.

The Alliance outlines system thresholds, dynamics, transitions, interacting thresholds, cross-scale interactions, governance systems, cascading change, resilience-based stewardship, and

the necessity for transformation (Resilience Alliance, 2024). The framework for resilience assessment is a method for managing systems of natural resources that considers social and ecological factors across multiple scales, incorporates ongoing change, and recognizes inherent uncertainty, thereby enhancing a system's resilience to disturbances and its adaptability to change (Resilience Alliance, 2024).

The workbook by the Alliance outlines guidelines for assessing systems in projects for resilience; however, it lacks guidelines for design and post-evaluations. Walker and Salt, in *Resilience Practice: Developing the Ability to Handle Disturbances and Maintain Functioning*. They applied resilience in practical contexts and investigated the implementation of resilient system management practices across different scales. In examining case studies within *Resilient Practice*, Walker and Salt demonstrate the fundamental aspects of resilience thinking in practice. They intervene within the social-ecological systems and evaluate and manage resilience by fostering the implementation of resilience strategies through diverse approaches. They have key points from thinking that lead to practice in resilience.

- a. The systems we are dealing with are self-organizing.
- b. A system has limits to its self-organizing capacity
- c. These social, economic, and biophysical domains have been linked through these systems.
- d. Self-organizing systems pass through the adaptive cycle.
- e. Linked adaptive cycles can operate at multiple scales.
- f. Specifically, three related dimensions of resilience are transformability, general resilience, and specified resilience.
- g. Adapting and transforming are involved in working with resilience; the cost is in maintaining or building resilience.
- h. Resilience is not a byword for knowing everything.

The shift from adaptive to responsive resilience theory highlights the need to incorporate social learning and engagement into urban resilience planning.

3.4.3 Responsive Resilience Theory

While adaptive resilience theory has been instrumental, its application to urban settings has not been obvious (Ahern, 2011). Ahern, responding to the works of Walker and Salt, developed an urban design framework that emphasizes the prominence of social interaction in resilient urban circumstances. His framework, outlined in "From Fail-Safe to Safe-to-Fail: Sustainability and Resilience in the New Urban World," includes five strategies: multi-scale networks and connectivity, adaptive planning and design, bio and spatial diversity, multi-functionality, modularization, and redundancy (Ahern, 2011).

These strategies collectively address resilience in urban landscapes, focusing on creating environments that can withstand and adapt to various disturbances. This comprehensive approach ensures that urban planning considers physical systems and promotes social engagement and contribution to decision-making and policy formulation (Ahern, 2011). Additionally, case studies such as Joan Woodward's "Envisioning Resilience of Volatile Los Angeles Landscapes" demonstrate practical applications of these theories, highlighting strategies to manage disruptions like water shortage, growth of the population, and natural disasters such as earthquakes through adaptable and durable landscape treatments (Woodward, 2008).

3.4.4 Engaging Resilience Theory

Engaging resilience theory is a new, advanced framework that argues that active, essential, and meaningful community participation is an important factor and that communities should interact within the resilience process. It, therefore, stands apart from the traditional static, passive, or even resilience earlier concepts of adaptation. In the reasoning that advocates for development, it must be active, action-oriented, and participatory; people and communities should be active in planning, deciding, and effecting decisions and the resilience strategies (Norris et al., 2008). It emphasizes the community competence, social capital, and effective communication systems that can enhance resilience by actively nurturing and leveraging these elements. It further explains that resilience means bouncing back and changing into a

completely different form due to the evolving circumstances. (Cutter et al., 2008; Walker & Salt, 2006). It, therefore, calls for a multi-stakeholder approach, one that ensures the process of building and enhancing resilience will be participatory and one that will also be practical.

These are all elements of an urban system (Meerow, Newell, & Stults, 2016). Incorporating all these components together enables ERT to realize a comprehensive and flexible approach to community resilience improvement through an active and inclusive process. Resilience Alliance (2024) defines Resilience as the basis of sustainability.

The Sustainable Sites Initiative established Guidelines and Performance Benchmarks in 2009 to assist landscape architects and professionals in sustainable design. Criteria for sustainable land practices are part of the guidelines that facilitate built landscapes in supporting natural ecological functions by preserving existing ecosystems and restoring the environmental capacity where it has been reduced. This theory relates to the assessment and incentive of projects for the conservation, restoration, and enhancement of the ecosystem services that give people facilities such as clean air and water, climate stabilization, and enhanced human health. The reference points and baselines provide a fundamental assessment for determining the sustainability of a site.

The guidelines represent an initiative to promote sustainable practices in urban environments, with only implicit references to resilience theory through the best practices. The Landscape Architecture Foundation established a Case Study Method for Landscape Architecture. The case study was created to emphasize more than one area of case studies as a comprehensive and multidimensional approach to case studies, while ensuring consistency in format and methodology. The Landscape Architecture Foundation wishes to raise the visibility of this method with the expectation that professionals, informed by their experiences with clients, and their clients can better incorporate new issues and models in design, that new designers are trained in the case study method and the benefits it offers; and this method is integrated into the design training curriculum so that all designers, and policy-makers, are contented and familiar with utilizing a systematic approach to documentation and research methods (Landscape Architecture Foundation, 1999).

In 2013, graduate Kevin Cunningham of Kansas State University set the groundwork for examining the resilience theory within the field of landscape architecture. Cunningham's

research, "Resilience Theory: A Framework for Engaging Urban Design, set the basis on which a project should be defined as resilient" Nevertheless, the framework did not precisely tackle social design applications and how this social aspect aids in the resiliency of a proposal or project social functions at various scales as were identified in Cunningham's research via a resilience and the analysis framework. Critical goals and objectives of social functions were recognized in the thresholds, redundancy, diversity, connectivity, and planning standards of the regional/provincial, metro, and site scales. While the resilience and the analysis frameworks appear similar, however, they are totally different tools. The analysis matrix serves as a passive tool for post-design evaluation. At the same time, the Resilience framework functions as a dynamic system for transforming abstract and complex theoretical concepts into practical design strategies and methodologies" (Cunningham, 2013, 114). Holistic and flexible in nature, Cunningham's framework is applied to Mahmutbey.

This research develops the field of social systems around the analysis of Cunningham's theory on resilience through the review of literature, case studies, and an analysis case study of Mahmutbey, Istanbul, with a focus on social resilience aspects and social design implementations to promote the social cohesion and social resilience of Mahmutbey. Cunningham's frameworks and analysis of resilience expanded to social systems; this research added in-depth knowledge of social systems according to the Turkish context, aiming to develop landscape architecture, urban planning, and other fields of understanding of social resilience.

In return, the research will also enable landscape architects to use analysis matrix and resilience frameworks to serve as a foundation alongside my social resilience guidelines contribution, especially within the context of Turkey and similar places in other countries, the goal is an attempt to enhance evidence-based design by improving the awareness of resilience theory that would, through the case study and design process, emphasize social in the aspect for promoting a social resilient spaces. Table 3.3 summarizes and compares key theoretical frameworks of resilience in recent academic literature.

Table 3.3: Comparative Overview of Resilience Theories and Urban Applications, Prepared by Author.

Theory/Framework	Key Features with Main Academic Sources	Relevance to Urban Design/Resilience
Transformative Resilience	Focuses on a system's capacity for renewal and transformation after disturbance, highlighting the need for radical change when existing systems fail (Holling, 1973; Walker et al., 2004; Gunderson & Holling, 2002).	Encourages innovation in urban regeneration, adaptive urban policies, and shifts in land use.
Adaptive Resilience	Emphasizes learning, flexibility, and incremental adaptation to ongoing change (Folke et al., 2002; Walker & Salt, 2006; Stockholm Resilience Centre, 2013).	Supports stepwise improvements, iterative design processes, and community learning in cities.
Responsive Resilience	Stresses the importance of social learning, stakeholder engagement, and development of multi-scale networks (Ahern, 2011; Woodward, 2008).	Promotes participatory design, networked public spaces, and redundancy in urban systems.
Engaging Resilience	Prioritizes active community participation, multi-stakeholder approaches, and strengthening of social capital and communication systems (Norris et al., 2008; Cutter et al., 2008; Sustainable SITES Initiative, 2009; Cunningham, 2013).	Useful for placemaking, integrating policy, and fostering long-term stewardship of public spaces.

The following section is about the frameworks and concepts used in fostering social resilience to be applied later.

3.5 SOCIAL RESILIENCE THEORETICAL FRAMEWORKS

3.5.1 The Adaptive Cycle and Transformation Phases

The Adaptive Cycle, formulated by Holling and Gunderson, describes four interconnected phases through which social-ecological systems regularly transition as shown in Figure 3.2:

- a. Exploitation (r-phase): Rapid growth, resource accumulation, extensive infrastructure development, and economic prosperity.
- b. Conservation (K-phase): Stability, institutional rigidity, established infrastructures, and reduced adaptability leading to increased vulnerability.
- c. Release (Ω -phase): Breakdown or collapse resulting from accumulated stressors, triggering reconfiguration opportunities.
- d. Reorganization (α -phase): Innovation, renewal, and adaptation post-disturbance, creating opportunities for system transformation and renewal.

The system states that the structures and functions of the neighborhood can be identified in phases of the adaptive cycle. Four stages make up the adaptive cycle (See Figure 3.2): conservation (K), rapid growth (r), and the reorganization phase (Alpha), release (Omega), all integrated within a loop. The adaptive cycle has been used to describe the system condition. These complex systems “consist of relationships between elements at several scales and within nested systems (Holling & Gunderson, 2002).

Design strategies stand as one of the factors contributing to thriving and securing the success of a healthy, safe community. Recognizing how social systems function at a localized scale and affect border regional and metropolitan contexts is a fundamental unit for evaluating resilience. “Involves combinations of resources and periodically reorganizes to create opportunities for innovation,” and “is a fundamental unit for understanding complex systems, from ecosystems to societies to cultures” (Holling, 2001).

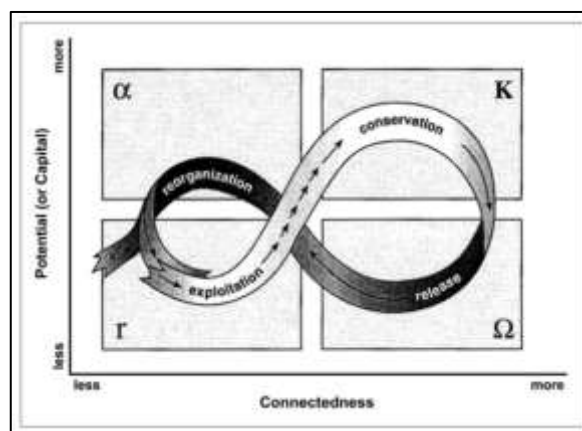


Figure 3.2: Adaptive Cycle, Adopted from (Chapin Et Al., 2009)

3.5.2 Panarchy and Multi-Scale Interactions

Panarchy focuses on properties that “arise from the interactions between slow-moving and fast-moving processes that have extensive spatial reach and processes that are more localized” (Gunderson and Holling, 2001). The cycle can repeat itself across multiple scales. At large scales, the higher the impact, the slower the changes occur. At more minor scales, the lower the influence, the quicker the changes (see Figure 3.3).

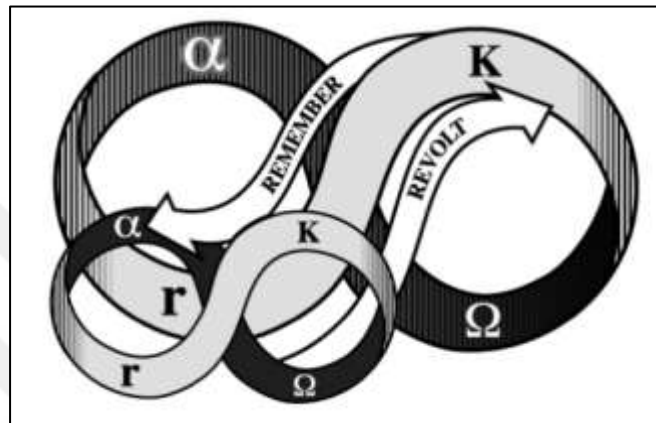


Figure 3.3 Panarchy and Nested Adaptive Cycles, Adopted from (Gunderson and Holling 2003).

All these scales are interconnected, and changes at more minor scales can significantly affect changes at higher and larger scales. In the reorganization phase, cumulative capital is released, creating creative destruction opportunities, such as creative deconstructions. In this context, such creative dismantling can foster social development by breaking down existing social systems.

Regarding Mahmutbey, strategically located in Istanbul, acts as a dynamic force for positive urban transformation. Like a small-scale system, it has the potential to initiate a cycle of change. Prioritizing urban sustainability and social resilience, Mahmutbey could be developed and redesigned to focus on pedestrian-friendly spaces, aiming for more walkable environments. This transformation is expected to enhance health, welfare, and safety, fostering residents' higher quality of life and contributing to overall social resilience.

3.5.3 Attraction Basins and System Stability

The term of “basin attraction” is used to describe how the systems behave in a three-dimensional space. Generally, Basins of attraction function as their name suggests: They

form “basins,” which include a primary “attractor” and may also encompass various “attractors.” A System may have many basins with different “attractors” and a primary “attractor.” Basins of attraction characterize systems in three dimensions: precariousness, latitude, and resistance. Latitude measures the breadth of the basin and indicates how much a system can change before it collapses. Precariousness describes the system’s current condition and how close it is to a critical threshold beyond which it cannot be recovered; resistance reflects how deep the basin is and how challenging it would be to alter the system state (Walker et al. 2004).

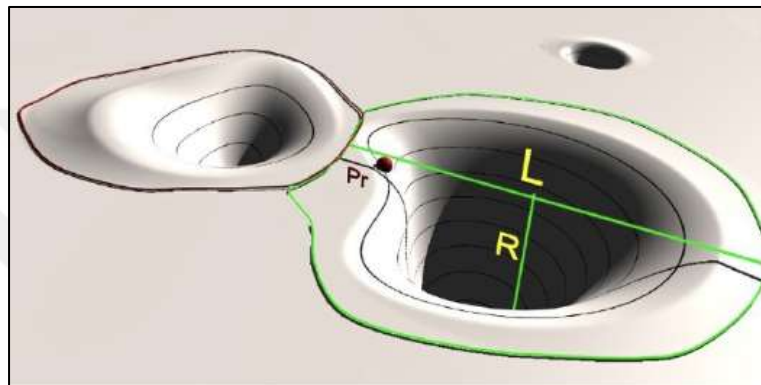


Figure 3.4: Basin Model of System Stability, adopted from (Walker et al. 2004)..

A system is considered resilient if it can remain within its basin of attraction. However, the basins of attraction are continuously influenced by external factors outside their boundaries, which these factors are external and often stem from human activities, such as pollution and excessive water use (see Figure 3.4).

The attractors always sit at the basin’s lowest point, and the system consistently strives to maintain a stable equilibrium (Walker and Salt 2006, 54). If the system passes a threshold and shifts into a different basin with different functions and composition, it can produce either positive or negative changes to socio-ecological outcomes (Walker and Salt 2006, 55-56).

Holling defines resilience as a system's capacity to persist through changes (Holling 1973, 36). In other words, it means that resilience involves preventing systems from crossing thresholds. One of the metaphors used for describing a threshold is that of a ball moving inside a basin. That is, a state, which is the social-ecological system, is a ball, and a basin is a set of states whose functions and feedback are similar (Walker and Salt 2006, 54).

Feedback refers to the secondary effects of an act of one variable on another (Walker and Salt 2006, 164). For example, more deforestation results in more carbon dioxide in the atmosphere. When a ball is in a system producing the same feedback, the system is, therefore, striving to reach some state of equilibrium or the bottom of a basin. For example, a lake system is a ball that is aiming for the bottom of a basin, which represents low phosphorus levels in the water.

Nevertheless, the systems are constantly adapting, and the lake is meaningfully always moving around the base of the basin. Basin's shape is continuously altering, also as the variables affecting the system undergo external change (Walker and Salt 2006, 54). If a system's dynamics are changed, for example, by increasing the drainage of phosphorus into a lake, the feedback of the system would change and shift, for example, by forming more algae in it. As this adjustment occurs, the system starts moving further from the bottom and closer to the basin's edge.

This edge is what is called a threshold. If the system passes a threshold, it goes to another basin of attraction with a different structure and functioning. For example, increased phosphorus levels push the system closer to the edge of the low algae and clear state basin; the lake can then be easily pushed across the edge and into the high algae and murky basin. A significant number of positive or negative consequences of this event could be placed upon society (Walker and Salt 2006, 55).

3.6 SOCIAL RESILIENCE CURRENT RESEARCH APPLICATIONS

Interest in sustainability research has grown, as has the focus on resilience theory. Numerous research institutions and centers have started initiatives to explore the dynamics of social-ecological systems. Leading these initiatives is the Resilience Alliance, a network of scientists and practitioners from various fields dedicated to advancing research on resilience, adaptability, and transformability, which underpin key principles of sustainability policies and practices (Resilience Alliance 2024).

The second is the Stockholm Resilience Center, which focuses on advancing the governance of social-ecological systems with a strong emphasis on resilience. Resilience is defined as the ability to deal with change and continue developing (Stockholm Resilience Centre, 2013). Carl Folke, Science Director of the Stockholm Resilience Center, stated that we aim

to establish a distinctive trans-disciplinary research environment where innovative ideas can thrive. By merging new forms with comprehensive viewpoints to produce the insights necessary for enhancing the resilience of societies and their ecosystems, Capacities can adapt to an increasingly fast-paced world (Stockholm Resilience Centre, 2013).

In the past decade, researchers and designers, such as Jack Ahern, Brian Walker, and David Salt, have developed tactics and models for evaluating and designing resilience in ecological, social, and economic systems. Walker's and Salt's *Resilience Practice* (2012) brings approaches for assessing systems for stated and general resilience. In assessing for stated resilience, Walker and Salt indicate listing known thresholds, and suspected thresholds of concern, developing conceptual models to understand how the system functions, and developing analytical models to start the development of conceptual understanding quantitatively with measurements (Walker and Salt, 2012, 89), Tables 3.4, 3.5, and 3.6 illustrate suggested approaches and system to resilience.

Walker and Salt recommend assessing systems for diversity, reserves, openness, tightness of feedback, social capital, modularity, and stages of capital resources. Such attributes, when applied, can be used to decide if a system is generally resilient and can help develop the level of resilience for a system (see Table 3.5). Above these attributes, Walker and Salt list attributes to a "Resilient world." They include ecological variability, diversity, modularity, recognizing the slow variables, social capital, tight feedback, and innovation that intersect in governance and the ecosystem facilities.

Also, Jack Ahern suggests strategies for designing resilient sys in his work "From Fail-safe to safe-to-fail" *Sustainability and Resilience in the New Urban World* (2011).

Table 3.4: Suggested Resilience in The Systems of Jack Ahren, Prepared by Author.

Strategy	Author's Description	Resilient Effects
Multifunctionality	Combining different functions, stacking them, or shifting them over time (Ahern, 2011, p. 342)	Enhances the variety of responses to functions of providing. Instances include urban stormwater wetlands and floodplain parks (Ahern, 2011, p. 342)
Diversity (Bio and social)	Encouraging social, physical, and economic diversity within species groups that respond differently to stress and disturbances (Ahern, 2011, p. 342)	Groups with diverse functions are more possible to thrive under a wide range of situations and recover more effectively from disturbances (Ahern, 2011, p. 342)
Redundancy and Modularization	Having several elements or components that offer the equivalent or similar backup functions (Ahern, 2011, p. 342)	Distributes risks over time, across different locations, and among various systems (Ahern, 2011, p. 342)
Adaptive Planning and Design	Viewing urban plans and designs as experiments that predict how policies or projects will impact landscape functions (Ahern, 2011, p. 343)	Helps specialists, experts, and decision-makers advantage new insights throughout ongoing analysis and monitoring (Ahern, 2011, p. 343)
Connectivity and Multiscale networks	Creating multi networks linked to bus routes and drainage systems connected to natural streams (Ahern, 2011, p. 342)	Builds resilience by maintaining connectivity and functionality even after network disruptions (Ahern, 2011, p. 342)

As the title suggests, Ahern believes systems should not be designed as no-fail, optimal systems but as safe-to-fail systems that can self-organize and regrow after a failure. Ahern's strategies for developing resilience in systems include approaches like modularization, redundancy, multifunctionality, (bio and social) diversity, multi-scale networks, connectivity, and adaptive planning and design (see Table 3.4).

Table 3.5: Suggested Resilience in Systems of Walker and Salt (2006).

