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An Integrative Placemaking Framework for Sustainable Urban Park Revitalisation in Istanbul

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Highlights

- Developing an integrative placemaking framework for Istanbul urban parks.
- Combining spatial analysis, ecological design, and participatory planning.
- Applying GIS, AutoCAD, SketchUp, and Lumion across five case-study sites.
- Projecting 35-50% gains in public use under revitalization scenarios.
- Supporting inclusive, resilient, and environmentally responsive regeneration.

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Abstract

Urban transformation of Istanbul has taken place at a fast pace and created a situation of socio-spatial fragmentation, the deterioration of the quality of public spaces and the emergence of neglected open spaces in the city that are mostly out of touch with the everyday life of the community. To address these challenges, this study presents an integrative framework for placemaking using cutting-edge engineering and digital modeling software to enable sustainable urban revitalisation and community-oriented development of public spaces. The framework is a blend of Digital Spatial Analysis, Ecological Design, Participatory Planning, and Tactical Urban Interventions for systematically examining and mobilizing overlooked urban space. The research is designed using a mixed methodology (qualitative and quantitative) and five (5) case-study sites are selected to show the different socio-spatial conditions in Istanbul. Structured site observations and spatial mapping, participatory workshops with local stakeholders, and semi-structured interviews are used for data collection. GIS-based spatial analysis platforms, AutoCAD, SketchUp and Lumion software were used to model the spaces, analyse the circulation, estimate the environmental performance, and visualise proposed design interventions. The scenario-based findings show that the proposed framework can be used to improve the performance of OFs in urban areas that are neglected. The public level of use, spatial activity, social inclusion and environmental quality were projected/scenario based assessments conducted after the implementation of the proposed interventions. There are scenarios of potential increases in public use of around 35-50% and changes in perceived social value and community engagement of around 40% or more in several selected sites. The percentages shown in this table are not to be interpreted as the "observed effect" after the implementation of the scenarios, but rather as a modeling estimate based on baseline and scenario comparisons. The implications of the study show that it is a powerful way to leverage the integration of intelligent urban analysis technologies with participatory placemaking strategies for inclusive, resilient, and environmentally responsive urban regeneration in rapidly transforming cities like Istanbul.

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1. Introduction

The spatial and social structure of modern cities has been greatly changed by rapid urbanization, population

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growth, economic restructuring and large-scale infrastructure development. Recent research by Sezgen [1] and Sakarya et al. [2] has confirmed that Istanbul is one of the largest transcontinental metropolitan regions in the world and that the city is experiencing multiple and large-scale urban change, shaped by regeneration projects, housing redevelopment, transport expansion, and growing commercial pressures. According to recent literature [3], [4], [5], the urban identity of the city, as defined by its historical heritage and cultural diversity, has given rise to major challenges in the process of making the city inclusive and sustainable. While urban transformation has been helpful to economic and infrastructural development, many interventions have focused on physical and economic goals rather than human considerations. As such, the issue of socio-spatial fragmentation and reduced access to public space has been raised, along with environmental degradation and a reduced sense of place in a rapidly changing urbanised environment [2], [6].

The transformation processes have led to the rise of neglected urban open spaces (NUOS) such as empty plots, sites that are abandoned for infrastructure, deteriorated waterfront zones that are deteriorated, remaining spaces and underused green areas. Although they are strategically located and have a potential contribution to urban sustainability, many of these spaces are disconnected from the surrounding community and inadequate to be a part of an everyday city. The ongoing shortcomings in NUOS have been cited as a reason for a lower quality of the environment, lower safety in the city and lower vitality of space Tutuncuoglu [7], Rahbarianyazd [8], and Zakka et al. [9]. But if managed well, these areas could provide possibilities for sustainable urban regeneration and could become places which are inclusive, accessible and environmentally responsive to support community wellbeing.

Good quality public spaces support social interaction and inclusion [10] and a sense of belonging for residents [6]. All in all, they might enhance the bond between humans and urban surroundings. In high-density metropolitan cities like Istanbul, with scarce, inaccessible open spaces as a result of the growing pressure for development, the rejuvenation of marginalized urban spaces has become a key priority in the improvement of urban life and sustainable urban development [1], [3]. Current research on urban design also stresses the need to adopt a practice-led, participatory and ecologically responsive approach to public space transformation rather than solely a physical one [11].

The placemaking human-centred approach to transforming underused spaces into places for humans is increasingly evident in urban regeneration. Given this, placemaking practices highlight the importance of engaging local communities, fostering a sense of place, adopting a tactical approach, and adapting reuse as ways to enhance the quality of the public space and deepen social ties [12], [13]. Likewise, Basaran et al. [14] reiterated the significance of green infrastructure, environmental improvements and climate-responsive interventions in building urban resilience and sustainability via ecological and landscape-based approaches. The study conducted by Alikhanzadeh et al. [15] defined digital technologies as the integration of geographical information and spatial analysis tools with digital modeling. Digital technologies are also increasingly used in urban planning processes to enhance spatial understanding, visualization, and evidence-based decision-making.

While there have been some advances in urban regeneration research, there are a number of drawbacks. In essence, many regeneration projects in Istanbul and elsewhere in fast-growing cities are still grappling with a core understanding that the City is mainly a collection of large-scale development projects, economic investment and physical restructuring, with fewer opportunities to seriously engage with smaller-scale underdeveloped areas that have great social and ecological potential [15], [16]. In addition, prior research often focuses on the physical design interventions, community involvement, ecological approaches, and digital planning tools individually, without combining them into a systemic approach. This disjointed approach hinders the comprehension of how several aspects of place-making, when combined, impact the performance of public space.

Moreover, there is little empirical evidence to examine the role and potential of participatory, tactical, ecological, and digitally-driven placemaking approaches in revitalizing underused open space in complex metropolitan environments like Istanbul. While existing research has a significant amount to offer with respect to the design of public space [9] and the process of urban regeneration [6] few studies have addressed the ability to measure the outcomes of public space interventions in terms of use/access, social integration, spatial activity, and environmental quality in varying socio-spatial contexts. The lack of systems to integrate evaluation frameworks is a key knowledge gap, especially for rapidly changing cities where spatial inequities and shifting community needs are growing.

Therefore, this study addresses the identified research gap by developing and evaluating an integrative, context-sensitive placemaking framework for the sustainable revitalization of Neglected Urban Open Spaces (NUOS) in Istanbul. The framework combines digital spatial analysis, participatory planning, ecological design principles, and tactical urban interventions to explore how underutilized urban spaces can be transformed into inclusive, vibrant, and socially meaningful environments. Through the examination of

five (5) diverse case-study sites, the research provides evidence-based insights into the potential of community-centered and technology-supported approaches to improve public-space quality, enhance social interaction, strengthen environmental responsiveness, and contribute to urban liveability. To achieve this aim, the study pursues the following objectives:

RO1: To examine the existing physical, social, and environmental conditions of selected urban parks in Istanbul.

RO2:To identify and evaluate the effectiveness of creative, tactical, participatory, and ecological place-making strategies in revitalizing abandoned or underutilized urban spaces.

RO3:To assess the role of community participation and stakeholder engagement in improving social inclusion, place attachment, and long-term sustainability of revitalized public spaces.

RO4:To analyze the environmental, spatial, and urban livability impacts of place-making interventions within the selected case-study areas.

RO5:To develop a scalable and context-sensitive place-making framework capable of guiding the transformation of neglected urban spaces in Istanbul and comparable metropolitan contexts.

Accordingly, the study addresses the following research questions:

RQ1: What forms of place-making are most effective in transforming abandoned urban spaces into inclusive, vibrant, and environmentally responsive public areas?

RQ2: How can community engagement and stakeholder participation be maximized through spatial interventions in the revitalization of an urban park in Istanbul?

This study is a part of the development of an integrative placemaking framework for revitalizing urban parks sustainably, in which placemaking is the conceptual approach. The research offers empirical proof of what community-led and context-specific interventions can achieve regarding the use of public space, social integration, environmental conditions and spatial life in abandoned urban areas. Further, the study is relevant for the many cities that are quickly becoming urban and are experiencing growing socio-spatial fragmentation, while simultaneously losing quality of public space. The research brings practical lessons for urban designers and planners, policymakers, urban designers, municipalities and community organizations in their efforts to create inclusive and sustainable ways of urban revitalization by studying the various urban contexts in Istanbul. In addition, the proposed framework can be used as part of the ongoing urban resilience and adaptation and socially responsible planning debate in metropolitan regions that are in the midst of complex urban transformation.

The rest of this paper will be divided into five major sections. The literature review is provided in Section 2, which covers theoretical frameworks of place-making, urban livability, participatory urbanism and the revitalization of disused urban spaces. The third section describes the research methodology followed in this study, which involved case site selection, qualitative data collection methods, and analysis. The findings and the cross-case analysis are presented in Section 4, which focuses on the selected sites located in Istanbul. The implications of findings in relation to existing literature are explored and discussed in relation to urban regeneration practice and the proposed place-making framework in Section 5. Finally, Section 6 summarizes the key findings, contributions, limitations and directions for future research and practice.

2. Review of Literature

2.1.Concept of Livability in Urban Studies

Urban livability has become a key consideration in modern urban research, as it relates to how well urban areas provide for human health and social engagement [17], environmental sustainability [18] and fair access to opportunities. Livability, as defined by [19], is generally considered to be the overall quality of life within a city and it includes social, environmental, economic, cultural and spatial components. Safe and accessible public spaces, environmental quality, efficient mobility systems, social inclusivity, cultural vibrancy and civic participation are hallmarks of livable cities [20], [21]. Over the last few years, the notion has gone beyond the physical and infrastructural to encompass wider issues of spatial justice, ecological resilience, and community well-being.

In the field of urban studies, public space is becoming a more important part of the urban fabric since it can serve as a site where people interact, engage in the democratic process, enjoy leisure and recreation, and express culture. High-quality public spaces promote walking, build social capital, and increase a citizen's feeling of belonging to the city, as stated in [10]. Likewise, [11] states that a successful public place helps to create a lively city by adding inclusivity, accessibility, and multifunctionality. The concept of design and management of urban space that will affect residents' experience and interaction with the city was proposed in these perspectives [22].

