URBAN WATERFRONT REVITALIZATION THROUGH LANDSCAPE DESIGN ENHANCING SOCIAL-CULTURAL CONDITIONS OF EL-MINA, TRIPOLI

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Abstract

The concept of waterfront revitalization has been a prominent notion in the field of urban planning and is considered an effective strategy to enhance deteriorated sites and inspire the identity and authenticity of communities. Nevertheless, there is no definite prescription for success when it comes to linking waterfront landscape design with improving the social and cultural site conditions in a deteriorating historical area. This paper examines the revitalization of the waterfront through greenway design in El-Mina, Tripoli, Lebanon in order to put emphasis on the local culture of the city and create socio-cultural opportunities for the area of study and better improve the quality of life of its residents. The research employs a mixed method approach, where both qualitative and quantitative methods are applied. The qualitative approach is based on theoretical study and the analysis of three case studies and the quantitative part of the study consists of both a survey and simulations to understand the various struggles and problems that the residents of the zone of study face and to find the optimum landscape design proposal that links the waterfront to the existing urban fabric along with sustainable environmental solutions to enhance the surrounding heritage context through the design of a Cultural Park that is applied on a lot by the city's waterfront. A set of design recommendations regarding the connectivity of landscape waterfront spaces to heritage spaces were then issued and developed based on the synthesis of the simulation results and urban analysis.

Keywords

1. INTRODUCTION

Heritage, both cultural and natural, visible and spiritual, is an ever-changing resource that fosters identity, memory, and a "feeling of place," and it plays a significant role in attaining sustainable development (Labadi *et al.,* 2021). On the other hand, cities have recently recognized the significance of water as a representational and geographical contextualizing element as it offers places that are ideal for slowing down and walking. It also animates and organizes urban environments while avoiding the creation of spatial boundaries and increases the value of urban places.

The revitalization of urban waterfronts, as well as the qualitative upgrading of their spatial condition values, are given special attention, particularly if large urban transformations occur and alter the urban heritage. The development of waterfront areas is critical in this regard, as it allows for the proper integration of human hobbies and settlements in a deteriorating and constantly vulnerable area (Niemann & Werner, 2016). Unfortunately, the deteriorating state of the historical buildings of El-Mina along with the decreasing social and economic conditions of its inhabitants have rendered the area struggling and in great need of revitalization.

This research examines the revitalization of the waterfront through the design of greenways in order to create socio-cultural opportunities for the area of study and better improve the quality of life of its residents. The research also aims to highlight the approaches that can be applied to fulfill the following objectives:

1- To provide mixed-use zones within the greenways that cater the needs and interests of individuals from all age groups and backgrounds;

2- To showcase community, natural settings, culture, and art through greenway implementation;

3- To put emphasis on the sense of the place through the employment identity-building recurring components within the greenways.

The concept of waterfront revitalization has been a popular concept in the area of urban planning and especially in recent years. Moreover, the role of landscape design in waterfront revitalization and the reflection of the identity and culture of the city has also been discussed vastly in literature.

Water is a distinctive element that essentially influences the nature of any location it comes into contact with. Water's function in transportation, industry, sanitation, and nutrition makes it the foundation for human habitation (Rasal, 2012). Natural water sources are highly valued in urban areas due to the aesthetic influence they have on humans. This includes optical, auditory, tactile, and psychological effects (Timur, 2013). Waterfronts, or the particular locations at which land and water connect, seem to be a limited asset that represent the distinctive historical significance of each city (Sairinen & Kumpulainen, 2006). Urban waterfront planning investigates the many methods of accessing and using the borders of oceans, lakes, or rivers, as well as comprehending their features for the city. The demand for waterfront area, the necessity for open access to the coast, as well as the protection of waterfront biodiversity as a renewable source seem to have become progressively important issues in urban policy (Sairinen & Kumpulainen, 2006).