Strategy	Authors' Description	Resilient Effects
Diversity	Various types of components make up the system: functional parts, various species, and a range of different response types (Walker & Salt, 2006, p. 145)	Provide numerous future possibilities and enhances a system's ability to respond to changes and disturbances for various ways (Walker & Salt, 2006, p. 145)
Modularity	How connections are arranged and their patterns within a system (Walker & Salt, 2012, p. 215)	Systems with too many connections are prone to shocks, but resilient systems can resist this tendency (Walker & Salt, 2006, p. 146)
Acknowledging Slow Variables	Controlling biophysical factors like sediment concentration and population age structures that change slowly (Walker & Salt, 2012, p. 216)	By focusing on these slow-changing variables, we can better manage a system's resilience (Walker & Salt, 2006, p. 146)
Ecological Variabilities	Managing flood stages and preventing population bursts by embracing and working with ecological variability (Walker & Salt, 2006, p. 146)	A forest that remains unburned loses its fire-resistant species, resulting in increased vulnerability to fire (Walker & Salt, 2006, p. 146)
Tight Feedbacks	The secondary effects of one variable's impact on another, changing the magnitude of that effect (Walker & Salt, 2006, p. 164)	Help detect thresholds before they are crossed. Globalization has led to delayed feedbacks that were previously quicker (Walker & Salt, 2006, p. 164)

Table 3.5: Suggested Resilience in Systems of Walker and Salt (2006) “Table Continued”.

Overlap Intersection in Governance	Including redundancy of governance’s structure and mixing property rights with overlapping access (Walker & Salt, 2006, p. 148)	Redundancy of the governance increases a system's response diversity and flexibility (Walker & Salt, 2006, p. 148)
Social Capital	Building trust, developing social networks, and promoting leadership (Walker & Salt, 2006, p. 147)	Resilience is closely tied to the ability of individuals within the system to react to it, and manage disturbances (Walker & Salt, 2006, p. 147)
Innovations	Encouraging and promoting learning, experimentation, local regulations, and implementation the change (Walker & Salt, 2006, p. 147)	Accepting and adapting to change rather than denying or resisting it (Walker & Salt, 2006, p. 147)
Ecosystem Services	Actions of species in an ecosystem that benefit society (Walker & Salt, 2006, p. 164)	These services often change during regime shifts and are appreciated only when lost (Walker & Salt, 2006, p. 147)

Building on these two sets of strategies, Kevin Cunningham created a resilience framework to analyze case studies in his research, the Resilience Theory: A Framework for Engaging in Urban Design (Cunningham, 2013).

As shown in Table 3.6, Cunningham’s framework synthesizes Walker’s, Salt’s, and Ahern’s suggested strategies. He used his framework to analyze case studies for methods for designing resilience in landscapes, allowing him to provide broad possible strategies for applying resilience to systems, as found in his research.

Table 3.6: Suggested Resilience in Systems of Cunningham (2013).

Strategy	Previous Strategies
Recognize and Respond to Critical Thresholds	Walker and Salt: Recognizing slow-changing variables, tightening feedback loops, and fostering innovation (Walker & Salt, 2006)
Create Multi-scale Networks and Connectivity	Walker and Salt: Emphasizing modularity (Walker & Salt, 2006) Ahern: Focusing on multifunctionality, redundancy, and modularization (Ahern, 2011)
Promote Diversity	Walker and Salt: Encouraging diversity and ecological variability (Walker & Salt, 2006) Ahern: Promoting bio and social diversity (Ahern, 2011)
Develop Redundancies	Ahern: Ensuring spatial connectivity within the urban landscape (Ahern, 2011)
Implement Adaptive Planning/Management Strategies	Walker and Salt: Overlapping governance structures (Walker & Salt, 2006) Ahern: Utilizing adaptive planning and design (Ahern, 2011)

Resilience theory applied to a real example in Joan Woodward's case study, Los Angeles, Even with real examples that resilience theories have been successfully used to real examples such as Joan Woodward's case study, "Envisioning Resilience of Volatile Los Angeles Landscapes," which applies resilience theory to address key disruptions in Los Angeles, such as water shortage, growth of the population, and the natural disasters such as earthquakes (Woodward, 2008). The study emphasizes creating adaptable and durable landscape usages to maintain urban functions during volatile periods. Woodward advocates for strategies that support both human and non-human systems, highlighting the interconnectedness of urban and ecological resilience. This practical application demonstrates how theoretical frameworks can be translated into real-world strategies for enhancing urban resilience (Woodward, 2008).

3.6.1 Existing Resilience Guidelines

Within the Existing guidelines, organizations such as the Resilience Alliance, Sustainable Sites Initiative (SITES), and Landscape Architecture Foundation (LAF) have attempted to assist practitioners in applying resilience theory to landscape designs. The Resilience

Alliance is focused on researching resilience theory. The Sustainable Sites Initiative and Landscape Architecture Foundation do not directly relate to the resilience theory, but their work overlaps with the work conducted by the Resilience Alliance. All three organizations concentrate on social-ecological systems and apply design solutions to create more sustainable and resilient landscapes.

a. The Resilience (Alliance):

It was established in 1999 and is a research organization focusing on resilient and sustainable practices and understanding social-ecological systems (Resilience Alliance 2024). The organization has produced a workbook titled *Evaluating Resilience in Social-Ecological Systems, Workbook for Practitioners*, which was created in 2010 to assist practitioners in analyzing their systems for resilience and determining necessary actions. The workbook provides guidance for users by leading them through assessing their site for key issues, thresholds, cross-scale interactions, social networks, and finally, synthesizing and initiating transformation (Resilience Alliance, 2010). This workbook provides the guidelines for evaluating systems in terms of their resilience but does not continue to guide practitioners or landscape architects to design implementations based on the assessment.

b. Sustainable Sites Initiative (SITES):

More specific guidelines in the form of a rating system are the SITES system. The system allows the ability to measure the sustainability of landscapes and assess their social equity, economic feasibility, and environmental soundness at the site scale (SITES 2009). Some strategies are required to receive a SITES rating, for example, "preserve wetlands" and "decrease clean water consumption for irrigation of the landscape by 50 percent compared to established baselines" (SITES 2009). Other strategies are only recommended, but if a site demonstrates them, the rating is expected to improve. The Guidelines and Performance Benchmarks 2009 are relevant to this research because they provide design strategies SITES suggests implementing to create sustainable landscapes.

c. Landscape Architecture Foundation (LAF):

Another implementation and learning tool is the Landscape Architecture Foundation's Landscape Performance Series. This program offers case studies, and a toolkit of research

works to inform designers and others of the performance benefits of landscapes (LAF 2024). Guidelines or a rating system are not included in this program, and resilience theory is not a specific focus of the program. However, the case studies presented offer a thorough description of their landscape benefits, research methodologies, challenges, solutions, and lessons learned from the studies (LAF, 2024). The Landscape Performance Series is relevant to this research by offering resilient strategies that have been implemented in specific landscape designs and descriptions of the methods leading to these strategies.

Existing resilience guidelines. The Resilience Alliance, on the other hand, offers guidelines for assessing resilience in systems but does not combine landscape architecture design principles with the broad strategies suggested. The alliance's workbook begins to help practitioners adapt resilience theory to real systems. However, it is inadequate to supply designers with the tools they need to design landscapes using resilient strategies. On the other hand, SITES offers guidelines with more specific design strategies. Still, the focus of the guidelines is on sustainable natural systems and not on resilient social, ecological, and economic systems. Lastly, LAF only presents sustainable strategies used in specific sites, which are only generally helpful for practitioners in this research.

Alongside with all existing resilience guidelines that are developed, the following chapter emphasizes the selected frameworks and strategies for the Mahmutbey case study to analyze it and implement these guidelines to promote the social cohesion and resiliency of the Mahmutbey neighborhood by taking into consideration Walker and Salt social capital strategies and Cunningham's social resilience framework to synthesize and develop strategies to be implemented for Mahmutbey.

3.6.2 Existing Frameworks and Strategies

In this chapter, the existing frameworks and strategies are developed and studied to be implemented to foster Mahmutbey's social resilience. The selected social resilience frameworks and methods are:

a. Cunningham's Integrated Social Resilience Framework:

Cunningham developed a new framework in "Resilience Theory: A Framework for Engaging Urban Design" by integrating Ahern's framework with that of Walker and Salt.

Cunningham combined the two frameworks to develop a framework for analyzing case studies. The framework introduces urban planning and design strategies analogous to those proposed by Ahern. The strategies include identifying and responding to critical thresholds, promoting diversity, developing redundancies, creating multiple-scale networks and connectivity, and implementing adaptive management and planning strategies (Cunningham, 2013). Cunningham formulated a resilience theory framework for urban planning based on these strategies. The framework integrates five strategies, each categorized into social, economic, ecological, and spatial approaches at regional, metropolitan, and/or site scales throughout a temporal dimension. Cunningham's framework facilitated the identification of strategies for urban design and planning that are relevant to applying resilience theory. The framework was subsequently employed in the 2013 ULI Hines competition, contributing to the team's successful proposal for The Armory in Minneapolis/St. Paul, Minnesota (Cunningham, 2013).

b. Walker and Salt's Social Capital Strategies:

Walker and Salt have also employed the resilience theory to develop social capital strategies. In "Resilience Thinking: Sustaining Ecosystems and People in a Changing World, according to Walker and Salt (2006), the social capital that is closely related to a resilience theory is defined as being highly linked with the ability of the system's individuals to collectively and coherently respond to change or disturbance. The Key factors for ensuring that it can happen include trust, robust networks, and effective leadership (Walker and Salt 2006, 147). Walker and Salt's framework encompasses variability, diversity, modularity, ecological recognition of tight and slow variables, social capital, innovation, ecosystem services, and governance overlap. The variables within this framework correspond to Ahern's methodology, which states that designs should have the capacity for safe failure. Designers can identify the areas that have not met the requirements and evaluate these problems. They can have expectations so they can be anticipated and either prevented or minimized in future designs. This methodology was first described in 1978 by Holling, who characterized the design profession as making decisions under conditions of uncertain knowledge regarding change and uncertain disturbances, seeing these circumstances as an opportunity for experiential learning (Holling, 1978).

3.7 SOCIAL COHESION: DEFINITION AND RELEVANCE

Social cohesion is widely recognized as a fundamental component of resilient urban communities. In this research, social cohesion is defined as the degree of social connectedness, mutual trust, and collective identity among residents within a neighborhood. It includes the extent to which individuals and groups are able and willing to interact, cooperate, and participate in the social, cultural, and civic life of their community. Social cohesion is not only a product of shared values and social networks. Still, it is also directly influenced by the physical environment, particularly the accessibility, quality, and distribution of public spaces and amenities.

3.8 CONCLUSION OF THE LITERATURE REVIEW

The literature review chapter establishes the urban resilience concept as a multifaceted framework that involves the social, economic, ecological, and spatial dimensions that show urban design strategies to foster role, fast, adaptive, and transformative systems first starting with the foundation concept that introduced a whole holing, and then this distinguish resilience from ability and expanse into the contemporary theory that includes the transfer to responsive adapted and engage, conclusion, a primary key elements that has an instructor, which includes:

- a. Social Resilience: emphasizing the social capital, community networks, and social essentials for ambulance, adaptation, and learning for fostering resilience in public places and stasis
- b. Economic and Ecological Resilience focuses on the system's ability to absorb shocks and maintain functionality.
- c. Spatial Resilience: advises the role of form and its instructions in sustaining the system's integrity.

The literature review also integrates a framework, such as Cunningham's integrated social resilience framework and social capital strategies and resources concept, which establishes a guide for applying resilience specifically in enhancing social provision and public spaces, as exemplified by the Mahmutbey case study in Istanbul.

4. RESEARCH METHODOLOGY

4.1 METHODOLOGICAL BASIS

This research uses a multi-method approach due to its primary focus being to enhance the social resilience of Mahmutbey; the methods used in this research are:

- a. Literature review: resilience theories and the current studies' structures for urban resilience.
- b. Case study analysis: The methodology includes research and case study analysis of social resilience solutions.
- c. Mahmutbey neighborhood case study analysis: The research uses the Mahmutbey neighborhood as a case study to develop and validate social resilience strategies that fit the Turkish context of social urban resilience in the research and analysis of the case studies; this research proposes enhancing social connections and adaptation in Mahmutbey, which builds its overall social resilience.

4.2 THEORETICAL FOUNDATIONS AND KEY FRAMEWORKS

Cunningham's resilience framework combines strategies from Jack Ahern (2011), Brian Walker, and David Salt (2006).

- a. Jack Ahern (2011) States that we should organize failure-safe and flexible plans.
- b. Brian Walker & David Salt (2006): Introduce a systemic view of resilience thinking.
- c. Cunningham (2013): Suggests using thresholds, diversity, redundancy, connectivity, and planning as resilience criteria across site, metro, and region levels.

Additionally, the Sustainable Sites Initiative (SITES) and the Landscape Architecture Foundation (LAF) provide structured guidelines with benchmarks to help developers build sustainable and socially resilient communities. These organizations develop sustainability standards that protect cultural heritage and improve community wellness alongside their goal setting for equal development, enhanced public well-being, and achieving social resilience objectives (e.g., equitable access, cultural preservation, and community health).

4.3 AIMS AND STUDY OBJECTIVES

In line with Cunningham's resilience matrix and other literature-based strategies, five overarching social resilience goals guide this research:

- a. Identify Thresholds: Recognizing how urban systems reach tipping points (e.g., overcrowding, resource limitations).
- b. Promote Diversity: Ensuring a variety of land uses, stakeholder groups, and community amenities to foster adaptability and social cohesion.
- c. Develop Redundancies: Layer multiple, overlapping solutions (e.g., alternative transportation, flexible public spaces).
- d. Enhance Connectivity: Improve links across the neighbourhood and create community networks that increase social links in the neighbourhood.
- e. Implement Adaptive Planning strategies: Employ iterative, flexible strategies that scale up or down to different contexts (regional, metro, site).

These goals also encompass the human health and well-being requirements inspired by organizations such as the SITE, LAF, and the Alliance, which aim for inclusive site development, public education, protected cultural/historical elements, and social spaces.

4.4 DATA COLLECTION METHODS AND TECHNIQUES

A blend of quantitative and qualitative tools supports the research:

- a. Literature and Document Review:
 - i. Academic papers, frameworks, and guidelines, such as those by Ahern, Walker & Salt (SITES, LAF).
 - ii. Municipal plans and policy documents relevant to Mahmutbey and Bağcılar District.

- b. GIS and DepthmapX Analysis
 - i. GIS software (QGIS, online analysis tools) to map existing land use, transportation networks, and demographic data.
 - ii. DepthmapX to assess spatial configurations (visibility, movement patterns), identify “viewshed” connections, and highlight possible design interventions.
- c. Case Studies
 - i. Examination of ULI/Hines Competition 2009 / TOUCH and The High Line, New York, to see how social resilience frameworks operate in practice.
 - ii. Adapt or refine those strategies for Mahmutbey’s context.

The literature review highlighted several case studies. It gives a base on which to apply guidelines for social resilience. All case studies also provide measurable evidence, and their evidence comes from multiple sources and has benefits that come from the resilience theory studies. The primary focus is social resilience. Nonetheless, ecological, economic, and spatial resilience is set to be addressed in the case studies and analysis of the neighborhood. The site assessment and analysis of Mahmutbey will be conducted after the establishment of literature-based social resilience goals and objectives applied to the case studies.

Table 4.1: Social Resilience Analysis Matrix, Derived From (Cunningham, 2014).

Social Resilience Analysis Matrix			
	Regional	Metro	Site
Thresholds			
Diversity			
Redundancy			
Connectivity			
Planning			

The site analysis data will be gathered using various apps and mapped critically across various scales related to social systems. The site analysis will be mapped using GIS programs

and alternative creativity tools such as Adobe Creative Cloud applications. Each guideline will address the goals and objectives of social resilience and be applied to develop objectives at Mahmutbey, and regarding the social analysis matrix derived from (Cunningham, 2014) as shown in Table 4.1.

Table 4.2: Key Social Goals and Objectives Taken from The Sustainable Sites Initiative: Guidelines and Performance Benchmarks 2009.

Key Social Goals and Objectives taken from The Sustainable Sites Initiative: Guidelines and Performance Benchmarks 2009
Key Social Goals and Objectives
Ensure that site development is fair and inclusive for all.
Increase awareness and education about sustainable practices.
Preserve and safeguard distinctive historical and cultural sites.
Ensure the site is easily accessible, safe, and well-marked for navigation.
Create outdoor spaces that encourage social interaction.
Provide serene outdoor areas with vegetation for mental relaxation and restoration.
Minimize light pollution to improve the natural environment.

Utilizing objectives and social resilience will be implemented to develop guidelines for Mahmutbey; it's essential to emphasize the social resilience guidelines. Function as a comprehensive framework by applying this guideline to other spaces or designs and projects, which is the derivation of key objectives from these guidelines in Table 4.2.

Social resilience is evaluated at the regional, metropolitan, and site levels, focusing on various system attributes: thresholds, diversity, redundancy, and connectivity. The 15 requirements and 51 credits are outlined in the Sustainable SITES Initiatives: Guidelines and Performance Benchmarks 2009 (SITES 2009), influencing landscape design from creation to site selection to maintenance. These requirements and credits cover human health and well-being, construction, operations and maintenance, monitoring and innovation, water management, soil and vegetation, materials selection, site selection, pre-design evaluation and planning, and more.

Table 4.3: A Case Study Example (Landscape Architecture Foundation, 2010).

A Case Study Outline adopted from “Landscape Performance Series”	
Context	
Site Examination	
Imitation of the Project Context	
Background & Historical view of the project	
Function of Landscape Architects	
Maintenance and Management	
Design, Development, Decision-Making Process	
User/Use Analysis	
Criticism	
Program Elements	
The importance of the project’s uniqueness	
Limitations and project constraints	

The human health and well-being requirement informs the pertinent societal goals and objectives. These requirements and credits make up the system of ratings that SITES uses to assess a project's "sustainability." A project's sustainability is evaluated after construction is finished, not before, and it is not phased out after work is over. According to the "Case Study Method for Landscape Architecture" (LAF 1999), a case study is a crucial tool in landscape architecture, as shown in Table 4.3.

An analysis of landscape architecture and its application in other professions, such as law and health, has also been used in case studies to give a more objective analysis and to disseminate information fairly. Context, site evaluation, project background and history, origins of the project, design and development process, the role of the landscape architect, program components, maintenance and management strategies, analysis of users and usage, peer feedback, criticism, the project's significance and distinctiveness, constraints, transferable features and lessons, as well as future challenges and plans are some of the

essential components of the case study method. Refer to Table 4.3 for the LAF Case Study Outline. These case study techniques have been combined with the approaches suggested by SITES to increase their efficiency further.

4.5 ANALYTICAL FRAMEWORKS AND DATA INTERPRETATION

Building on the cross-scale approach suggested by Cunningham, data from both international and local analyses are mapped to the Resilience Analysis Matrix:

- a. Metro Scale: is assessed for thresholds, diversity, redundancy, connectivity, and planning.
- b. Identifying Dilemmas and Opportunities: Data reveals where Mahmutbey's most significant vulnerabilities lie (transportation gaps, underused public spaces) and where resilience could be strengthened.

The results of this analysis will then inform strategic recommendations for promoting Mahmutbey's social resilience cohesion.

4.6 METHODOLOGICAL IMPLEMENTATION STEPS

- a. Synthesize Literature & Guidelines:
 - i. Review key authors (Ahern, Walker & Salt, Cunningham) for overarching resilience concepts.
 - ii. Extract social resilience objectives from frameworks like SITES and LAF.
- b. Develop and Refine Social Resilience Goals:
 - i. Translate general guidelines into context-specific objectives
- c. Analyze International Case Studies:
 - i. Observe success factors, challenges, and best practices to adapt them.

c. Apply Refined Goals to Mahmutbey:

- i. Conduct spatial and social analyses with GIS and DepthmapX (land use, topologies, connectivity).

Identify dilemmas (fragmentation, lack of green spaces) and potential opportunities (cultural heritage sites, community interest in improvement). Formulate Mahmutbey-Specific Recommendations:

Propose design or policy interventions that align with the social resilience goals of the research.

4.7 STUDY CONSTRAINTS

- a. Data Limitations: Mahmutbey's up-to-date demographic or GIS data availability may restrict specific analyses.
- b. Temporal Constraints: Some resilience benefits appear only long after interventions.
- c. Policy Constraints: Municipal regulations and budgets may impact feasibility.

In conclusion, the following chapter contains the case studies, with outlines of clear steps for the methodology part of this research.