Scholarly interest in the link between livability and spatial justice has also grown in recent years. Spatial justice, in the words of [23] relates to the fair distribution of urban resources and opportunities among social groups and neighbourhoods. Imbalanced access to public space is sometimes indicative of socio-economic inequalities and exclusionary planning in fast-growing cities, and can manifest in many ways. In megacities like Istanbul, where rapid urban change, neoliberal redevelopment and infrastructural growth have brought

about socio-spatial fragmentation and loss of access to inclusive public places, this challenge is especially apparent [2], [6]. As a result, urban space is often neglected, becoming a physical manifestation of urban inequality, environmental neglect and planning imbalance.

Neglected Urban Open Spaces (NUOS), such as vacant lots, abandoned infrastructure [24] and degraded waterfronts and green areas [23] are a real threat to urban living. These areas are generally correlated with low-quality environments, low social interaction, low levels of security, vandalism, and low levels of community ownership [25]. In many instances, they destroy the sense of place and diminish neighbourhood identity and, as a consequence, urban vitality. But the potential of these underutilised areas as transformative spaces has grown in recognition and is evident in studies like [26] and [6] that take a different approach to adaptive reuse and place-making.

Modern place-making strategies focus on the combination of tactical urbanism, community engagement, nature, and innovative strategies in the revitalization of underused urban areas. Tactical urbanism interventions (e.g., small-scale spatial interventions with low cost) have been proven to revitalize urban public spaces in a short period of time, and to promote experimentation and community participation [12]. Likewise, participatory place-making enhances local ownership and a sense of social legitimacy by engaging communities directly in planning and design [9], [27], [28]. Ecological place-making supports environmental sustainability in multiple ways, including through the creation of green infrastructure, climate-responsive design and biodiversity enhancement [28].

Although the concept of a revitalisation of public space is increasingly the subject of scholarly inquiry, there is a dearth of empirical studies on the effect of integrated place-making strategies to improve inclusivity, environmental quality, place activation and social cohesion within underutilised urban public spaces in the context of the city of Istanbul. One problem with existing studies is that they are either at the scale of a whole city or specific to design interventions without giving enough attention to the synergistic interaction among the three elements of stakeholder engagement, ecological responsiveness and tactical activation [29], [30]. Hence, this study is an addition to the literature in terms of creating a context-sensitive place-making model that aims to connect community engagement, spatial quality and ecological design in the process of park revitalization in Istanbul.

The concept of livability is multidimensional in nature, as it encompasses an interconnection of social, environmental, economic and spatial dimensions that influence the quality of urban life, as is shown in Fig. 1. It highlights that the key features of a liveable city are inclusive public spaces, environmental sustainability, economic opportunity, accessibility and inclusive community interaction. Livability is becoming a central concept in the discussion about urban living in contemporary city planning and is considered a most important instrument for measuring urban resilience, wellbeing and sustainability [23] [8], especially in cities that are experiencing high rates of urbanisation and socio-spatial fragmentation and environmental pressures [8]. Safe, accessible and vibrant public spaces further the sense of social cohesion, environmental quality and urban vitality [11], [24], [31].

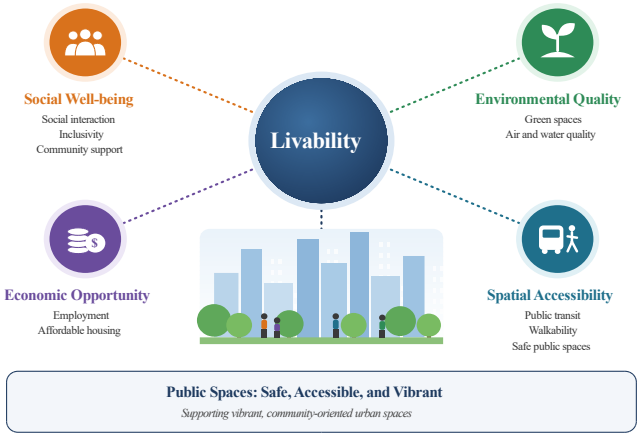

Fig. 1. The multidimensional concept of livability in urban studies. Source: Adapted from [9] and [23].

2.2. Theoretical Framework of Place-Making and Urban Revitalization in Istanbul

Place-making was developed from the fields of urban design, environmental psychology, and social theory as a concept that focuses on creating space into a socially rich, culturally diverse, and meaningful space [24], [32]. Place-making is different from traditional top-down planning models, which tend to emphasize physical redevelopment and economic value. Place-making emphasizes the human experience, community interaction, local identity and the social production of space, rather than the conventional top-down planning models that tend to emphasise physical redevelopment and economic value. The current place-making theory has developed into multiple interrelated concepts and trends, including creative, tactical, and participatory place-making, which each offer unique, yet complementary strategies to the process of urban revitalization [12], [24], [31].

Creative place-making is the incorporation of the arts, culture, heritage and creative expression into an urban regeneration process. In a creative work by Markusen et al. [33], creative interventions are shown to reinforce place identity, engage the public, boost local economies, and enhance the aesthetic appeal and beauty of urban areas. Areas that have been abandoned are revitalized through the use of public art installations, cultural storytelling, performance spaces and artistic

programming, which are often used to strengthen collective memory and cultural belonging [24], [33]. In more fragmented urban contexts, like Istanbul, creative placemaking can be used to bring together communities with under-exploited urban spaces or spaces that have been historically excluded from urban life [12], [31].

Tactical placemaking, also referred to as tactical urbanism, 'Urban Acupuncture ', and 'DIY urbanism ', is about low-cost, temporary and flexible interventions that aim to activate public space and pilot ideas for future change [6], [12]. These can be temporary seating, street paintings, mobile kiosks, pedestrianisation trials, pop-up parks, or community-organised public events, and so on. In urban settings where formal planning systems are sometimes slow and inflexible, and struggle to connect with local requirements, tactical approaches are especially useful. Tactical interventions allow for incremental and experimental urban change, can quickly enhance spatial activation, pedestrian activation and public visibility and can motivate further participation of the community [34], [35], [36], [37].

Participatory place-making builds on this by focusing on how local communities and stakeholders engage directly in the planning, design and decision-making process. A study by Akbar et al. [38] suggested that participatory approaches enable communities to make democratic spaces their own, to engage local knowledge, and build social cohesion by giving communities the power to design spaces based on their lived experiences and socio-cultural needs. A series of community workshops, co-design activities, focus groups and collaborative planning sessions creates a socially inclusive and contextually responsive revitalization initiative. This is becoming more widely acknowledged as a key way to realize equitable and sustainable outcomes as part of urban development.

Creative, tactical and participatory place-making practices support adaptive, flexible and user-centred urban regeneration strategies. These three strands of place-making theory are interconnected, and are shown in Fig. 2, which illustrates how cultural expression, temporary activation and community-driven design all contribute to urban vitality, inclusivity and sustainability. These are especially applicable when the existing urban planning-led approaches are not adequately involving local communities and/or addressing socio-spatial inequalities.

The study's methodology establishes placemaking as the blueprint for the community, with the following three elements complementing the approach: participatory design methods to integrate local views and social desires; environmental and spatial performance evaluation to quantify sustainable outcomes; and digital engineering and modelling tools (GIS, AutoCAD, SketchUp and Lumion) to aid evidence-based analysis, scenario development and design decision-making. While place-making has become an accepted concept internationally, the current city revitalization project in Istanbul has largely been led by large-scale redevelopment projects within the "urban transformation" (kentsel dönüşüm) framework. Economic development and real estate development are some of the areas that have seen infrastructural improvement and this has been welcomed, but there have also been criticisms of such efforts for prioritizing economic profitability over social inclusion, cultural continuity and public participation [1]. However, in numerous cases, redevelopment has been done following a top-down planning approach that has excluded local communities and replaced, instead of rejuvenating, the existing urban fabric [39].

In addition, several revitalized areas are now new tourist destinations, commercial investment zones, or new elite consumption patterns without satisfying the daily needs of the people or enhancing inclusive public space [9], [25]. As a result, many of the ignored open spaces are not integrated into urban life due to their socio-spatial strategic potential. The restrictions raise an important issue regarding the current practice and research of urban revitalization in Turkey. Current frameworks tend to neglect the importance of tactical interventions, participatory governance, enhancement of the ecology, and culturally responsive design in the transformation of abandoned urban space. Thus, there is a current need for alternative urban regeneration models, which emphasise participatory bottom-up approaches, spatial justice, ecological resilience and community-based place-making. From this perspective, the application of integrated place-making tools can help to transform marginalized city open spaces, improve the livability, social cohesion and environmental sustainability of cities, particularly in the urban context of Istanbul.



Fig. 2. Theoretical dimensions of place-making approaches in urban revitalization. Source: [12], [38].

2.3. Global Case Studies' Review on Cities and Lessons for Istanbul

Several cities around the world have been able to develop placemaking strategies that can provide lessons to be learned in Istanbul. Some of the best cities are New York City, Barcelona, Seoul, and Bogotá. The development of Bryant Park in NYC is an example of how a public/private collaboration and user-centered design can transform a space that would otherwise be abandoned into a lively and engaging neighborhood space [24], [32]. Superblocks in Barcelona are one example of how street space can be reallocated to make it more pedestrian-friendly and help improve the environment [9], [40]. The ecological and social impacts of rehabilitating infrastructure were demonstrated in the case of the Cheonggyecheon Stream restoration in Seoul, and tactical urbanism worked [41], with small-scale plazas in Bogotá. Large-scale, policy-led changes to cities are also becoming more prominent in the Middle East, as shown by a series of examples [12], [42]. Dubai, Doha and Riyadh are examples of smart cities that illustrate the fusion of sustainability, cultural identity and smart technologies in urban regeneration initiatives [43], [44], [45]. The examples outlined above, all from around the world summarized in Supplementary Table 1, illustrate the critical need to combine ecological design, participatory governance and context-sensitive planning in the redevelopment of public space.

3. Methods

The methodology used was a multi-case study approach, where five (5) selected representative sites with different socio-spatial and environmental conditions were studied in a qualitative fashion [46], [47]. The framework of the study is shown in Fig. 3. The research process began with the selection of a site and preliminary contextual analysis, then an in-depth literature review that centered on the concepts of urban livability, placemaking theory, participatory urbanism, and public space revitalization [10], [48]. Multiple methods of qualitative data collection were used, such as systematic site observations, spatial mapping, and semi-structured interviews, participatory workshops, and stakeholder engagement sessions [11], [32], [49].

