

## Developing a model of landscape elements in residential open spaces effective on social resilience (Comparative study of Basmayeh & Haifa residential open spaces in Baghdad, Iraq)

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**Abstract:** This study explores the role of landscape elements in residential open spaces and their impact on fostering social resilience. By comparing Basmayeh, a modern planned community, and Haifa, an area characterized by vernacular architecture in Baghdad, Iraq, the research aims to develop a model of effective landscape design. Using surveys, field observations, and community feedback, the study examines how design elements influence social interaction, mental well-being, inclusivity, and community identity. Results show that modern open spaces prioritize recreation and aesthetics, while vernacular spaces emphasize social cohesion and cultural heritage. The study concludes with a hybrid model integrating the strengths of both contexts to create inclusive, resilient residential open spaces. Recommendations include adopting context-sensitive designs, enhancing accessibility, and promoting community participation in the design process.

**Keywords:** Community, Landscape, Model integrating, Open spaces, Social resilience.

### 1. Introduction

In recent years, the role of landscape architecture in shaping urban environments has gained increasing recognition, particularly in its potential to enhance social resilience within communities. Residential open spaces, as integral components of urban living, serve as platforms for social interaction, mental and physical well-being, and community cohesion. These spaces, when thoughtfully designed, can address challenges related to urbanization, population growth, and socio-cultural dynamics by fostering a sense of belonging and adaptability among residents.

Social resilience—the capacity of individuals and communities to navigate and adapt to social, economic, and environmental challenges—has become a vital consideration in urban planning. It reflects a community's ability to maintain functionality, recover from disruptions, and thrive in changing conditions. Landscape elements such as green spaces, playgrounds, pathways, and public parks have been identified as critical contributors to social resilience, promoting interaction, recreation, and well-being. However, the effectiveness of these elements can vary significantly depending on their design, implementation, and the socio-cultural context of the area.

This study focuses on developing a model of landscape elements in residential open spaces that are effective in enhancing social resilience. The research involves a comparative analysis of two distinct residential developments in Baghdad, Iraq—Basmayeh and Haifa. These neighborhoods offer contrasting urban and socio-cultural contexts, providing a unique opportunity to examine how specific landscape features influence social resilience in differing settings.

The objectives of this research are threefold: first, to identify key landscape elements that contribute to social resilience in residential open spaces; second, to analyze and compare the effectiveness of these elements in the Basmayeh and Haifa neighborhoods; and third, to propose a model that can serve as a

guideline for the design of socially resilient residential landscapes. By addressing these objectives, the study aims to provide insights that can inform urban planning and landscape design practices, particularly in the context of rapidly urbanizing cities in the Middle East.

In the following sections, the study will review existing literature on social resilience and landscape architecture, outline the methodology for data collection and analysis, present findings from the comparative study, and propose a model of effective landscape elements. Through this research, it is hoped that residential open spaces in Baghdad and similar urban contexts can be designed to better support the social, mental, and physical well-being of their communities, fostering a more resilient and cohesive urban fabric.

### *1.1. Definition of Social Resilience and Landscape Architecture*

Social resilience is a concept that refers to a community's ability to withstand and recover from social, economic, and environmental shocks and stresses. It involves the capacity to adapt and bounce back from adversity, while maintaining social cohesion and well-being. In the context of landscape architecture, the integration of elements that promote social resilience is crucial. By designing landscapes that enhance community cohesion, create spaces for social interaction, and promote mental and physical well-being, landscape architecture can play a significant role in building social resilience, furthermore Landscape architecture plays a crucial role in reshaping post-disaster landscapes and fostering community resilience. By definition, landscape architecture encompasses the design, planning, and management of outdoor spaces in order to create functional and aesthetically pleasing environments. In the context of post-disaster scenarios, landscape architects are tasked with assessing the impact of disasters on landscapes and identifying key challenges and opportunities for resilience [1].

### *1.2. Purpose of the Study*

The purpose of this study is to examine the integration of landscape architecture elements in promoting social resilience. By exploring the role of landscape architecture in enhancing community cohesion, creating spaces for social interaction and support, and promoting mental and physical well-being, this research aims to understand the potential benefits and challenges associated with incorporating these elements.