5. CASE STUDIES IN URBAN SOCIAL RESILIENCE

5.1 INTRODUCTION TO THE CASE STUDIES

To research resilience and create guidelines for designing resiliently, this research analyzed case studies. One of the case studies examined in Cunningham's thesis ULI/HINES COMPETITION 2009 / TOUCH and the High Line, New York City, USA project, and the selected area for this research is Mahmutbey neighborhood which is located in Istanbul, the reason behind choosing it as the case study for this research is the focus on the long-term state, due to its increasing self-organization, and continued adaptability.

An analysis matrix created by Kevin Cunningham was used to examine each case study, drawing on criteria adapted from Jack Ahern (2011) and Brian Walker with David Salt (2006). This matrix categorizes resilience promotion methods by scale (regional, metropolitan, site) and system (social, ecological, economic, spatial). However, in this research, the focus is more on the metro scale, which is at the neighborhood scale, the Mahmutbey neighborhood in Istanbul, Turkey.

5.2 CASE STUDY 1: ULI/HINES COMPETITION 2009 / TOUCH

Kevin Cunningham presented this project in his research. In this research, the case study on public space design is not considered for its environmental resilience. Still, it is notable that this case study offers what socially resilient site goals should be implemented in public space to be resilient, not just to the neighborhood, even to the city in general, this case study offering some of the goals and objectives for a site to be resilient, based on the case study of Cunningham, this research considers the outcomes related to the goals of resilience in order later to be studied for Mahmutbey. This design of public space enriches the possible typology of public space but having this can contribute to a socially resilient space.

5.2.1 Project Context

The site is located in Denver, CO, in the south of the Central Business District. It is the Location of the Denver Design District and Several Big Box Stores (Cunningham, 2013), as shown in Figure 5.1. The master plan utilizes the current economic hub along Broadway Blvd., extends eastward, and integrates the public transit station on the west side. This area

features diverse buildings and open space types designed to create a unique sense of place and improve social adaptability by connecting neighboring areas. Touch represents a project that focuses on developing a solution that is adaptable to future needs. This initiative seeks to enhance connectivity at both regional and local levels, foster a vibrant community spirit, and establish a unique identity within the Denver metropolitan area. The strategies aligned with resilience theory are regularly applied, except for Adaptive planning and management, which are particularly absent. The lack of institutional management in the submission is due to its exclusion as a competition goal for this project. This competition focuses on the site; however, the submissions must also account for the site's integration within the regional and metropolitan context, which is essential for resilience considerations. Connectivity acts as a fundamental aspect of the Touch's design. A regional transit system facilitates extensive connectivity, whereas the street network organizes pedestrian and vehicular modes hierarchically. These systems link various open spaces characterized by size, type, and nature differences.



Figure 5.1: Uli/Hines Competition 2009 / Touch, Master Plan (Cunningham, 2013).

5.2.2 Planning & Design Approach

An on-site biotech medical facility enhances the economic stability of the nearby Denver Design District. This allows for flexible utilization of adjacent areas' buildings, particularly regarding the variability of big box retail over time. Adaptable architectural typologies facilitate the integration of new building skins and technologies in the future, thereby

enhancing economic and spatial resilience. The utilization of alternative energy sources, in particular passive solar, reduces buildings' dependence on non-renewable energy resources. Touch fosters diversity by proposing a variety of scales. This, in return, generates redundancies and inherently enhances the resilience of the development. The relationship between the proposal's economic viability aspect and additional adaptability strategies is not clearly defined, aside from the implementation objective. Diverse funding sources have been identified to generate the funds required to offset development expenses. The distribution of construction is evenly divided, indicating a degree of diversity. The economic strategies outlined are primarily founded on connectivity to adjacent economic hubs and the cost efficiencies derived from infrastructure bundling and creating adaptive systems structures.

- a. Metro connections of the project: A hierarchy of connections contextualizes the site. Different modes, including pedestrian, ecological, and vehicular, are analyzed (see Figure 5.2).



Figure 5.2: Metro Connections, Adopted from (Cunningham, 2013).

- b. Socio-Economic Bridge of the Project: The site is perceived as a possible opportunity for the socio-economic link between neighboring areas characterized by diverse income levels and demographic data. Touch ultimately proposes strategies at regional, metropolitan, and site scales. The design emphasizes the medical technology sector to establish a stable entity, anticipating future economic shocks. Engaging diverse adjacent neighborhoods promotes social adaptivity and memory, enabling the site to catalyze social interaction. Touch promotes diverse energy sources and enhances connectivity to metropolitan and regional systems, promoting habitat diversity. The connectivity is

deficient in considering how ecological flows move alongside the nearby rail line to the Platte River. Although this strategy is considered absent, the proposal utilizes a comprehensive design strategy that aligns with several principles of the resilience theory.

- c. Regional Connections of the Project: The medical technology sector is suggested as a reliable economic foundation for growth, connecting with other regional organizations. Highlighting its socio-economic significance. The metro connections are also shown in Figure 5.3.

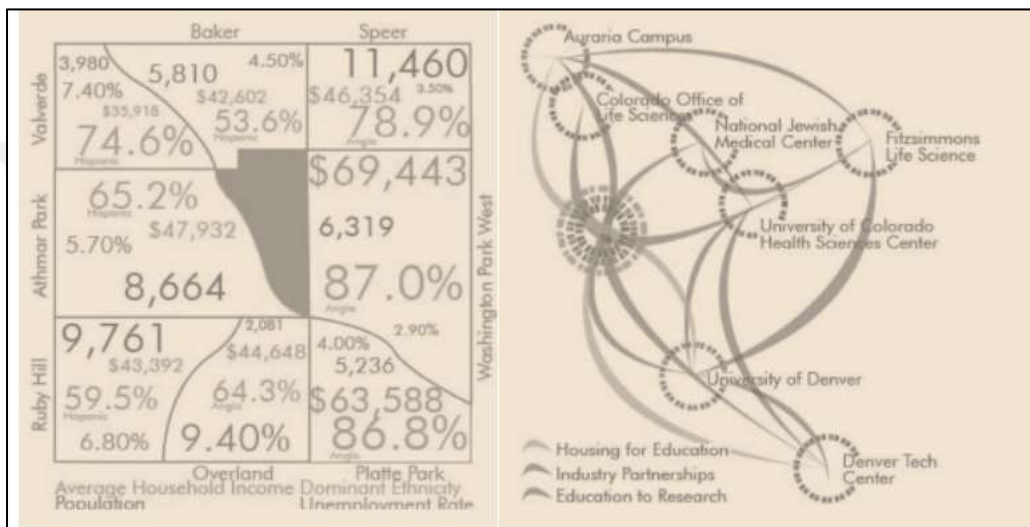


Figure 5.3: Regional Connections, Adopted from (Cunningham, 2013).

The site is for it to manifest as a socio-economic bridge between the neighboring landscapes, with heterogeneities of demographics and income levels.

- d. Development Program: Figure 5.4 illustrates an emphasis on office and residential space, and the plan promotes several programs overall. A vigorous open space approach strengthens ecological and social interdependence.

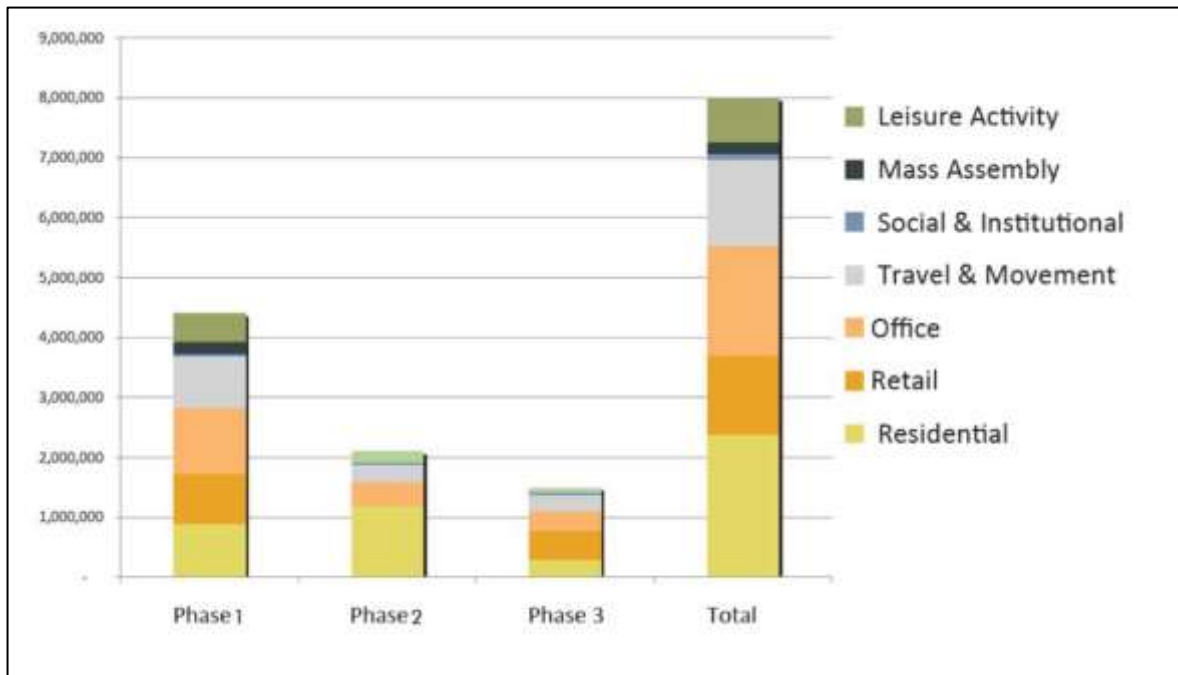


Figure 5.4: Development Program, Adopted From (Cunningham, 2013).

- e. Social memory: A socially resilient community is created by having a well-developed experience of being in a place with different social stakeholders. In development, when arts and sciences are integrated, various people from other lives are brought together.

5.2.3 Implementation Outcomes and Lessons Learned

In Conclusion, the ULI Competition case study focuses predominantly on site-specific strategies, emphasizing mid-range metro-scale considerations. Thereafter, the regional scale remains out of focus, and the Touch case study integrates with a more comprehensive approach that includes regional and metro strategies. Naturally, this narrow emphasis on the site-centric approaches stems from the design nature and brief for the competition, which do not explicitly demand larger-scale analysis and solutions. Consequently, most case studies focused directly on the immediate ten-year plan as mandated by the competition; very few strategies went beyond this time frame. This finding, therefore, implicitly points to a gap in long-term resilience planning and suggests that future competitions could support more comprehensive, or integrative, approaches to urban resilience regarding regional and longer-term perspectives, as finalized with the implemented strategies in Table 5.1.

Table 5.1: Methods and Solutions Applied in This Project to Be a Social Resilience Project,
Prepared by Author.

Methods	Explanations
1. Hybrid Innovation:	Use art and technology in two different ways, to improve the whole social memory and to improve the capacity to adapt.
2. Brown Roofs:	Use brown roofs to alleviate the urban heat island outcome and for long term climate change impact.
3. Geothermal Systems:	Many of Them are to upgrade to a geothermal heating/cooling system to enhance buildings' ability to tolerate climatic shifts.
4. Diversified Economies	A nation has to establish multiple economic relationships and linkages to develop stability in the economic sector.
5. Adaptable Architecture:	Design the building typologies in such a way that the retrofit technologies can easily interface it.
6. Node of Intensification:	Create concentration area in a regions for intensification of social diversity.
7. Medical Technology Partnerships:	The stakeholders of this policy should be medical technology sectors because their social diversity should be increased.
8. Diverse Open Spaces	Design various forms of the open area to improve the quality of human experiences.
9. Inclusive Housing	Encourage various types of accommodation to accommodate various types of people within the society.
10. Habitat Corridors	Extend the connectivity of habitats to ensure movement of the main species for species conservation.
11. Recycled Materials:	Recycled Materials: Include maximum proportion of recycled substrate materials in brown roofs to improve on the biodiversity.
13. Artistic Culture Growth	Facilitate the development of artistic culture in Design Districts for development to occur in the region.
14. Mixed Land Use:	Called for multiple land cover to enhance development invulnerability.

Table 5.1: Methods and Solutions Applied in This Project to Be a Social Resilience Project,
Prepared by Author. “Table Continued”.

15. Diversified Tenants	Corner numerous fonts of big box companies in order to boost the economy.
16. Multi-modal Transportation	Diversified Tenants: Corner numerous fonts of big box companies in order to boost the economy.
17. Building Diversity	This must be done with a view of creating diversity within the buildings in order to serve a multitude of social and economic purposes.
18. Diverse Programs	Offer many housing, shopping and open space programmers to prevent monotony in social interaction.
19. Multiple Energy Sources	One has to use several energy types, and this will help increase the level of energy security.
20. Redundant Infrastructure:	organize bundled infrastructures in streets to minimize economical costs on the maintenance.
21. Institutional Partnerships	Enhance the development endeavors with the help of the multiple institutional factors.
22. Diversified Funding	Make proper use of different forms of fund to make it strong and viable.

5.3 CASE STUDY 2: THE HIGH LINE, NEW YORK CITY, USA

The High Line was selected due to the similar condition of what the Mahmutbey neighborhood is facing, as both are characterized as industrial areas and share similar aims, one of which is to foster social resilience. The High Line is considered a successful example of how social resilience strategies have been implemented successfully.

5.3.1 Project Context

The High Line's master plan showcases the redevelopment of the elevated railway into a vibrant space designed by James Corner Field Operations with Diller Scofidio + Renfro Studio; the master plan strongly focuses on sustainability, social interaction, and biodiversity in the city. There are different species of plants and seats, cultural spaces, a line of park that gives all the benefits of community engagement and resilience at its best for underutilized infrastructure. The master plan is successful in readily integrating the park into Manhattan's urban fabric, providing one continuous green space, promoting ecological health and social well-being, according to the Landscape Performance Series in 2024.

The history of the High Line is a story of New York City's industrial evolution and community activism. It was built in the 1930s to elevate dangerous freight trains off Manhattan's streets. By the time the 1980s were here, the railway fell into disuse and faced demolition until, again, among efforts fanned through by Friends of the High Line, established in 1999, moved to preserve and transform the structure (see Figure 5.5).



Figure 5.5: The High Line Top view, Adapted from (High Line, 2025).

The outcome of this initiative became the High Line, a truly special urban park that preserves historical infrastructure and adapts it for modern city life. The High Line's transformation

epitomizes New York's resilience, needless proof of its innovative spirit in turning industrial relics into public space hotspots (Landscape Performance Series, 2024).

5.3.2 Planning & Design Approach

The High Line is part of the larger, well-publicized public transport system in New York City, and it is located within blocks of many subway lines, including the A, C, E, and L trains. The treat contributes further to visitors with easy access and favors the use of sustainable transport. This proximity of the park to public transit will, therefore, play a significant role in the urban mobility network of the city by encouraging locals and visitors to add green spaces into their daily routines (see Figure 5.6). According to this concept, accessible public space is essential for building resilience and developing livelihoods that are sustainable (Urban Green-Blue Grids, 2024).

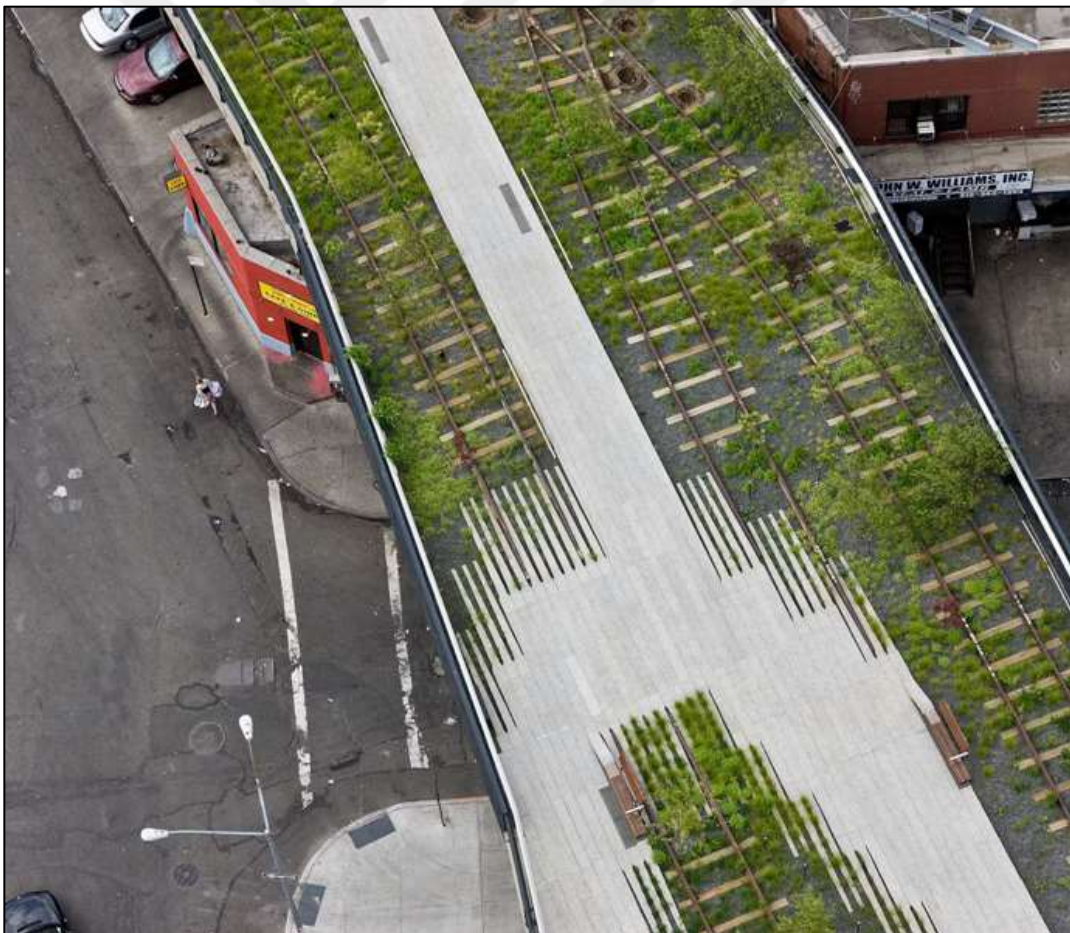


Figure 5.6: The High Line Top View 02, Adapted from (High Line, 2025)

- a. **The Socio-Economic Bridge:** Serving as a socio-economic bridge, the High Line links various communities along the West Side of Manhattan. Social cohesion has turned this free, inclusive space into an area that draws from multiple demographics through events, including cultural performances, art installations, and educational programs. This then brings an area to life with socio-economic bridging. Along with the improvement of surrounding neighborhoods, the emergence of new businesses, galleries, and restaurants notably grew due to the park's presence. All this brought to life is the fact that public spaces themselves are a factor of social resilience and economic growth. This would mean The High Line is a vibrant, diverse urbanistic environment (The High Line, 2024).
- b. **Regional Connections:** The High Line stretches out into the surroundings, connecting to all other urban green spaces and trails throughout New York City. This connectivity allows for walking, jogging, and cycling-oriented activities across many of the city, promoting health and general well-being for populations. In combination with other greenways and public spaces, it underlines the idea that connectedness in urban ecosystems is very important for ecological viability and diagonal resilience (see Figure 5.7). As part of a larger green space network, High Line shows the wholeness and strength of an urban landscape in acting as a connector of the different green spaces, which proves that regional planning corresponds to good urban design.



Figure 5.7: The High Line Before and After, Adapted from (High Line, 2025).

- c. **Development Program:** A comprehensive development program for the High Line would ensure the continued existence of the elevated park and its sustainability. Both community outreach programs and sustainable landscape practices made sure that local

native and drought-resistant plantings were utilized. Innovative designs for water management systems also ensued, with a focus on having as low maintenance as possible yet sustainable, to support biodiversity the ecological system. In the developmental process, habitats were created for the urban wildlife with the consistent growth of biodiversity within the city. The High Line's development program serves as a model for the creation of sustainable urbanism, demonstrating how sensitive planning and active community engagement can bring resilient and lively public spaces into being (The High Line, 2024).