These techniques allowed for the acquisition of spatial and perception-based data that informed the attributes of public use, inclusiveness, environmental quality and social value [50], [51]. Thematic coding, cross-case comparison, pattern-matching analysis, and comparative scoring techniques aided by evaluation indices and a percentage improvement equation [46], [52] were used to analyze the data collected. Triangulation, participant validation, expert review, and cross-case replication logic were also used to enhance the reliability and transparency of the results produced by the methodology [25], [53]. Last, the results of the analyses were used to create a context-sensitive and scalable place-making framework to improve spatial activation, community engagement and urban livability in underutilized urban space [10], [11].

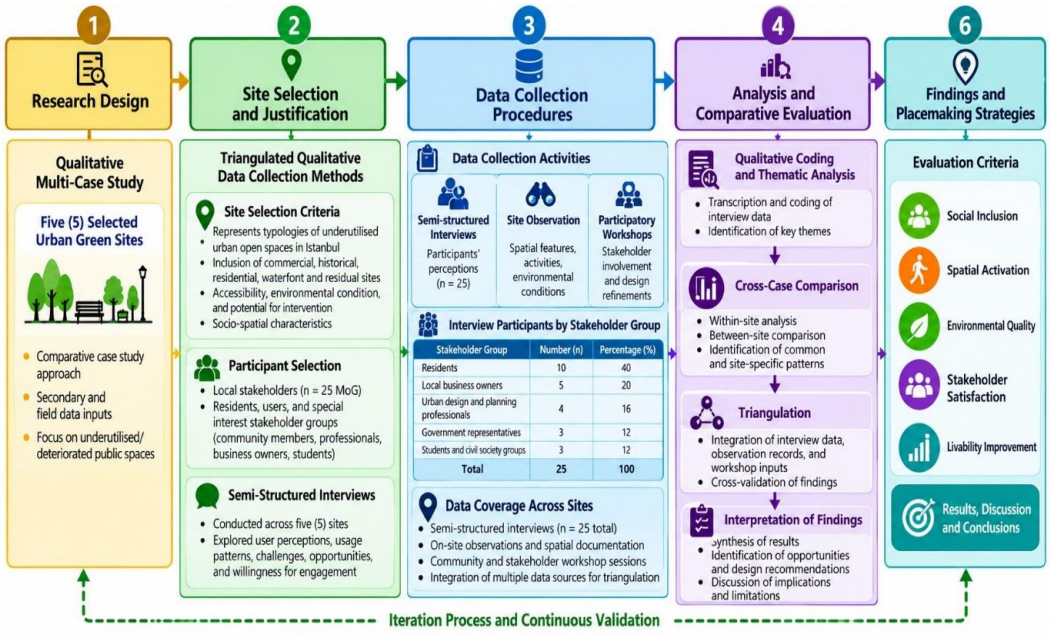

Fig. 3. Study's research methodology flow line; Source: Author's conceptualization.

3.1. Research Design: Qualitative Multi-Case Study

This study aimed to use a mixed qualitative–quantitative evaluation framework to have methodological transparency and analytical consistency in the evaluation of place-making interventions in the selected parks in Istanbul, comprising five (5) parks. The qualitative approaches used were site observation and semi-structured interviews with the residents and urban experts. The success of possible interventions was

evaluated by means of indicators like perceived social value, public use, inclusiveness, and activation in space. The framework was developed to measure changes in public use, social value, inclusivity, and spatial activity pre- and post-proposed interventions, in a systematic way. The analytical model that is developed is adapted from participatory urban design and public space evaluation literature, and combines observational assessment, stakeholder perception and spatial performance indicators in a structured comparative assessment process [10], [11].

A multi-case approach is suitable because it allows for an in-depth study of socio-spatial phenomena, with a degree of complexity, in real-life situations, and allows for comparisons between cases and analytical generalization [46]. The parks reflect a range of urban settings that offer a wide range of contexts to grasp the ways in which place-making strategies are adapted to a variety of local dynamics. The use of qualitative techniques such as site observation and semi-structured interviews with residents and urban experts allowed for a consideration of context-dependent experiences, perceptions and spatial practices [54]. This way, in-depth and descriptive observations can be made on topics like social value, inclusiveness and public space usage. Moreover, the multi-case approach provides a greater strength of evidence through the appearance of common themes and differences across each site, which can help to create adaptable and scalable place-making frameworks.

3.2. Site Selection and Justification Rationale

Five case-study sites were purposefully chosen throughout Istanbul, representing a variety of socio-spatial conditions, urban settings, the types of public use, and public space regeneration issues. In qualitative research of the case-study type, purposeful sampling is used to select information-rich cases that are of special interest when addressing the research questions and phenomena being studied [46], [55]. It was done based on four main criteria: (i) clear evidence of long-term under- or neglect-use; (ii) lack of significant or formal redevelopment programmes; (iii) informal, unexpected, or shifting patterns of public use; and (iv) community interest, dissatisfaction, or unmet needs linked to the spaces. The following criteria were used to select sites that were meaningful enough to explore placemaking and public space revitalization strategies in various contexts.

The five sites were chosen to allow for variation instead of duplication in the urban fabric, access, usage, environment and community. Purposeful variation also adds validity to qualitative case-study research because it allows for the study of differences and similarities among a set of varied settings and helps to facilitate analytical generalization over statistical generalizations [46]. This diversity was helpful to determine if the principles of placemaking and revitalization identified were useful for other underutilized urban spaces and not just for a particular neighborhood or spatial condition. The case-study approach thus allowed for both intra- as well as inter-site comparisons of common and local challenges [56].

The same data-collection protocol was followed at all five sites to ensure adequate data coverage. All case studies were qualitatively and observationally treated similarly, with five semi-structured interviews conducted at each of the case sites, systematic site observations, and participatory engagement activities. The interview sample was also designed to include various stakeholders' viewpoints, such as residents, urban space users, urban design and planning professionals, municipal officials, and others. It is crucial to ensure consistency and credibility of cross-case qualitative analysis by adopting similar data collection methods across cases [46], [56]. The same interview themes and observation framework across the five sites provided comparability, but allowed for the emergence of site-specific issues. Also, methodological triangulation was used by incorporating interview data and direct observations with the findings from the participatory workshops, which allowed for multiple sources of evidence to check interpretations rather than depending on one source [57], [58]. This not only enhanced the credibility and interpretation of the findings but also facilitated the convergence, complementarity and differences between the different sources of evidence.

The choice of the five sites, therefore, was not just for convenience of access or location, but for their capacity to supply information-rich and contextually diverse cases that were relevant to the research goals. The planned construction of the purposive sample, the balance of participants, the uniformity of the data-collection process and the triangulation of the five case-study locations guaranteed empirical coverage for the identification of patterns, comparison of stakeholder perceptions, and site-specific conditions [46], [55], [56]. The first site, situated between Mustafa Kemalpaşa and Cihangir–University Mahallesi Station in Bağcılar (around 20,000 m²), is a post-industrial space with scattered land use and informal development. At the second site (Supplementary Fig. S2) located in Cennet Neighborhood, Küçükçekmece (11,600 m²), the green infrastructure is in poor condition and quality public amenities are scarce. The third site (Supplementary Fig. S3) in Zeytinburnu (18,000 m²) shows the characteristics of gentrification pressure that the area suffers from and the fact that there were several underutilized or fenced-off public parcels in the area. The fourth site (Supplementary Fig. S4) is in the Tarlabaşı neighbourhood of Beyoğlu (18,000 m²), in a historically interesting but physically isolated area that is undergoing a large-scale urban renewal process and is subject to

displacement [59]. The fifth site (Supplementary Fig. S5) is located in Avcılar (4,650 m²), it is considered a suburban-type site where the green buffers are not maintained well and vacant plots exist due to the lack of maintenance. These five (5) case study sites can be brought together to emphasize the need for place-making interventions that are context-specific and multidimensional in nature. They also include a strong empirical basis for the testing of scalable models to improve the quality of life in cities and social cohesion.

3.3. Data Collection and Analysis

This study used a triangulated qualitative data collection strategy, since it aimed to understand the complexity of the user experiences and spatial conditions in the selected sites in Istanbul. The use of several methods provides cross-verification of validity and can provide a more detailed picture of socio-spatial dynamics [47], [54]. Qualitative research can be helpful in discovering linkages between different stakeholders, depending on the different sources of data that are used [60]. The findings of this study, which are measured, are based on the empirical data obtained through field observation, spatial analysis, and on-site assessment within the selected study areas, to enhance the clarity of analytical results and the methodological transparency of the study. The results are first-hand and based on facts that have been observed on the site. The outcomes of the scenario modelling exercises, which are carried out with digital tools, assess the potential impact of urban park revitalisation interventions. These outputs are described in a predictive format, not as an actual reality.

Qualitative data obtained from the interviews and participative engagement processes are reported separately for each stakeholder and highlight the user needs, preferences and perceived priorities with regard to the improvement of the public space. Finally, design assumptions are described in the form of conceptual and technical parameters that are used to develop alternative scenarios of revitalization, including the planning criteria, design principles and modelling constraints. This separation of analytical categories, its transparency, internal consistency and methodological rigor improve the study as a whole.

Systematic site observations have been conducted to check and evaluate the actual situation of the land use, physical conditions, user behavior, site accessibility and visibility for site observation and spatial mapping. The observational structure was based on current theories of urban design, such as Jacobs [48] and Gehl et al. [61]who emphasized the concept of walkability, human scale, safety and social interaction. Physical and experiential qualities of space were recorded in detailed field notes, photographic documentation and spatial mappings using sketches. In addition, the spatial approach using GIS-supported mapping techniques was applied to investigate spatial relations, connectivity and access networks, and led to the identification of under-used areas and potential action points. This comprised a combination of qualitative observation and spatial analysis, and provided a full picture of the performance of each site at the time.