### *1.3. Importance of Landscape Architecture in Post-Disaster Contexts*

The importance of landscape architecture in post-disaster contexts cannot be overstated. In the aftermath of a disaster, the physical landscape is often significantly altered, requiring careful planning and design to ensure the resilience and well-being of affected communities. Landscape architects play a crucial role in assessing the impact of disasters on landscapes and identifying key challenges and opportunities for reimagining the affected areas. They contribute to the development of comprehensive resilience plans, integrating natural elements for disaster mitigation and implementing sustainable design principles. Additionally, landscape architects incorporate cultural and historical contexts, restoring damaged ecosystems, promoting biodiversity and habitat restoration, and enhancing natural resource management. They also play a key role in creating inclusive public spaces that foster social cohesion and well-being, engaging in participatory design approaches [2].

### *1.4. Enhancing Community Cohesion Through Design*

Community cohesion is an essential aspect of social resilience, as it strengthens the bonds and relationships within a community. Landscape architecture plays a crucial role in enhancing community cohesion through design. By creating inclusive and accessible public spaces, such as parks, plazas, and gardens, landscape architects provide opportunities for people to come together, interact, and connect with one another.

Carefully planned design elements, such as seating areas, walking paths, and communal gathering spaces, encourage social activities and facilitate informal interactions among community members.

These design interventions promote a sense of belonging and foster a shared identity within the community. Additionally, incorporating elements that reflect the cultural heritage and history of the area further strengthens community cohesion by creating a sense of pride and ownership.

#### *1.5. Identifying Key Challenges and Opportunities*

Identifying key challenges and opportunities in post-disaster landscapes is a critical aspect of landscape architecture's role in fostering community resilience. By understanding the unique challenges that arise after a disaster, landscape architects can develop innovative solutions to address them. One key challenge is the need to assess the impact of the disaster on the landscape, including the damage caused and the potential risks for future events. This assessment helps in determining the necessary interventions and resilience strategies. Additionally, landscape architects must identify opportunities for improvement, such as incorporating natural elements for disaster mitigation and integrating sustainable design principles. By recognizing these challenges and opportunities, landscape architects can develop comprehensive resilience plans that effectively reshape post-disaster landscapes and foster community resilience [3].

#### *1.6. Integrating Cultural and Historical Contexts*

Integrating cultural and historical contexts in landscape architecture plays a crucial role in reshaping post-disaster landscapes and fostering community resilience. By understanding and incorporating cultural and historical significance, landscape architects can create designs that honor the identity and heritage of affected communities. This integration not only helps in the physical reconstruction of the landscape but also contributes to the emotional and psychological recovery of communities. By preserving historical landmarks, incorporating traditional architecture, and considering cultural practices, landscape architects can create spaces that promote a sense of place and belonging. This approach also strengthens social cohesion and encourages community engagement, further enhancing resilience. By acknowledging and integrating cultural and historical contexts, landscape architects can create resilient landscapes that reflect the unique identities and values of the communities they serve [4].

#### *1.7. Rehabilitating Damaged Ecosystems*

Rehabilitating damaged ecosystems is a crucial aspect of landscape architecture in post-disaster contexts. The aim is to restore and revive the natural elements that have been affected by the disaster. This process involves identifying the extent of the damage and implementing strategies to rebuild and rehabilitate the ecosystem. By promoting biodiversity and habitat restoration, landscape architects can create resilient ecosystems that are more resistant to future disasters. Additionally, enhancing natural resource management ensures the sustainable use of resources and helps in the long-term resilience of the landscape. Through these efforts, landscape architects play a critical role in healing and restoring ecosystems, ultimately fostering community resilience.