Waterfronts are usually significant locations. Since their utilization seems to have direct or indirect effects on the image of the location and on social fairness; several occasions waterfronts are regions of high-priced accommodation and redevelopment (Sairinen & Kumpulainen, 2006). This impact results in a contrast in property prices between a more costly waterfront and relatively moderate regions (Oliva, 2006). Waterfront revitalization projects are frequently used as a point of focus for the formation of public–private, multi-stakeholder collaborations in order to assist specific initiatives as part of a wider commercial drive (Rasal, 2012).

The social impact evaluation of urban waterfront development investigates many methods of accessing and exploiting the borders of oceans, seas and rivers, as well as identifying its characteristics for the city. Its goal is to render planners, decision-makers, and the general public aware about the cultural and social components of waterfront regions, such as the physical, recreational, and cultural links that exist among a city and its waterfront. The fundamental strategic issue, in general, is the interplay between human-modified and natural ecosystems (Sairinen & Kumpulainen, 2006). The level of water reliance and the potential consequences are determined

by the desires and views of those concerned. Firstly, individuals that live, work, or play near water are affiliated with waterside regions for accommodation, commerce, transportation, and a range of leisure and entertainment amenities. Secondly, people who see waterfront regions as a public asset are concerned about their quality and utilization, particularly if they do not actively utilize or profit from the resource. The second group is more likely to use a water-related corridor as a recreational and ecological resource (Sairinen & Kumpulainen, 2006).

Establishing a sense of place and identity are critical aspects of revitalization (Iqbal *et al.*, 2020). Place identities are developed via realms of sentiments, interpretations, experiences, recollections, and behaviors that, although fundamentally subjective, get processed and promoted by social systems (Hague & Jenkins, 2004). Planning and urban design have been regarded as being about creating a sense of place and employing it as the primary tool for waterfront development, striving to create the identities of areas via manipulation of the events, emotions, understandings, and urban fabric that join together to form sense of place (Liu, 2013).

Almost every major urban waterfront revitalization has a strong recreational feature. New public places that are creative have been noted for their capacity to be claimed by individuals representing varied backgrounds, for enabling multiple experiences, and for stimulating social and cultural interchange (Ryan & Borden, 2006). People gravitate towards waterfront developments that feature leisure and recreation facilities for a myriad of purposes. Tourists are attracted to the urban waterfront mainly to interact with diverse types of people as well as to engage in the many activities offered. Waterfront recreation areas must give sufficient satisfaction of users' expectations over how to rest since waterfronts are being frequented during people's spare time, whenever individuals get the most options for where they wish to spend their time. When it comes to relaxation and sensory stimulus, the materiality and human scale of a waterfront recreational location must also be prioritized. Some ecological factors are also considered a vital part of waterfront leisure facilities (Miller, 2011).
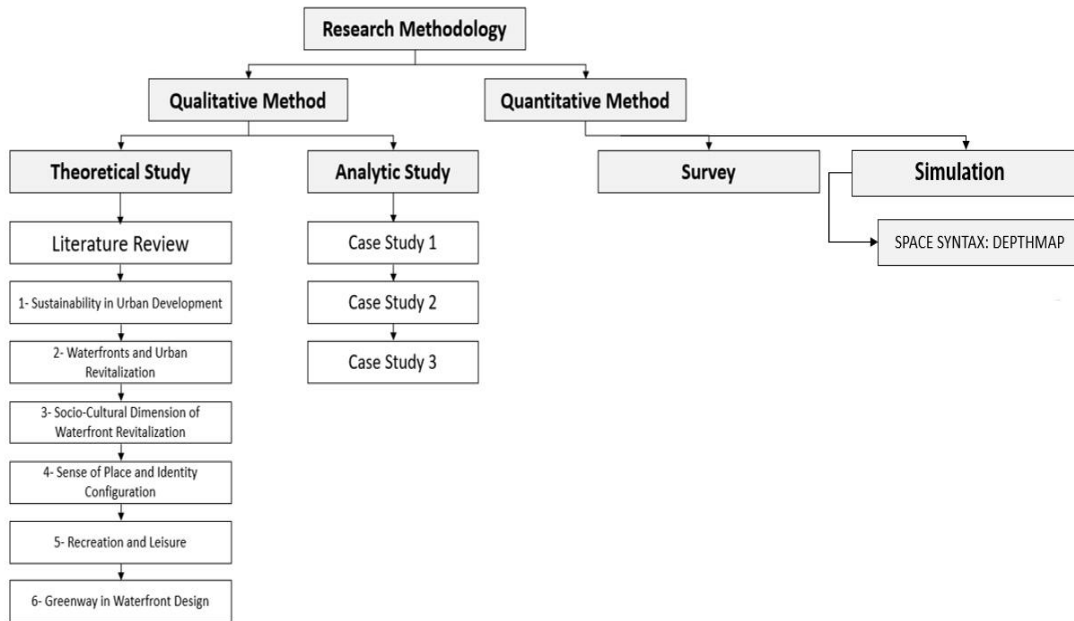
Greenways are linear open areas such as waterways and attractive roads that run along waterfronts or slopes, and have been transformed into recreational paths. They are characterized variably in terms of concept as well as scope. The scopes of these greenways differ because they serve diverse purposes. Greenways are classified into various classes based on the estimates of scientists and planners working toward various objectives, as following:

- Greenways for recreation: They are the locations that possess the properties of many types of roads and paths and extend onto a very long line. These paths are developed along roads and paths that travel across recreational areas that are often related to water and landscape assets with considerable visual value.

- Natural corridors of environmental significance: they are the corridors established by the areas typically along the waterfront. These types of places allow for the preservation of biological variety.

- Greenways of visual and historic significance: these are the greenways that draw visitors, give financial, cultural, and visual advantages, as well as offer permanent-seasonal accommodation. They are mostly routes along roads or highways, with just a few exceptions being routes along waterways (Salici, 2013).

The research employs a mixed method approach, where both qualitative and quantitative methods are applied. The first part of the study, being qualitative, is based on theoretical study and the analysis of three case studies that present waterfront revitalization approaches using landscape design in similar conditions. The second part of the research is quantitative and consists of both a survey and simulations to understand the various struggles and problems that the residents of the zone of study suffer from and to propose solutions.

2. METHODOLOGY

The research methodology is based on both qualitative and quantitative methods. The first is built on the theoretical examination of different literature and case studies that discuss enhancement of socio-cultural conditions through greenway design in waterfront revitalization. As for the latter, it was based on a survey and on simulations that measure space connectivity and microclimate changes.

2.1. Theoretical Background

The main focus of this section is to establish an understanding of waterfront revitalization strategies and the role of landscape design in enhancing deteriorating heritage sites based on international research. The water's impact as a design factor in urban areas is introduced and analyzed, followed by a definition of the waterfront region and its importance in urban planning. Waterfront revitalization is then explained, its different typologies and features are listed and analyzed along with the various advantages and disadvantages that revitalization could bring. The criteria necessary to a sustainable urban development are then theoretically explained further. Waterfront landscape planning is the section that follows and it incorporates a definition about urban landscape followed by the structure and features of a waterfront landscape and its means of development and finally greenway in waterfront design is defined and explained.

2.2. Case Study Analysis

Three case studies were analyzed, of which one is an example of waterfront revitalization, and the other two are parks that incorporate greenways and have successfully managed to improve the social and cultural conditions of the communities they are situated in. A conclusion is made on what are the most effective and successful approaches in revitalizing waterfronts through landscape design and on what are the solutions regarding the enhancement of socio-cultural conditions of a waterfront.