3.3.1. Quantitative Evaluation Framework

The quantitative evaluation process was used to create structured indicators for revitalization performance in the form of scenarios. The equations used in this study are not empirically calibrated predictive laws but rather are transparent analytical formulations derived for this research from already existing public space evaluation constructs and the usual percentage change procedures. The component variables were chosen from the literature on public space quality, urban liveability, and placemaking that was found for each indicator listed below. The post-scenario scores and percentage changes are therefore not measured outcomes of implemented interventions, but rather comparative modeling estimates of expected outcomes. These encompass the creation of a series of analytical equations and composite indices to measure expected changes on the case study sites. These indices allowed for cross-case comparison, thematic convergence analysis and pattern matching between the socio-spatial conditions and proposed interventions. The framework combines both human-centred perceptions and spatial performance indicators, offering a comprehensive framework for assessing the social, environmental, and functional implications of context-sensitive place-making approaches in complex urban contexts. The potential and impact of proposed place-making strategies were evaluated using four (4) main criteria based on existing literature on public space quality and urban liveability (as outlined below):

3.3.1.1. Social Inclusion

This criterion focuses on how public spaces reflect the needs of a variety of user populations and foster equitable access and participation. Examples of indicators are user diversity (age, gender, socio-economic status), inclusive amenities, and access for persons with disabilities. A socially equitable and cohesive society relies on inclusive design, which is essential for this [62].

3.3.1.2. Spatial Activation

Spatial activation is the extent to which a space is able to be used more, be more lively, and engage in more activities after the intervention. This covers the quantity of visits, length of stay, temporal volume of visits and the occurrence of organized events and spontaneous activities. Public spaces can be seen as an important metric of good urban design, and play a vital role in the overall value and vitality of the city [10], [11].

3.3.1.3. Environmental Quality

This criterion evaluates the space's ecological and aesthetic performance, such as green coverage, air

quality, thermal comfort and maintenance. Environmental improvements were assessed by incorporating elements of sustainable design like permeable surfaces, native vegetation and water-sensitive urban design features. Improving the quality of the environment is essential for resilience and users' well-being [3], [9].

3.3.1.4. Stakeholder Satisfaction

Stakeholder satisfaction reflects users' and decision-makers' perception of the effectiveness, relevance, and emotional impact of the interventions. Follow-up interviews and feedback instruments were used to collect data on the degree of acceptance and perceived benefits, as well as willingness to support long-term maintenance. This is essential to ensure that planning outcomes meet community expectations, leading to long-term place attachment and stewardship. These assessment criteria offer a holistic framework that connects physical change to social, environmental and governance outcomes of place-making interventions.

3.4. Analytical Equations for Assessing Place-Making Interventions in Urban Open Spaces (UOS)

For this research, the quantitative analytical framework was developed for comparison of the site conditions before the intervention and after the intervention. It draws on concepts defined in public space and urban design assessment literature, such as use, social value, inclusiveness and spatial activity [11], [32], [62]. A percentage-change expression is the common way of calculating relative change, and the composite indices are not universal equations previously validated but are operationalizations of the constructs cited in the context of the specific study. Using a series of standardized indices and percentage improvement formulas, multiple measures of evaluation provided a way to compare pre- and post-intervention conditions, enabling the comparison to be made. These metrics aim to convert observations, perceptions, and participatory assessments into measurable outcomes that reflect changes in the performance of public space. Four main dimensions are analyzed: (a) Composite Public Utilization Index (PUI), (b) Perceived Social Value Index (PSVI), (c) Inclusivity Index (II), and (d) Spatial Activity Index (SAI), which are all operationalized as composite indices. The indices bring together several sub-indices, encompassing both physical and socio-spatial aspects of the study areas. A Composite Public Utilization Index (PUI) is also used to give an overall measure of space usage intensity and diversity. They all provide a structured framework for evaluating spatial transformation outcomes and help to make a clear judgement on baseline and post-transformation conditions to evaluate percentage improvements for each of the key indicators.

Equal weighting was applied to the component indicators within each composite index because the study did not have a sufficiently large empirical calibration dataset or an independently validated basis for assigning differential weights. This neutral weighting scheme prevents an unsupported preference for any single component and improves transparency and replicability. However, equal weighting implicitly assumes that the included components contribute comparably to the construct being represented; consequently, alternative weighting schemes could change the absolute index values and the estimated percentage changes. The results are therefore interpreted as scenario-comparison estimates, and future validation should test sensitivity to expert-derived, stakeholder-derived, or statistically estimated weights.

Overall, the analytical formulations employed in this study were developed as study-specific operational measures for systematically comparing the baseline conditions and projected intervention scenarios across the five case-study sites. The individual indicators incorporated into the indices were informed by established literature on public-space quality, urban liveability, social inclusion, spatial activity, and participatory placemaking [9], [11], [62]. Accordingly, the equations adopted are interpreted not as mathematical models reproduced directly from a single previous study; rather, they represent literature-informed composite formulations developed for the present research. The percentage-improvement equation represents the conventional relative-change calculation used to express the proportional difference between baseline and projected scenario scores.

(a) Percentage improvement

For the percentage improvement formula, the following refers to the appropriate mathematical equation adopted for assessing place-making interventions. The percentage improvement for each evaluation criterion was calculated using:

$$\text{Percentage Improvement (\%)} = \frac{(P_{post} - P_{pre})}{P_{pre}} \times 100 \quad (1)$$

where:

- P_{post} = Post-intervention evaluation score
- P_{pre} = Pre - intervention evaluation score

This formula was applied to the four evaluation dimensions:

- Public utilisation
- Perceived social value
- Inclusivity
- Spatial activity

(b) Composite public utilisation index (PUI)

Public utilization levels were estimated based on projected/scenario-based assessments of the pedestrian activity, duration of stay, and diversity of use:

$$PUI = \frac{(F + D + A)}{3} \quad (2)$$

where:

- F = Pedestrian footfall score
- D = Average duration of stay score
- A = Diversity of activities score

The index was normalized to a 5-point qualitative scale prior to comparative analysis.

(c) Perceived social value index (PSVI)

Perceived social value was evaluated using participant perceptions regarding safety, belonging, identity, and social interaction:

$$PSVI = \frac{(S + B + I + C)}{4} \quad (3)$$

where:

- S = Perceived safety
- B = Sense of belonging
- I = Community identity
- C = Social cohesion

(d) Inclusivity index (II)

Inclusivity was measured by assessing accessibility and participation across diverse demographic groups:

$$\text{Inclusivity Index (II)} = \frac{(G + A + D)}{3} \quad (4)$$

where:

- G = Gender inclusivity score
- A = Accessibility score
- D = Diversity of users score

(e) Spatial activity index (SAI)

Spatial activity was assessed based on multifunctionality, event frequency, and intensity of social interaction:

$$SAI = \frac{(M + E + SI)}{3} \quad (5)$$

where:

- M = Multifunctionality score
- E = Event/activity frequency
- SI = Social interaction intensity

3.5. Participants, Sample Size and Qualitative Data Collection Across Five Case Study Sites

The qualitative aspect of the study consisted of semi-structured interviews with 25 individuals from five urban parks in Istanbul, with 5 individuals in each park. For the purpose of ensuring the inclusion of stakeholders with direct experience as well as knowledge about the selected urban open spaces, a purposive sampling strategy was used, which was deemed adequate [54], [55]. The 5(20%) qualitative sample was divided into five stakeholder groups to provide a comparable sample across the five case-study locations: residents, urban space users, urban design and planning professionals, municipal representatives, and other relevant stakeholders.

The criteria used to select these stakeholder groups were focused on the study objectives and the desire to represent different viewpoints of the social, spatial, environmental and institutional aspects of urban park use and revitalization. Place attachment, day-to-day use, perceived deficiencies and neighborhood-level needs were shared by residents. Urban space users provided their impressions from the first-hand experiences they had with accessibility, comfort, safety, activities and spatial functionality at the same time. A panel of experts in urban design and planning was included to share their unique insights on spatial quality, design interventions, connectivity, inclusivity and environmental performance. Institutional and management aspects about planning, maintenance, governance and feasibility of potential interventions were provided by municipal representatives. Other relevant stakeholders were added to gain further insight into the community, organizational, or professional views and experiences that might help to provide a broader context of park conditions and revitalization priorities.

The balance of the participants in each stakeholder group and the case-study parks was appropriate and was followed for balanced cross-case comparison and to avoid overrepresentation of any stakeholder perspective or case-study park, as recommended by [55]. The sample was not a cross-section of the population intended to be statistically generalizable, but rather was selected to provide rich and diverse accounts to identify themes, contrasting perceptions, and site-specific characteristics. The interviews were conducted using a standardized semi-structured script [56], [58] that included the following question areas: Usage of public space, accessibility, social value, inclusiveness, safety, environmental conditions, spatial quality, and community engagement. Using this method allowed the qualitative results to be approached in a systematic manner throughout the five parks selected.

To enhance the credibility, contextual interpretation and triangulation of the qualitative findings, semi-structured interviews were supplemented by systematic site observations and participatory workshops [58]. Five interviewees were selected at each of the five chosen parks so that similar qualitative data were obtained for each location in the parks selected for the study. The site observations took place at various stages of activity and recorded the presence of users, their movement, their spatial behavior, the accessibility conditions, the levels of activity and forms of public engagement. The observation framework highlighted the following main areas: social inclusion, spatial activation, environmental quality and satisfaction of the stakeholders.

Participatory workshops were held with relevant stakeholders to identify local priorities, discuss perceived spatial and environmental challenges, and discuss

placemaking and revitalization interventions. The workshops were designed to offer an opportunity to further develop individual accounts of interviews with a collective discussion about the strengths and weaknesses of the selected parks, and their future development opportunities. The combination of interviews and direct site observations with the results of the workshops allowed the study to analyze the socio-spatial aspects of the five parks from a variety of complementary viewpoints.

These techniques enable triangulation and are relevant because perceptions of the quality of urban parks may vary depending on stakeholder role and patterns of park use. Residents and users might highlight their daily experiences and the ease of use of the parks, while professionals and municipal planners and managers might more strongly highlight planning, design, management, and implementation. These views were then compared to what was observed at the site, so as to differentiate the perceived and observed characteristics, and increase the interpretative value of the results.

The framework also included GIS-based spatial analysis and digital modelling tools for spatial interpretation and visualization of proposed interventions. Spatial relationships, accessibility patterns, and site characteristics were analyzed in GIS platforms, and spatial models were created and presented in AutoCAD, SketchUp and Lumion software to apply to the proposed design scenarios. These digital tools were employed to support analyses and visualizations, not as simulation tools, but to evaluate spatial opportunities and design alternatives.