- d. **Social Memory:** The High Line has grown to a big repository of social memory, housing the collective history and cultural identity of the community. The renovation of an industrial relic into a celebrated public park has come to define the resilience and inventiveness of New Yorkers. As a living monument, the High Line permits the memories of an industrial past to persist even while it makes room for new ones. This artful blend of historical preservation and contemporary use enriches the cultural fabric of the area to turn the High Line into a powerful metaphor for urban resilience and community spirit (Homes & Gardens, 2024).
- e. **Challenges and Solutions:** The High Line would be a remarkably innovative elevated park with many challenges. The regulatory and approval processes were many and involved coordination across the many city agencies, orchestrated with the assistance of detailed organization charts and visual presentations. Entrances every two or three blocks, integrated with public transportation, will increase the accessibility of the place. The project addressed environmental factors or issues with engineered soil, adaptable plant species, and graded hardscapes toward planting beds to lessen irrigation needs. These solutions made sure that the park was well-fitted into the urban environment; it became a precedent for innovative urban design (Landscape Performance Series, 2024).
- f. **Stewardship:** The High Line stewardship falls on the nonprofit conservancy called Friends of the High Line. The FHL is responsible for maintaining and operating the park. Sustainable practices used by FHL include composting nearly 100% of green material on-site, integrated pest management, and plant material sourced locally. The organization's community engagement, volunteer programs, and public-private partnerships have broadly affected the raising of funds for the continuity and long-term

success of the park. This stewardship model underpins how dedicated management plays a great role in the maintenance and enhancement of urban green spaces, thus showing how active stewardship sustains public parks (Landscape Performance Series, 2024).

- g. **Sustainable Features:** The High Line has taken a diverse range of sustainable practices that work to create less negative environmental impacts. This includes the annual sequestration of atmospheric carbon of over 1.3 tons and intercepts over 24,340 gallons of stormwater. There is more than a 200% increase in plant species diversity, hosting over 500 species and cultivars. The High Line also recycles 100% of its plant waste, substantially generating on-site compost. Socially, it has had millions of visitors annually, with thousands more visiting programmable-appointed events, and it has enlightened many children with its various programs. In economic terms, the tax revenue generated by this park has been huge, or it has catalyzed substantial new development; it has become an exemplary case demonstrating the multiple benefits emerging out of sustainable urban design (Landscape Performance Series, 2024).

5.3.3 Implementation Outcomes and Lessons Learned

The High Line illustrates what compelling design for public space can do to entice visitors and inspire the rest of the cities to bring abandoned structures back to life as public spaces (see Figure 5.8). On its part, the Friends of the High Line established a peer-to-peer network, the High Line Network, promoting other public realm projects.

The project reflects the power of key stakeholders working along with a confident design vision to carry on the High Line through regulatory and administrative hurdles, fundraising, and garnering public support. Except for some damages like burning by the sun and wind, the general health of the vegetation succeeded more than expected, mainly turning into one of its vital attractions. The real usage shows it is an all-season spot. High diversity now meets with awareness, which has encouraged many lectures and publications about it (Landscape Performance Series, 2024).



Figure 5.8: The High Line Greenery, Adapted from (High Line, 2025).

The extracted methods used in this case study are:

- a. Carbon Sequestration: The engagement in planting 750 trees can be in line with the uptake of 13 tons annually of carbon, thus boosting the capacity to withstand the impacts of climate change by removing carbon from the environment.
- b. Plant Diversity: This increases the number of diverse plant species by more than double, to more than 500. Up to 50% of plant species are native to North America, meaning ecology is being improved, and local plant and animal species are supported undisturbed.
- c. Stormwater Management: Stormwater absorbed through tree canopies and pervious surfaces minimizes further irritation to the city sewers, thereby minimizing the occurrence of floods.
- d. Energy Efficiency: Of the energy-efficient lighting, 81% is LED. Thus, if consumption is lowered, negative impacts arising from pollution will be minimized, making the environment more sustainable.

- e. **Recycled Materials:** The chairs and tables used as chairs and tables, as well as the decks within the house, are made from recycled timber and recycled steel, which helps the company minimize the use of raw materials that are harmful to the environment.
- f. **Green Infrastructure:** Integrating green roofs, open-jointed pavement on surfaces, and bioswale networks into the city framework would achieve effective stormwater management, reduce the effect of heat islands in cities, and promote biological diversity.

It shows how the High Line successfully responds to social resilience.

- a. **Accessibility:** The organizing organization also has the right to provide disability access to the park so that everyone, whether able or not, will be served.
- b. **Diverse Recreating Opportunities:** Several amenities, including strolls, benches, and open space with grass and gravel, encourage people to engage in social and physical activities.
- c. **Cultural Engagement:** To actively participate in the community, the High Line incorporates installations of contemporary art that also interpret the locality's history and other related public events to breathe renewed spirit and actively assert authorship of place for cultural sustainability.
- d. **Connectivity:** The design offers many entries and exits and easy access to the surrounding communities for mobility, thereby integrating it into the cityscape.

The Highline case demonstrates effective environmental resilience by integrating carbon sequestration, biodiversity enhancement stores, motor management, green infrastructures, energy efficiency, lighting, and recycling. Materials significantly diminish the environmental impacts of the project's positioning towards sustainable design.

Social resilience strategies are implemented, as shown in Table 5.2 and the measures in Table 5.3. These strategies highlight accessibility by offering diverse recreational activities and facilities with cultural engagements and providing connectivity, fostering an exclusive, cohesive, and dynamic urban environment that encourages community connections.

Table 5.2: Environmental Resilience Strategies of The High Line, Prepared by Author.

Method	Details	Impact on Resilience
Carbon Sequestration	Planting 750 trees absorbing 1.3 tons of carbon annually.	Enhances climate change mitigation by removing CO2 from the environment.
Plant Diversity	Introduction of over 500 diverse plant species, 50% native to North America.	Promotes ecological balance and supports local flora and fauna.
Stormwater Management	Tree canopies and permeable surfaces reduce sewer overflow and flooding risks.	Minimizes urban flooding, protecting infrastructure and ecosystems.
Energy Efficiency	Use of 81% LED lighting to lower energy consumption.	Reduces pollution and enhances sustainability by minimizing resource use.
Recycled Materials	Utilization of recycled timber and steel in furniture and decks.	Decreases reliance on raw materials, reducing environmental impact.
Green Infrastructure	Incorporation of green roofs, permeable pavements, and bioswales.	Supports biodiversity, mitigates heat islands, and manages water resources efficiently.

Table 5.3: Social Resilience Measures of the High Line.

Aspect	Details	Impact on Resilience
Accessibility	Ensuring Park access for disabled individuals.	Promotes inclusivity, ensuring the space serves diverse community needs.
Diverse Recreation	Inclusion of amenities like walkways, benches, and open spaces for varied activities.	Encourages social and physical interactions, building community strength.
Cultural Engagement	Contemporary art installations and public events linked to local history.	Strengthens cultural identity and fosters community participation.
Connectivity	Multiple entries/exits offering seamless integration with surrounding neighborhoods.	Enhances urban mobility and strengthens ties between communities.

Table 5.4: Comparative Analysis of Mahmutbey and The Case Studies, Prepared by Author.

Criteria/Aspect	Mahmutbey (Istanbul)	The High Line (New York City)	ULI/Hines Competition (Denver)
Type of Intervention	Existing urban neighborhood, facing fragmentation and lack of public space	Transformation of disused rail line into linear park	Urban infill and public space revitalization
Green Space Availability	Limited, fragmented, with inadequate connectivity	Extensive, continuous, highly accessible	Integrated within mixed-use redevelopment
Community Participation	Limited, top-down planning	Extensive stake holder engagement	Moderate, with public-private partnership
Multimodal Transport Integration	Planned/improving, not fully realized	Integrated (walking, cycling, transit)	Integrated urban transit and pedestrian
Social Cohesion	Weak, fragmented networks	Strong Connections	Improved through design interventions
Public Amenities	Insufficient, unequally distributed	Numerous and diverse	Adequate, supporting mixed uses
Resilience Strategy	Focus on theory-to-practice translation for social cohesion	Emphasis on adaptive reuse, ecological and social connectivity	Emphasis on urban, economic and social revitalization

This approach highlights how the High Line integrates with social inclusivity. Currently, the High Line is considered in the conservation stage, where it has stabilized as a vital part of New York City's urban fabric. This is characterized by:

- a. Strong biodiversity and sustainable practices.
- b. High social resilience through cultural events and inclusivity.
- c. Established partnerships for stewardship and maintenance.

To contextualize Mahmutbey's challenges and strategies, Table 5.4 compares the neighborhood with two internationally recognized case studies in urban social resilience. This highlights key differences and lessons (The High Line, 2024; Cunningham, 2013).



6. MAHMUTBEY CASE STUDY: SOCIAL RESILIENCE STRATEGIES AND ANALYSIS

6.1 INTRODUCTION: SCOPE & AIMS

Selecting the areas within Mahmutbey, which are the Bölge Park and the cross-road parks, the aim is to make this neighborhood more socially resilient by applying methods to these parks and connecting the neighborhood with cross-roads areas to achieve the resilient concept, and a set goals for two parts the first part which is focusing on the neighborhood parks long-term social and the second part concentrating on Provide a varied array of features and activities for the neighborhood. This research analyzed the spaces for both parts, systematically comparing the benefits and drawbacks associated with each. Then, it will be related to the case study to come up with a strategy that makes the area more resilient according to the results of the analyses and the methods that have been used in the case studies.



Figure 6.1: Main Highways Surrounding the Neighborhood of Mahmutbey, Prepared by Author.

As shown in Figure 6.1, Mahmutbey has a key location in the Bağcılar district with opportunities to grow and promote development in the area. Besides that, the focus is on Bölge Park in Mahmutbey and other possible green spaces in Mahmutbey's neighborhood. The large surface truck parking lot north of Bölge Park, which currently serves as the asphalt factory, could be redeveloped as green infrastructure to mitigate the urban heat island effect and reduce noise pollution from the main highway. The secondary streets connecting the park are Taşocağı Yolu Street, Peyami Safa Street, and Dilmenler Street; Bölge Park is currently in its very beginning phases, with the majority of its land occupied by the industrial area, including the asphalted factory (see Figure 6.2). The area currently lacks strong physical and visual connections with its surroundings.



Figure 6.2: Industrial and Commercial Areas of Mahmutbey, Prepared by Author.



Figure 6.3: Parks and Streets of Mahmutbey, Prepared by Author.

As shown in Figure 6.3, the majority of parks in Mahmutbey are relatively small in size, with most serving primarily as children's playgrounds. These green areas are measured with GIS tools and these numbers represent the approximate extent of these green areas: The Mosque Park (230 m²), Stadium Park (110 m²), Soğuksu Park (160 m²), Ozmo Park (230) and Bulancak Dernekler Federasyonu Park (270), these parks are typically enclosed by physical barriers such as fences or walls and their main entrances cannot be reached directly from the pedestrian walk paths such as the mosque park. As a result, these barriers substantially reduce the parks' potential to serve as vibrant public spaces, thereby limiting opportunities for community interaction, social engagement, and other recreational activities

(see Figure 6.5). Such a flaw in design completely suppresses their potential to become key nodes of social engagement and environmental relief within the neighborhood. Besides, heavy truck parking areas and regular parking areas have diminished the excellence of the shared urban space in Mahmutbey. The lands occupied by such vehicle parks could have been repurposed to provide greater social and ecological value to the community. Heavy truck parking decreases the physical and visual permeability near residential zones and public spaces, disturbing pedestrian mobility and adding noise and air pollution. The lots also disrupt the continuity of the urban fabric, making for disjointed spaces and inhibiting walkability and connectivity between the different parts of the neighborhood, undermining opportunities for social cohesion and community interaction.

6.1.1 Provide A Diverse Array of Elements and Activities to Promote Social Resilience



Figure 6.4: Connectivity and Accessibility Analysis of Mahmutbey, Prepared by Author.

- a. **Little Accessibility to Parks:** Due to the impermeable design of parks, direct access from adjacent streets is limited, significantly diminishing both their practical utility and capacity to fulfill their social functions (see Figure 6.4). Furthermore, pedestrian crosswalks are widely perceived as unsafe, poorly connected, and ineffective in connecting areas. Most crosswalks are considered dangerous to use, especially since some are not visible to drivers at night, and they lack a safe design layout for pedestrians. These barriers surrounding the parks limit opportunities for spontaneous social contact and community engagement; these barriers reduce the potential capacity of these parks to help build more social resilience at the neighborhood level (see Figure 6.5).

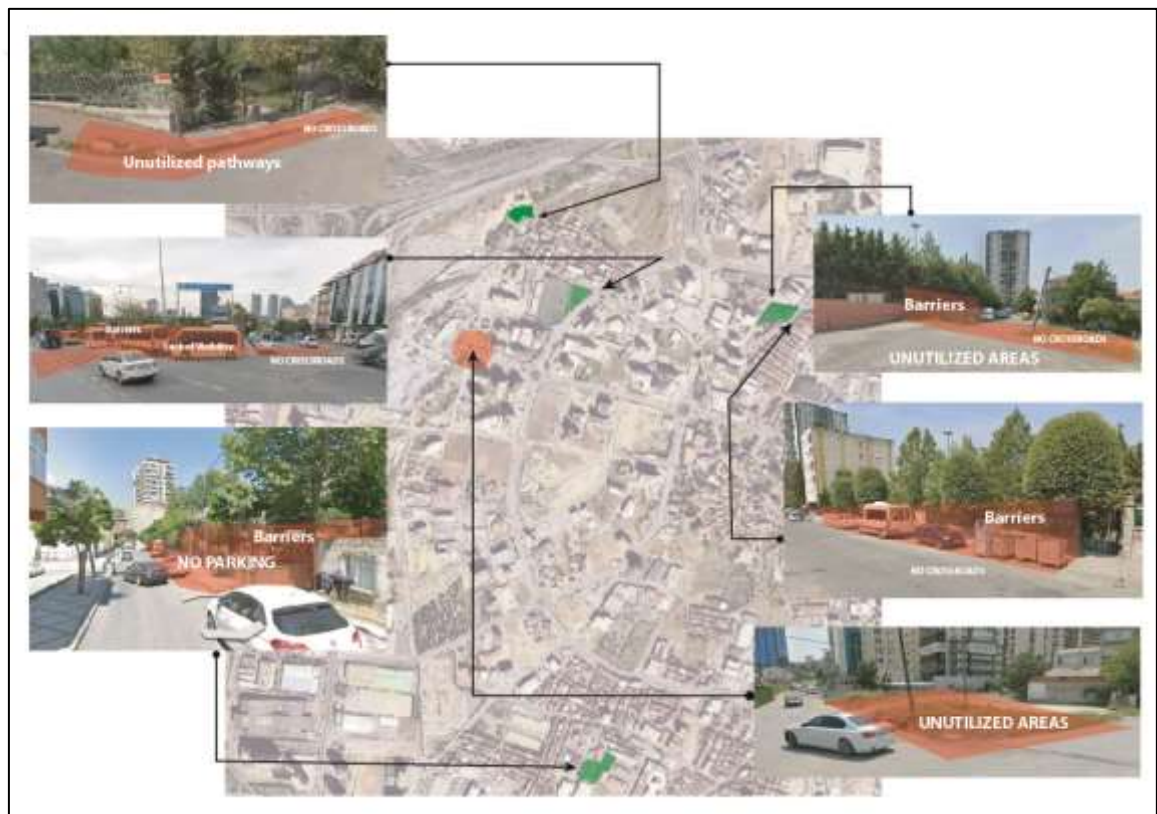


Figure 6.5: Missed Connections in Mahmutbey, Prepared by Author.

- b. **Fragmentation of Public Space:** Large areas devoted to truck and vehicle parking fragment the urban landscape. This fragmentation is at the expense of pedestrian flows, which cannot or will not form a consistent, continuous walking network of public spaces that help knit the community together.
- c. **Environmental Degradation:** Such as parking trucks, contributes to an increase in urban temperature and ecological quality degradation. Heavy trucks moving around residential

zones are a source of air and noise pollution that will affect the health and quality of life of the residents.

- d. Missed Connections strategy implementation: the solutions can be achieved through a step-by-step redesign of the current parks and redevelopment of parking lots. First is the need to open the parks towards the street by removing physical and visual barriers currently limiting accessibility and permeability. This will make the parks more passable and integrated into the surrounding urban texture. It will become an active public space and link them with transportation systems to provide a strong connection among all these neighborhood parts (see Figure 6.6). The analysis uncovers that the fragmentation of green and public spaces in Mahmutbey limits opportunities for regular social interaction and community activities, thereby constraining social cohesion. The absence of accessible, multifunctional public spaces undermines residents' ability to form trust and collective identity.

Opening up the parks and making them inviting will result in more use, which will significantly increase their potential as social and environmental assets in the neighborhood.

At the same time, designated parking facilities for heavy vehicles should be relocated to suitable sites at a considerable distance from residential neighborhoods and public spaces. Existing car parking areas can be redeveloped into accessible green corridors, multifunctional public squares, or community gardens that provide continuous pedestrian pathways linking the parks and other key areas of the neighborhood.

This not only enhances walkability and connectivity but also helps toward a healthier and more sustainable urban environment in general by greening the area while reducing the negative impacts of large parking areas. These changes will enable Mahmutbey to develop its public spaces into an integrated, accessible, and environmentally sustainable network of life-enhancing spaces for all its inhabitants. The remade parks and converted parking areas will develop a more resilient, connected, and socially inclusive neighborhood. The implemented strategies regarding the missed connection analysis (see Table 6.1).

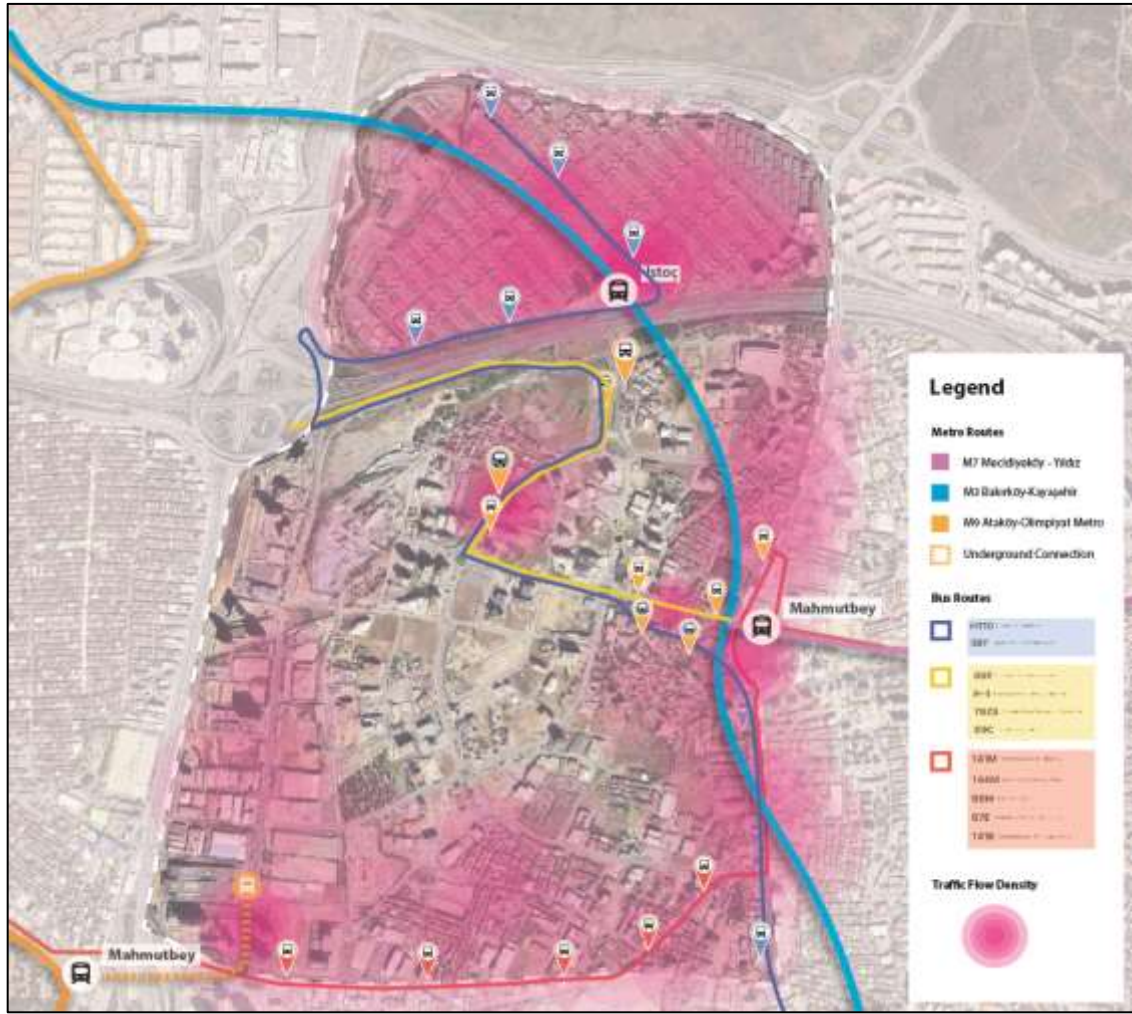


Figure 6.6: Transportation System Analysis and Traffic Flow of Mahmutbey, Prepared by Author.