2.3. Survey

A survey has been conducted to understand the various struggles and problems that the residents of the zone of study suffer from and the areas of improvement that could potentially enhance the quality of life and conditions of the inhabitants of the current zone. A conclusion is then made on what are the most prominent problems that the residents of the site are concerned about.
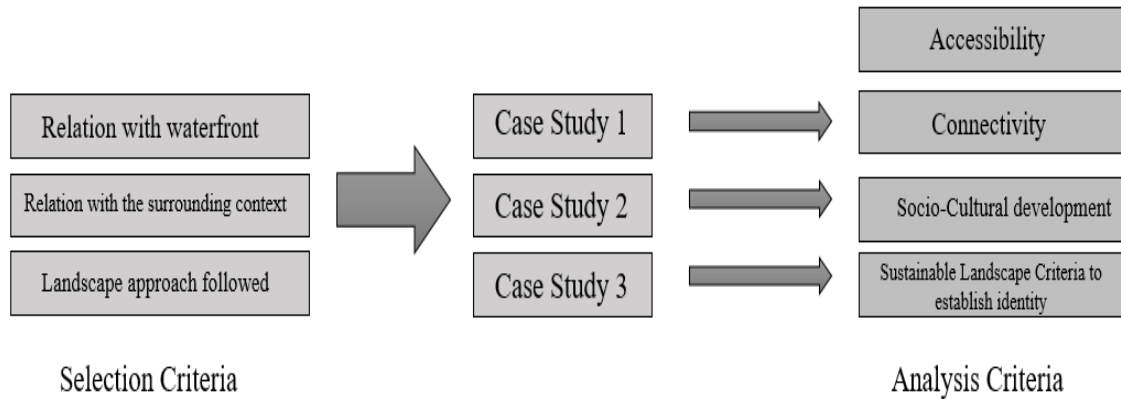
2.4. Simulation

The proposed designs were tested through simulation software in order to select the optimum design solutions and deal with environmental situations and challenges. The connectivity of the proposed landscape designs were tested on Depthmap.

3. CASE STUDIES

The main criteria for choosing case studies would be waterfront revitalization that has been established adjacent the city's center. The second criteria is based on the landscape design approaches that are applied to enhance the quality of life and revitalize the waterfront and how well these strategies are linked with the existing urban fabric.

The points taken into consideration when analyzing the case studies are as follow:
- Relation with waterfront
- Relation with the surrounding context
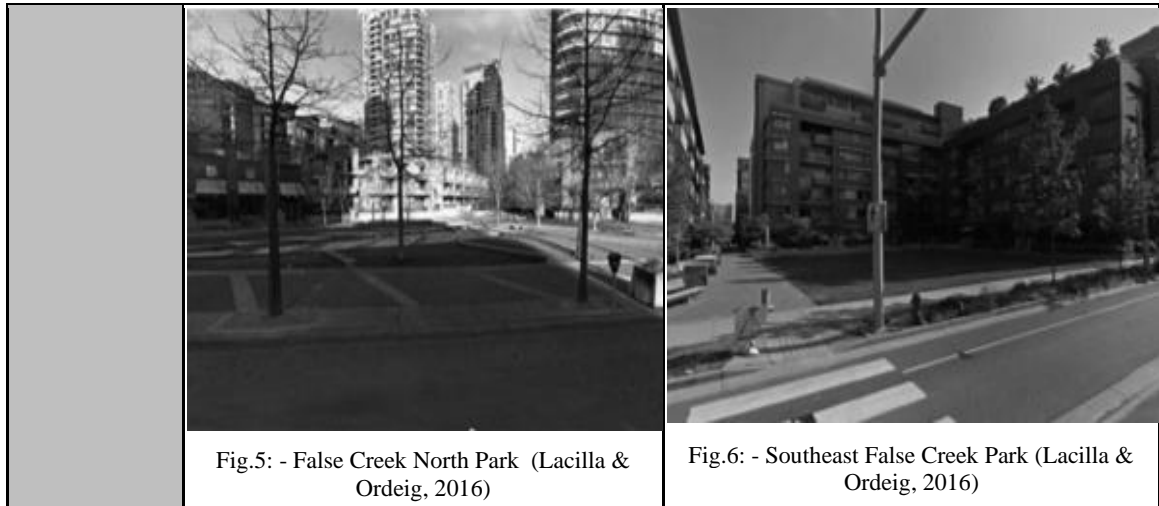- Landscape approach followed to solve the site's problems and revitalize the waterfront.