Moreover, multiple data sources allowed methodological triangulation, which added to the validity and reliability of the results and made sure that the results were not dependent on a single source of evidence [47]. The pattern-matching analysis and thematic convergence in the case studies showed that there were commonalities in topics associated with better community involvement, more spatial activation, and better environmental quality. These recurring patterns help to support the transferability of the findings and strengthen the effectiveness of participatory, tactical and ecological place-making approaches for various socio-spatial settings [46].

Overall, the analytical framework provides a robust basis for comparative urban place-making assessment by combining stakeholder experiences, spatial analysis, and measurable evaluation indicators. This integrated methodology aligns with contemporary approaches to urban design and public-space evaluation that emphasize multidimensional assessment of urban liveability, social inclusion, and place quality [9], [10], [11]. The findings provide evidence-based insights for the sustainable revitalization of neglected urban open spaces in rapidly transforming urban environments.

4. Results and Discussions

The findings of the qualitative analysis on 5 Urban Open Spaces (UOS) in Istanbul are presented in a systematic way for each of the five site cases, and a cross-case synthesis is provided to generate patterns, variations of context, and transferable lessons from these cases across urban contexts.

4.1.Mustafa Kemalpaşa (Bağcılar)

The identified site challenges, proposed design interventions and stakeholder expectations within the study area are well correlated as shown in supplementary Table S2. Qualitative information, findings from observations, and spatial analysis increase the reliability of the results and the transformative power of the context-responsive placemaking process in Mustafa Kemalpaşa. Supplementary Fig. S6 (a-c) shows the proposed three-dimensional (3-D) spatial changes, the conceptual design diagrams and the two-dimensional (2-D) site context for the study area.

4.2. Cennet Neighborhood (Küçükçekmece) Open Space

Cennet Neighborhood results are summarised in Supplementary Table S3 and show how effective a combination of tactical urbanism and NbS approaches are in order to transform under-used spaces. The sense of community participation in co-design and co-maintenance is an important example of participatory place-making and essential for inclusive, resilient and sustainable cities. Diagrams of the proposed three dimensional (3-D) changes in the study area are provided in supplementary Fig. S7 (a-e), from the four perspectives of North, South, East and West. Furthermore, a two-dimensional (2-D) site plan concept is suggested for the study area of the Cennet Neighborhood.

4.3. Zeytinburnu Open Space Park

The Zeytinburnu case highlights the complexity of designing for socially diverse and dynamically changing urban contexts, as summarised in Supplementary Table S4. The results highlight the importance of creating design solutions that are flexible and balanced to cater to various user preferences, with the potential for spatial activation through cultural programming. Inclusive amenities, environmental improvements, and participatory negotiation are an integrated approach to sustainable placemaking. Based on the information provided, the Zeytinburnu Open Space Park is currently a stony area, but it has the potential to become a functional, beautiful, and welcoming public space as part of the proposed transformation. A three-dimensional (3-D) spatial view of the proposed site is presented in Supplementary Fig. S8, which illustrates the envisioned transformation of the area into a functional, attractive, and inclusive public space. The design concept

emphasizes the spatial layout of landscape elements, pedestrian movement, recreational amenities, green infrastructure, and community interaction areas that will improve the environmental quality, the beauty of the city, and the sense of community in the park environment.

4.4. Beyoğlu (Tarlabaşı) Open Space Park

The importance of inclusive, culturally responsive place-making in social and built environments that are dense and complex is illustrated by the Beyoğlu (Tarlabaşı) case (Supplementary Table S5). The results show that spatial activation and environmental improvement can be achieved with the implementation of modular and green interventions, but social equity and anti-displacement measures must also be included in the urban regeneration process to achieve sustainable and inclusive urban renewal. The two-dimensional (2-D) site plan context for the Tarlabaşı open space project is accompanied by the proposed spatial changes that are planned to improve the functionality, accessibility, and visual quality of the open space context. These show the suggested spatial structure, circulation, landscape parameters, and activity areas that will help transform the area into a more inclusive, vibrant, environmentally responsive urban public space.

4.5. Ambarli, Avcilar

The Avcılar case emphasizes the need for 'place-making' to be youth-centred and activity-oriented in suburban settings Supplementary Table S6. Environmental conditions are fairly stable, while the addition of elements of ecology and interaction creates additional use value and awareness. The results also highlight the importance of taking intergenerational design approaches to provide greater community involvement and sustainable outcomes. Ambarlı open space area diagram proposals for spatial changes are shown in supplementary Fig. S10. The proposed design interventions focus on creating spaces that are more connected, accessible, and enjoyable for the community, while also promoting sustainability and environmental health. The goals are to enhance the overall quality of the space and contribute to a more livable, sustainable, and vibrant city.

4.6. Integrated Cross-Case Analysis of Revitalization Outcomes

The spatial modeling assessment results were obtained from three indicators: (i) public use change, (ii) perceived improvement in the social value, and (iii) perceived improvement in spatial activities. These indicators were derived by applying a percentage improvement formula to composite indices created for each of the dimensions they evaluated. A baseline (pre-intervention) score was first determined for each urban open space case. These scores reflect the status quo of each site before any proposed revitalization and used a standard 5-point Likert scale (1 = very poor condition, 5 = very high performance). Baseline data were informed by field observations, on-site behavioral mapping, and initial stakeholder consultations that supply the actual level of use, perceived social value, and intensity of spatial activities under current conditions. The scores were then calculated after the scenario (projected intervention) to simulate the results of implementing the proposed revitalization strategies. These scores were not observed directly, but were developed using a participatory approach that involved interviews with stakeholders, participatory workshops, design scenario testing, and spatial modeling simulations. This enabled an estimation of the impacts that changes to design, accessibility, and programming would have on user behaviour and social perception. The gap between pre- and post-scene scores was then measured in percentages to quantify the effect of revitalization for each indicator and to analyze how effective each revitalization project was, across all selected urban open spaces, on a systematic basis.

Some examples include the creation of multi-use public spaces, shaded seating, and tactical commercial spaces in Mustafa Kemalpaşa (Bağcılar) that brought a rise in pedestrian traffic, length of stay, and the variety of activities. The baseline score for the PUI went from about 3.0 to 4.5 on a 5-point scale, a 50 % rise.

Likewise, the 45% rise in Cennet Neighborhood was due to greater usage of learning gardens, fitness tracks, and ecological public spaces. Meanwhile, the other three districts, Zeytinburnu (+40%), Beyoğlu (+38%) and Avcılar (+35%) saw increases in their scores, reflecting their improved accessibility, multifunctionality and activity diversity.

Participatory ecological interventions and intergenerational green spaces in Cennet Neighborhood led to an increase in the PSVI from 2.5 (baseline) to 3.7 (48%).The PSVI level was relatively higher in Cennet Neighborhood at 48%, which is higher than the estimated baseline level of 2.5, with participatory ecological interventions and intergenerational green spaces.

Mustafa Kemalpaşa's family-friendly areas and tactical markets enhanced people's sense of community and interaction, leading to a 45% increase. Similarly, culturally responsive design, participatory engagement, and inclusive recreational interventions were effective in Zeytinburnu (42%), Beyoğlu (44%), and Avcılar (40%) in bringing about significant change.

Tactical commercial activities, kiosks and flexible public spaces in Mustafa Kemalpaşa enhanced the amount and quality of social interactions. The SAI in one instance, for example, rose from around 2.6 to 3.5, a 35% increase.

Likewise, Cennet Neighborhood saw a 30% growth with tactical urbanism and community programming. Beyoğlu (26%), Zeytinburnu (27%), and Avcılar (25%) saw positive changes with the implementation of better

multifunctionality, cultural programmes, youth-oriented recreational facilities, and greater public awareness. Overall, these percentage changes reflect the size of the improvement that might be expected if the proposed place-making interventions were put into practice, assuming the same scenarios. They do not show actual post-implementation impacts, and thus are considered to be comparative modeling estimates, and not actual changes in public space use, social value, or spatial activity.

The findings of Supplementary Table S7 reveal high thematic homogeneity between the cases on the effectiveness of participatory, tactical and ecological place-making approaches in the revitalization of urban parks in Istanbul. The interventions across all the case sites showed a clear improvement in public use, perceived social value of use, inclusiveness and spatial use due to the community-driven, contextual interventions. The outcomes show a 35-50% increase in public use at the five (5) locations, with significant gains in the number of pedestrians, types of uses, and the amount of time spent at the project sites. In the same way, there was a higher increase in perceived social value improvements in most locations (no less than 40%), which indicates that people's perceptions of safety, social cohesion, neighbourhood attachments and cultural identities have improved after the proposed interventions. There were significant inclusivity gains at sites that incorporated multigenerational facilities, culturally responsive programming, and inclusive co-design practices. Spatial activation also gained significantly with the introduction of tactical urbanism elements such as pop-up activities, flexible programming, temporary installations, enhanced pedestrian access and mobility and multifunctional gathering places. These results are the result of simulated performance evaluations based on the comparative analysis of the existing site conditions and scenarios for intervention, as well as on the basis of spatial analysis, participatory feedback and digital modelling processes.

Permeable paving, rain gardens, shaded landscapes, pollinator gardens, and vertical greening are all examples of environmental enhancements that consistently improved ecological, thermal comfort, and environmental performance across a variety of urban environments. These results show that ecological design interventions are able to promote both social well-being, ecological responsiveness and urban liveability at one go. However, important differences across cases were also identified, such as preferences toward generations and divergent priorities of stakeholders and issues of gentrification and sustainable governance structures.

The findings were produced via a comparative qualitative evaluation framework which integrated systematic site observation, spatial mapping, semi-structured interviews, participatory workshops and thematic cross-case analysis. Initial assessments were conducted at each of the five sites by observation to establish baseline conditions, which included documenting pedestrian movements, accessibility, environmental quality, safety conditions, spatial legibility, and patterns of activity. The level of spatial neglect and socio-environmental shortcomings at each site were captured using photographic documentation, behavioral mapping, and field notes. In addition to the observational data, semi-structured interviews were held with 25 interviewees, comprising community stakeholders, urban design professionals, municipal officials, urban planners, and residents. The interviews looked at perceptions regarding usability, safety, social interaction, accessibility, environmental comfort and expectations for revitalisation. Following these steps, thematic coding and pattern-matching analysis were used to uncover themes and commonalities across sites.

