T.C.

ISTANBUL OKAN

UNIVERSITY

GRADUATE SCHOOL

THESIS FOR THE DEGREE OF MASTER IN ARCHITECTURE PROGRAM

Haleemah Faraj BIN TAHIR

DEVELOPMENT FOR WATERFRONT OF DERNA CITY AND URBAN PARKS CASE STUDY

THESIS ADVISOR

Asst .Prof.Dr. Özgün ARIN

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Advisor: Asst. Prof. Dr. Özgün ARlN **..…….....**

Dr. Ali KILIC …….....

Dr. Feride SENER …….....

ISTANBUL, May 2023

DEDICATION

To those who are absent from me, and left an unforgettable trace and memory, may God's Mercy on them : my mother, my father, my brother.

ACKNOWLEDGMENTS

The first thanks to God for completing this humble work, and we thank Him for facilitating things and overcoming difficulties.

I extend my sincere thanks and sincere appreciation to my esteemed teachers who spared no effort to light the way for me to step safely and resolutely in the paths of knowledge . In particular, Dr. Özgün Arın and Prof.Dr.Emre Aysu for their valuable advice and guidance throughout the period of supervising this thesis.

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To everyone who helped us from near or far, even with advice, as well as everyone who encouraged us to continue.

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DERNA KENTİNİN KIYI GELİŞİMİ VE KENT PARKLARI ÖRNEKLEM ÇALIŞMASI

Kıyı kentsel gelişmelerinin ekonomik ve coğrafi konumları, benzersiz faaliyetlere ve büyüme modellerine sahip olmalarını sağlar. Bir şehrin kıyısı, vatandaşların aidiyet duygusunu artırabilecek, sosyal ve kültürel değerlerini pekiştirebilecek, rekreasyon projeleri başta olmak üzere çeşitli amaçlarla kullanılabilecek sonsuz fırsatlarla doludur. Ancak bazı kentsel gelişmeler çeşitli nedenlerle böyle bir fırsatı kaybedebilmektedir. Derna, Libya'nın doğu kesiminde, uzun bir Akdeniz kıyısına sahip bir şehirdir. Şehirdeki rıhtım tam olarak kullanılmamış, lojistik ve ticari deniz faaliyetlerini ele almak için alçakgönüllü bir şekilde faaliyetler geliştirilmiştir. Mevcut araştırma, Libya'nın Derna kentinin kıyısındaki kentsel yeşil alanları/kent parklarını sürdürülebilirlik gereksinimleriyle uyumlu olarak ve nüfusunun tarihi, sosyal ve kültürel ihtiyaçlarını destekleyerek incelemeyi amaçlamaktadır. Yeterli park ve yeşil alan eksikliğinin hissedildiği kent için mimari analiz yapılıyor. Analiz ayrıca, şehrin sahilinin tam potansiyeline göre gelişmediğini de gösteriyor. Ayrıca, şehir sakinlerinin tercihlerini ve sahile bir park geliştirme uygulamasına ilişkin bakış açılarını anlamak için bir anket uygulandı. Derna'nın rıhtımı üzerine yapılan araştırmanın bulguları, şehir sakinlerinin ihtiyaç ve tercihlerinden, nüfusun isteklerini karşılamada proaktif bir strateji ve şehirdeki şehir plancıları ve geliştiricilere uygulanabilir bir çözüm olarak ortaya çıkıyor.

Anahtar Kelimeler: Sahiller, Yeşil Alanlar, Derna, Libya

ABSTRACT

DEVELOPMENT FOR WATERFRONT OF DERNA CITY AND URBAN PARKS CASE STUDY

The economic and geographical locations of coastal urban developments allow them to have unique activities and growth patterns. The waterfront of a city is filled with endless opportunities to be used for various purposes, especially for recreational projects, which can increase the citizens' sense of belonging and reinforce their social and cultural values. However, some urban developments may lose such an opportunity due to various reasons. Derna is a city located at the Eastern part of Libya with a long Mediterranean waterfront. The waterfront in the city has not been fully utilized and activities were developed humbly to address the logistical and commercial sea activities.

The current research aims to study urban green spaces/ urban parks in the waterfront the city of Derna, Libya in alignment with sustainability requirements and supporting the historical, social, and cultural needs of its population.

