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URBAN WATERFRONT REVITALIZATION AS A REGENERATIVE TOOL OF SUSTAINABLE CITIES

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Abstract

Waterfronts are regarded as one of the most crucial components of urban development as they connect water elements to the urban fabric. They provide residents with opportunities to engage in essential waterfront activities, which contribute to the area's social, economic, urban, and environmental importance. Urban places with waterfronts are more valuable and help people visualize certain scenes in their mind maps. Egypt boasts numerous waterfronts with distinct locations, particularly Port Said city, which overlooks the Suez Canal along the city's tourist walkway. This significant site is considered the cornerstone of the world and the meeting point of the continents of Asia and Africa. It holds a prominent position locally and globally in terms of global transport and trade, playing a vital role in achieving economic and environmental sustainability. Additionally, it holds historical value. However, despite these attributes, it faces various urban, economic, and environmental challenges. Consequently, the research idea emerged, highlighting the necessity of adopting a sustainable strategy to regenerate this vital area in terms of urban, economic, environmental, and social aspects while preserving its heritage and historical value. The research emphasizes three main aspects: firstly, a theoretical study that encompasses the definition and principles of urban waterfronts; secondly, an analytical study of one of the best international waterfronts worldwide (Kyrenia waterfront); and finally, an applied study that applies the most important criteria derived from the analytical study to the port said waterfront, with the aim of achieving a sustainable waterfront.

Keywords

Urban Waterfront, Urban Fabric, Waterfront Regeneration, Sustainable Walkway

1. INTRODUCTION

Sustainable cities can be identified by their approaches to sustainable waterfronts. Every city is experimenting with fresh approaches to solve a specific problem in environmental friendly waterfront development. Egyptian waterfronts do not satisfy the standards needed to achieve sustainability objectives, which has a negative impact on the built environment's aesthetic value and degrades the appearance of the majority of Egyptian cities. Therefore, this paper aims to find sustainable solutions to one of the most important waterfronts in Egypt, which considered as a global waterfront to all continentals it is Port Said waterfront, in order to achieve sustainable iconic waterfront.

1.1 Research Problem

Despite the multiplicity of capabilities and advantages of the waterfront area in Port Said, it suffers from problems at the urban, environmental and social levels, which negatively impacts the achievement an overall sustainable urban design that strips its ability to achieve sustainability at the global level.

1.2 Research Objectives:

The main objective of this paper is to emphasize the role plays by urban waterfront and develop the touristic walkway for Port Said in a sustainable way to be a hub to support urban, environmental, economic, tourism, and social development. This objective will be achieved through secondary objectives (figure 1) which represented in:

- Preserving historical buildings which have an architectural value from the colonial period and is considered as a part of the identity of this city, a symbol of heritage.
- Improving the visual image of a city by reference to cultural and economic activities.
- Creating new interactive activities for the walkway users to encourage them to achieve social and economic sustainability.
- Developing the visual impact of the region through soft scape and hardscape elements to strengthen mental images of the region.

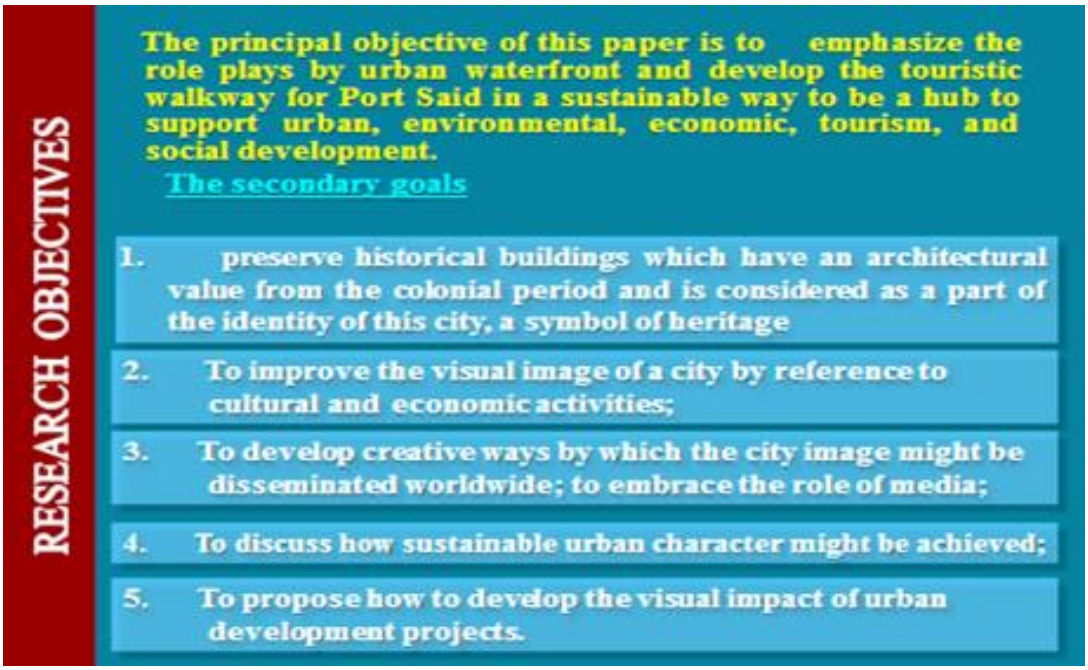

Fig.1: shows the research objectives
Source: the Author

1.3 SCIENTIFIC ADDITION:

The scientific addition of the research is creating an iconic resilient waterfront in sustainable urban fabric at Port Said City that preserves the cultural and heritage identity of this vital area.

2. RESEARCH METHOD

The research methodology is based on three approaches: theoretical, analytical studies, and applied studies. The theoretical one deals with the definition of waterfronts, and the importance of connecting them with urban fabric, and urban waterfront regeneration.

The second approach , which is the analytical study, which shed light on how the concept of "sustainable waterfront "was developed through case studies then conclude the most important criteria to achieve such a sustainable waterfront. The third approach depends on an applied study on Egyptian city "Port Said "to achieve a sustainable hub by sustainable waterfront and entails field trip to the region and present a questionnaire to random samples of visitors to the walkway to identify their top needs and meet those needs in accordance with the solutions that have been suggested to achieve sustainability. (Figure 2).