The case study analysis was based on comparative analysis regarding how well they manage to achieve the following requirements:
- Accessibility
- Connectivity
- Socio-Cultural development
-

Table 1: Showing approaches followed in both case studies (Author, 2022)

Approaches followed related to specific criteria	Orikum Waterfront Urban Development (Nepravishta et al., 2014)	Jeddah Waterfront Development (Mostafa, 2017)
Connectivity	Expanding the community further towards seaside shoreline and on both ends of the river waterfront. Using parks to set limitations for the city's development.	Link the waterfront as a single design unit with many purposes, as well as public and social services. Connect the waterfront to the existing urban fabric which enables the creation of visual corridors and enhances the connection of residents to the waterfront.
Accessibility	Pedestrian pathways are utilized, whereas buses for visitors and cyclists would be taken from the city till the start of the tours.	Implement authorized transportation studies to improve traffic flow in the cornice region. Open entry will be increased, as will accessibility to waterfront properties, and new links will be built.
	The major promenade design idea includes greenery, parks, leisure, service businesses, resting spaces, educational pavilions, an archaeological museum, as well as other sociocultural events. The promenade links significant portions of the city, resulting in a rich place with social and cultural activities.	The establishment of a walkway, and minor paths, along with green areas for peaceful observation, active play, and recreation places, enabled the creation of recreational activities. Creating mixed-use zones that cater the needs and interests of individuals from all age groups and backgrounds.

Socio-Cultural Development	 Fig.1: - Archeological Site of Orikum (Nepravishta & Vokshi, 2013)	 Fig.2: - Jeddah waterfront development (Mostafa, 2017)
Sustainable Waterfront Criteria to establish identity	Vancouver, Canada (Lacilla & Ordeig, 2016)	
	False Creek North	Southeast False Creek
Greenway Design	The greenway's design complements the urban fabric at the cost of the riverside and any significant connection with the water feature that is limited to a reflective role. The design enables various sorts of individuals to use the space for both leisure and transportation, including cyclists and pedestrians. Fig.3: - False Creek North Greenway (Lacilla & Ordeig, 2016)	The project preserves the current shoreline's morphology while preserving the park's ecological character, and offering additional recreational services. Identity is created through maintaining strong visible and physical linkages between the waterfront and the residential neighborhood, and landscaping the water border with vegetation and urban elements that represent the place's historical purpose. Fig.4: - Southeast False Creek Greenway (Lacilla & Ordeig, 2016)
Sustainable Waterfront Criteria to establish identity	Vancouver, Canada (Lacilla & Ordeig, 2016)	
	False Creek North	Southeast False Creek
Public Park Design	The geometric shape of the parks is influenced by the urban fabric. Despite their proximity to the sea, they are solely used for social purposes such as relaxing and playing.	Visually the parks seem to be one park since they stretch sequentially along the coastal promenade. Achieving passive and active enjoyment, and ecological sustainability.

Fig.5: - False Creek North Park (Lacilla & Ordeig, 2016)

Fig.6: - Southeast False Creek Park (Lacilla & Ordeig, 2016)

4. APPLIED STUDY

A Cultural Park was proposed on the waterfront of El-Mina, Tripoli as an application.

4.1. Site Selection Criteria

The selected lot area is about 23,000 square meters along with the cafeteria's lot which is about 400 square meters. The main lot is easily accessible through the cornice's highway and is characterized by its location on the waterfront, an active pedestrian flow at the cornice's walkway, visibility of the historical city and the modern part of the city and its connection with the park (Municipality Park) that faces the main highway.