- a. Isolated from other Parts because of Existing Infrastructures: Bölge Park and the other smaller parks in Mahmutbey are isolated due to infrastructure divides major highways and adjacent industrial facilities that occupy the bölge park, such as the parking lot for heavy trucks and the asphalt factory. These limit the ability of pedestrian and vehicular traffic to gain entry to the parks: this means that the parks are easily inaccessible to the residents of another part of Mahmutbey and adjacent areas. The inaccessibility of these parks severely thwarts their ability to serve as social gathering points, as the existing layout does not allow for seamless connection with the rest of the city fabric. It leaves parks isolated in terms of access so that they can play those vital roles.
- b. Underutilized Spaces: A significant part of the existing area of Bölge Park and the smaller parks is occupied by underdeveloped land parcels, which have not been used,

and can be seen as potential for improving the urban landscape. Additionally, by developing some of those areas, the parks can be enlarged or adjusted to have more centers that provide a variety of activities and services. Further, when such unused zones are adapted into public parks or other spaces for public use, it will augment the parks' connectivity with the neighborhood to foster social capital and to increase environmental responsibility.

Table 6.1: Missed Connection Strategies Implementation for Mahmutbey, Prepared by Author.

Category	Case Study / Resilience Theory	Objective	Strategy
Social Connectivity	High Line, New York City – improve the Connectivity of the pedestrian through design (Ahern, 2011)	Create open public area for people of the community interaction while reducing environmental issues. (Sustainable Sites Initiative, 2009)	Implementing green infrastructure in main streets with urban seating and vegetation, to enhance the air quality and reduces noise pollution.
Recreational Spaces	ULI/HINES Competition - Multifunctionality in Urban Spaces (Walker & Salt, 2006)	Promote outdoor sports and recreation to support healthy community lifestyles (Sustainable Sites Initiative, 2009).	Develop public service facilities for sport activities such as jogging areas, kids' areas, open fields and link them with residential through walkways.
Pedestrian Pathways	High Line, New York City - Linking Parks and Urban Spaces (Ahern, 2011)	Strengthen pedestrian networks by integrating green spaces, crossroads, and business areas (Ahern, 2011).	Develop and Design streets for pedestrians with vegetation additions that connect parks, plazas and business spaces.
Green Infrastructure	ULI/HINES - Green Corridors for Urban Cohesion (Walker & Salt, 2006)	develop green spaces along the main roads that can connect all areas (Walker & Salt, 2006).	Create parks that are linear in shape to link green areas with other residential and commercial areas to parks.
Neighborhood Networks	ULI/HINES - Enhancing Urban Networks (Walker & Salt, 2006)	Enhance neighborhood connectivity by linking residential and commercial zones (Walker & Salt, 2006).	Develop bike lanes and pedestrian pathways to improve area connectivity.

- c. **Enhance the Transportation and Accessibility:** Relative to Bölge Park, there is a potential to enhance the linkage and access ways of the park and nearby parks and crossroad zones. These green spaces near key metro stations and main roads show an opportunity to improve the infrastructure supporting active transportation modes such as walking and cycling in Mahmutbey and the adjacent territories. Further, connecting the parks through greenways or transport corridors would enable residents to access parks through non-motorized. With these improved connections, the social aspect of the parks would be boosted since well-interconnected parks contribute to communication.

6.1.2 Long-Term Social Resilience Analysis and Strategies

Land use analysis of Mahmutbey (as shown in Figure 6.7), provides a comprehensive overview of the neighborhood's spatial configuration, categorizing areas into residential, commercial, and public green spaces, for instance and these highlights, the population density, and the need for the local amenities is Ensuring everyone has fair access to commercial areas not only strengthens the local economy but also encourages a more lively mix of activities and uses throughout the neighborhood. The concentration of industry and commercial spaces at the heart of Mahmutbey has created some barriers, but it also opens up opportunities for positive change. Improving connections, especially by adding green corridors, could help reduce social and environmental isolation and make public spaces more inviting for community interaction. Recognizing and addressing these gaps in connectivity gives a more straightforward approach and lays a strong foundation for enhancing social resilience across the Mahmutbey neighborhood.

Mahmutbey's land use provides critical insights into the urban fabric, emphasizing the challenges and opportunities for social-ecological resilience. For instance, the residential areas marked with yellow color dominate the neighborhood. However, the fragmented distribution of public spaces and green infrastructure indicates a disconnected urban network, undermining social cohesion and limiting access.

The key observation: Residential zones emphasize the extensive presence of residential areas and highlight the dense population of the neighborhood. However, the lack of public amenities reflects the gaps in urban equity and accessibility.

Fragmented green areas, the green spaces present the present are fragmented and insufficient with the integration of the browser urban framework, which is limiting their ecological functions and the accessibilities for community recreation, such as the green corridors alongside the major main street, could be connected to the residential zones within the parks, not only the residential about the mixed-used development, which Is enhancing the both the ecological and the connectivity the example of the Highline project, which demonstrates how the integration of the linear green corridors can reconnect the fragmented spaces which improving both environmental activities and public accessibility (Ahren, 2011).



Figure 6.7: Land Use Analysis of Mahmutbey, Prepared by Author.

The industrial areas, concentrated in the neighborhood, have the potential to create employment and generate demand for goods and services. However, they also divide the

neighborhood into two distinct zones with differing rental values, which limits access to public spaces and reduces connectivity between areas. The transportation and networks of the neighborhood are considered the major infrastructure (see Figure 6.8), with the wide streets weakening the neighborhood's connectivity and the degraded people's access to places undermining the pedestrian movement.

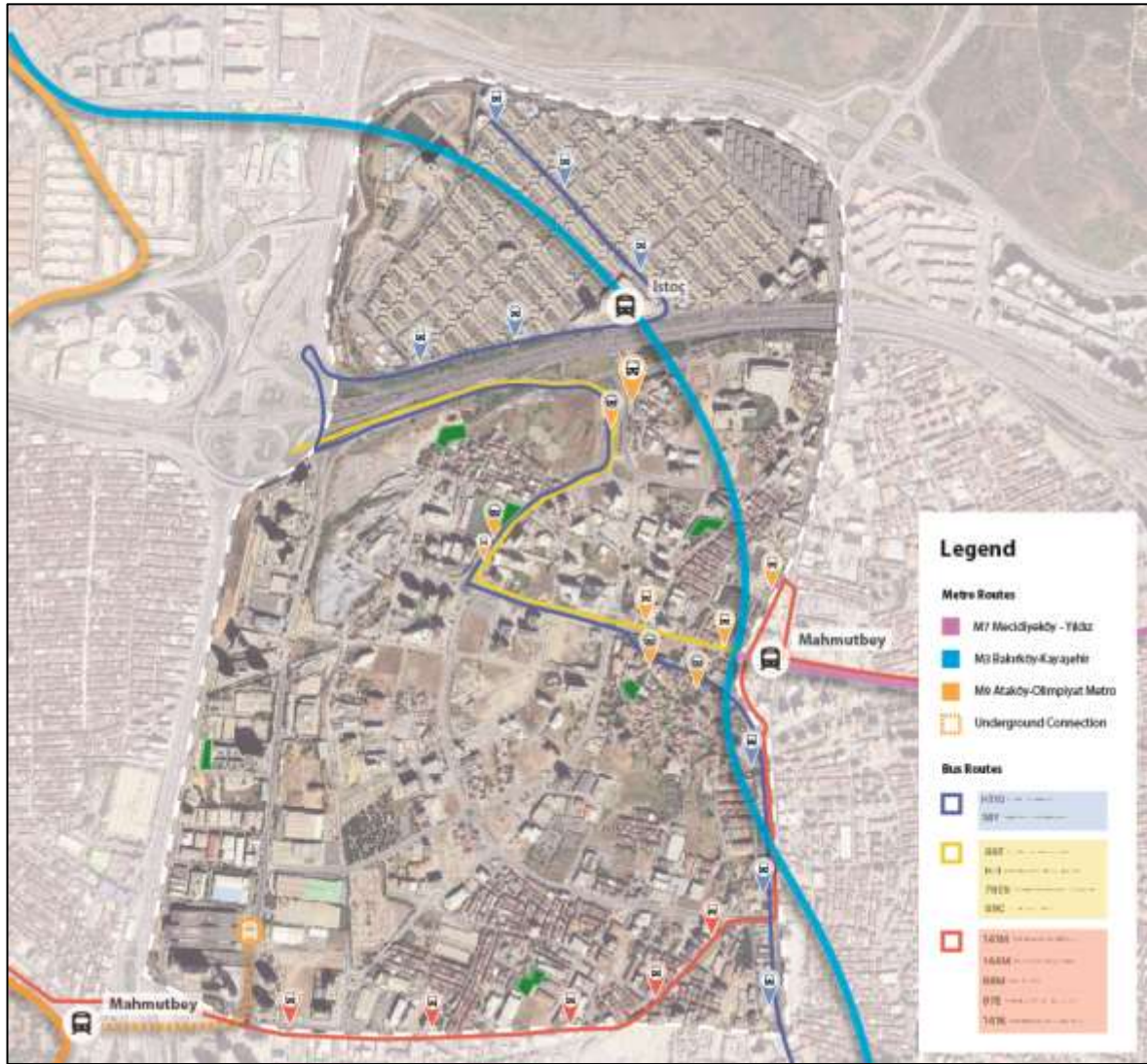


Figure 6.8: Transportation System and Green Areas Analysis, Prepared by Author.

The observed patterns of Mahmutbey highlighted the need for a transformative intervention to enhance the neighborhood's resilience and inclusiveness, especially considering the physical barriers created by the main streets and the industrial places in the neighborhood. The lack of cohesive green corridors, limited green public spaces, and unutilized and disconnected areas highlight the urgent need to implement the necessary changes based on

resilience theory. Overall, the need for cohesive urban strategies based on the resiliency theory was identified for a neighborhood to improve community connectivity.

Land Use Strategies Implementation, currently, the plan requires involving stakeholders, including Bağcılar Municipality, relevant local authorities, and businesses located nearby, to enhance the implementation process through forming a practical implementation of a public-private partnership. To finance and maintain the green corridors and public areas, stakeholders may engage in co-management arrangements on either a refundable or tax-deductible basis. Neighboring commercial properties may be able to participate in facilitating the development of accessible routes through pedestrian-friendly pathways, at the same time benefiting from the increased traffic in the neighborhood. New York's High Line case study showed how funds and resources were mobilized by the collaboration of both public institutions and private entities to create a long-term and well-managed public space (The High Line, 2024). The ULI/HINES competition case study also illustrated the capacity of collaborative investments to convert unutilized areas into vibrant, multifunctional public spaces that accommodate social, recreational, and ecological activities (Walker & Salt, 2006). This framework presents a more applicable and necessary model of the essential funding and the distributed resources that support urban interventions, paving the way for sustainable and engaging communities for Mahmutbey (see Table 6.2).

- a. Implementation of the green corridors has been successful, with the development of the high lines, linear parks, and green corridors linking the fragmented green spaces.
- b. The development of industrial areas involves applying the mixed-use development principles derived from the ULI/HINES competition case study to classify industrial zones by incorporating diverse functions that address the needs of both residents and businesses (Cunningham, 2013).
- c. Stakeholder collaboration, establishing public-private partnerships to enhance resources, mobilize them, and promote sustainable management, in line with the interests of local authorities, businesses, and residents, to achieve the common objectives.
- d. Open activation programs involve designing and implementing cultural, recreational, and educational programs within public spaces to improve community engagement and maximize space utility.

Table 6.2: Land Use Strategies Implementation for Mahmutbey, Prepared by Author.

Case Studies / Resilience Theory	Objectives	Strategies
High Line, New York City	Improve ecological and pedestrian connectivity (Ahern, 2011)	Create green corridors linking fragmented spaces
ULI/HINES	Foster multifunctionality through mixed-use developments (Walker & Salt, 2006)	Redevelop industrial zones with diverse residential, commercial, and recreational functions
High Line, New York City	Enhance community interaction by repurposing obsolete infrastructure (Ahern, 2011)	Design linear parks with multifunctional spaces for recreation and ecological benefits
ULI/HINES	Promote sustainable urban development through strategic land use (Walker & Salt, 2006)	Transform underutilized lots into vibrant mixed-use hubs
High Line, New York City	Increase environmental sustainability through adaptive design (Ahern, 2011)	Incorporate native vegetation and climate-responsive infrastructure

Neighborhood development integrates social resilience into the urban environment by addressing the enhancement of fragmented green spaces and the repurposing of industrial areas. This approach is informed by international best practices such as the Highline and the ULI/HINES case studies. These approaches offer capable solutions not only for the Mahmutbey neighborhood but also for other neighborhoods in Istanbul. The partnerships of private and public will enhance community engagement through the physical infrastructure while promoting the social cohesion and sustainability of the neighborhood. These strategies will be improved. Public health promotes environmental sustainability and fosters social interaction through implementing strategies that include the expansion of pathways, increased participation in community programs, and reduction in urban heat islands. By focusing on the ecological, social, and economic factors, the neighborhood transformation can become and serve as a benchmark for resilient urban renewal.

Space Topologies Analysis, the analysis of Bölge Park and its surroundings highlights three distinct zones: (Reserved Areas), Accessible Areas, and (planned Green Spaces), Non-Accessible. These areas reflect the level of development and availability of some sites within the park and adjacent territories.



Figure 6.9: The Current Green Areas Conditions in Mahmutbey (Adopted from Bağcılar Municipality, 2025).

- a. **Accessible Areas (reserved areas):** These sites are, therefore, open to the public and are used to estimate the initial form of park development (see Figure 6.9). These areas are best described as public spaces that need to be developed by increasing accessibility and provisions for use. The current use is for parking.

- b. Non-Accessible Industrial Areas (planned green spaces): These areas have future possibilities for change. A longer-term development plan will encompass converting industries into multipurpose social amenity spaces, contributing to the integrated park, and creating more greenery.

Table 6.3: Space Typologies Strategies Implementation for Mahmutbey, Prepared by Author.

Case Study/ Resilience theory	Objectives	Strategy
High Line, New York City	Repurpose underutilized spaces and obsolete infrastructure for public use	Provide a versatile structure of a single building to efficiently combine a parking space and apartments or offices.
High Line, New York City	Reduce the urban heat island effect and promote environmental sustainability.	To reduce the urban heat island effect, create a parking and service department with a green roof that serves Bölge Park and the surrounding parks.
ULI/HINES Competition	Enhance urban connectivity and pedestrian walkability	Connect Bölge Park to nearby areas through Main Street of Taşocağı Yolu Street, Peyami Safa Street and Dilmenler street to the Mahmutbey metro way.
ULI/HINES Competition	Promote sustainable transportation options and reduce carbon emissions	Create connections between Taşocağı Street, Peyami Safa Street and Dilmenler street, and with the Bike Sharing within Bölge park.
High Line, New York City	Support mixed-use development and encourage green urban spaces	Expand Bölge Park to the Crossroads District to foster mix used-development with green paths to connect the neighborhood promoting walkable streets.

Space Topologies Strategies Implementation: Bölge Park's development will also be done in two clearly defined stages. In this context, the first phase aimed to extend the currently accessible areas and redesign the surrounding regions into new pathways, green spaces, and

public amenities, making the park immediately usable and relevant for social interaction (see Table 6.3). The second phase will emphasize the sustainable redevelopment of the Industrial and non-accessible areas, their transformation into fully functional public spaces, and facilitate the seamless integration of all park spaces in Mahmutbey into a cohesive, interconnected green infrastructure network.



Figure 6.10: Current Condition of Bölge Park, Mahmutbey, Prepared by Author.

Strategic implementations derived from this analysis can contribute to a more cohesive urban fabric by connecting fragmented spaces, enhancing cultural identity, and fostering ecological integration, ultimately boosting the area's resilience (see Figure 6,10).

Viewshed analysis: The viewshed of Bölge Park in Mahmutbey offers a significant iconic view of the area. Still, there is no effective plan to develop this park and integrate it into the neighborhood. The Bölge and the surrounding parks present an opportunity to enhance the community's resilience. Viewshed analysis is an essential tool in urban planning, as it examines how visual connections and spatial relationships between key landmarks, natural features, and the built environment influence the perception and experience of urban spaces in Mahmutbey (see Figures 6.11, 6.12 and 6.13), and the strategies implemented to foster the social resilience in regard with Viewshed analysis (as shown in Table 6.4).

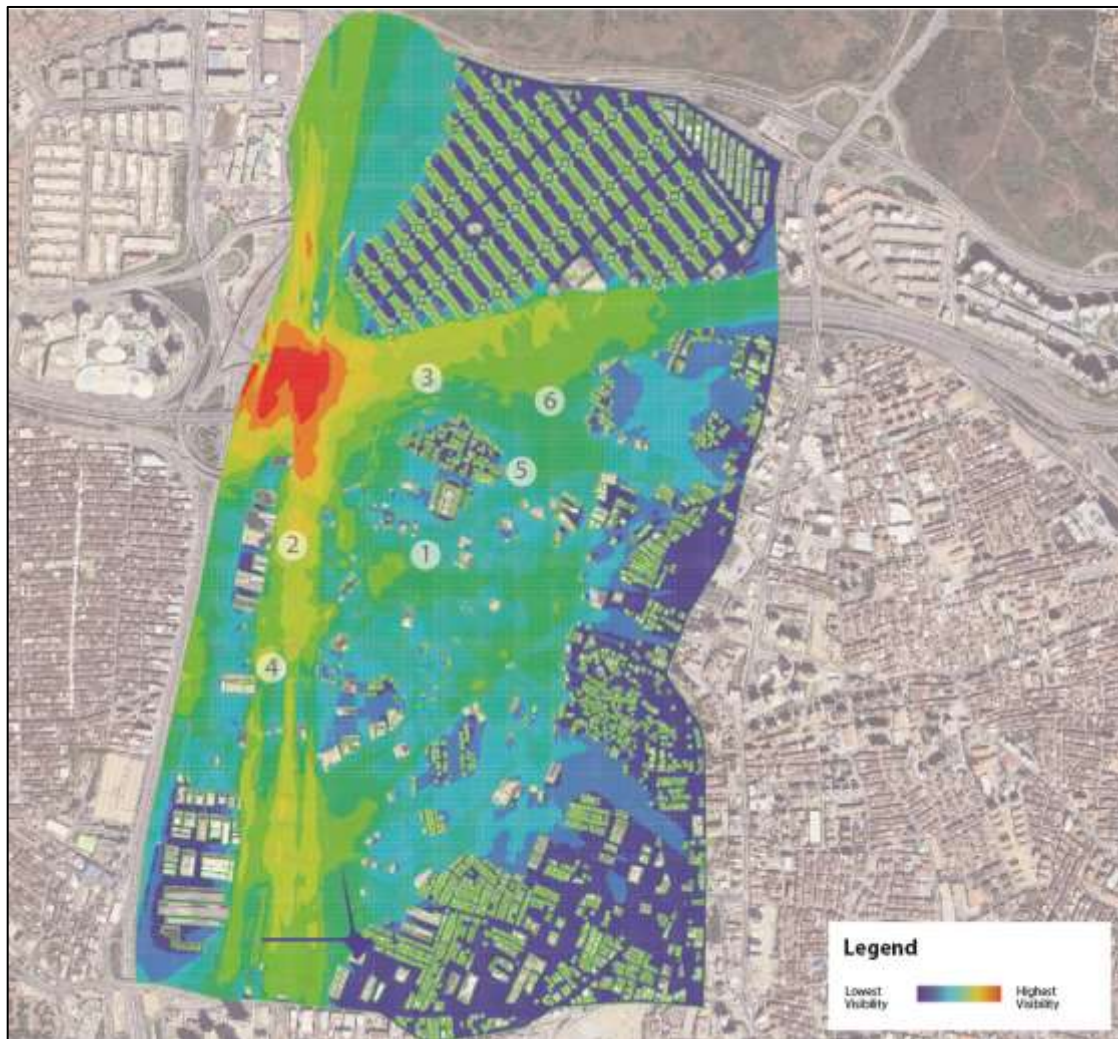


Figure 6.11: Viewshed Analysis of Mahmutbey, Prepared by Author.



Figure 6.12: Surrounding The Bölge Park (Google Earth, 2024).