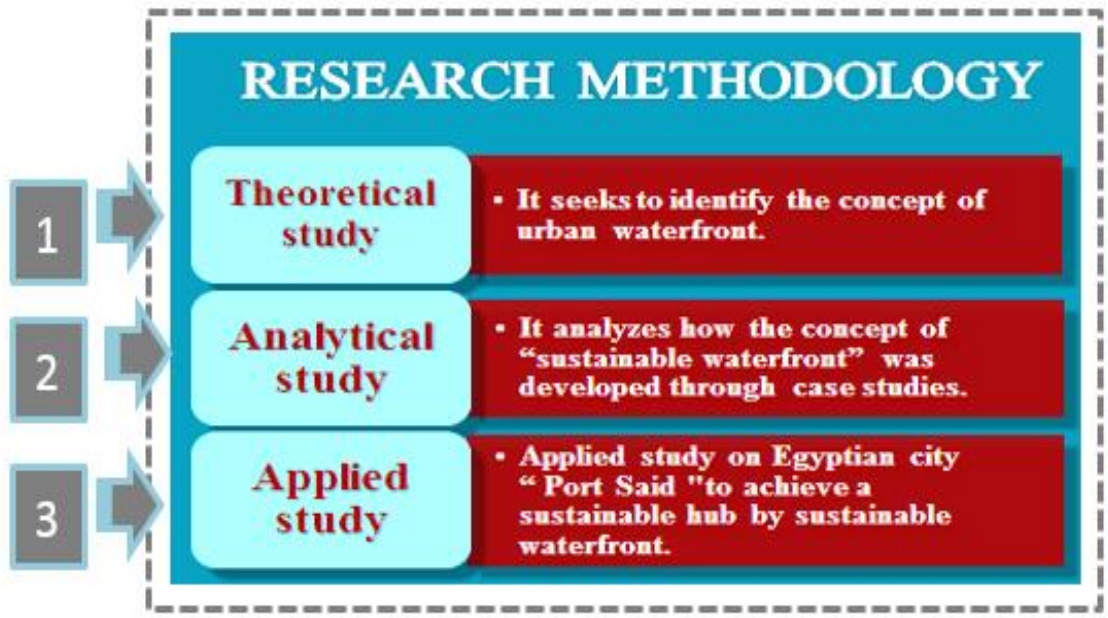

Fig.2: shows the research methodology
Source: the Author

3. WATERFRONT DEFINITION

The urban area that is directly adjacent to the water is referred to as the "waterfront"[1], Anonymous. (2013i). Port infrastructure and port activities typically occupy waterfront areas. Yasin *et al.* (2010) stated that the waterfront is widely understood to be the place where urban growth meets water. [2]. Hou (2009) described the waterfront as the meeting point of land and water. [3]. Waterfront refers to the edge of the water in any size of city or municipality. A river, lake, ocean, bay, creek, or canal could be the body of water." or artificial.[4] (Shaziman et al., 2010)

4. URBAN WATERFRONT

Urban waterfronts have traditionally served as a center for trade, commerce, and transit. (Ferri, B.; Maturo, 2012)[5] They are always in close contact with one another by promptly reflecting any change in social, economic, industrial environmental or historical conditions. Water in urban environments has both aesthetic and practical impacts. They include goals for enjoyment, noise reduction, circulation impacts, and climatic comfort. By increasing the amount of moisture in an environment, water surfaces chill the air. It is crucial, especially with a continental climate. Water is also utilized to purify the air outside. Regional-scale wide water surfaces control the temperature of the surrounding areas. Because of the visual and climatic benefits of water, urban areas in these regions place a high value on this feature. (Figure 3).

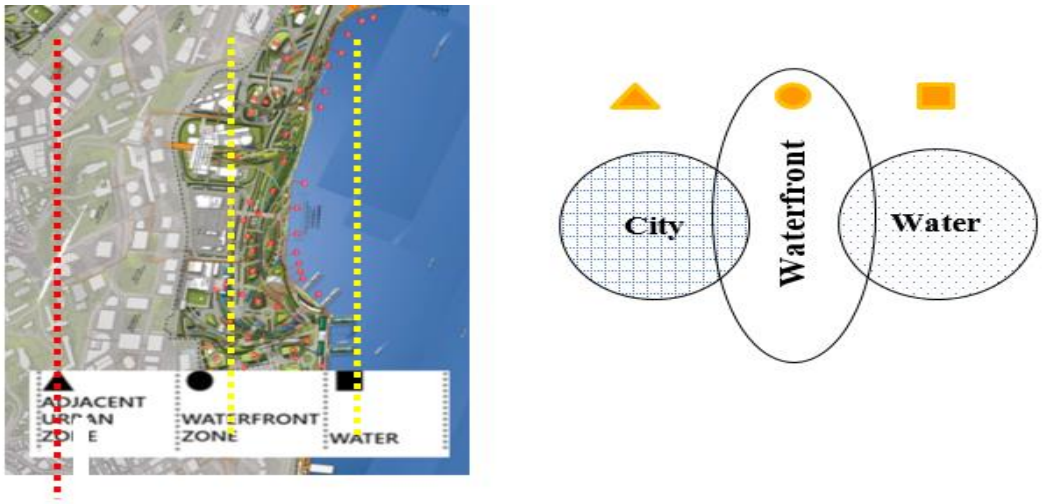

Fig.3: shows Conceptual Diagram for understanding the waterfront area
Source: the author

Waterfronts must be reconnected to the urban fabric as part of waterfront development plans. That is to say, new waterfronts ought to be viewed as an essential component of the already-existing cities and as a source of its energy. So, these plans should be focused on overall urban planning development while simultaneously preserving the features of public areas. (Benson, 2002; Giovinazzi & Moretti, 2010; [6]Hou, 2009). Beside, waterfront green areas should be regarded as part of the overall city system. Also, since water is a natural component of the urban environment, it should serve a variety of purposes, including recreation, culture, aesthetics, and transportation on the water. (Giovinazzi & Moretti, 2010). (Figure 4).