#### *1.8. Creating Community Spaces*

Designing inclusive public spaces is a crucial aspect of landscape architecture in post-disaster contexts. These spaces serve as gathering points for communities to come together, providing a sense of belonging and promoting social cohesion and well-being. By incorporating participatory design approaches, landscape architects ensure that the voices and needs of the affected communities are heard and reflected in the design process. Through the thoughtful integration of cultural and historical contexts, these spaces not only serve their practical purpose but also contribute to the preservation and celebration of local heritage. Ultimately, the goal is to create community spaces that are not only aesthetically pleasing but also functional, resilient, and adaptable to future challenges. By prioritizing the creation of such spaces, landscape architecture plays a vital role in enhancing community resilience and promoting a sense of strength and unity in the face of adversity [5].

### 1.9. Key Landscape Elements in Residential Open Spaces

#### 1.9.1. The Analysis Identified Six Primary Landscape Elements That Contribute to Social Resilience

**Green Spaces:** These include parks, lawns, and natural vegetation. Residents in both neighborhoods prioritized green spaces as essential for mental relaxation and informal social interactions.

**Playgrounds:** Playgrounds were frequently mentioned as critical spaces for fostering family connections and community engagement, particularly among families with children.

**Public Parks:** Larger community parks were viewed as hubs for social gatherings and events, providing opportunities for both structured and unstructured social activities.

**Paths and Walkways:** These elements were found to encourage physical activity and casual social interactions during daily routines.

**Seating Areas:** Benches and shaded seating spaces were highlighted as important for fostering informal conversations and creating a sense of comfort [6].

**Water Features:** While less frequent than other elements, water features (e.g., fountains) were recognized for their calming effects and their ability to draw people together in shared spaces.

A comparative evaluation of the two neighborhoods revealed the following insights:

**Table 1.**

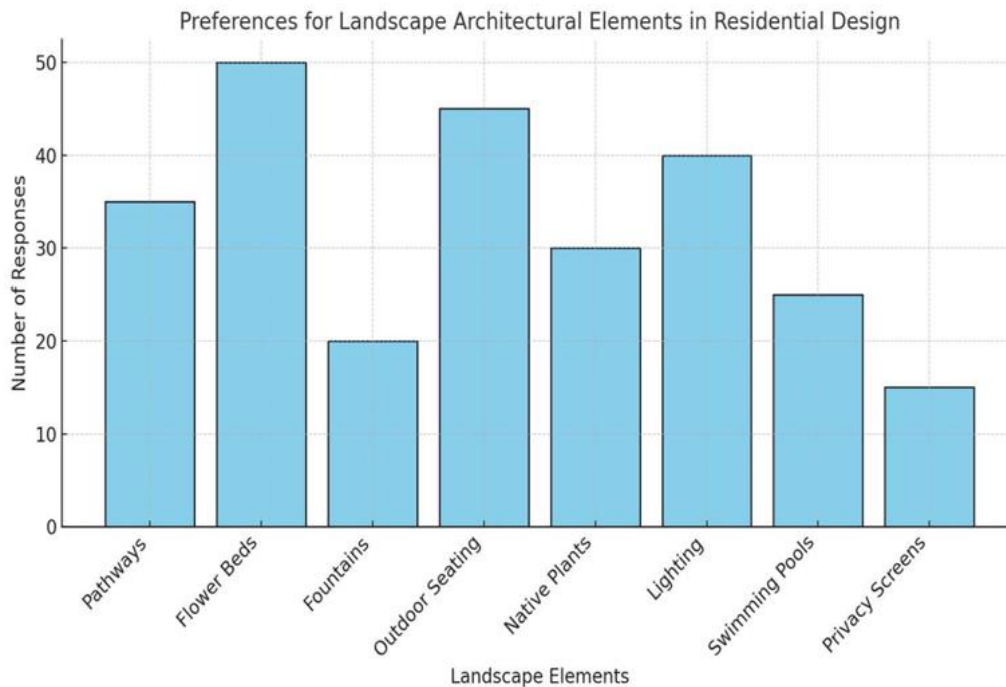
Comparative analysis of Basmayeh and Haifa residential areas.