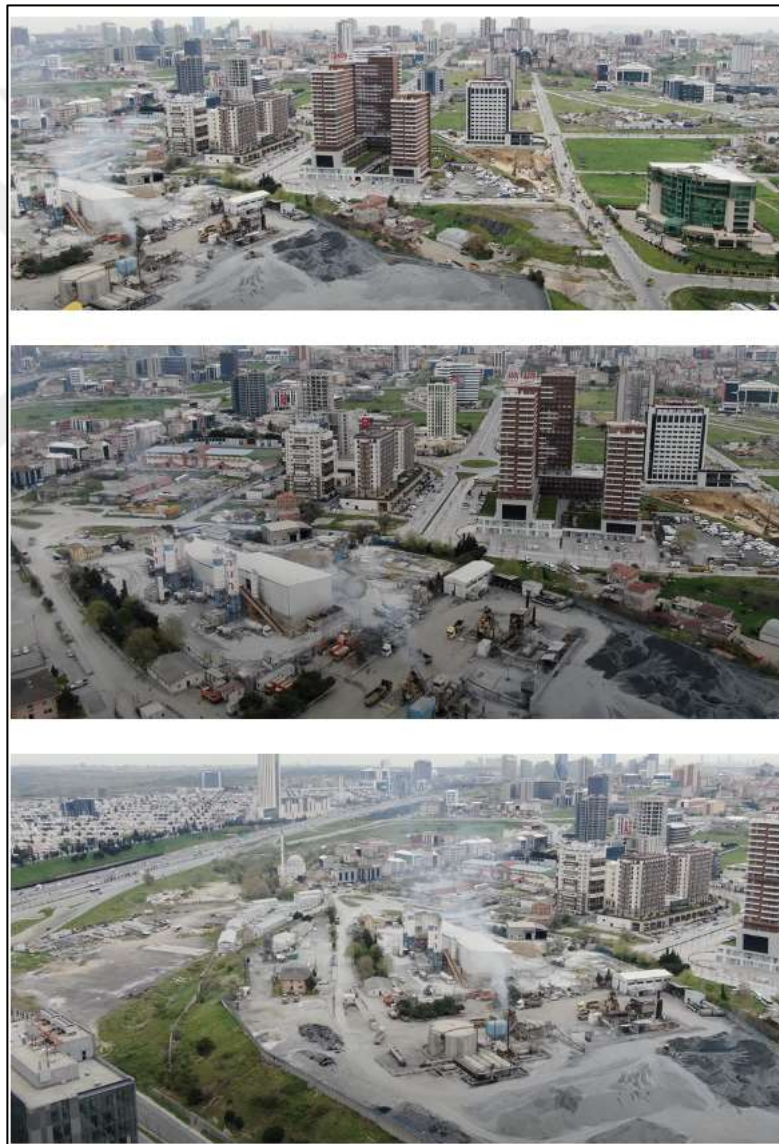


Figure 6.13: Images of Bölge Park (Google Earth, 2024).

Viewshed Strategies Implementation for Mahmutbey:

Table 6.4: Viewshed Strategies Implementation for Mahmutbey, Prepared by Author.

Category	Case Study/ Resilience theory	Objectives	Strategy
Cultural Preservation	Based by the High Line in New York City, where industrial infrastructure was reimagined (Ahern, 2011).	Preserve the cultural and historical sites of Mahmutbey that suit its new urban identity and architecture.	Develop inviting public places which would reveal the history of the area.
Urban Connectivity	Based by the High Line's focus on pedestrian-friendly designs and linked networks (Ahern, 2011).	Make Mahmutbey better-connected with its Neighborhood by bringing some soft connections so that people and nature can move around harmoniously.	Design green connection zones and pedestrian passage ways for corridors between parks and other communal areas and residential areas with access for everyone
Environmental Visibility	Based on the ULI/HINES Case study green corridor strategies for urban cohesion (Walker & Salt, 2006).	Develop the concept of Mahmutbey ecological values and raise awareness about it: Biodiversity Gain.	Integrate green buffer zones with native plants, Second, create permeable surfaces and natural elements into the existing networks of parks and streets of the Mahmutbey.
Urban Aesthetics and Identity	Based by the ULI/HINES Case study ideas for blending cultural and ecological elements (Walker & Salt, 2006).	Propose seamless transitions between cultural and the architectural as well as natural elements with the premise of strengthening Mahmutbey's visual and spatial anchors.	Apply viewsheds to link parks and green areas and reveal the cultural and natural potential of Mahmutbey.

6.1.3 Generate Positive Social Memory of The Mahmutbey Neighbourhood

The neighborhood has a rich combination of history and culture, which shapes its identity (see Figures 6.14 and 6.15). The village thrives on its historic character, exemplified by features such as old wooden houses, historic fountains, and a central coffeehouse. These elements not only preserve the architectural heritage of the area but also serve as focal points for social interaction, collectively strengthening the neighborhood's cultural identity and positive social memory.



Figure 6.14: Mahmutbey Village Borders, Prepared by Author.

All of these contribute to a vibrant historical character. The village itself is still charming, with trees and Stone walls separating it from the urban developments, and the village retains

its charm. To enhance duration and resilience, public arts and culture centers can be established in certain areas of the village, such as vacant areas and green space, to connect the village within the neighborhood and ceramic areas, installing entrance signage and landmarks with cultural themes while guiding the visitors through Spaces. Green corridors continuously connect the neighborhood, natural, and urban environment.

Implementing the strategies and enhancing the link between the neighborhood's lasting social memory and the neighborhood by considering the connection between heritage and modern community life (see Table 6.5). As public arts, cultural centers will be gathering centers to promote shared identity and belonging, and interpretive street signage and landmarks will make them accessible, even for future generations. Over time, this blend of culture and sustainable development will create a resilient and lively community.

Table 6.5 Positive Social Memory Strategies Implementation for Mahmutbey, Prepared by Author.

Category	Case Study/ Resilience theory	Objectives	Strategy
Cultural Preservation	High Line, NYC: Repurposing industrial infrastructure into cultural landmarks	Showcase Mahmutbey's cultural identity through integrated green and cultural spaces.	Develop public art and cultural centers within the parks to connect and enhance interaction within the neighborhood.
Urban Connectivity and Environmental Visibility	ULI/HINES: Integrating biodiversity into urban spaces (Walker & Salt, 2006).	Promote biodiversity	Create biodiverse green layout with native plants
Urban Aesthetics	All cases blended ecological and cultural elements	Aesthetics improvements implementation	Improve street pedestrian signage, add landmarks and nodes within parks and the neighborhood



Figure 6.15: Village of Mahmutbey (Bağcılar Municipality, 2024).

6.1.5 Alternative Transpiration System

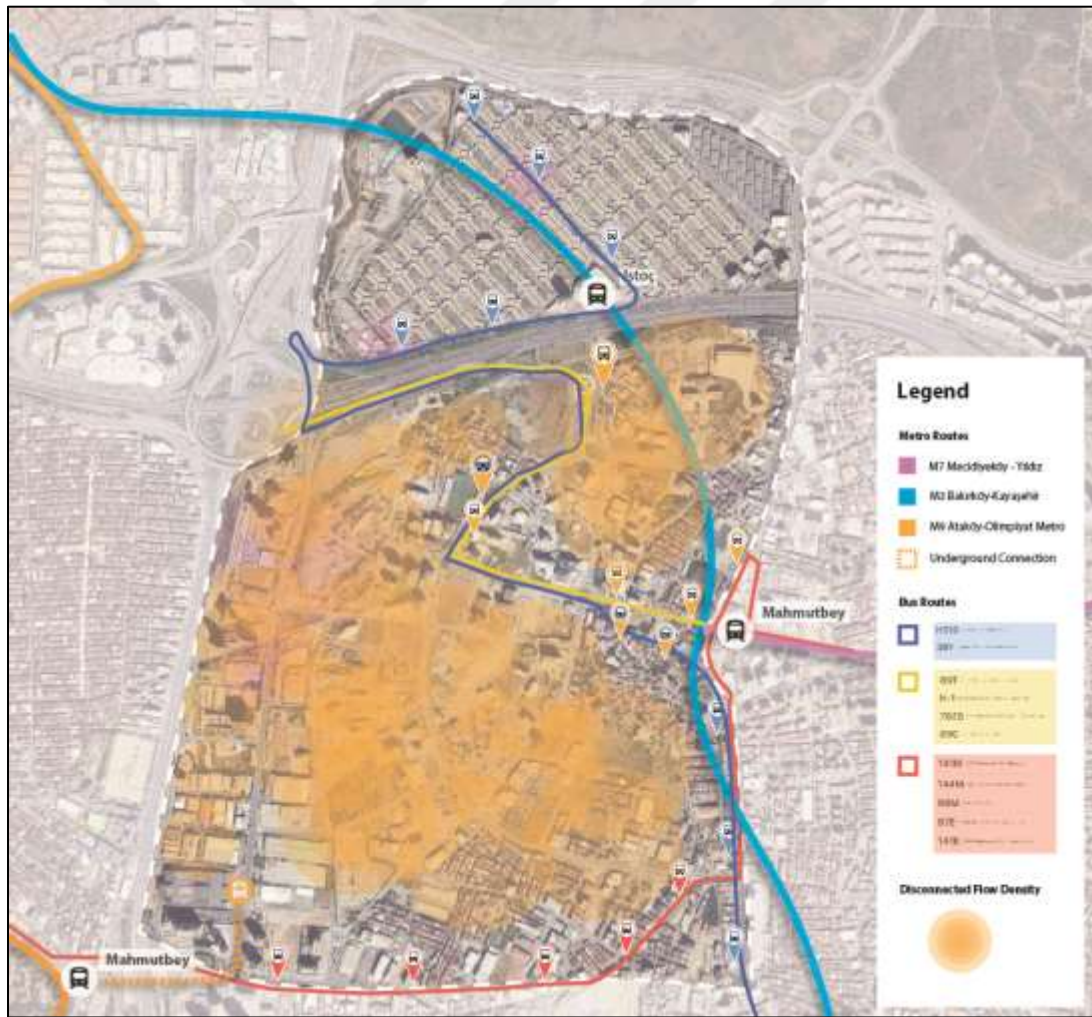


Figure 6.16: Disconnected Social Amenities Analysis, Prepared by Author.

Discontented social amenities analysis: The analysis demonstrates how some areas within the neighborhood are disconnected from social amenities, such as those located from west to east and the north and south of the neighborhood. It is hard to reach and connect within these zones due to the lack of green spaces, social amenities, and even transportation, as well as the lack of pedestrian roads and crossroads. (see Figure 6.16)



Figure 6.17: Connected Social Amenities Analysis, Prepared by Author.

Connected Social Amenities and Transport Stations: The neighborhood's residents have limited access to green areas surrounding the transportation system, and most of the Areas in the neighborhood are hard for them to connect with green areas. The areas covered with arrows show that These areas are considered disconnected and need to be connected with other areas of the neighborhood with green, cycling pathways and pedestrian to connect with crossroads neighborhoods even with the commercial spaces and shopping center and link it with the village, directly to the metro station of Mahmutbey, which will enhance the connectivity in the region, so everyone can access the social amenities and maintaining a transportation system that connects the social amenities and the people of Neighborhood.

The neighborhood's residents have limited access to green areas surrounding the transportation system, and it is difficult for them to connect with green areas (see Figure 6.17). The areas covered with arrows show that These areas are considered disconnected and need to be associated with other areas of the neighborhood with green, cycling pathways and pedestrian to connect with crossroads neighborhoods even with the commercial spaces and shopping center and link it with the village, directly to the metro station of Mahmutbey, which will enhance the connectivity in the region, so everyone can access the social amenities and maintaining a transportation system that connects the social amenities and the people of Neighborhood.

Table 6.6: Discontented and Connected Strategies Implementation for Mahmutbey, Prepared by Author.

Case Study/ Resilience theory	Objectives	Strategy
Based on all case studies, the integration of urban mobility infrastructure	Improve transport efficiency and reduce carbon emissions.	Establish Bike routes to connect the stations and enhancing the pedestrian zones.
Networks connection structures	Improve connections	Create a stronger walk path for pedestrians across Mahmutbey
Based on all case studies, the integration of urban mobility infrastructure	Connect with cross roads neighborhood	Transform Dilmenler street as the main street of Mahmutbey and link it with cross roads Neighborhood
Multi transit system implemented in all cases	Link residents with existing commercial spaces and parks	Maintain Dilmenler street with well design pedestrian streets, commercial spaces and parks for strong connection

Within these strategy implementations (as shown in Table 6.6), the social resilience of the neighborhood will be fostered in many aspects, such as enhancing the transportation systems and green areas, which aim to connect all these amenities within one network to improve the overall social resilience cohesion of the neighborhood.

6.2 SOCIAL AMENITIES & NETWORK SYSTEMS

This section clarified the use of different social systems and helped understand which system supports the concept of resilience within the scope of social resilience at a neighbourhood scale.

6.2.1 Centralized Network Structures of the Social Systems

Centralized Network Structures: Centralized systems have a central node that connects with other components, forming a wheel structure (see Figure 6.18). These systems are robust in terms of communication and coordination but far more sensitive to a single point of failure, which, if it occurs, will trigger a domino effect across the system.

Centralized settings are characteristic of bureaucratic organizational systems, where most decisions are made at the central level. Centralized systems are susceptible to disruptions of the central node, which makes their resilience inherently restricted.

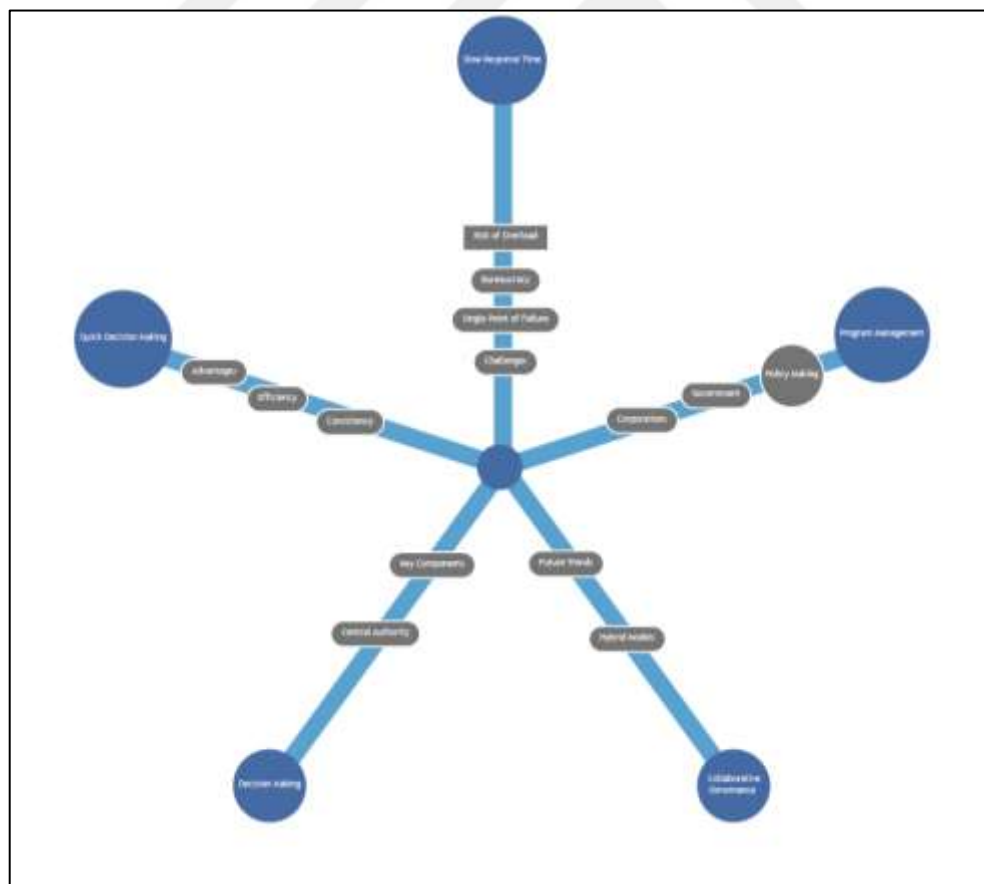


Figure 6.18: Centralized Social System, Prepared by Author.

6.2.2 Hierarchical Network Structures of the Social Systems

Hierarchical Network Structures: Hierarchical configurations represent a transitional model between centralized and decentralized systems (see Figure 6.19). They exhibit a tree-like structure featuring numerous subsystems that extend from central nodes. This configuration permits enhanced adaptability relative to centralized systems. Tiered decision-making structures balance centralized control with distributed functionality in multi-level urban governance and corporate organizations. In multi-tiered urban administrative areas, governance duties are allocated among local, regional, and national entities, and resilience is achieved through redundancy and localized adaptation. It means that hierarchical structures are still effective in maintaining centralized efficiency, but freedom is provided to subsystems to be more adaptive.

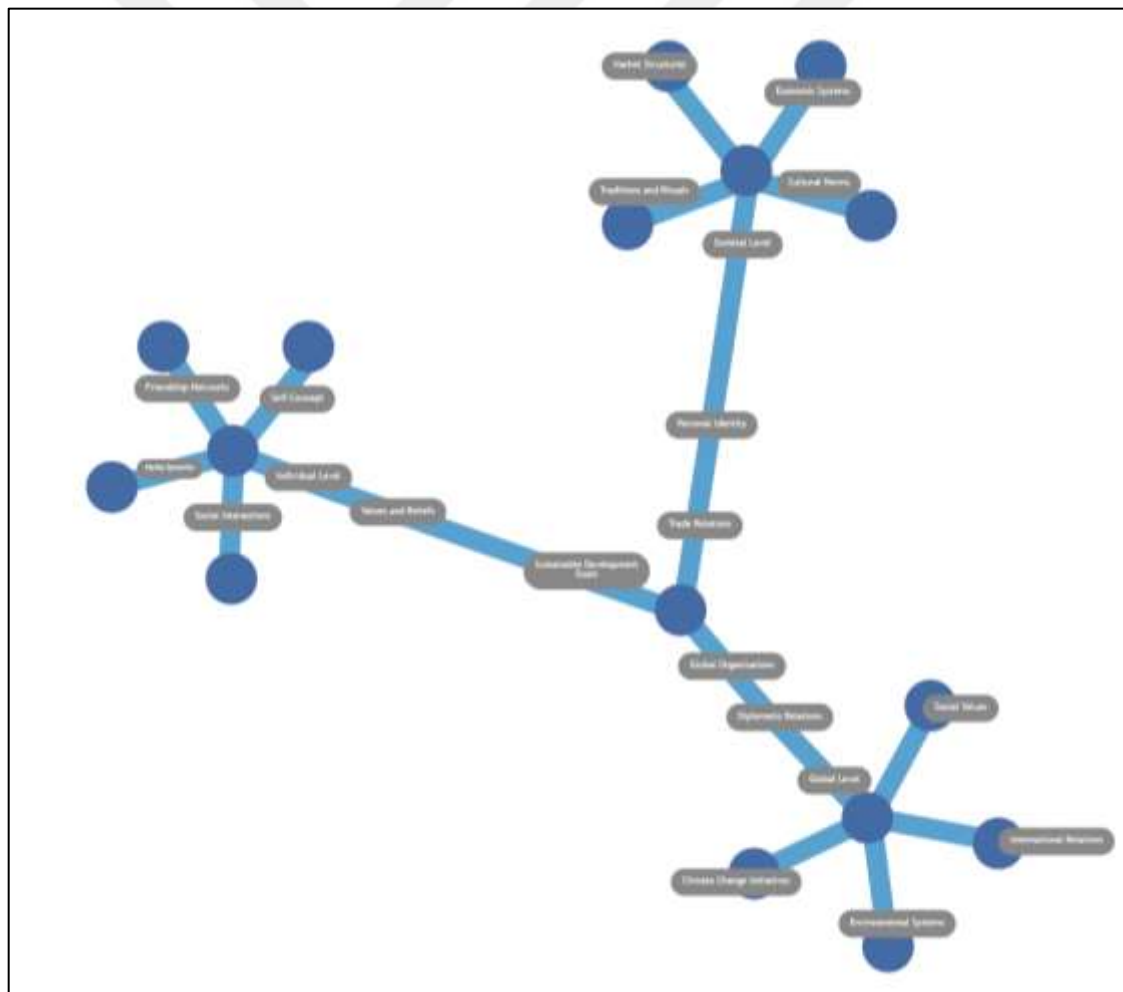


Figure 6.19: Hierarchical Social System, Prepared by Author.

6.2.3 Decentralized Network Structures of the Social Systems

Decentralized Network Structures: A decentralized system is often found in participatory planning, projects, and developments involving the community in the urban setting. These systems enhance their resilience by reducing dependency on their systems, which are deemed more resilient than others (see Figure 6.20).