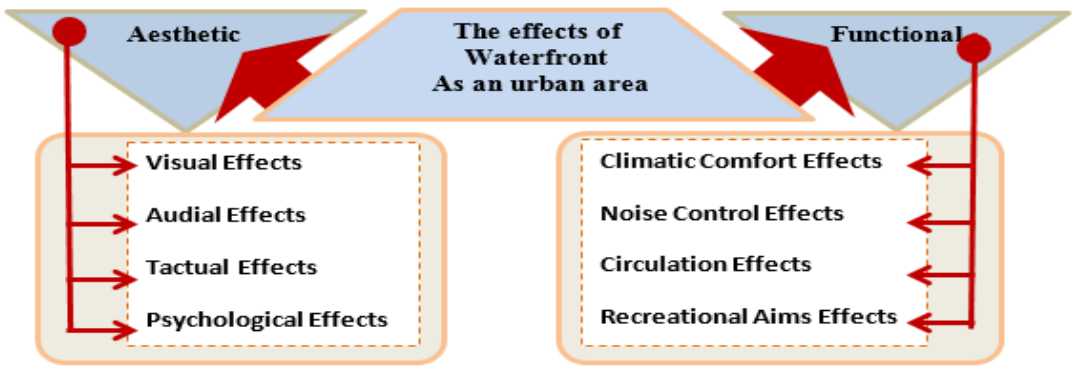

Fig.4: adapted from Onen (2007), the effects of waterfront as a planning element in urban area.
Source: the author

5. URBAN WATERFRONT REGENERATION:

Urban waterfront regeneration is a phenomenon with a worldwide scope that helps the community in terms of social, economic, and environmental factors.7 Urban waterfront regeneration is the process of transforming former industrial or derelict waterfronts into new, mixed-use areas that promote economic development, environmental sustainability, and community vitality. Waterfronts have long been important economic and cultural centers, but they often fell into decline as shipping and manufacturing moved to other locations. In recent decades, however, many cities have begun to revitalize their waterfronts through a variety of strategies, including:

- Redeveloping old industrial sites into new commercial, residential, and recreational space
- Creating parks and greenspaces to improve public access to the waterfront and provide a place for people to relax and enjoy the outdoors
- Investing in infrastructure such as roads, bridges, and public transportation to make the waterfront more accessible
- Promoting tourism to attract visitors to the waterfront and generate economic activity

Urban waterfront regeneration can have a number of benefits for cities, including:

- Economic development: New development on the waterfront can create jobs, boost tax revenue, and attract new businesses and residents to the city.
- Environmental sustainability: By cleaning up polluted waterfronts and creating new greenspaces, waterfront regeneration can improve air and water quality, reduce greenhouse gas emissions, and promote biodiversity.
- Community vitality: Waterfront regeneration can create new public spaces where people can gather, socialize, and participate in activities such as walking, biking, fishing, and boating. This can help to build stronger communities and improve the quality of life for residents.
- Waterfront regeneration is a complex and challenging process, but it can be a successful way to transform underutilized waterfront areas into vibrant, mixed-use communities that benefit both the city and its residents

According to Papatheochari (2011)[8], the most obvious benefits urban waterfront regenerations are:

- The preservation of local and historical heritage, as well as the reuse of, historic building,
- Strengthen the social relationship among people.
- The enhancement of water quality and ecosystem through the use of modern management techniques.
- Creating new activities connected with the relationship between water and the city.
- Providing new uses, jobs, and activities.
- The improvement of the environmental and economic conditions.
- Attracting tourists at the regional, nationally and internationally level.

In addition to the benefits indicated, urban waterfront rehabilitation may also have certain threats and drawbacks. The following list outlines the disadvantages and negative points of waterfront regeneration according to Morena (2011)[9]:

- Frequently, the outcome causes a form of disorientation in which the location's identity is lost.

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- An overabundance of commercial and tourist functions; the dominance of these over residential and productive activities poses a significant risk because these locations are typically only used on the weekends and for a few hours each day. When planning for the project area is complete, residential usage as an additional commercial and tourism attraction should be introduced in order to ensure its long-term viability (Morena, 2011).
- The area surrounding residential areas should be diverse (mixed uses) in both social and functional ways (Giovinazzi & Moretti, 2010).
- High profit margins are prioritized over producing goods of exceptional quality (Moretti, 2008).

6. ANALYTICAL STUDY: CASE STUDYOF KYRENIA -CYPRUS

The Northern Cyprus waterfront at Kyrenia is the subject of this study. Kyrenia is a city with both historical and natural attractions. Hotels, educational facilities, art, cultural, and event centers, as well as a significant number of tourist attractions, have all been constructed there.[10] (Figure 5).Location: Kyrenia, North Cyprus, Area: 4000 m2[11]

Fig.5: shows Kyrenia waterfront location and surround urban context, and Kyrenia Waterfront after development.

Source: Do ˘ga Üzümcüo ˘glu * and Mukaddes Polay,Article,The Assessment of Creative Waterfronts: A Case Study of the Kyrenia Waterfront,Department of Architecture, Eastern Mediterranean University, Famagusta 99628, Turkey,2022,* Correspondence: 15600171@emu.edu.t

Aspects and Variables of Kyrenia Waterfront Case Study after Development

The Kyrenia waterfront is a popular tourist destination in North Cyprus. In recent years, the waterfront has undergone a major redevelopment project that has transformed it into a modern, pedestrian-friendly waterfront with a variety of attractions [12](Do˘ga Üzümcüo ˘glu, 2022) including:

- A new promenade with stunning views of the Mediterranean Sea.
- A public square with fountains and seating.
- A children's playground.
- A number of restaurants and cafes.
- A marina for yachts and boats.

The redevelopment of the Kyrenia waterfront has had a number of positive impacts on the local area, including:

- Increased tourism.
- Increased economic activity.
- Improved environmental quality.
- Enhanced community pride.

The following are some of the key aspects and variables of the Kyrenia waterfront case study after development:

Aspects

- Tourism: The redevelopment of the Kyrenia waterfront has led to a significant increase in tourism to the area. In 2019, the number of tourists visiting Kyrenia increased by 20% compared to the previous year.
- Economic activity: The redevelopment of the Kyrenia waterfront has also led to an increase in economic activity in the area. The new businesses and attractions that have been created on the waterfront have created jobs and boosted tax revenue for the local government.
- Environmental quality: The redevelopment of the Kyrenia waterfront has also improved the environmental quality of the area. The new promenade and public square have created a more attractive and welcoming environment for visitors and residents alike. The new marina has also helped to improve water quality in the area.
- Community pride: The redevelopment of the Kyrenia waterfront has also boosted community pride in the area. Residents are proud of the new waterfront and are more likely to spend time in the area.

Variables

- Location: The Kyrenia waterfront is located in a prime location on the Mediterranean coast. This makes it an attractive destination for tourists and businesses alike.
- History: The Kyrenia waterfront has a rich history dating back to the Byzantine period. This history adds to the appeal of the area and makes it a popular destination for tourists.
- Culture: The Kyrenia waterfront is located in a region with a rich culture. This culture is reflected in the architecture, food, and art of the area.
- Climate: The Kyrenia waterfront enjoys a mild Mediterranean climate. This makes it a popular destination for tourists year-round.