The percentage improvements reported in Supplementary Table S8 were determined by comparing the scores and perceptions obtained prior to the presentation of proposed intervention scenarios at participatory workshops and design review sessions. Participants evaluated the future changes in attractiveness, inclusivity, functionality, environmental quality and social value with structured rating scales and qualitative feedback mechanisms. The projected number of pedestrians, diversity of activity, and length of stay at the sites were informed by public utilization estimates by conducting spatial modeling exercises and soliciting responses from stakeholders. The same applies to perceived social value improvements, which were associated with increased experiences of belonging, safety, social cohesion and community identity. The level of inclusivity was measured by how well any proposed interventions catered for a range of demographic groups, including age, gender and cultural groups. Spatial activity enhancements were assessed by projected gains in active use, multifunctionality, event programming and spontaneous social interaction, in parallel.

Mustafa Kemalpaşa (Bağcılar), Cennet Neighborhood (Küçükçekmece), Zeytinburnu, Beyoğlu (Tarlabaşı) and Avcılar were compared according to: (i) Site Characteristics / Profile Change (%), (ii) Public Utilization Change (%), (iii) Stakeholder Satisfaction (%), as shown in Fig. 4. As seen in the chart, the site characteristic/profile improvement was highest in Mustafa Kemalpaşa (Bağcılar) while the greatest change in public use of the site was observed in Cennet Neighborhood (Küçükçekmece). The satisfaction of the stakeholders showed a similar trend, and they were found to be the highest in Mustafa Kemalpaşa and decreased in the other locations.

The cross-case synthesis also identified four cross-cutting themes in successful place-making: inclusive

design, tactical activation, ecological enhancement, and stakeholder engagement, demonstrating how these themes work as mutually reinforcing aspects of successful place-making [24]. Local ownership and social legitimacy were enhanced through participatory mechanisms, tactical urbanism interventions facilitated activation and visibility, and ecological design strategies helped to improve environmental quality and long-term sustainability outcomes. These findings provide a foundation for the creation of a flexible and scalable place-making framework that can transform underutilized urban space into an engaging, dynamic and inclusive public space.

In general, the study reveals that the implementation of social inclusion, spatial activation, ecological responsiveness, and participatory governance is needed to be integrated into a comprehensive and contextually responsive urban regeneration approach in order to achieve successful urban park revitalization in the city of Istanbul. These results provide valuable empirical support to the current debate on placemaking and provide concrete recommendations for sustainable urban change in fast urbanizing metropolitan areas.

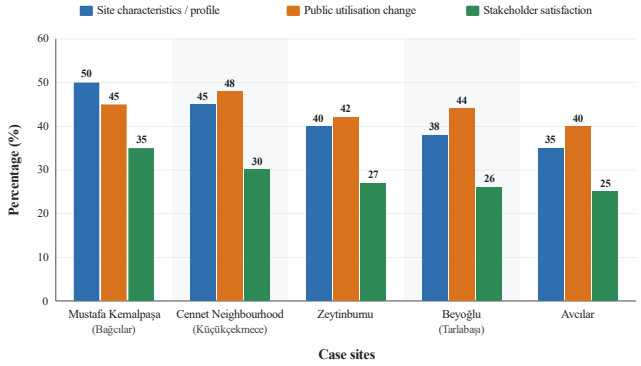

Fig. 4. Comparative assessment of the changes in site characteristics, public utilization change, and stakeholder satisfaction across the five case sites; source: Author's conceptualization.

4.7. Revisiting the Place-Making Framework

The findings of this study directly reflect the overall research goal of creating and testing a place-making framework for urban space revitalizations in Istanbul's Urban Open Spaces (UOS). The analysis of the five case-study sites illustrates that creative, tactical, participatory, and ecological place-making processes can help to raise social inclusion, spatial activation, environmental quality, and satisfaction of stakeholders, which in turn helps to increase the liveability of the city and its engagement with the community. Through the cross-case analysis, it was possible to find some common themes and patterns in the five selected places in Istanbul and to identify the key factors that helped the place-making projects in each one of these places to be successful. Thematic coding and comparative analysis allowed a selection of common socio-spatial challenges, opportunities and enabling conditions to be identified, while emphasising the similarities and differences in the dynamics of urban regeneration.

The results show high consensus between the different stakeholder groups about the barriers that hinder the use of public space and the conditions for revitalizing neglected Urban Open Spaces (UOS). To summarise, the outcomes demonstrate that context-sensitive and flexible approaches, which include participatory governance, tactical activation strategies, creative expression and ecological design that is attuned to the climate is the best approach to placemaking, as illustrated in Fig. 5. These factors combine to create adaptable, inclusive and resilient urban public spaces capable of addressing the needs of the community and responding to future uncertainties and challenges. The general conclusions are that the proposed framework has the potential to transform abandoned urban spaces into inclusive, active and environmentally responsive public places if it is effectively designed and executed in a context-sensitive, community-based and institutionally supported way.

4.7.1. Participatory engagement and social ınclusion

Engaging in participatory processes was found to be one of the most powerful enablers of effective intervention design at every site of the case studies. Conversations through participatory workshops, focus groups, co-design, and semi-structured interviews helped residents, youth groups, NGOs, and businesspeople to take an active role in making spatial decisions and expressing their priorities. These processes built trust between communities and planners, increased perceived ownership, and increased community support for implementation and long-term maintenance. The participants often reported that they felt grateful being involved in decision-making processes and emphasized that participatory planning is crucial to making urban space socially responsive. The legitimacy, relevance, and sustainability of urban interventions are enhanced by community involvement. The results also indicate that participatory processes enable consensus building and provide some reconciliation between conflicting expectations by the users. But the effectiveness of participatory mechanisms was different according to socio-demographic contexts. Interventions that build on the interests of youth were especially effective in Avcılar in engaging participants, while inclusive efforts for programming were somewhat less successful among elderly residents. Likewise, in Tarlabaşı, culturally responsive approaches promoted greater involvement of minorities by addressing local identity needs and local realities. These results also offer evidence for the influence of socio-spatial dynamics, demographic sensitivity, and contextual relevance on place-making outcomes [11].

4.7.2. Tactical Urbanism and Incremental Activation

The case study locations consistently showed the effectiveness of tactical urbanism strategies as a very powerful tool for "activating" space and engaging pedestrians in a quick way. Visible results of interventions included in terms of public activity, social interaction, and enthusiasm about redevelopment/regeneration in Cennet, Zeytinburnu and Mustafa Kemalpaşa. The flexible, low-cost interventions helped communities to pilot their concepts without committing to long-term solutions, decreasing financial risks and promoting trial-and-error and civic engagement. The results correspond to the principles of "fast, cheap, and flexible" urbanism proposed by Lak et al. [12]. They stress the adaptive and incremental nature of tactical urbanism in today's urban regeneration. Creative place-making strategies also contributed strongly to place identity strengthening, visual quality and emotional connection to public spaces. Public art, public furniture and public installations like the murals enhanced social interaction and community identity, especially in Cennet and Beyoğlu. These findings corroborate the theories of [63], [64] that creativity and cultural expression are a vital part of effective urban regeneration since they help to support local identity and promote social cohesion.

4.7.3. Ecological and Climate-Responsive Design

Another important success factor that was identified across the selected sites was the ecological and climate-responsive interventions. There was a consistent relationship between strategies and benefits of environmental quality, thermal comfort, and user satisfaction. Rain Gardens, Permeable Paving, Bioswales, Vertical Greening, Pollinator Gardens, Shaded Seating, and Green Buffers consistently correlated with positive impacts on environmental quality, thermal comfort, and user satisfaction. The results show encouraging potential for using NbS solutions to combine sustainability with liveability in the city. The relationship between the sustainability-related discourse and the application of the discourse is very crucial, as the discourse of the Garden City of Singapore reveals that the "green" vision does not always lead to sustainable solutions [65]. These measures not only mitigated environmental issues like drainage, heat stress and greenery but also improved biodiversity, ecological functions and public health. This resonates with the international urban design literature that focuses on green infrastructure as a way to enhance climate adaptability as well as urban sustainability [6], [26], [66], [67]. Importantly, ecological improvements were seen by stakeholders not just as an environmental improvement, but as a way to provide psychological comfort, social interaction and overall quality of life. In all the case studies, ecological interventions thus served as environmental, social and spatial regeneration mechanisms. Overall, the cross-case analysis reveals that effective placemaking interventions are grounded in the strategic process of engaging the public, activating the public, expressing creativity and designing ecologically. These interrelated strategies work together to improve neglected urban spaces to become public spaces that are inclusive, vibrant, and responsive to their environment.

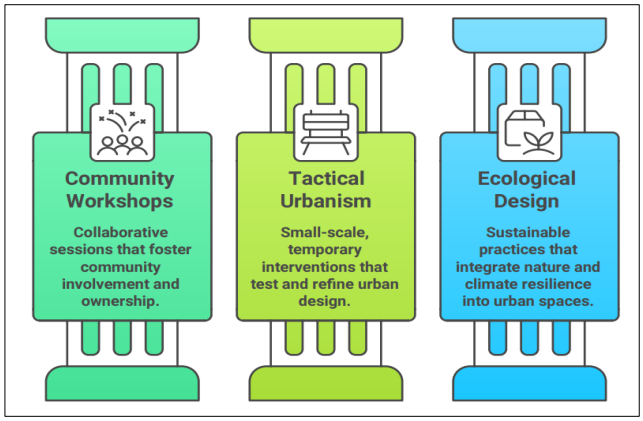

Fig. 5. Foundations of successful place-making. Source: Author's conceptualization.

4.8. Validation of the Results

The credibility, reliability and academic quality of the results were secured through the use of multiple validation strategies as suggested by qualitative multi-case study research and urban place-making evaluation approaches as outlined in Table 1 and Fig. 6. The study used a multi-layered validation process that involved triangulation, cross-case replication, participant verification, thematic coding and spatial analysis, which provided methodological robustness and analytical reliability. The findings were supported across a range of validation methods, which enhanced trustworthiness. This strengthened the scientific soundness of the proposed place-making model of the revitalization of neglected urban open spaces.