Fig.7: - Site location and pictures (Author, 2022)

4.2. Urban Analysis

Based on the urban analysis that have been done, the area under study suffers from a lack of public spaces and greenery as it is evident that the amount of greenery in El-Mina is much less than its adjacent city, Tripoli (see figure 9). Figure 8 showing land use indicates that there are a very few entertainment activities and public parks that can be found in the area under study. In addition, most buildings in the area of study are residential buildings with commercial activity in their GFs.
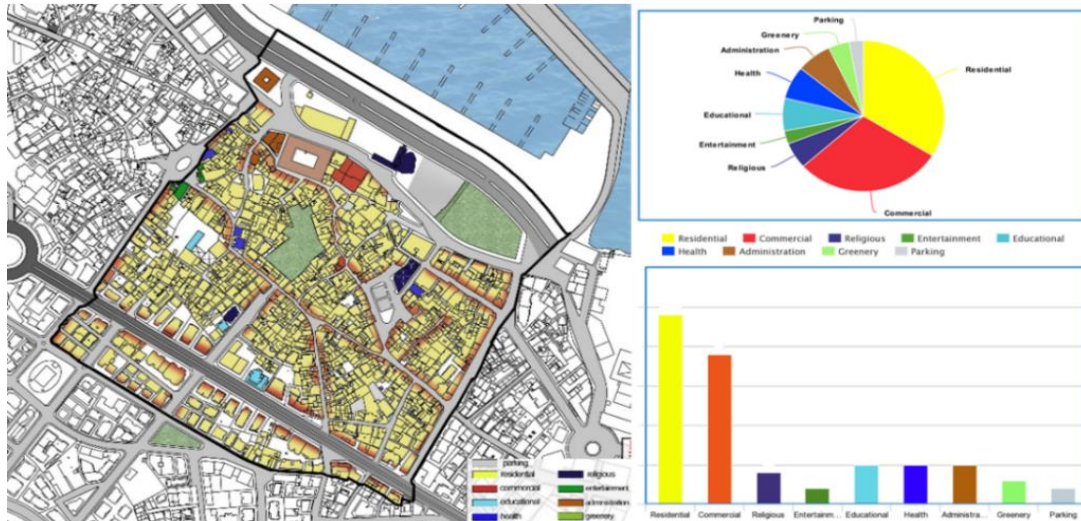

Fig.8: – Land use in the area of study (Author, 2021)

Fig.9: - Greenery in the area of study (Author, 2021)

4.3. Survey Results

The survey took place in October 2021 and was completed through Google Forms and was conducted to understand the various struggles and problems that the residents of the zone of study suffer from and the areas of improvement that could potentially enhance the quality of life and conditions of the inhabitants of the current zone. The total numbers of interviewees is 55 participants including 33 females and 22 males.

The questionnaire was divided into seven different sections to better understand and then analyze the problems the residents face on a regular basis. The sections include the social and economic status, health, services, safety along with activities and leisure. Some of the questions regarding social gatherings and activities are as following:

- Q1- Do your friends and/or relatives reside in El-Mina?
- Q2- What type of places do you usually hang out at?
- Q3- Do you feel a sense of belonging to El-Mina?
- Q4- Do you include recreational activities in your daily routine?
- Q5- Do you think there's enough activities in the area?
- Q6- What type of activities do you wish to see in the area?
- Q7- Do you frequent a public park in the area?
- Q8- Which public park do you usually visit?
- Q9- How many times do you visit?
- Q10- Who do you go with?
- Q11- How much time do you usually spend there?
- Q12- What type of transportation do you use to reach the park?

According to the results, a main problem the residents have faced was an evident shortage in entertainment and gathering spaces, which resulted in them meeting with family or friends at their own residences rather than frequenting a public space.