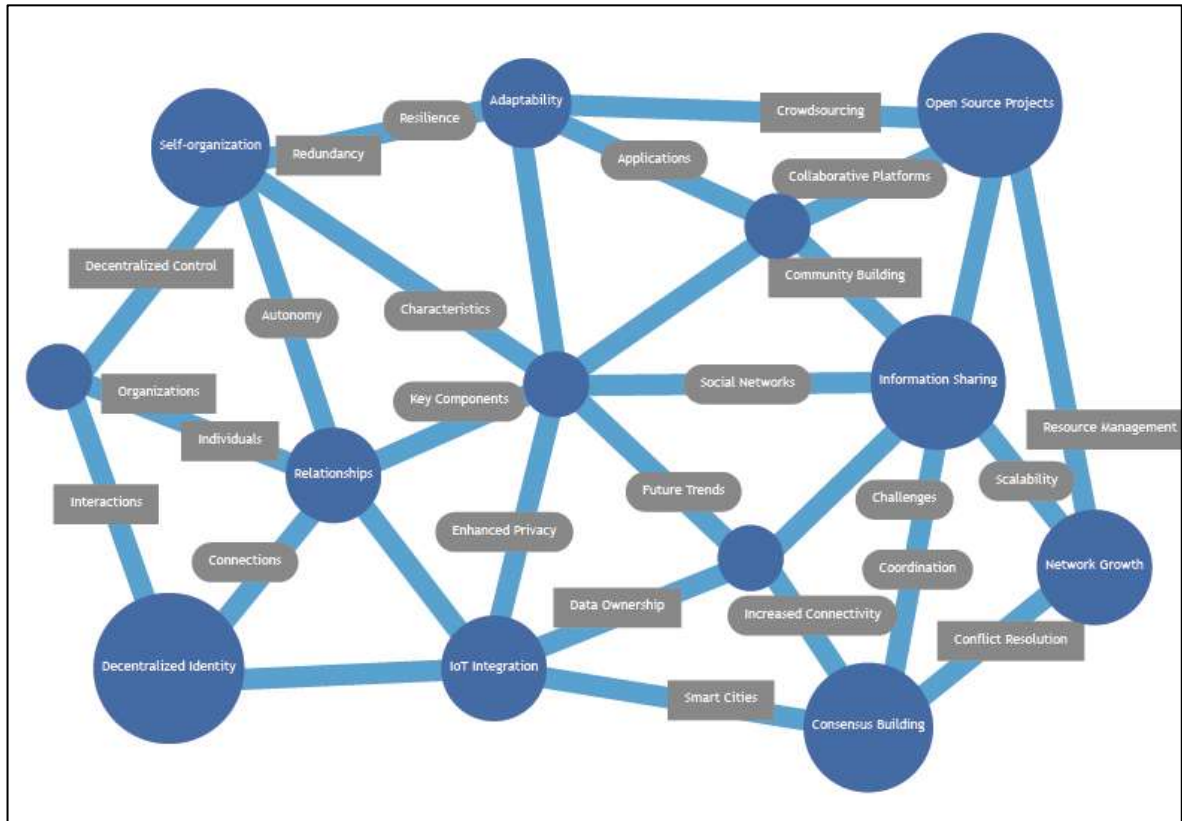


Figure 6.20: Decentralized Social System, Prepared by Author.

6.2.4 Context Social Amenities of the Social Systems

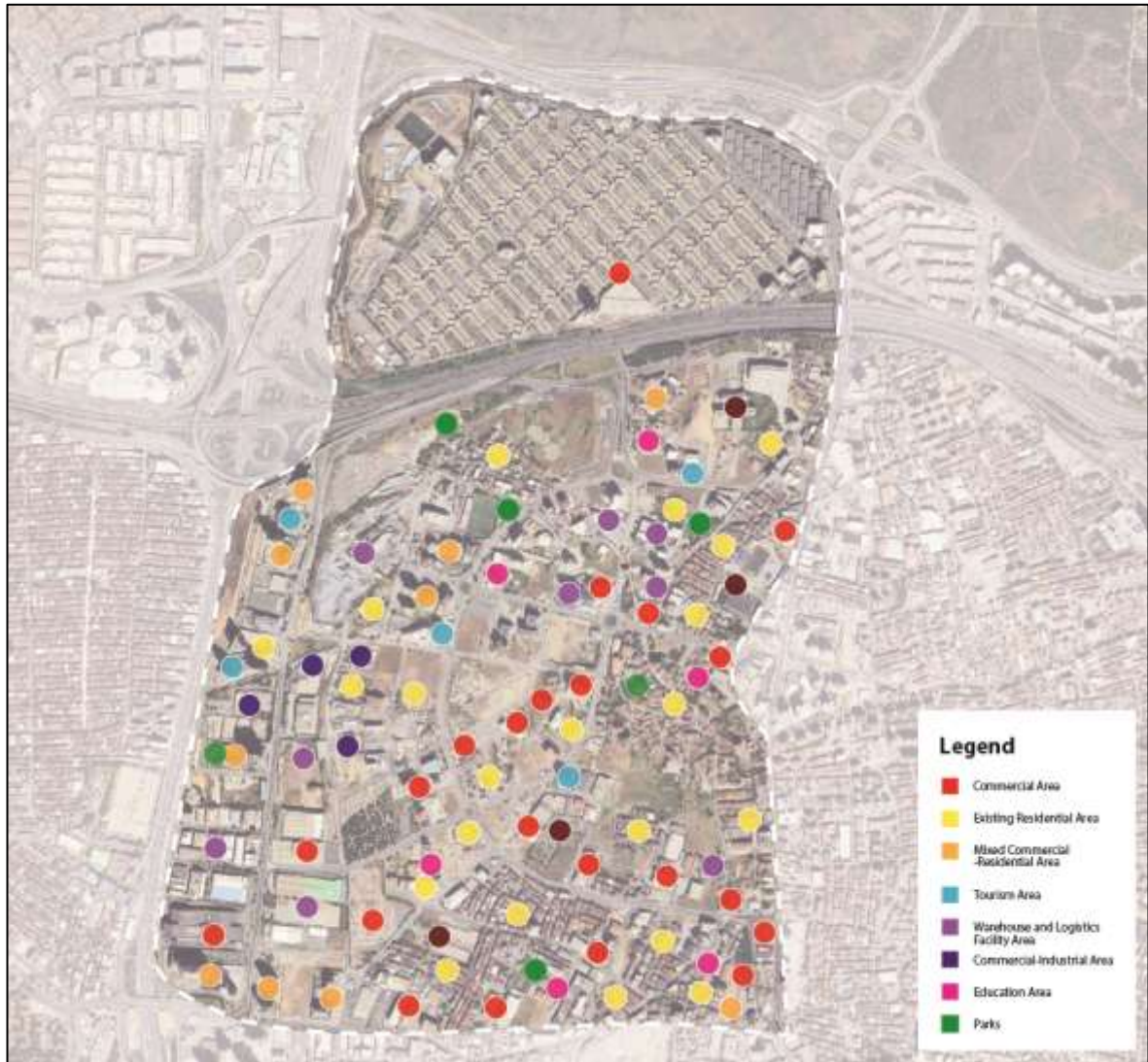


Figure 6.21: Social amenities in Mahmutbey, Prepared by Author.

As shown in Figure 6.21, Mahmutbey has various social amenities. However, the neighborhood is also impoverished in terms of social amenities like health, art, and services. Furthermore, the existing ones are isolated due to the nature of the lands and the industrial areas within the surrounding vicinity.

a. Education Areas:



Figure 6.22: Educational Institutions, Prepared by Author.

As shown in Figure 6.22, adequate social amenities are associated with education. Many people who live near Bölge Park are students and families. In addition, Mahmutbey is home to four schools and one university.

b. Mixed Use Areas:



Figure 6.23: Mixed-Use Developments in Mahmutbey Neighborhood, Prepared by Author.

As shown in Figure 6.23, numerous urban projects have been developed within the neighborhood over the past twelve years. These initiatives have improved the quality of the area's high-rise mixed-use developments; however, the absence of other social amenities, green spaces, and services has caused these projects to impose concrete structures within the urban environment of Mahmutbey.

c. Residential Areas:



Figure 6.24: Residential Areas in Mahmutbey Neighborhood, Prepared by Author.

As shown in Figure 6.24, many of these residential areas consist of older buildings that pose significant risks in the event of natural disasters. Most buildings date back 20 to 50 years and are inadequately managed concerning social amenities, green spaces, and pedestrian access.

d. Manufacturing and Industrial Area:



Figure 6.25: Manufacturing and Industrial Areas in Mahmutbey Neighborhood, Prepared by Author.

Following the construction of the major highways in the region, Mahmutbey was designated as a commercial and industrial zone, attracting major factories specializing in food processing, textiles, and logistics. The Mahmutbey region has always been an advantageous location for manufacturing, and the use of technology and labor has always been prominent (see Figure 6.25).

e. Commercial Areas:



Figure 6.26: Commercial Spaces in Mahmutbey Neighborhood, Prepared by Author.

The İstoç is one of the central business hubs in Istanbul. The 212-shopping center is a major family attraction; besides that, there are small markets scattered in residential areas. Big-name markets have started operating in Mahmutbey, around Bölge Park, which is the future of this region, promising to provide services for the needs of residents. However, while many commercial places exist in the neighborhood, it is noted that there is a lack of accessibility between these areas (see Figure 6.26).

f. Context Social Amenities Connection:

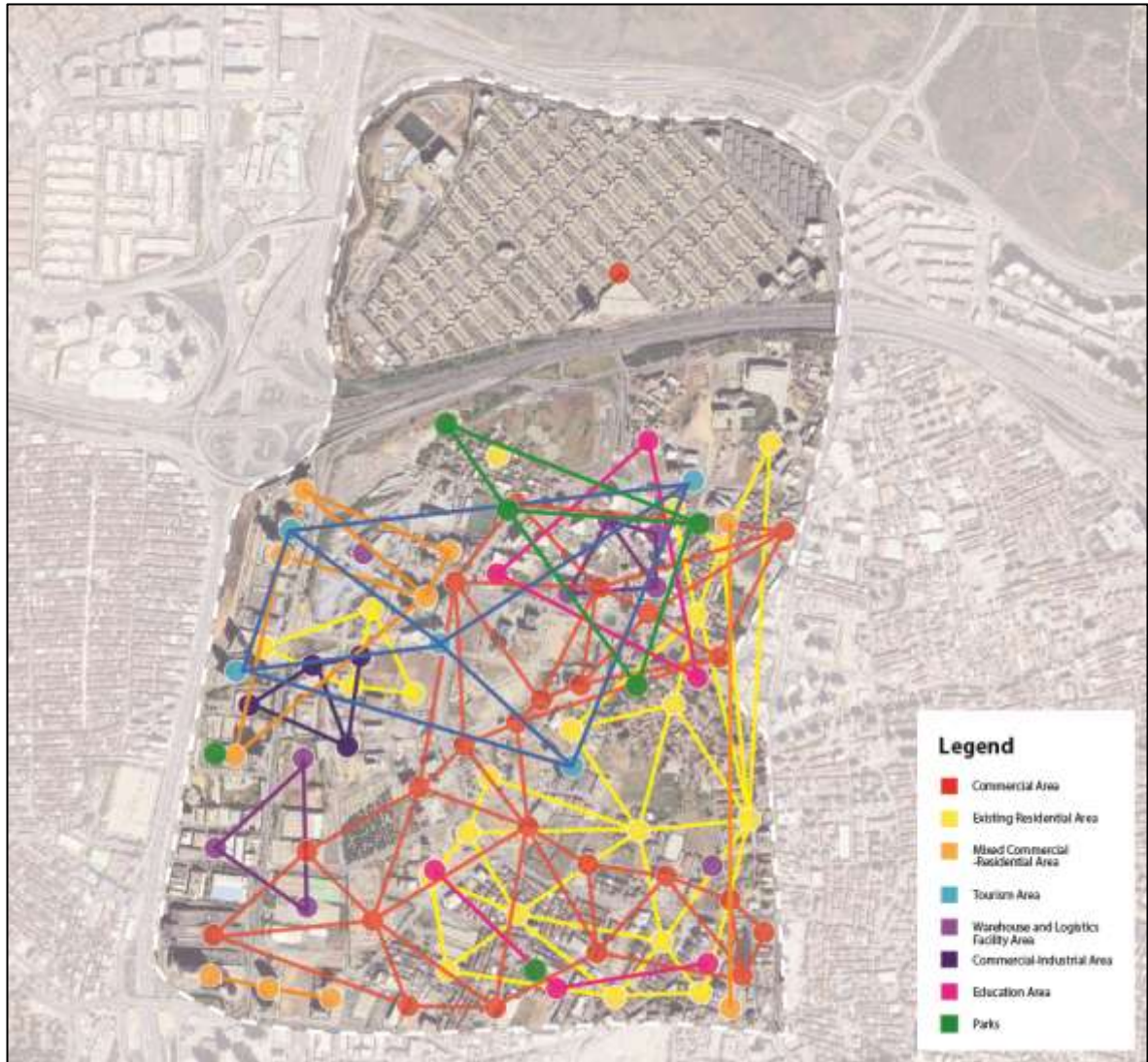


Figure 6.27: Social Amenities Connections in Mahmutbey, Prepared by Author.

The Mahmutbey Neighborhood has the capability to stimulate social amenities available within the Mahmutbey Neighborhood and Bölge Park. By improving their decentralized connection, a wide variety of social facilities can be developed, enhancing social vulnerability in the neighborhood by adopting the strategies proposed in this research. This would improve the neighborhood's sense of social resilience (see Figure 6.27).

Connecting System Configurations to Resilience: The relationship between system configurations and resilience is well explained in the resilience literature. However, the main drawback of centralized systems is that they are prone to top event-type failures. On the other hand, hierarchical systems achieve efficiency at the expense of moderate resilience since the problem mainly affects specific branches (Holling, 1973). In their *Resilience Thinking*, Walker and Salt (2006) suggest that decentralized systems exhibit greater responsiveness, incorporate built-in redundancies, and possess strong self-organizing capacities. These characteristics enable more effective recovery after disturbances and contribute to higher reliability and resilience in urban contexts. Overall, in an Urban context, System configurations deeply influence resilience. The principles of network structures and connectivity models can be applied to examine how the effects of spatial organization of the environment on mobility, social relations, and stability of infrastructures.

Urban Connectivity: Network structure determines the flow of people, goods, and services in an urban region. When several pathways are provided, the connection improves, while decentralized systems reduce vulnerability to interference. Transport networks with duplicate paths are also available for use during the closure of one path or a non-functioning transport system.

Social Resilience: Decentralized structures positively impact community networks because they regionally address the decision-making and problem-solving processes of the communities. This is similar to a polycentric system, which emphasizes multiple decision-making centers as a key characteristic of a resilient system.

In conclusion, these facts prove that decentralized configurations are key to creating sustainable and versatile resilient urban systems. The following section presents a stepwise implementation framework designed to translate social resilience strategies into actionable interventions for Mahmutbey. This approach emphasizes participatory processes, integration with transport systems, and continuous adaptation to ensure sustained social and spatial resilience. The following section integrates the proposed strategies for Mahmutbey, demonstrating how the coordinated implementation of these interventions will comprehensively transform the neighborhoods to be more socially resilient.

6.3 STRATEGIES IMPLEMENTATION FOR MAH MUTBEY

This section integrates the proposed strategies for Mahmutbey, drawing on detailed analyses and urban resilience frameworks discussed in this research. It offers a practical scenario for Mahmutbey's future once all strategies are realized. These strategies are implemented and focused only on Bölge Park and the surrounding area of Mahmutbey.

Essential improvements will facilitate multiple forms of interaction and activity, and public spaces will serve as catalysts for community engagement, social cohesion, and dynamic urban life within the neighborhood (see Figure 6.28).

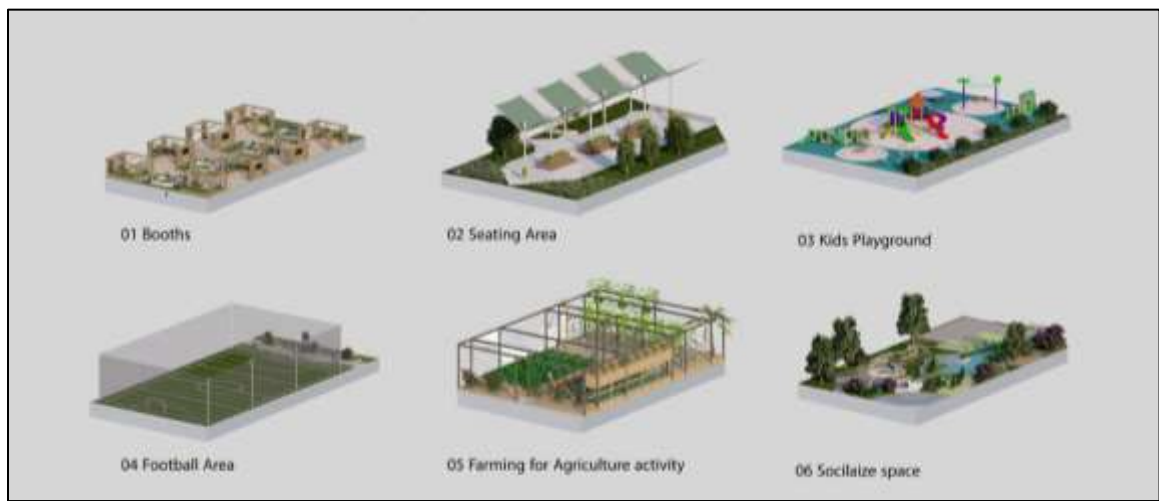


Figure 6.28: Proposed Public Space Interventions for Mahmutbey, Prepared by Author.

- a. Booths: Such booths allow local markets, small companies, and community events to use different sites, supporting the local community and businesses.
- b. Seating Areas: Shaded areas with comfortable seats make it easier for people to meet, relax daily, and use these areas more.
- c. Kids' Playgrounds: Neighborhoods with well-maintained parks appeal to families with children since they help everyone be active and spend time together.
- d. Football Area: Dedicated sports fields give people of all ages a place to play sports and socialize, promoting good health and friendly gatherings.

- e. **Agricultural Activity Involve Farming:** Urban farming plots allow people to engage in community gardening and small-scale agricultural activities, enhancing sustainability, education, and the production of more locally grown food.
- f. **Socialize Space:** Social cohesion grows when landscaped areas, different types of plants, water features, or artwork add opportunities for people to rest and celebrate community events together.



Figure 6.29: Mahmutbey (Bölge park and its surrounding areas) Plan, Prepared by Author.

Key Features of the New Mahmutbey (Bölge park and its surrounding areas) Plan as shown in Figures 6.29 and 6.30:

- a. **Distribution of Green and Public Spaces:**
 - i. **Multiple Park types:** Large central parks, pocket parks, and linear green corridors.
 - ii. **Public amenities** include playgrounds, football fields, urban farming areas, seating zones, social spaces, and modular booths for local commerce.
 - iii. **Community facilities:** Education center, health center, community hub, mosque, and handicraft/exhibition spaces.

- iv. Integrated functions: Mixed-use and commercial zones at key nodes, residential areas surrounding public spaces.
- b. Transportation & Access:
 - i. Non-motorized mobility network:
 - ii. Continuous, dedicated bike paths linking all major destinations.
 - iii. Secure bike parking at key public facilities and parks.
 - iv. Pedestrian-only corridors connecting homes, amenities, and transit stops.
 - v. Car access management:
 - vi. Inner streets are accessible to vehicles only when necessary (emergencies, deliveries, essential resident needs).
 - vii. Main car traffic is routed to the periphery or specific entry points, minimizing through-traffic.
- c. Priority for people:
 - ii. Public space and street design encourage walking and cycling as default options.
 - iii. Safe crossings, shaded walkways, and direct routes enhance daily convenience.



Figure 6.30: Mahmutbey (Bölge Park and its Surrounding Areas) Plan 02, Prepared by Author

As shown in Table 6.7 and Figure 6.31, these strategies collectively demonstrate how Mahmutbey integrates accessibility, ecological connectivity, and vital community functions to foster the social resilience cohesion of Mahmutbey:

- a. **Accessibility and Main Circulation:** The plan establishes a robust network of movement corridors, clearly prioritizing pedestrian and bicycle flows. The main circulation routes enable residents to traverse the district efficiently, linking homes to amenities and green spaces without reliance on private vehicles.
- b. **Green Belt:** A continuous green infrastructure system interlaces the neighborhood, connecting large parks, pocket gardens, and recreation fields. This enhances environmental quality and ensures every household has direct access to green spaces.
- c. **Functional Distribution:** Key amenities, including health centers, education hubs, community and craft spaces, and the mosque, are spatially distributed to ensure equitable access, strengthening both daily convenience and social integration.
- d. **Entrances and Public Spaces:** Well-defined site entrances and a rich variety of public spaces (plazas, sports fields, gathering nodes) foster safety, inclusivity, and vibrant

community life. These spaces' diversity and strategic placement support regular events and spontaneous interactions.