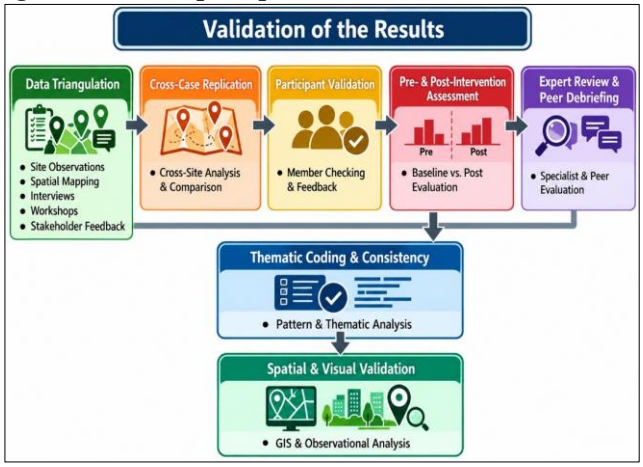

Fig. 6. Study's results validation flow line; Source: Author's conceptualization.

Table 1. Validation Strategies Applied to the Study Findings.

Validation Strategy	Validation Process (Simplified)	Application in the Study	Contribution to Reliability & Validity
Data Triangulation	Multiple qualitative and spatial data sources were cross-checked for consistency.	Site observations, spatial mapping, interviews, workshops, and stakeholder feedback across five NUOS sites.	Strengthened credibility by confirming consistent patterns across multiple evidence sources (Yin, 2018).
Cross-Case Replication Logic	Comparative analysis across multiple case sites.	Similar improvements in utilization, inclusivity, and spatial activity observed across all sites.	Enhanced transferability and consistency across different socio-spatial contexts.
Participant Validation (Member Checking)	Participants reviewed and confirmed preliminary findings.	Feedback from residents, planners, NGOs, and professionals validated interpretations.	Reduced researcher bias and improved interpretive credibility (Parhamfar et al., 2026).
Pre- and Post-Intervention Comparison	Baseline and projected scores were systematically compared.	Assessed changes in utilization, social value, inclusivity, and spatial activity across sites.	Improved analytical consistency and enabled measurable outcome comparison.
Expert Review & Peer Debriefing	Urban planning experts reviewed analysis and interpretations.	Experts evaluated feasibility and coherence of proposed interventions.	Strengthened methodological rigor and analytical transparency.
Thematic Coding & Saturation	Iterative coding cycles identified recurring themes.	Interview and workshop data analyzed using thematic convergence and pattern matching.	Enhanced reliability through consistent and repeated thematic patterns.
Spatial & Visual Validation	Spatial analysis and visual modeling verified projected outcomes.	GIS mapping, pedestrian flow analysis, and observational mapping supported findings.	Provided spatial evidence for improved accessibility, connectivity, and use intensity.
Pattern Matching Analysis	Empirical findings were compared with theoretical expectations.	Evaluated against participatory, tactical, and ecological place-making frameworks.	Strengthened internal validity and theoretical alignment.
Stakeholder Consensus Analysis	Stakeholder views were compared across groups.	Synthesized perspectives from residents, NGOs, businesses, and planners.	Identified shared priorities and contextual differences influencing outcomes.

4.9. Governance Challenges and Stakeholder Engagement Across the Case Study Sites

Vandalism, perceived insecurity and poor lighting were found to be ongoing problems and impediments to public use and social interaction at all case sites. The poor maintenance and lack of lighting were consistently reported in observational data and in response to questions during the interviews and were linked with a fear of crime, especially among women, elderly residents and families. The same issues have been cited in public spaces found in urban environments where concerns about safety can significantly shape the use and social inclusion of space [10], [48]. In some locations, people reported that the neglected environment facilitated anti-social behaviour and informal occupation, which affected community participation. Another common problem was the lack of spatial legibility, such as fragmented circulation paths, unclear access points, and disjointed urban layouts. Lynch [50] states that legible urban environments can influence user comfort, orientation and accessibility, which all proved to be lacking in all the selected sites. Moreover, the lack of trees and smooth surfaces, which resulted in heat exposure, contributed to microclimatic discomfort and its impact on usability and length of stay. The results are consistent with research highlighting the need for climate-adaptive urban design to enhance the liveability and environmental comfort of urban areas [9], [66].

The engagement and satisfaction of stakeholders and the level of satisfaction varied between the study sites, and differed based on the distinct socio-economic priorities, governance and expectations on urban revitalisation within the different cities. This boost in pedestrian traffic and economic visibility from commercial activity was also strongly considered by local business owners in Beyoğlu and Mustafa Kemalpaşa, leading to their strong support of revitalisation measures. But civil society organisations and neighbourhood groups also voiced great interest in community stewardship and co-management opportunities. The results, thus, indicate that besides tactical activation and participatory design, long-term institutional support and collaborative governance mechanisms are needed to achieve successful revitalization of neglected urban space. Building stronger ties between municipalities, communities, NGOs and the private sector can help strengthen the capacity to maintain, foster place ownership and sustain interventions. Fiscal support, maintenance arrangements, and regulatory guidance for local stewardship efforts may also help to boost community

engagement and resilience. In other cities, like Melbourne, Seoul and Medellín, the participatory governance and co-management models have enabled cities to achieve resilient and socially inclusive public spaces [68].

5. Summary of the Findings: the Study's Objectives and Questions

The results of this research effectively meet the overall objective of the research, which is developing and testing a context-sensitive framework for place-making for revitalization of the Neglected Urban Open Spaces (NUOS) in Istanbul. The study shows how a combination of creative, tactical, participatory and ecological place-making strategies can result in a reimagining of under-used urban spaces to create public places that are inclusive, rich and environmentally responsive, that improve the quality of the lived city and become places of community. The study found that there was limited accessibility to many NUOS sites; limited public use; poor social interaction; poor green infrastructure and a lack of safety at many NUOS sites. But, place-making interventions going to the right places have been effective in addressing these challenges and enhancing spatial quality, environmental comfort, public access and social activity. By utilizing tactical urbanism approaches, like pop-up cafés, temporary markets, mural walls, modular seating and mobile kiosks, public space was quickly activated, creating opportunities for increased pedestrian presence. Place identity, visual appeal and emotional attachment to space were enhanced through the use of creative placemaking – with public art, cultural installations and space painted by the community to enhance their sense of 'place'. Environmental quality, climate responsiveness and user comfort were improved through ecological interventions such as rain gardens, permeable pavements, shaded promenades, pollinator gardens and vertical greening.

The results also indicate that the more people, NGOs, business owners, planners and community groups are involved in the planning, design and implementation processes, the more involved they will be in the community. Co-design activities, participatory workshops and focus groups ensured that interventions were grounded in the needs of the local people in terms of the socio-cultural context, and built trust and ownership among stakeholders. Specific community-based interventions complemented the creation of context-specific interventions and further supported participation and stakeholder satisfaction. The research also found that the areas that were revitalised saw key enhancements to safety, walkability, accessibility, environmental resilience, and general urban liveability. However, governance issues were identified as being obstacles to long-term sustainability, including weak policy integration, inadequate maintenance frameworks, and poor coordination between municipal authorities. Overall, the study suggests a framework for place-making that is scalable and flexible, using a mix of tactical activation, creative expression, participatory governance, ecological design, and institutional support Table 2, Fig. 7 and Fig. ***8***. The study provides both theoretical and practical inputs for developing a socially inclusive, environmentally resilient, and spatially active public space in the context of urban development in rapidly urbanizing cities like Istanbul, by leveraging neglected urban space. These details are further explained in Fig. 7 and Fig. ***8***.

Table 2. Key Findings and Implications for Urban Park Revitalization in Istanbul.

Research Aim / Objective / Theme	Key Findings (Condensed)	Implications for Urban Park Revitalization
Aim: Develop & evaluate a place-making framework for NUOS in Istanbul	Integrated creative, tactical, participatory, and ecological strategies effectively transformed neglected spaces into active and inclusive environments.	Confirms the effectiveness of an integrated place-making framework for improving liveability, social interaction, and environmental quality.
Objective 1: Assess existing park conditions	Sites showed poor accessibility, weak social interaction, low green infrastructure quality, underuse, and safety concerns.	Highlights the need for context-sensitive interventions targeting accessibility, safety, and spatial quality.
Objective 2: Identify effective place-making strategies	Tactical urbanism (e.g., pop-up cafés, markets, modular seating) rapidly increased activity in multiple sites.	Low-cost and flexible interventions are effective for quick spatial activation and public engagement.
RQ1: Most effective forms of place-making	Best outcomes emerged from combining tactical, creative, participatory, and ecological strategies.	NUOS transformation requires multi-layered and integrated place-making approaches.
Creative Place-Making	Public art, murals, and installations strengthened identity and emotional attachment.	Enhances place identity, pride, and visual quality of urban parks.
Participatory Place-Making	Co-design workshops and stakeholder engagement improved ownership and cultural relevance.	Strengthens social cohesion, satisfaction, and long-term stewardship.

Objective3: Role of participation & engagement	Strong involvement from residents, NGOs, youth, planners, and businesses improved trust and ownership.	Participation is essential for sustainable engagement and inclusive urban spaces.
Social Inclusion & Liveability	Spaces became more inclusive across gender, age, and cultural groups, improving safety and interaction.	Inclusive design strengthens cohesion and improves urban liveability.
Participation Variation	Youth participation was high; elderly engagement remained limited in some sites.	Participation strategies must be tailored to demographic needs.
Objective 4: Environmental & spatial impacts	Green infrastructure improved thermal comfort, resilience, and environmental quality.	Ecological design supports climate adaptation and user well-being.
Spatial Quality & Safety	Improved lighting, circulation, and visibility enhanced safety and accessibility.	Better spatial design increases usability and long-term park use.
RQ2: Community engagement through spatial design	Engagement increased when users were involved in co-design and planning processes.	Co-design strengthens trust, ownership, and sustained engagement.
Context-sensitive interventions	Site-specific designs reflected local cultural and social needs effectively.	Success depends on tailoring interventions to local context.
Flexible & multifunctional spaces	Adaptable layouts supported diverse user activities and increased inclusiveness.	Multifunctionality enhances usability across user groups.
Stakeholder engagement & governance	Local actors supported revitalization due to expected socio-economic benefits.	Collaborative governance improves long-term sustainability.
Institutional & policy challenges	Weak policy integration and maintenance systems threaten long-term success.	Institutional support and maintenance frameworks are critical for sustainability.
Objective 5: Develop scalable NUOS framework	Integrated tactical, ecological, participatory, and institutional components are essential.	NUOS revitalization requires an adaptive, scalable, and collaborative framework.