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The redevelopment of the Kyrenia waterfront is a successful example of how urban waterfront regeneration can be used to improve the economic, environmental, and social well-being of a community. The case study provides valuable insights into the factors that contribute to the success of urban waterfront regeneration projects. (Table 1).

Table 1: illustrate the aspects and variables of Kyrenia waterfront case study after development

Aspects	Variables
Promoting Entrepreneurship	The position provides economic advantages to several people. Entrepreneurs are welcomed to make investments there.
Protection of Culture	Accepting people from different linguistic and cultural backgrounds. The environment protects its unique qualities, historical context, and cultural heritage. The environment seems to be contemporary. There, users may feel the culture of the city. There are prospects for festivals there. Accessibility to local cuisine. Local arts are available. The quality of artistic efforts. The first picture has changed and been preserved.[13]
Physical Quality	The physical state is suitable. The setting looks contemporary.
Creative Activities	There is a wide range of artistic activities all around. Public amenities in the area are appropriate and adequate. The setting gives the creative class a respectable substitute place. The environment exemplifies Cyprus culture.
Quality of Life	The site is reachable. There, the user feels safe. The area is neat.
innovation	Opportunity to develop original thoughts. There are innovative ideas or artistic creations there. The employment of contemporary technology tools is prevalent, including the use of digital lighting systems, development labs, and/or simulation labs.
Functional	Along the waterfront, there are several worthwhile opportunities. Around the waterfront, there are jovial areas with music, food, books, dancing, and/or maritime history.
Physical	The waterfront is kept up beautifully. Many pieces of art that are in good physical condition can be found there. Physically sound urban furniture is available. Access to the shoreline is possible for both healthy and disabled people. There are plenty accessible public spaces nearby. It is simple to get to the beach on foot, a bicycle, or even using public transportation. The flow of traffic is good. Parking is not a problem.
Social	People from diverse socioeconomic origins, ages, races, and educational levels can enjoy the place. There are friendly spaces for mingling.[14] (Wuijts, S,2022)
Economic	The inexpensive and environmentally friendly design approach was considered during the development process. The area produces a substantial amount of economic revenue.
Politic support	With the aid of pertinent parties, the development process was finished. During the development process, policies pertaining to innovation, creativity, and/or social well-being were carefully considered. Legislators enact the necessary laws to provide continuing maintenance.
Creative Environment	Display potential of a space. Zones of performance that is appropriate. sufficient open and/or enclosed spaces that encourage artistic creation

After concluding the set of aspects and variables of Kyrenia waterfront case study, it can be used in the applied study and apply it on Port Said to achieve certain criteria.

7. APPLIED STUDY:" PORT SAID CITY- EGYPT"

Egypt is the sole land bridge that connects the two continents of Africa and Asia, and as the Red Sea and the Mediterranean are the two seas that separate the two continents, Egypt has direct access to both of these seas. Many ports and cities have grown along the two coasts as a result of their significant strategic location. The nation has created a port system based on traditional ports and the new circumstances primarily brought about by the opening of the Suez Canal[15] , together with 2000 kilometers of coastline. Because of this, the system is made up of a number of ports along the Mediterranean and Red Sea coasts. "PORT SAID" is one of the most significant strategic cities. Since its foundation, Port Said has been a global city. It has a number of benefits, including competitive advantages, which help it become a sustainable global metropolis. Africa and Asia are what the world corner saw. The most significant ports in Egypt on the Mediterranean Sea is Port Said which located 30 kilometers north of the Suez Canal in northeastern Egypt, along the Mediterranean Sea shore. The Suez Canal borders the fifth-largest city in Egypt. The canal, which connects Europe and the East, is regarded as one of the largest crossing traffic ports in the world. (Figure 6).

Area: 1,351.1 km2 (521.7 sq mi)

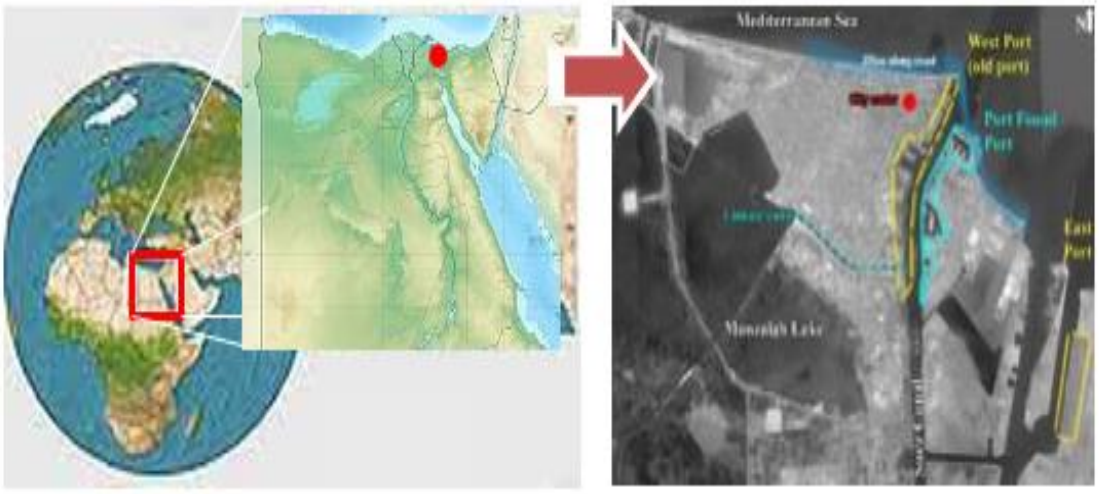

Fig.6: shows the location of Port Said City in Egypt
Source: Author from Google maps

At the national, regional, and local levels, Port-Said governorate constitutes a sizable and important portion of the administrative and political structure that is being challenged by commercial interests. The construction of the new east port, the Port-Said industrial zone, the El-Salam Canal, the Sahel Al-Tinah villages, the new tunnel south of Port-Said, the El-Salam Canal (which transfers Nile water to the Sinai peninsula), the Port-Said ring road, and the enlargement of the Suez Canal waterway are all part of this economic development. In fact, Port-Said benefits from a variety of potentials that could foster development, including location, climate, infrastructure, and tourism-related services and activities. These locations have development potential in terms of historical,

archaeological, military museums, nature, beaches, etc., but they are not yet sufficiently developed to draw frequent tourist traffic.

Distance: 1,351.1 km2 (521.7 sq. mi).

7.1 The Cornishe (Touristic Pedestriane) Documentation:

For the best views of the canal's entry point up close, go along the 8-kilometer elevated boardwalk that runs along the waterfront. The boardwalk used to be lined with modest stores offering everything from clothing to gadgets, but it will soon become an outdoor mall. (Figure 7, and8).