Criteria	Basmayeh	Haifa
Green spaces	Abundant but underutilized due to lack of shade and amenities.	Limited but heavily used due to proximity and accessibility.
Playgrounds	Modern and well-maintained but underutilized by older children.	Limited in number but actively used by diverse age groups.
Public parks	Well-distributed but sparsely attended due to perceived safety concerns.	Centralized and frequently used for social gatherings
Paths and Walkways	Wide and well-maintained, encouraging physical activity.	Narrow and less integrated, limiting usability.
Seating areas	Plentiful but poorly shaded, reducing usability during peak hours.	Limited but strategically placed in shaded and active areas.
Water features	Present but not functional in most cases	Few but aesthetically significant and functional.

We can see the preferences for landscape architecture elements in residential design

#### 1.10. Incorporating Participatory Design Approaches

Incorporating participatory design approaches is a crucial aspect of landscape architecture in reshaping post-disaster landscapes and fostering community resilience. By involving the affected communities in the decision-making processes, landscape architects can ensure that the design solutions meet the specific needs and aspirations of the community members. This participatory approach not only empowers the community but also builds their sense of ownership and belonging. It allows for diverse perspectives to be considered, leading to more inclusive and sustainable design outcomes. Furthermore, participatory design approaches enable the community to contribute their local knowledge and expertise, enhancing the effectiveness and appropriateness of the design solutions. Through collaborative engagement, landscape architecture promotes resilience by fostering community cohesion, encouraging active participation, and creating spaces that reflect the collective identity and values of the community [7].



**Figure 1.**  
Balancing aesthetic and functional aspects.

Balancing aesthetic and functional aspects is crucial in the integration of landscape architecture elements in social resilience. Designing spaces that are visually appealing while also serving practical functions is essential for creating environments that promote social well-being and community cohesion.

Aesthetics play a significant role in attracting people to outdoor spaces and encouraging social interaction. Well-designed landscapes that incorporate elements such as aesthetically pleasing plants, sculptures, and water features can enhance the overall experience for individuals using these spaces. At the same time, functionality is equally important to ensure that the landscape elements fulfill their intended purposes.

Architects must carefully consider the needs of the community and the specific functions that the landscape elements are expected to serve. This includes providing accessible paths and seating areas, designing spaces for different activities, and incorporating sustainable features that support environmental resilience.

By striking a balance between aesthetics and functionality, landscape architects can create spaces that not only contribute to the visual appeal of a place but also provide practical benefits to the community. This integration of aesthetic and functional aspects contributes to the overall social resilience of a community by enhancing its livability and promoting a sense of belonging and well-being.

#### *1.11. Strategies For Effective Integration of Landscape Architecture Elements*

Strategies for effective integration of landscape architecture elements can greatly contribute to social resilience. Collaborative design approaches, such as involving community members and stakeholders in the design process, can ensure that the landscape meets their needs and fosters a sense of ownership and pride. Additionally, incorporating sustainable practices in landscape design, such as using native plant species and implementing green infrastructure, can contribute to climate adaptation and enhance social resilience. Long-term maintenance and management considerations are also crucial to ensure the longevity and effectiveness of the integrated elements. By implementing these strategies,

landscape architecture can play a vital role in strengthening community identity, enhancing residents' quality of life, and building adaptive capacity for future challenges.

#### *1.12. Long-Term Maintenance and Management Considerations*

Effective integration of landscape architecture elements in social resilience requires careful consideration of long-term maintenance and management. This involves developing maintenance plans and allocating resources to ensure the ongoing upkeep of the designed spaces. Regular maintenance such as pruning, irrigation, and cleaning is necessary to preserve the functionality and aesthetics of the landscape. Additionally, monitoring and addressing any potential issues or damage that may arise is crucial to maintain the resilience of the landscape architecture elements. Collaborative efforts between landscape architects, local communities, and relevant stakeholders are essential in executing effective long-term maintenance and management strategies. By implementing sustainable practices and engaging in proactive maintenance, landscape architecture elements can continue to contribute to social resilience and enhance the well-being of communities for years to come.