Table 6.7: Key Spatial and Functional Elements, Prepared by Author.

Diagram	Content & Role
Accessibility	Highlights new and reinforced movement corridors, ensuring seamless pedestrian and bike connections across the entire district.
Green Belt	Shows the continuous green corridors linking parks, plazas, and community gardens, supporting recreation and biodiversity.
Existing Axes	Identifies historic and functional axes preserved and integrated to maintain local identity and urban continuity.
Main Functions	Maps the distribution of core amenities (health, education, community, religious, and craft spaces) for universal access.
Main Circulation	Depicts the hierarchy of circulation routes, prioritizing non-motorized movement and clarifying vehicle access zones.
Site Entrances	Marks the primary access points for residents and visitors, enhancing permeability and safety.
Public Spaces	Highlights the range and distribution of public gathering areas, ensuring social interaction and community events.

In summary, integrating these spatial, functional, and ecological layers transforms Mahmutbey into a highly accessible, environmentally sustainable, and socially cohesive neighborhood. This comprehensive approach exemplifies best practices in resilient urban planning, setting a model for future neighborhood development in rapidly urbanizing contexts.



Figure 6.31: Mahmutbey Diagram, Prepared by Author.

Table 6.8: Summary of Implemented Strategies for Mahmutbey, Prepared by Author.

Category	Objective	Implemented Strategy
Connectivity & Green Infrastructure	Enhance ecological and pedestrian connectivity	Created green corridors linking fragmented green spaces to support pedestrian and ecological continuity.
Multifunctional Land Use	Encourage multifunctionality through mixed-use developments	Redeveloped industrial and underutilized zones as mixed-use hubs, integrating residential, commercial, and recreational functions.
Sustainable Urban Development	Promote sustainable land use	Converted underutilized lots into vibrant mixed-use areas to stimulate local economic and social activity.
Adaptive Environmental Design	Improve environmental sustainability	Used native vegetation and climate-responsive infrastructure to address urban heat and support a healthy microclimate.
Pedestrian Pathways	Improve accessibility	Developed pedestrian-friendly streets and networks, linking parks, green spaces, and commercial zones for safe pedestrian travel.

Table 6.8: Summary of Implemented Strategies for Mahmutbey, Prepared by Author “Table Continued”.

Neighborhood Networks	Strengthen urban connectivity	Enhanced pedestrian and bicycle paths connecting residential and commercial areas, improving overall mobility.
Community Interaction	Foster social interaction and community use	Repurposed obsolete infrastructure into linear parks and multifunctional spaces for community engagement.
Social Connectivity	Enhance pedestrian and social connectivity	Integrated green infrastructure and seating along main streets to encourage social interactions and urban comfort.
Recreational Spaces	Promote multifunctionality in urban spaces	Developed jogging paths, playgrounds, and sports areas accessible via the expanded pedestrian network.
Cultural & Educational Activation	Stimulate community engagement	Organized cultural, recreational, and educational events in public spaces to increase participation and learning.
Stakeholder Collaboration	Facilitate public-private partnerships	Engaged local authorities, residents, and businesses collaboratively in managing and maintaining public spaces.
Positive Social Memory	Strengthen community identity and historical ties	Created accessible public spaces that highlight Mahmutbey’s cultural identity and historical significance.

As shown in Table 6.8, Mahmutbey's transformation is underpinned by a comprehensive set of physical, environmental, and social strategies, each grounded in sustainable urbanism and resilience principles. These strategies are not isolated interventions but are designed as an integrated framework, ensuring that environmental improvements reinforce social outcomes and vice versa.

Applying these strategies step by step, Mahmutbey is now regarded as a friendly neighborhood that supports nature, offers many benefits, and has a tough infrastructure that positively supports the local community. Using green corridors and different land uses

improves how people and nature are connected, and new bicycle and pedestrian paths support an eco-friendly city. Ensuring that public spaces are open to cultural and friendly events adds value to them as community centers.

In conclusion, these integrated strategies collectively set a benchmark for sustainable urban regeneration, positioning Mahmutbey as a model for resilient, healthy, and cohesive urban living in Istanbul.

6.4 STRATEGIES IMPLEMENTATION ROADMAP FOR MAHMUTBEY

Implementing the proposed social resilience strategies for Mahmutbey requires a structured approach that translates visionary ideas into actionable steps on the ground. Social resilience, defined as social groups' ability to tolerate, absorb, cope with, and adjust to various stresses while learning and adapting, must be operationalized through clear roles, timelines, and metrics. This section lays out a comprehensive roadmap for Mahmutbey based on resilience theory and urban planning practices.

Table 6.9: Stepwise Implementation Framework for Social Resilience Strategies in Mahmutbey,
Prepared by Author.

Phase	Key Actions/Interventions	Key Stakeholders	Expected Outcomes	Success Metrics (KPIs)
1. Needs Assessment	- Community-wide consultations and focus groups- Surveys (in-person, digital)- GIS-based spatial analysis to identify deficits- Inclusive outreach to all groups	Urban Planning Dept., Social Affairs Dept., local NGOs, academic partners, residents	Comprehensive, inclusive understanding of local needs	Participation rate; diversity index; number of issues identified
2. Visioning & Co-Design	- Participatory workshops- Collaborative design sessions- Scenario planning- Visualizations for feedback	Urban Design Dept., Parks and Gardens Dept., NGOs, schools, residents, facilitators	Context-sensitive, community-driven project vision	Number of workshops; satisfaction scores; diversity of participants

Table 6.9: Stepwise Implementation Framework for Social Resilience Strategies in Mahmutbey,
Prepared by Author “Table Continued”.

3. Pilot Interventions	- Small scale demonstration projects (e.g., pocket parks, new pathways, community gardens)- Real-time user feedback- Rapid evaluation and documentation	Parks & Gardens Dept., local contractors, community leaders, residents	Visible, fast improvements and lessons for scaling	Pilot completion rate; user satisfaction; documented lessons learned
4. Integration with Transport	- Link green/public spaces to metro, bus stops, pedestrian/cycle networks- Upgrade access routes, signage, crossings- Improve wayfinding	Transport Dept., Urban Planning, Metro authorities, NGOs, schools	Increased access and safe, seamless mobility	Increase in foot/cycle traffic; accessibility audit scores; connectivity index
5. Monitoring & Adaptation	- Ongoing monitoring (apps, surveys, observations)- Regular feedback meetings- Data-driven adjustments- Public dashboards for transparency	academic partners, municipal IT, residents	Responsive, adaptive interventions over time	Number of adaptations; response rate to feedback; public awareness score
6. Institutionalization	- Formalize policies for maintenance and engagement- Secure long-term funding- Capacity-building for local leaders- Establish stewardship models	Policy-makers, Finance Dept., legal advisors, local community boards	Sustainable, policy-embedded resilience	Policy adoption; budget allocation; stewardship agreements; maintenance audits

Each strategy includes responsible actors, phased timelines, funding avenues, key steps, anticipated obstacles, and measurable indicators. This approach ensures that the

neighborhood's resilience is deliberate, inclusive, *and* monitored, reflecting global frameworks emphasizing multi-dimensional actions such as promoting diversity, connectivity, and adaptiveness. Table 6.9 summarizes the implementation plan for the selected social strategies for Mahmutbey, serving as a practical guide for moving from planning to execution.

The implementation is structured over three years, with overlapping phases: Needs Assessment begins immediately and provides the data foundation for all other steps. Visioning & Co-Design starts in parallel toward the end of the assessment, maximizing participation and accelerating project development. Pilot Interventions begin in the first year, allowing early demonstration projects to inform and build momentum for broader integration. Integration with Transport, benefiting from feedback and lessons from pilots. Monitoring & Adaptation commences early and continues throughout, ensuring data-driven management. The roadmap takes a practical and measurable approach to social resilience by using participatory needs assessment, collaborative visioning, pilot interventions, integration of different types of transport, and creation of established systems. This method's flexibility and timely response lead to its results, since every phase considers what has been discovered so far and the suggestions of all stakeholders.

The framework encourages everyone to be involved, rely on data and experience, and ensure ongoing readiness by using what people know and what has worked globally. The gradual process of phasing in new developments supports bringing individuals together, improving local accessibility, and increasing the area's ability to withstand change. The model sets out a blueprint that can be applied to other city neighborhoods experiencing similar issues and adds to awareness of how to act on resilience theory.

7. DISCUSSION AND LIMITATIONS

7.1 INTERPRETATION OF FINDINGS

The analyses of Mahmutbey, alongside the international case studies (ULI/Hines TOUCH and The High Line), reveal that effective social resilience strategies require both physical (land use, connectivity, and adaptive infrastructure) and social (community engagement, policy support) dimensions. In Mahmutbey, green space integration, multimodal transport planning, and adaptive reuse emerged as recurring themes aligned with the research objectives. The findings underscore that contextual tailoring, particularly regarding demographic trends and local governance structures, significantly shapes an area's capacity to adapt to shocks and stresses.

7.2 COMPARISON WITH PREVIOUS STUDIES

When comparing these outcomes with similar resilience-focused studies, there is a clear overlap in emphasizing community-centric approaches and strong policy frameworks as drivers for resilience. While global examples (The High Line) showcase broad socio-economic revitalization through design innovation, Mahmutbey's context stresses multi-scale connectivity (regional, metro, and site-level). This highlights the need for flexible frameworks that can be adapted across varying socio-economic contexts. Projects integrating innovative technologies or robust stakeholder coalitions generally displayed more substantial, more sustainable impacts, reinforcing the notion that a multi-pronged strategy is essential.

7.3 STUDY LIMITATIONS

7.3.1 Scope of Study

This research provides an in-depth look at Mahmutbey, but the singular focus on this neighborhood limits generalization. Additional case studies from diverse urban environments would strengthen the universal application of the proposed resilience strategies. Ultimately, adapting these recommendations to each city's unique socio-economic and spatial characteristics remains crucial.

7.3.2 Data Availability

Reliance on secondary data sources introduces the risk of outdated or incomplete information, which could skew the analysis of social resilience indicators. Future researchers may gather primary data, such as Interviews and surveys, for more context-specific insights. This approach would address data gaps identified during the Mahmutbey study (such as missing demographic updates) and align with methods from global examples that prioritize robust evidence collection.

7.3.3 Temporal Constraints

Rapid urban development in Mahmutbey means that conditions can shift faster than the research timeline can capture. Longitudinal studies, where data are collected at multiple intervals, would identify emerging trends such as Changes in population density or new transit corridors. Such an approach would help refine resilience strategies and ensure they remain relevant as the district evolves.

7.4 SUMMARY OF DISCUSSION AND LIMITATIONS

The limitations highlight how context, data quality, and time can influence the efficacy of resilience measures. Yet, they also point toward clear opportunities for deeper inquiry, particularly in collecting richer data (through direct stakeholder engagement) and conducting ongoing assessments as neighborhoods evolve. These insights strengthen the credibility of the research conclusions by transparently acknowledging constraints and guiding how future investigations can address them.

8. FUTURE RESEARCH

8.1 CASE STUDIES IN GENERAL

Building on the lessons from Mahmutbey's analysis and international examples, researchers could investigate a broader range of neighborhoods within Istanbul and elsewhere using the same resilience frameworks. This would test the transferability of the recommended strategies (integrated green space, adaptive land use, and community engagement) under different cultural and spatial contexts.

8.2 TECHNOLOGY SOLUTIONS INTEGRATION

Innovative technologies (IoT, big data analytics, GIS) can enhance real-time monitoring of demographic shifts, environmental conditions, and community feedback. For Mahmutbey, leveraging tools like big-data-driven GIS might fill existing data gaps, enabling near-instant tracking of infrastructural performance. This approach resonates with the High Line's technology-supported maintenance and could help local authorities adopt strategies promptly.

8.3 POLICY IMPACT ASSESSMENT

Evaluating existing urban policies, zoning regulations, and participatory governance frameworks could pinpoint obstacles or gaps in effectively implementing resilience measures. By systematically studying where policies succeed or fall short (like how The High Line benefited from supportive city policies), future research could propose robust policy-integration frameworks that amplify the adaptive capacity of areas like Mahmutbey.

8.4 COMMUNITY ENGAGEMENT

Insights from both the case studies and Mahmutbey underscore that empowering residents fosters ownership of public spaces and accelerates resilient transformations. Future studies might explore digital engagement platforms or co-design workshops tailored to socio-economically diverse communities. Neighborhoods can refine design interventions by embedding local voices in decision-making to their unique cultural and social realities.

8.5 CLIMATE CHANGE ADAPTATION

As climate impacts intensify, focusing on green infrastructure such as corridor networks of vegetated areas or adopting sustainable building practices (LEED, SITES) can help mitigate rising temperatures, flooding, and other climate stressors. Mahmutbey's growing density indicates an urgent need for integrated solutions that combine climate resilience with socio-economic strategies, ensuring equitable protection for all residents.

8.6 CONCLUSION OF FUTURE DIRECTIONS

The directions outlined above resonate with global best practices but also reflect the specific constraints and possibilities revealed by the Mahmutbey case. Embracing these directions, ranging from broader cross-city comparisons to more robust data collection, will help refine and scale resilience strategies in diverse urban contexts. Future research can enhance urban resilience initiatives' practical feasibility and long-term impact by incorporating advanced technologies, aligning supportive policies, and prioritizing community input.

9. CONCLUSION

As Mahmutbey has grown rapidly, public spaces have become divided, social bonds have weakened, and few green spaces threaten community unity and the neighborhood's future. The main problem guiding this research was: How can resilience theory improve social cohesion and resilience among people in their communities? The purpose of the research was to:

- a. Identify the social problems in Mahmutbey.
- b. Link theory with real-world interventions.
- c. Create strategies that can be used in other cities with similar characteristics.

Table 9.1: Research Flow and Main Findings, Prepared by Author.

Objective	Method	Key Findings
Identify spatial/social gaps	GIS, SWOT, site analysis	Fragmentation, weak social cohesion
Bridge theory and practice	Comparative case studies, lit. review	Resilience theory can guide practical interventions
Develop and test strategies	Pilot proposals, stakeholder workshops	Participatory, green, and mobility solutions work
Framework for replication	Synthesis of results	Model is transferable to other dense urban districts

By using a combination of literature review, SWOT analysis, GIS mapping, and comparative case studies, the research found:

- a. Fragmentation is both spatial and social. When parks are disconnected, public places are isolated, and there is little community involvement, resulting in unused spaces and a weaker local identity.
- b. Resilience frameworks can be applied practically. The research used the Adaptive Cycle and Engaging Resilience models to create interventions to help people develop adaptability, redundancy, and strong social networks.

- c. Community-centric design is transformative. Participatory planning, multifunctional public spaces, and improved mobility can build mutual trust, active engagement, and shared identity.

Mahmutbey can become a model. If strategies are systematically implemented, Mahmutbey could exemplify how older, rapidly urbanized neighborhoods are retrofitted for resilience and social well-being.

Addressing how integrating green spaces and multimodal transport systems enhances resilience by incorporating green space gives a new focus on greenery. Its formation in green corridors and public parks will reduce urban heat islands and put a new focus on people's interaction (see Table 7.1). All these green elements and connectivity improvements through the development of multimodal transport systems enhance both local accessibility and regional connectivity and serve as one goal to boost resilience regarding the social aspects of the neighborhood such as:

- a. **Connectivity Improvements:** Upgrade transport availability by developing multimodal systems to enhance access and regional connectivity.
- b. **Community-Centric Policies:** To design more resilient spaces through the community, promote people's participation in urban planning to ensure consideration of available resources, and enhance local government.
- c. **Adaptive Land Use:** Concerning adaptive land-use strategies to foster sustainable outcomes. Adaptive reuse of poorly utilized typologies in integrated mixed-use buildings that simultaneously serve economic, social, and environmental purposes. This will directly support the economic, social interaction, and ecological sustainability within the Mahmutbey neighborhood.

These strategies contain tangible recommendations for people who influence Mahmutbey's decision-making, especially policymakers, urban planners, and those with stakes in Mahmutbey. More empirical evidence should be collected in the future, new resilience indicators and measurements should be incorporated, and the participants' base should be broadened to advance and optimize these strategies for wider city use.

The objectives are to develop Mahmutbey into a sustainable, lively urban district and to integrate new actions with existing plans and principles of social resilience. General recommendations based on the SITES framework have been generalized into detailed recommendations, whereas specific responses were created to apply these strategies to the Mahmutbey context. This includes planting green strips and multiple functional public areas, improving accessibility of multi-modal transport systems, adaptive reuse of parking lots for mixed-use, and socially inclusive urbanism with equity.

Table 9.2: Integrated Essential Strategies for Social Resilience in Mahmutbey, Prepared by Author.

Strategy	Lead Actors	Key Actions	Success Indicators
1. Mixed-use Development	Municipality, Developers, Planners	Rezoning, pilot projects, design review	Increase in mixed-use areas, vibrancy
2. Green Corridor Integration	Municipality, NGOs, Community	Park creation, green links, restoration	Green space/capita, usage rates, biodiversity
3. Mobility Network Enhancement	Transport Dept., Municipality	New transit, bike/pedestrian networks	Modal shift, safer streets, accessibility
4. Social Facility Upgrades	Social Agencies, Local Organizations	New/renovated community centers	Event participation, access rates
5. Business and Office Zone Activation	Municipality, Business Associations	SME support, zoning, skill development	Job creation, economic growth
6. Education, Health, Culture Hubs	Municipality, Ministries, NGOs	Upgraded schools, clinics, cultural spaces	Access rates, program diversity
7. Participatory Planning & Engagement	Municipality, Residents, NGOs	Forums, workshops, digital input	Feedback quality, trust metrics

The findings and implications for the proposed methodologies are discussed in terms of their generalizability and the potential to promote sustainable economic, social, and ecological

development through participatory planning. Key findings highlight the necessity of an integrated design strategy, the engagement of all stakeholders, and the framework's suitability for other comparable Neighborhoods in Turkey and worldwide.

Table 7.2 summarizes the main strategies, actors, and expected outcomes. Therefore, this research aligns the theoretical resilience ideas with tangible design approaches, providing a strong theoretical foundation to strengthen the social resilience of Mahmutbey and other places. It offers a community-oriented approach to sustainable urban change by adopting international guidelines and adapting the strategies to the national context. Future research should further develop these approaches with the help of more sophisticated measures of resilience and increase empirical testing of the method for other purposes.

Table 9.3: Policy and Practice Recommendations for Social Resilience in Mahmutbey, Prepared by Author.

Policy Area	Action Steps / Practices	Intended Outcome
Urban Planning & Zoning	- Mandate accessible, connected public spaces in new developments- Integrate green corridors, pedestrian routes, public plazas- Ensure minimum standards for green space proximity	Equitable access; cohesive, connected public realm
Funding & Investment	- Adopt multi-channel funding (municipal, national, EU, private)- Develop public–private partnerships for green and social infrastructure- Encourage local philanthropy	Sustainable project financing; shared community ownership
Digital Participation & Engagement	- Invest in user-friendly digital planning platforms- Facilitate transparent two-way communication- Ensure multi-language/digital literacy support	Increased community input; inclusive, transparent governance
Monitoring & Evaluation	- Define and track key performance indicators (KPIs)- Implement regular data collection (surveys, sensors, feedback)- Publish annual progress reports	Evidence-based policy; accountability; adaptive management
Community Participation & Stewardship	- Institutionalize workshops and forums for co-creation- Support local leadership and youth engagement- Empower grassroots stewardship initiatives	Strong social networks; ongoing community empowerment

A complete plan of policy and practice recommendations has been made for Mahmutbey to become sustainable and maintain its social resilience. They are based on best practices worldwide and adjusted to the needs and opportunities found in this study. They ensure that local authorities and stakeholders have a clear guide to implement lasting improvements by dealing with planning, funding, digital engagement, monitoring, and community participation.

Table 7.3 outlines a set of suggestions to help Mahmutbey become a resilient and inclusive urban neighborhood. These recommendations ensure that changes in space, society, and institutions happen together. By carrying out these actions, Mahmutbey will become a model for social sustainability in Istanbul and give other neighborhoods a valuable example of fair and flexible urban development.

This research shows that resilience theory can help explain and respond to social cohesion and urban resilience issues within Mahmutbey, Istanbul. Mahmutbey carries out a case study in a specific socio-economic and environmental setting and employs resilience theory concepts, including adaptive cycles, social capital, and system dynamics, to provide a set of recommendations for the socio-economic and ecological issues of the neighborhood. Using insights drawn from other case studies from around the world, the study presents a model of change that can be achieved in the design of cities. The objectives are to develop Mahmutbey into a sustainable, lively urban neighborhood and integrate new actions with existing plans and principles to foster social resilience.

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