Fig.7. shows a documentation of Port Said touristic walkway.
Source: the Author.

Also Port Said is known as the Suez Canal terminal; a transshipment port for transit traffic in the Mediterranean region and one of the biggest container hub ports in the region [16] (Ades, 2017) it serves as a crucial hub for the Eastern Mediterranean region

- To enjoy a significant ratio between built-up areas and green spaces or urban voids [17]

- The waterfront's colonial architecture in Port Said and the port as an integral part of the city's design are closely related. [18]
- preserve the Suez Canal Historical Authority Building, which boasts colonial-era architecture and is regarded as a component of the city's character and a symbol of heritage. [19]
- The elevated pedestrian promenade next to the canal, which is indicative of the area's "port-city" urban characteristics.[20] (Pigna F. J 2014).

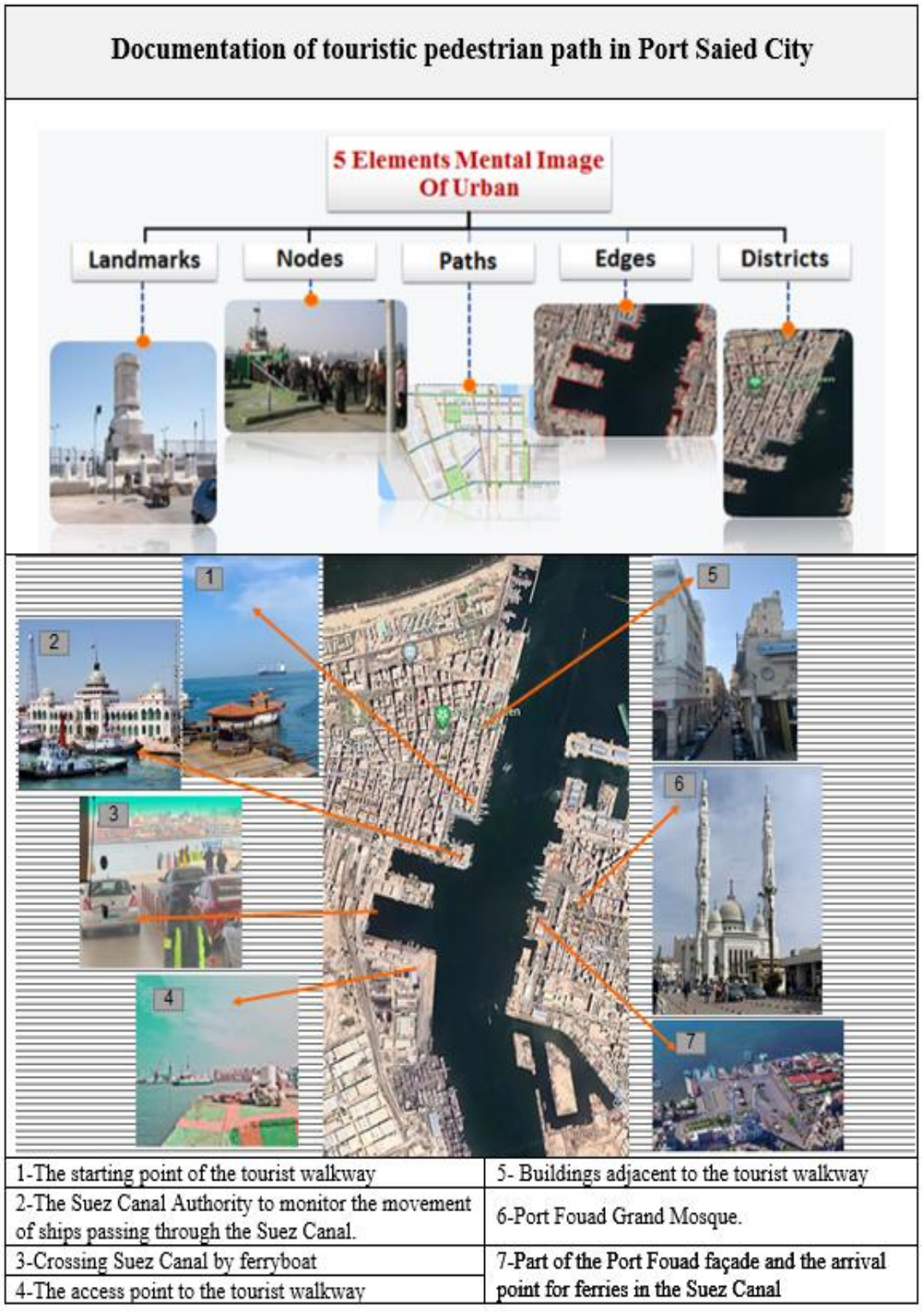

Fig.8. follow the documentation of Port Said touristic walkway
Source: Author – field visit

The following figure (Figure 9) illustrates a documentation of the visual image for Port Said Waterfront [landmark, path, node, edge, and district].