Fig. 7. Proposal for urban revitalization in Istanbul's heart; Source: Author's conceptualization.



Fig. 8. Proposal evolving paradigms of place-making in urban transformation; Source: Author's conceptualization.

6. Contributions of the study

6.1.Social Inclusion and Urban Liveability Benefit

This study contributes to the literature by focusing on social inclusion as one of the key pillars of urban liveability. In all the case-study sites, spaces that were previously ignored, unsafe, socially isolated and/or culturally uninclusive were transformed into more inclusive, usable and culturally responsive spaces that sparked a sense of belonging, safety and usability. This was especially noticeable in the former predominantly male informal areas of Mustafa Kemalpaşa, where family-oriented initiatives have reshaped the spaces, and in Tarlabaşı, where culturally inclusive initiatives have given more visibility and participation to minorities.

The results indicate that co-creative place-making approaches have a direct impact on how people feel about place and their desire to engage in civic life. Shaded seating, pedestrian-friendly pathways, interactive installations, versatile gathering spaces and multi-functional public areas enhanced both physical comfort and social interaction. The results align well with the previous studies by Yang et al. [10] and Gehl et al. [61] that state high-quality public spaces are essential to the liveability and enhancement of a city, particularly in dense and fragmented urban areas. The findings also show that interventions need to be grounded in local social dynamics and culture in order to engage the community as much as possible. In Avcılar, for instance, the youth-oriented programming was evident, while in

Cennet, the intergenerational spaces and their services were apparent, and in Tarlabaşı, culturally responsive programming was observed. The flexible and multifunctional configuration of the spaces also enabled a wide range of participation, with spaces being used to accommodate different groups throughout the day as well as different activities.

Significantly, the thematic analysis shows that social inclusion goes beyond physical accessibility to cultural recognition, participative governance, and interaction between generations. Storiespaces, community kitchens, education gardens, and youth facilities were integrated, promoting social involvement and creating a stronger local identity in the study areas. The availability of accessible and people-oriented public spaces that can help to build social cohesion and urban resilience is especially important in a context like Istanbul where people and places are increasingly disempowered due to fast urbanization and socio-spatial inequalities.

6.2. Environmental and Spatial Impacts

Cities also saw environmental and spatial enhancements as a result of the revitalization of urban parks, which was realized using ecological and climate-responsive design strategies. In every site, the interventions promoted environmental quality and helped achieve urban resilience goals, including permeable pathways, permeable pavements, vertical greening, native planting, rain gardens, and shaded promenades. The interventions were especially significant in high-density districts like Zeytinburnu and Mustafa Kemalpaşa where, besides heat exposure, environmental degradation and limited green infrastructure were a concern. The results are consistent with the literature that highlights the significance of green infrastructure in climate adaptation and urban sustainability [6], [31]. In addition to the ecological performance, participants consistently correlated the green interventions with the feeling of psychological well-being, environmental comfort and neighborhood attractiveness. This shows a good correlation between the quality of the environment and the feeling of being at home in the city. The interventions were successful both spatially, by reconnecting broken urban fabrics and improving urban legibility and accessibility, and in terms of their effect on the population. Spatially, the interventions proved to be successful in both reconnecting fragmented urban fabrics and making the urban environment more accessible and legible, with positive effects on the population. Previously passive or unsafe areas were transformed into more navigable and social areas by strategically adding lighting fixtures, walkable circulation loops, visual permeability, and flexible spatial layouts. Enhanced light, shade, seating and connectivity, as well as green infrastructure, also improved the perceived and actual usability, leading to more frequent and varied modes of public engagement. These results support the concept of “eyes on the street”, which highlights the link between the presence of active public spaces, sightlines, and the safety of the city [48]. The cross-case evidence hence showed that the need for quality improvement in the space is necessary to ensure its long-term use by the public, their environmental comfort and their place attachment.

7. Conclusions and Recommendations

This research has taken up the challenge of urban park revitalization, which is increasingly becoming a crucial issue in the city of Istanbul, and has created and evaluated a context-sensitive placemaking framework that combines creative, tactical, ecological and participatory placemaking approaches to urban revitalization. The study of five representative sites, from vacant lots to underutilized green areas, fragmented public spaces and socially disconnected urban spaces, shows that abandoned urban space can be effectively turned into dynamic, inclusive, and environmentally sensitive public space supporting urban liveability and community health.

The results show some of the major expected outcomes. All observed changes after the interventions were reported based on scenarios that were modelled and the assessment of stakeholders, but not on the actual implementation of the interventions. First, the tactical and creative placemaking activities, including temporary markets, pop-up activities, modular seating and mural installations, and flexible public infrastructure, were very effective in quickly transforming abandoned areas and establishing new pedestrian uses. Second, participatory planning exercises with residents, NGOs, local businesses, youth and planners greatly enhanced community ownership, social inclusion and satisfaction of planners and other stakeholders. Third, the implementation of ecological and climate-responsive measures such as rain gardens, shaded promenades, permeable pavements and urban greening measures enhanced environmental comfort, walkability, space quality and perceived safety in the case-study sites. These findings collectively highlight the need for the flexibility of a city, combined with culturally responsive design, environmental resilience, and spatial adaptability and social participation, in order to ensure successful transformation of urban parks.

The study also contributes to the general theoretical and practical debate on urban liveability, adaptive reuse and participatory urbanism and the “right to the city” in general. This research works on the following themes that are common to global urban discourse, but not without taking into account the fact that Istanbul is a city in a state of rapid urbanization, socio-spatial fragmentation, historical layering, environmental stress and population density. The results show that urban

parks can meet the needs for safety, accessibility, environment, social interaction and urban resilience; needs which can be addressed simultaneously, as a part of a more inclusive and people-oriented development of the city.

The study also has general importance in the field of the overall urban development targets and strategies of Istanbul, such as sustainable urban transformation, green infrastructure, adaptation to climate change, long-term plans (Vision 2050), etc. It is a framework that is closely aligned with existing priority policies for making public spaces more accessible, building urban green networks and making public spaces more environmentally resilient and socially inclusive. The results provide useful insights for future urban regeneration and sustainability policy in Istanbul and other rapidly urbanizing cities and demonstrate how underused urban space can be transformed into multifunctional, resilient and usable public space. In conclusion, this study provides a flexible and evidence-based approach to reactivate abandoned urban space and urban planning, which can be used as a model in Istanbul, but also as a good example for other cities around the globe facing the multifaceted problems of urban abandonment, spatial inequality, environmental deterioration and socio-cultural fragmentation. The results support the concept that inclusive, participatory and ecologically responsive placemaking can be transformative in building more resilient, livable and socially

7.1. Theoretical Recommendations

- Development of an integrative placemaking framework for sustainable urban park revitalization:

The study recommends the advancement of a structured and scalable methodological framework for the transformation of urban parks, integrating spatial and socio-environmental diagnosis, participatory co-design processes, tactical and ecological interventions, and long-term stewardship and governance mechanisms into a unified and adaptable model.

- Integration of multi-dimensional placemaking components:

It recommends strengthening placemaking theory by treating spatial analysis, community participation, tactical urbanism, ecological design, and governance structures as interconnected and mutually reinforcing dimensions rather than isolated or independent planning tools.

- Strengthening participatory urbanism theory:

The study recommends further theoretical development that emphasizes participatory and co-design approaches as central mechanisms for achieving equitable, inclusive, and socially responsive urban transformation.

- Expansion of tactical and ecological placemaking discourse:

It suggests expanding existing theoretical approaches to better understand the possible synergy between tactical urbanism and ecological design approaches as complementary tools to activate and transform underused urban space, especially in high-density urban areas.

- Context-sensitive and adaptable urban transformation theory:

It also suggests that the theories of park revitalization should be flexible in response to the complexities of different socio-spatial contexts and urban typologies, to accentuate the importance of context-sensitive design and culturally responsive design.

7.2. Practical Recommendations

- Institutionalize participatory placemaking:

The incorporation of participatory placemaking within formal planning processes should foster a sense of continuous community engagement from design to implementation and ongoing management of actions, to further build ownership, inclusiveness, and sustainability of interventions.

- Integrate ecological design interventions:

The implementation of ecological principles and solutions in urban regeneration projects, including rainwater-sensitive urban design, permeable surfaces, shaded walkways and urban greening, should be implemented systematically in order to improve the usability, environmental resilience and comfort of the microclimate of public spaces, particularly in dense urban areas.

- Strengthen multi-stakeholder collaboration:

Successful partnerships between local governments, NGOs, the private sector, and community groups are fostered to help sustain placemaking outcomes beyond the initial design and build by providing for long-term stewardship, maintenance and governance of revitalized spaces.

- Adopt context-sensitive and culturally responsive design:

Urban designers and planners should tailor interventions to the specific social, environmental, and cultural conditions of each neighborhood to ensure that parks revitalization efforts are functional, locally relevant, socially inclusive, and widely accepted by the community.

8. Limitations and Future Research Directions

8.1. Limitations of the Study

- Assessments are largely based on projections and scenarios, based on spatial modelling, stakeholder input and qualitative evaluations, rather than on long-term monitoring of fully implemented interventions.

- The socio-spatial impacts (such as gentrification, displacement, commercialisation and marginalisation of vulnerable users) were not measured directly.
- Stakeholder involvement helped gain insights, but issues such as maintenance responsibility, institutional coordination, and policy integration were not very well explored.

8.2. Future Research Directions

- Future research needs to aim to include a longitudinal study to assess the longer-term social, environmental and spatial outcomes from the intervention.
- There is a need to delve deeper into governance structures, institutional capacity, and public–private partnerships for sustainable place-making.
- The proposed framework needs to be piloted in different cities and regions to evaluate its transferability in different cultural, climatic, socio-economic and governance settings.
- It is recommended to include comparative studies across Europe, the Middle East, Africa and other fast urbanizing areas to improve the global applicability of the study.

Conflicts of Interests

There is no conflict of interest in this study.

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Availability of Data and Materials

Not applicable.

Using Artificial Intelligent Chatbots

None.

Supplementary data

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