#### *1.13. Promoting Education and Awareness*

Engaging communities in disaster preparedness is a crucial aspect of landscape architecture's role in reshaping post-disaster landscapes and fostering community resilience. By involving community members in the planning and preparation process, landscape architects can empower individuals to take an active role in their own safety and well-being. Additionally, educating about landscape resilience and sustainability is essential for building awareness and fostering a culture of disaster preparedness. Through public outreach campaigns, landscape architects can inform the public about the importance of resilient landscapes and provide practical knowledge on how to create and maintain them. By promoting education and awareness, landscape architects can equip communities with the knowledge and tools they need to effectively respond to and recover from disasters, ultimately enhancing community resilience [8].

#### *1.14. Educating About Landscape Resilience and Sustainability*

Educating about landscape resilience and sustainability is a crucial aspect of landscape architecture in post-disaster contexts. By providing education and knowledge about these topics, landscape architects can empower communities to understand the importance of resilient and sustainable design principles. This education can help community members to make informed decisions and actively participate in the planning and design processes. It also enables them to contribute to the long-term resilience of their landscapes. By educating about landscape resilience and sustainability, landscape architects can ensure that communities are equipped with the necessary tools and understanding to navigate and adapt to future challenges and disasters. Through education, landscape architecture becomes a powerful tool for fostering community resilience and promoting sustainable practices.

#### *1.15. Raising Awareness Through Public Outreach Campaigns*

Raising awareness through public outreach campaigns is a crucial aspect of landscape architecture in reshaping post-disaster landscapes and fostering community resilience. These campaigns play a vital role in informing and educating the public about the importance of landscape resilience and sustainability. By engaging communities in disaster preparedness, public outreach campaigns help individuals understand the role they can play in building resilience within their own landscapes. They also promote a sense of collective responsibility and encourage active participation in designing and creating resilient landscapes. Through these campaigns, landscape architects can effectively communicate the benefits of incorporating natural elements for disaster mitigation, implementing sustainable design principles, and integrating cultural and historical contexts. By raising awareness and educating the public, landscape architects can empower communities to actively contribute to the process of building resilient landscapes and fostering community resilience.

### 1.16. Enhancing The Quality of Life for Residents

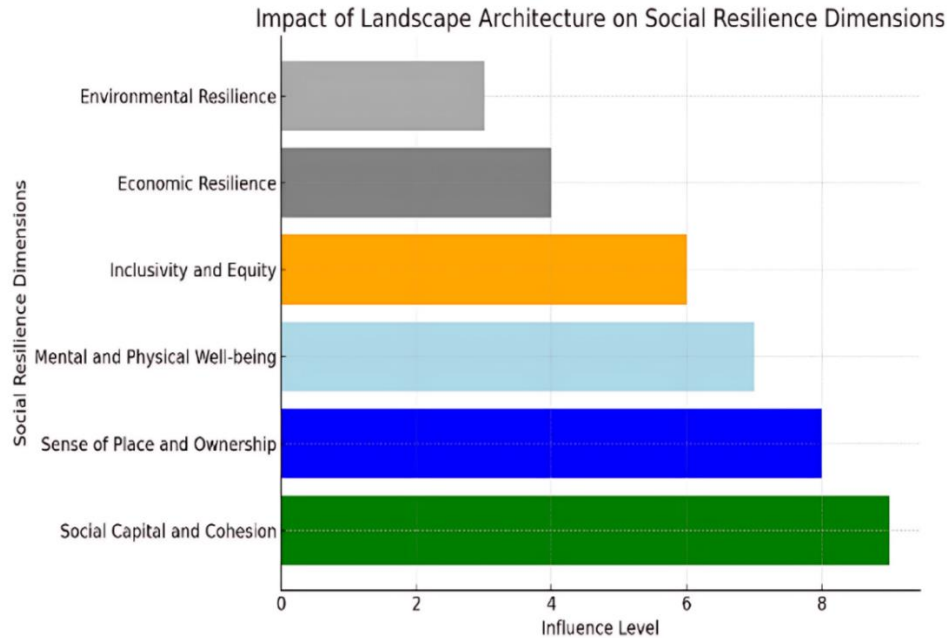
Enhancing the quality of life for residents is a crucial aspect of integrating landscape architecture elements in social resilience. By strategically designing outdoor spaces, landscape architects can contribute to creating a sense of belonging and well-being within communities. These spaces can be designed to promote social interaction and support, fostering connections between individuals and strengthening community cohesion. Additionally, landscape architecture can play a significant role in promoting mental and physical well-being by providing opportunities for relaxation, recreation, and exercise. Incorporating elements such as green infrastructure, urban parks, and cultural heritage in landscape design can further enhance the quality of life for residents, offering them spaces that meet their diverse needs and preferences. Effective integration of landscape architecture elements in social resilience not only enhances the immediate quality of life for residents but also helps build adaptive capacity to tackle future challenges. By prioritizing collaborative design approaches, sustainable practices, and long-term maintenance considerations, landscape architects can create environments that facilitate social resilience and ultimately contribute to the overall well-being of communities [9].