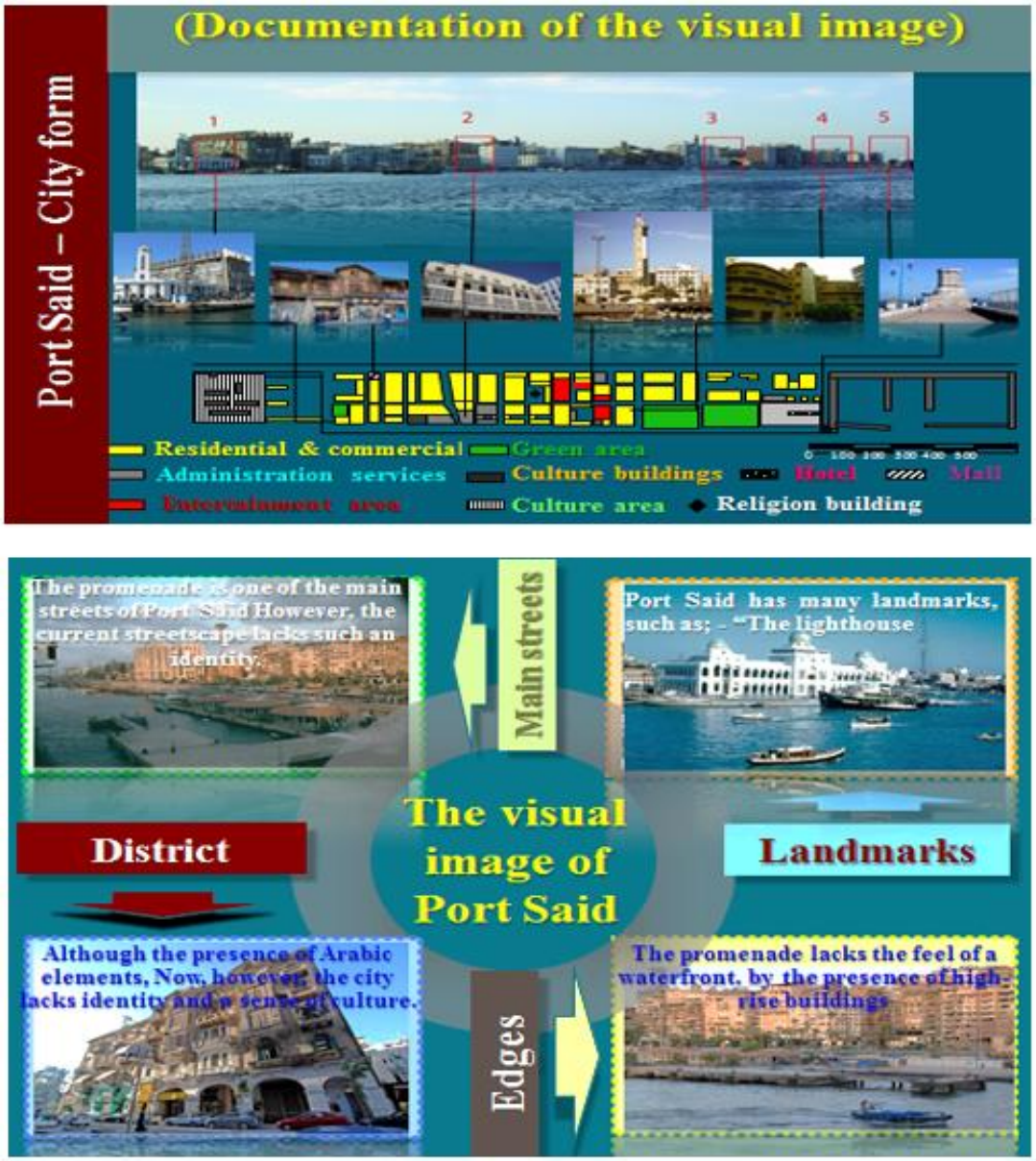

Fig.9: documentation of the visual image – Port Said City
Source: Author

7.2 Data Analysis of Port Said Waterfront:

A field survey and questionnaire were carried out to the studying area to identify the most important problems, and to out find users' needs through a questionnaire of random samples of the place visitors; in order to transform these negative points to positive points to evaluate the urban development potential and its obstacles along the Port Said Cornish to convert the urban disadvantages into advantages. Therefore, achieving the purpose of the research that is "to develop the tourist walkway for Port Said in a sustainable way to be a hub to support urban, environmental, economic, tourism, and social development as a developed urban base with assets of infrastructure, and tourism facilities and services the goal is to properly and efficiently utilize Port Said's touristy pedestrian area while minimizing unplanned expansion".

Based on observations and questionnaire with visitors, the Port Said Waterfront area has grown significantly more active and is now a hub for gatherings and refreshments as well as a potential investment location. The waterfront was mentioned by more than half of the users who were polled as a location with a sufficient quantity of artistic activities and events after solving current problems. Similar to this, half of the respondents thought that the waterfront offered chances for creativity and was a culturally significant location with welcoming spaces. Due to its high cultural quality and attraction to its users, particularly the creative class, it is conceivable to say that the Port Said Waterfront redevelopment has the ability to sufficiently contribute to the implementation of innovative and novel ideas as well as to a location of active urban life.

(As shown in figure 10).

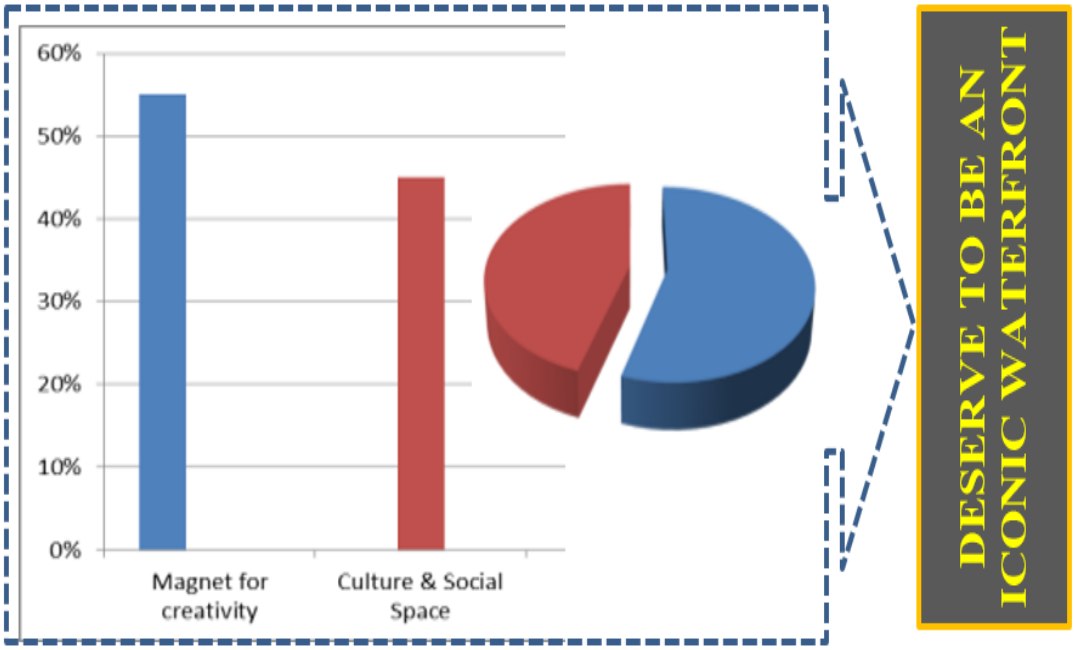

Fig.10: shows the result of questionnaire through the site visit.
Source: Author

After studying the current situation of the region, and deducing the weaknesses and strengths of the area (SWOT analysis) through the site visit, The research found many social, urban, economic, environmental and architectural problems which impede the achievement of sustainability .So the research proposed solutions to these problems drawn from different case studies around the world (as shown in tables No. 2, 3, 4, 5), a conclusion was made in order to achieve the suggestion strategy.