Table 2: Showing the survey conclusions regarding social status and activities in the area of study (Author, 2022)

SECTOR	CONCLUSION
Social Status	- Majority of the residents feel attached to the city and its culture - There's not enough gathering spaces in the area since most of the individuals choose to gather at their own residences.
Activities	- There's not enough activities in the area of study - There's not much public parks in the area - There is a lack in recreational activities - Most people incorporate activities in their weekly routines

4.4. Simulation: Space Syntax (Depthmap)

DepthmapX was the software used to test the connectivity of the proposed landscape designs in order to pick the most suitable solution that enables to link the waterfront to the existing urban fabric.
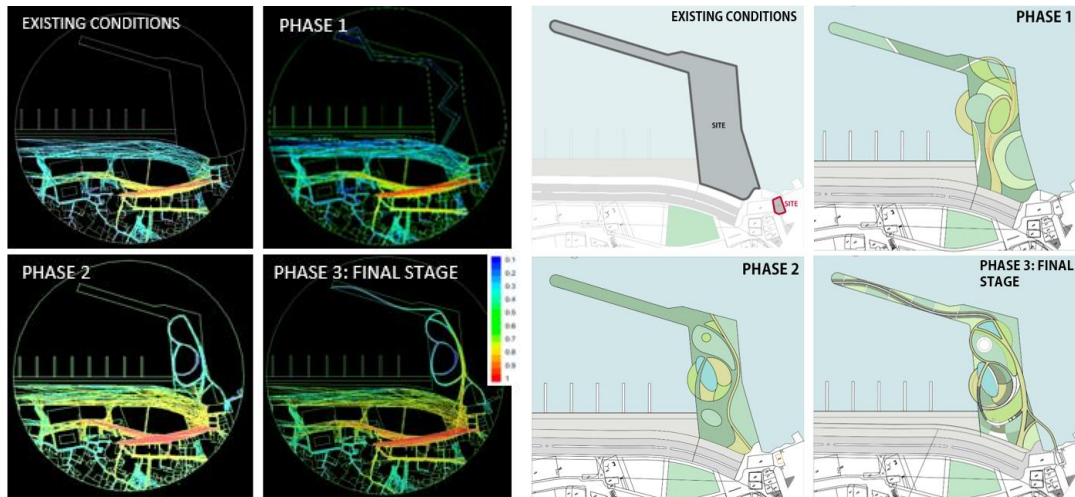
Fig.10:- Design phases and their tested connectivity on space synthax (Author, 2022)

Phase 3 proved to be the most appropriate proposal for the Cultural Park since not only does it connect the Park to the city but it enables full connectivity of the area of study to the chosen lot. It also enables full accessibility from the waterfront pedestrian walkway to the very end of the lot, where the promenade is situated.

5.5. Project Design and Layout
5.5.1. Philosophical Idea

The Cultural Park was proposed to implement a new community and event landscape on the city's waterfront, with geometries and tales inspired by El-Mina's relationship with the sea. Through several civilizations and conflicts, its continuous flow gave benefits to the city's occupants in the form of trade, fishing, and seashells. The eastward currents of the Mediterranean transported a diverse range of people from its coastlines to El-Mina, resulting in a cultural siltation and multicultural mix unlike any other metropolis in the world. It is a green oasis for the entire community inside the complex city fabric, a unique and memorable attraction in an expanding neighborhood, and a space for individualized enjoyment, rest, and community within the context of urban living.

Fig.11: - Mass Plan showing the Cultural Park and Restaurant (Author, 2022)

Fig.12: - Elevations (Author, 2022)

5.5.2. Social Sustainability

Gathering spaces such as seating areas, plazas, booths, outdoor art exhibitions are provided throughout the landscape and enable users to exchange cultural interactions and to experience the culture of El-Mina through local art that is showcased within the outdoor zones.