**Table 2.**  
Aspects and Elements of Landscape Architecture in Residential Open Spaces.

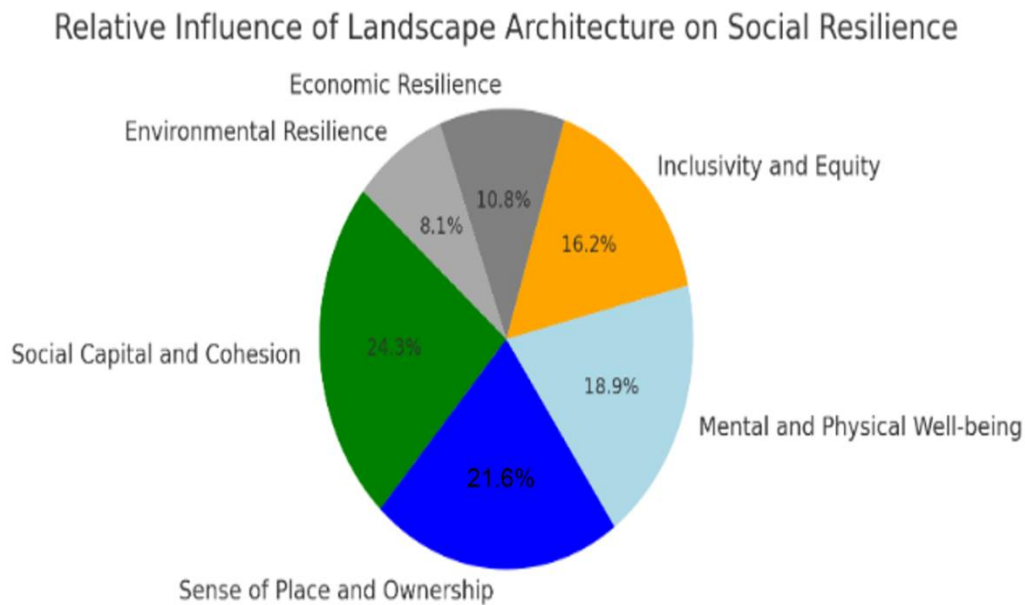
Aspect/Element	Description
Hardscape Elements	Pavements, roads, walls, etc.
Softscape Elements	Vegetation's, trees, lawns, etc.
Seating and Gathering Areas	Benches, shades area, community zones
Recreational Spaces	Playgrounds, fitness areas, sports courts
Water Features	Fountains, ponds, stream, etc.
Lighting Design	Streetlights, landscape lightening
Art and Sculptures	Statues, murals, etc.
Retaining Walls and Terracing	Landscape features for elevation changes
Shade Structures	Pergolas, canopies, shade trees
Environmental Sustainability	Use of sustainable materials, green roofs
Way finding and Signage	Directional signs, map kiosks
Accessibility Features	Ramps, tactical paths, inclusive design
Outdoor Furniture	Benches, picnic tables, etc.
Maintenance Considerations	Durability, easy maintains elements

**Table 3.**  
Influence of Landscape Architecture on Social Resilience in Basmayeh and Haifa Areas.

Location	Influencing factors	Impact on social resilience
Basmayeh	Modern design, functional spaces	Greater adaptability, social interaction, and community cohesion
Haifa	Vernacular design, cultural relevance	Stronger cultural identity, social bonds, and community pride



**Figure 2.**  
Bar Chart - Shows the impact of landscape architectural elements on different dimensions of social resilience.