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7.2.1 Social aspects of Port Said waterfront (problems & suggested solutions):

Table 2: shows social aspects of port said waterfront (problems & suggested solutions)

	Problems		Solutions	
Social Aspects	Handicaps + Elderly		Using the stairs and the elevator for the needy and the handicapped	
	Street children and street vendors		Providing job opportunities for them, and allocating places for street vendors	
	Writing on the walls		putting high fines for violators	

Source: the Author through field visit.

7.2.2 Economic & environmental aspects of Port Said waterfront (problems & suggested Solutions):

Table 3: shows social aspects of Port Said waterfront (problems & suggested solutions)

	Problem		Solutions	
Economic& Environmental Aspects	Not utilizing renewable energy sources		Utilizing solar energy, renewable energies to achieve an environmentally friendly walkway	
	Beach uncleanlin ess		Allocating cleaners and setting up instructions and places designated for trash	
	Not exploiting the port		Making cruises and interactive activities	

Source: the Author through field visit.

7.2.3 Urban Aspects Of Port Said Waterfront (Problems & Suggested Solutions):

Table 4: shows urban aspects of port said waterfront (problems & suggested solutions)

	Problems		Solutions	
Urban Aspects	Bad Circlelation		Dividing the walkway components in a way that serves the users more easily	
	No shading area		Shadows are placed along the walkway. photovoltaic cells can be used intelligently exploit and save energy	
	No setting area		Putting seats along the walkway every certain distance and not neglecting the international measurements in them	
	No handrails		must be there a handrails along the walkway to help people and to protect against falls	
	No lighting elements		Putting lighting poles along the walkway and placing light cells on them	
	Too much Stairs		Distribute and reduce the number of stairs to improve appearance and ease of use	
	Parking under the sidewalk		Organizing and coordinating a parking lot under the walkway as wide as possible	

Source: the Author through field visit.

7.2.4 Architectural aspects of Port Said waterfront (problems & suggested solutions):

Table 5: shows urban aspects of Port Said waterfront (problems & suggested solutions)

	Problem		Solutions	
Architectural Aspects	Walkway front view		Improving the facade of the walkway and developing it to be a tourist interface	
	Not exploiting the area overlooking the sea		Improving the appearance overlooking the sea and maintaining it as an attractive tourist destination	
	Not renovating and exploiting abandoned places		Restoration and repair of old buildings and their exploitation	
	Its construction materials are different and worn out in some areas		The use of materials that are long-term and suitable for environmental conditions	
	Difficulty in communicating traffic paths to reach places		Corridors design and relationships to each other to ease accessibility and movement within the corridor.	
	Pavement cuts at small distances with inappropriate height		Putting sidewalks of bearing materials	

Source: the Author through field visit.

8. DESIGN CONSIDERATIONS AND PRINCIPLES OF SUSTAINABLE WATERFRONT

Based on the previous solutions for social, environmental, urban, and architectural aspects we can conclude resilient designs to achieve sustainability which supported with some of significant considerations represented in:

8.1 Achieving Good Water Quality and Environment:

The waterfront's accessibility and range of usage could be significantly impacted by the water quality (Al Ansari, 2009)[21]. For these reasons, the port system's water quality is a requirement for developments. Hence, water must be treated to ensure good water quality and to improve the general public's sense of smell. An important factor in dealing with space for public comfort and health is the aspect of a quality environment (Giovinazzi & Moretti 2010; Shaziman et al., 2010).

8.2 Waterfronts should be a Part of the Existing Urban Fabric:

Waterfronts should be connected to urban fabric. They should be considered as an integral part of the existing city and contribute to its vitality. Plans should therefore focus on urban planning while also preserving the qualities of public spaces (Benson, 2002; Giovinazzi & Moretti, 2010; Hou, 2009). In addition, the entire city system should be thought of as including waterfront green spaces (Kaynak).

8.3 Preserving the historic identity and character:

- Giving the waterfront redevelopment character and significance, it is important to draw on the collective heritage of the city and the water, as well as of events, landmarks, existing architecture, and wildlife. In post-industrial port cities, in particular, the preservation of the industrial history is a crucial component of sustainable rebuilding (Giovinazzi & Moretti, 2010). As a result, both the natural and cultural landscapes should be considered.
- Green spaces along the waterfront and cultural landscape should be merged. The continuity of the urban historical context will be offered in this way. Also, the landscape's vibrancy along the waterfront will be improved (Anonymous, 2013[22].

8.4 Strong mental images elements:

Water feature for example dancing fountains, landmarks in starting and ending points to the pedestrian, attractive activity, sitting areas to enjoy nice views along the canal.

8.5 Mixed use is a priority

To achieve social sustainability we should provide uses and functions that require access the water. Waterfronts should celebrate water by offering a diversity of cultural, commercial and entertainment uses (Giovinazzi & Moretti, 2010).