Fig.13: - Elevation showing different zones of the landscape (Author, 2022)

Fig.14: - Social Sustainability Diagram (Author, 2022)

Fig.15: - Perspectives showing different areas of the landscape (Author, 2022)

5.5.3. Environmental Sustainability

Artificial trees hold solar panels, turn the sun power into electricity then channel it to the digital information panel, Wi-Fi and outdoor phone charger for users. This also can be managed in the control room in the basement and could provide power for the outdoor landscape art element. Permeable pavement was also used to enable the collection of storm water runoff along vegetation that enables to cool the microclimate and provide shade and privacy for users.
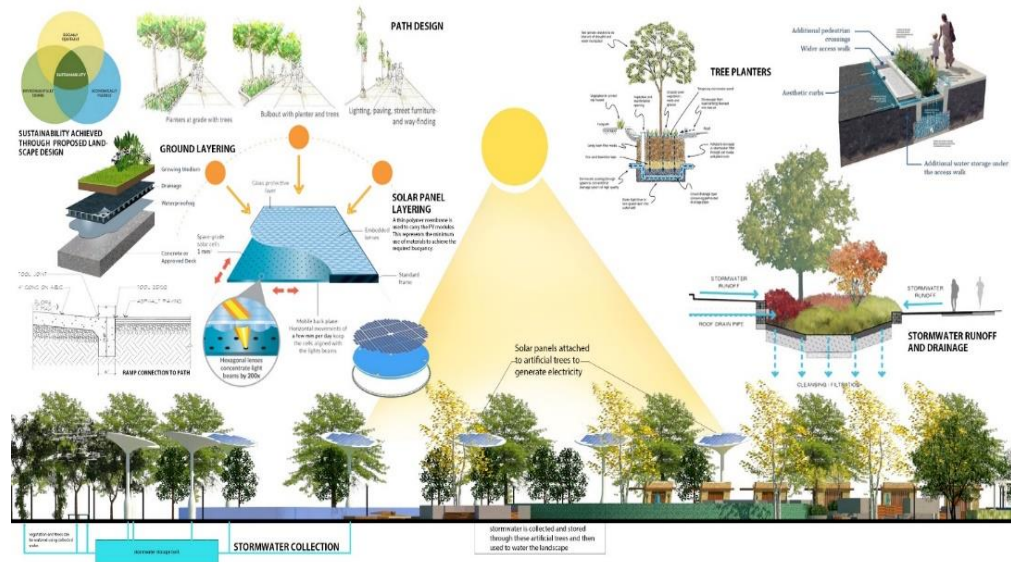

Fig.16: - Environmental Study (Author, 2022)

6. CONCLUSION AND RECOMMENDATIONS

The concept of waterfront revitalization has been a popular idea in the area of urban planning, particularly in recent years. The amount of reliance on water, as well as the possible implications, are decided by the preferences and opinions of individuals involved. Furthermore, the waterfront should represent the culture of the town in which it is located and should provide recreational activities that inhabitants of all ages and backgrounds require and are interested in. And while greenways are corridors that link culturally significant locations and contribute to the

city's character, they allow for the attraction of tourists while also providing economic, cultural, social and visual benefits.

This research investigated the revitalization of the waterfront through the design of greenways in order to create socio-cultural opportunities for the area of study and better improve the quality of life of its residents. The survey's results showed that the zone under study suffers from a lack a greenery and the absence of outdoor activities. Although most survey participants responded with feeling attached to El-Mina and its culture, there are not many gathering spaces for them to meet at and as a consequence they gather at their own residences. As for the activities that take place in the area of study, survey results show that there aren't enough recreational and cultural activities in the zone which affects residents' lives negatively since the majority incorporates such activities in their daily lives.

On the other hand, this research also discussed greenways and their importance on a city's waterfront and what they offer as advantages to improve the quality of public life of a deteriorating environment. Greenways help revitalizing waterfronts by allowing locations to be used for a different range of purposes. These opportunities will enable to draw visitors and residents of the surrounding context from all groups and backgrounds, give financial, cultural, and visual advantages, as well as offer permanent-seasonal accommodation. They also help increasing the connectivity of the waterfront to the existent urban fabric of a city, more specifically El-Mina, Tripoli in Lebanon.

However, these findings cannot be generalized to all waterfronts as it was based on a deteriorating environment with a heritage surrounding. The same study needs to be conducted on a lively waterfront to see if there's any similarities when it comes to enhancing social and cultural conditions of the community.

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