**Figure 3.**  
Pie Chart - Illustrates the relative influence of landscape architecture on these dimensions.

### 1.17. Monitoring and Evaluation

Monitoring and evaluation play a crucial role in assessing the effectiveness of landscape interventions and ensuring long-term resilience outcomes. Through systematic monitoring, landscape architects can track the progress and impact of their designs, identifying areas of success and areas that require improvements. This process allows for continual refinement and adaptation of strategies, ensuring that the landscapes are meeting the evolving needs of the community. Evaluation provides an



opportunity to assess whether the intended goals and objectives have been achieved, and to gather valuable lessons learned for future projects. By incorporating monitoring and evaluation into their practice, landscape architects can contribute to the ongoing development and improvement of resilient landscapes that support community well-being and sustainability [10].

#### *1.18. Post-Disaster Landscape Transformations: Case 1*

Post-disaster landscape transformations play a crucial role in reshaping physical environments and fostering community resilience. Through case studies, these transformations provide valuable insights into the practical implementation of landscape architecture in post-disaster contexts. Case 1 focuses on specific examples where landscape interventions have effectively contributed to the recovery and resilience of communities affected by disasters. These case studies showcase the diverse strategies employed, such as the rehabilitation of damaged ecosystems, the promotion of biodiversity and habitat restoration, and the enhancement of natural resource management. Additionally, they highlight the importance of designing inclusive public spaces that promote social cohesion and well-being, as well as incorporating participatory design approaches. By examining these case studies, we can gain a deeper understanding of how landscape architecture can play a pivotal role in reshaping post-disaster landscapes and fostering community resilience.

#### *1.19. Post-Disaster Landscape Transformations: Case 2*

Case 2 of post-disaster landscape transformations examines a specific example of how landscape architecture plays a crucial role in reshaping damaged landscapes and promoting community resilience. This case study illustrates the application of landscape architecture principles to a real-life scenario. By rehabilitating injured ecosystems and promoting biodiversity, landscape architects can restore the ecological systems that have been affected by a disaster. Additionally, they focus on creating inclusive public spaces that foster social cohesion and well-being, with an emphasis on participatory design approaches. The integration of green infrastructure solutions, such as improving water management systems and strengthening transportation networks, also enhances the resilience of the infrastructure. Finally, the case study highlights the importance of engaging with stakeholders, including local governments, organizations, architects, urban planners, and affected communities, in decision-making processes to ensure the long-term success of post-disaster landscape transformations.

#### *1.20. Post-Disaster Landscape Transformations: Case 3*

Post-disaster landscape transformations play a crucial role in rebuilding communities and promoting resilience. Case 3 explores real-world examples of how landscape architecture has been implemented to revitalize and restore areas affected by disasters. These case studies highlight the diverse ways in which landscape architects have incorporated natural elements, sustainable design principles, and cultural contexts to create resilient landscapes. By rehabilitating damaged ecosystems, promoting biodiversity, and enhancing natural resource management, landscape architects contribute to the restoration and preservation of the environment. Additionally, they focus on designing inclusive public spaces, promoting social cohesion, and incorporating participatory design approaches to foster a sense of community and well-being. Through the integration of green infrastructure solutions, improved water management systems, and strengthened transportation networks, landscape architecture also plays a crucial role in enhancing infrastructure resilience. Ultimately, these case studies demonstrate the multifaceted approach that landscape architecture takes in reshaping post-disaster landscapes and fostering community resilience.