8.6 Public access is a prerequisite

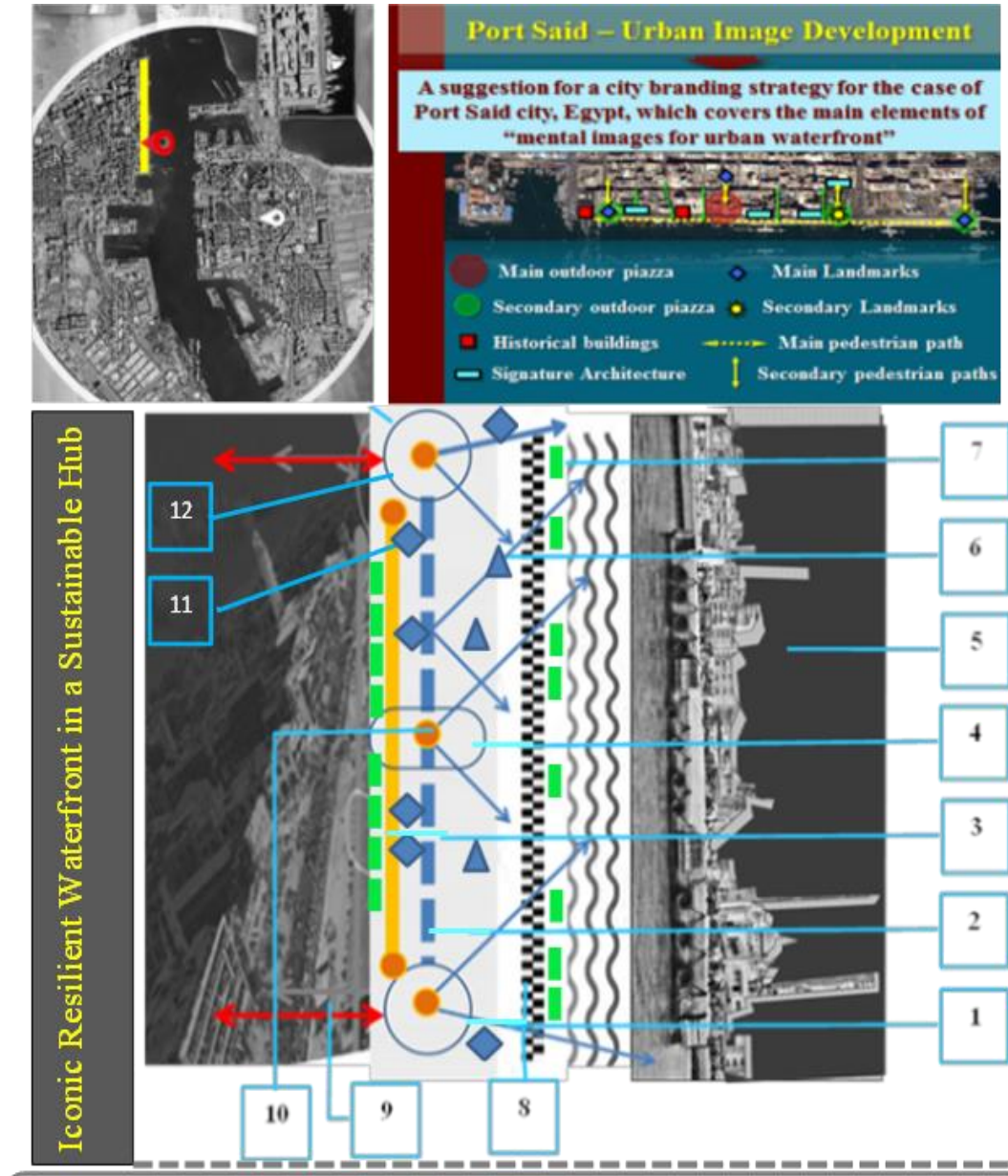
Bertsch (2008), as cited in Yassin et al. (2012)[23], the urban waterfront should not be isolated or separated from the urban context, to enable visitors to access the waterfront easily.

Waterfronts should always be physically and aesthetically accessible to residents and visitors of all ages and socioeconomic backgrounds.

- Public access, walkways and open spaces are vital importance to waterfront developments. According to Acosta (1990) these three elements are considered the base of waterfront regeneration (Dong, 2004) in order to connect the three formats: City-waterfront connectivity, inter-waterfront zone continuity and waterfront-water connectivity.

9. A FLEXIBLE STRATEGY TO ACHIEVE SUCH RESILIENT WATERFRONT AT PORT SAID CITY

The research suggested a flexible strategy consists of two parts the first is a resilient mapping for the touristic walkable waterfront with different activities according to users' needs and urban context .This mapping suggests focusing on 12 points of the main axis to achieve sustainable waterfront (Figure 11), then evaluated them in The second part in an evaluation table that analysis them before and after applications to ensure achieving sustainability.



1- STARTING POINT(PLAZA)	2-MAIN AXE (OPEN VIEW)	3- BYCECLE PATH
4- MID POINT(PLAZA)	5- STYLE & SKYLINE	6-ACTIVITIES
7-SOFTSCAPE	8-HARDSCAPE	9-CONNECTION TO URBAN FABRIC
10- WATEER FEATURES	11-GREEN ARC. ELEMENTS	12- ENDING POINT (PLAZA)

Fig.11: Shows suggesting a flexible strategy to achieve resilient waterfront at Port Said.
Source: Author

Table 6: shows suggesting a flexible strategy to achieve an iconic resilient waterfront at Port Said

BEFORE	•	• •	—
AFTER	1-STARTING POINT (PLAZA)	2-MAIN AXE (OPEN VIEW)	3-BYCECLE PATH
	MAIN PLAZA + LANDMARK+ WATER FEATURE (ATTRACTIVE GATHERING SPACE)	ATTRACTIVE PATH + OPEN VIEW TO CANAL+ (SHADED/ SIMI SHADED/ OPEN) WITH ACTIVITIES	DEDICATED BIKE PATH - SAFE SOLAR POWERED - DEFINED BY SHRUBS- OPEN VIEW
BEFORE	•	• •	•
AFTER	4-MID POINT (PLAZA)	5-ARCHITECTURAL STYLE & SKYLINE	6-ACTIVITIES
	GATHERING NODE DIERCTS TO MAIN ACTIVITIES. TRANSITION WITH LANDMARK/ FOUNTAINE	PRESERVE HERITAGE, CITY CHARACTER WITH UNIQUE SKYLINE.	SITTING AREA- READING- MUSIC FISHING – PHOTOGRAPHY- WALKING
BEFORE	—	•	•
AFTER	7-SOFTSCAPE	8-HARDSCAPE	9-CONNECTION TO URBAN FABRIC
	PALMS - AROMATIC FLOWERS – PLANTS THAT DON'T BLOCK THE VIEW	SOLAR UMBRELLAS - BENCHES - STONES - RAMPS - GUIDE SIGNS- LIGHTING SPOTS	TO BE AN INTEGRAL PART OF THE EXISTING CITY AND CONTRIBUTE TO ITS VITALITY.
BEFORE	—	—	•
	10-WATEER FEATURES	11-GREEN ARCHITECTURE	12-ENDING POINT (PLAZA)
	A WATER ELEMENT WITH A SWEET SOUND, LIKE A DANCING FOUNTAIN	SOLAR ENERGY - WIND ENERGY - POTENTIAL ENERGY BETWEEN OBJECTS	GATHERING NODE+ LANDMARK+ ACCESS TO OPEN SPACE TO URBAN FABRIC

Source: Author

10. CONCLUSION AND RECOMMENDATIONS

Urban planning strategies should combine between waterfront development theory and creative environment theory through creative activities, innovation and technology and open-mindedness. Quality of life requires physical comfort, social cohesion, and diversity of function, creative economy, economic contribution, and protection of culture. The paper intended to study Ancient Kyrenia Harbor from the perspective of innovative waterfront development criteria, and then deduce a set of criteria that should be taken into consideration to achieve sustainable waterfronts, then it dialed with Port Said waterfront which considered as one of the most important hubs all over the world and suggests a flexible strategy to achieve such a sustainable waterfront where people from all backgrounds and ages can live, work, play, visit, and learn in a way that strengthens and celebrates the beauty, the diversity, the economic vitality, the opportunities, the creativity, the heritage, and the natural environment of the city.

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