#### *1.21. Recap of the Role of Landscape Architecture in Fostering Resilience*

Landscape architecture plays a critical role in fostering community resilience in post-disaster landscapes. By assessing the impact of disasters on landscapes, identifying challenges and opportunities, and developing comprehensive resilience plans, landscape architects can help communities prepare for

future disasters. They incorporate natural elements for disaster mitigation, implement sustainable design principles, and integrate cultural and historical contexts to create resilient landscapes. Additionally, landscape architects restore ecological systems by rehabilitating damaged ecosystems, promoting biodiversity, and enhancing natural resource management. They also create community spaces by designing inclusive public spaces, promoting social cohesion, and incorporating participatory design approaches. Landscape architects further enhance infrastructure resilience by integrating green infrastructure solutions, improving water management systems, and strengthening transportation networks. Safety and accessibility are prioritized through hazard-resistant design strategies, universal accessibility in landscapes, and enhanced emergency response and evacuation plans. Furthermore, landscape architects promote education and awareness by engaging communities in disaster preparedness, educating about landscape resilience, and raising awareness through public outreach campaigns. Collaboration with stakeholders, including local governments, architects, urban planners, and affected communities, is key in decision-making processes. Monitoring and evaluation of landscape interventions, assessing long-term resilience outcomes, and incorporating lessons learned into future projects ensure continuous improvement. Through these efforts, landscape architecture contributes to the reshaping of post-disaster landscapes and the fostering of community resilience.

### *1.22. Work Results (Practical Side)*

#### *1.22.1. Data Collection*

**Field Observations:** Documented the physical layout, design elements, and usage patterns of open spaces in both Basmayeh and Haifa.

Evaluated accessibility, safety, and maintenance levels.

Noted cultural and environmental adaptations.

**Surveys and Interviews:** Gathered feedback from residents about their perception of the spaces' usability, safety, and contribution to social interaction.

Questions focused on frequency of use, feelings of belonging, and community cohesion.

**Photographic Analysis:** Compared design features like seating areas, greenery, pathways, and water features.

**Quantitative Data:** Measured space sizes, population density, and proximity to homes.

#### **Key Findings**

**Basmayeh: Strengths:** Modern design, recreational amenities, and aesthetics.

**Weaknesses:** Limited cultural connection, less emphasis on informal social gathering spaces.

**Haifa: Strengths:** Integration of local culture, organic layouts encouraging interaction, climate-responsive design.

**Weaknesses:** Limited accessibility for all abilities, aging infrastructure.

**Common Observations:** Both areas lacked sufficient inclusive elements for all age groups and abilities.

Maintenance and safety concerns were more pronounced in Haifa.

#### **Proposed Model**

**Core Elements:** Social Interaction Spaces: Shared gardens, plazas, shaded seating areas.

**Accessibility Features:** Ramps, clear signage, lighting.

**Cultural Integration:** Use of local materials and designs reflective of the community's heritage.

**Recreational Opportunities:** Playgrounds, walking paths, sports facilities.

**Ecological Features:** Native plants, rain gardens, and energy-efficient lighting.

## **2. Recommendations**

**For Basmayeh:**

Incorporate cultural and heritage-inspired design elements.

Enhance informal gathering spaces to foster unplanned social interactions.

Introduce more inclusive features for diverse age groups and abilities.

**For Haifa:**

Modernize existing infrastructure while preserving vernacular design elements.  
 Improve accessibility and safety through better pathways and lighting.  
 Encourage participatory design to involve residents in space improvements.

**General Recommendations:**

Balance modernity with tradition to meet the diverse needs of residents.  
 Prioritize sustainable and climate-responsive designs.  
 Establish regular maintenance and safety protocols for all open spaces.

### 3. Conclusion

This study highlights the significant role of landscape architectural elements in shaping social resilience. While Basmayeh excels in providing modern recreational facilities, Haifa's strength lies in fostering community cohesion through culturally rooted designs. A hybrid model combining modern functionality with vernacular adaptability is proposed to enhance social resilience in residential open spaces. The findings emphasize the importance of inclusivity, cultural relevance, and community engagement in landscape design.

By applying this model, urban planners and architects can create spaces that not only meet residents' recreational needs but also strengthen the social fabric of communities, ensuring a resilient and thriving urban environment.

### Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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