An architectural analysis is carried out for the city, where the lack of sufficient parks and green spaces was apparent. The analysis also shows that the waterfront of the city is not developed to its fullest potential. Furthermore, a questionnaire was carried out on the residents of the city to understand their preferences and viewpoints on implementing a park development to the waterfront.

The findings of the research on Derna's waterfront emerge from the needs and preferences of the city residents, as a proactive strategy in meeting population desires and providing a feasible solution to urban planners and developers in the city.

Keywords : Waterfronts, Green Spaces, Derna, Libya

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CHAPTER 1 :INTRODUCTION

1.1. PROBLEM STATMENT

Coastal cities have high values due to their strategic locations that allow them to become economic hubs, simulating trading activities and growth. It is the reason some coastal cities miss out on great opportunities when they do not pay adequate attention to their greatest assets: their waterfronts(Hegazy, 2021). Moreover, the existence of a waterfront in a city is a unique opportunity to provide its citizens with a great deal of recreational activities, allow them to experience the full potential of their home, and develop their sense of place and belonging towards it. Waterfront also bring the natural and cultural characteristics of the location, which have positive influence on the residents' comfort, satisfaction, and pleasure levels(Turkoglu & Secmen, 2019). Waterfronts for urban cities have an added natural element, which is the coast, that can expand horizons by providing a unique sightseeing accompanied with enjoyable activities(Giannico, et al., 2021).

The dilemma experienced by urban cities is mainly the focus on economic growth within the city through providing residential and commercial structures. Rapidly, residents find themselves surrounded by steel and concrete block that hinders their natural connections and depreciates the value of the city's identity and residents' sense of belonging(Colding et al., 2020). instances can be found where city developers did not consider the basic services needed by the residents and completely neglected the coastal advantages due to lack of satisfying basic urban planning requirements(Wood, et al., 2018).

The neglection of the waterfront of a coastal city, as well as its potential to enhance the residents' lives, is a significant issue that need to be highlighted. The case study adopted

in this research, The Libyan city of Derna, is an apparent example, where key recreational and natural spaces are lacking. Urban developers showed little attention to

the social and cultural needs of the population, which affects interactions, development of consensus, and encouragement of positive behaviour. The impact of natural elements within the city on the health and wellbeing of its residents is another aspect of the problem. (Di Nardo et al., 2010).

The research is a study of the problem of Derna and its need for green spaces and recreational facilities. Despite its coastal location, there have been no plans to take advantage of this asset. The proposed solution through the development of the city's waterfront is a valid and feasible approach to the urban planning problem of Derna that has accumulated over the years. The design and planning suggestions provided in the study should serve as the first step in creating a city with a better connection to its nature. Moreover, it is expected that this solution simulates better economic and strategic growth.

1.2. RESEARCH AIM AND OBJECTIVES

The main aim of the research is to study urban green spaces/ urban parks in the waterfront the city of Derna, Libya in alignment with sustainability requirements and supporting the historical, social, and cultural needs of its population. The objectives of the intended waterfront emerge from the needs and preferences of the city residents, as a proactive strategy in meeting population desires and providing a feasible solution to urban planners and developers in the city. Consequently, the objectives of the research are defined as follows:

- Review the concept of waterfront through the literature based on its basic elements and considerations, as well as the different methodologies that are used for its development.
- Assess the urban development status of Derna, Libya in order to create a general understanding of its needs for a sustainable development.
- Adopt a comprehensive methodology in problem assessment and solution development through an urban analysis, and population participation.

- Develop sustainable development criteria for the development of the waterfront of the city of Dernato take into consideration its historical, social, cultural, and environmental needs.
- Provide practical guidelines for waterfront development at Derna, along with the required alterations and issues that demand attention throughout the project lifecycle for a sustainable development.
- Present a conceptual design for the proposed waterfront and its location, as a solution to the problem that can be integrated with the guidelines and provide answers to the different challenges that can face the development.
- Discuss the proposed solution, including guidelines and conceptual design, along with relevant case studies and literature to understand its potential and opportunities for future research.

Furthermore, Figure 1.1 illustrate the objectives of the research.

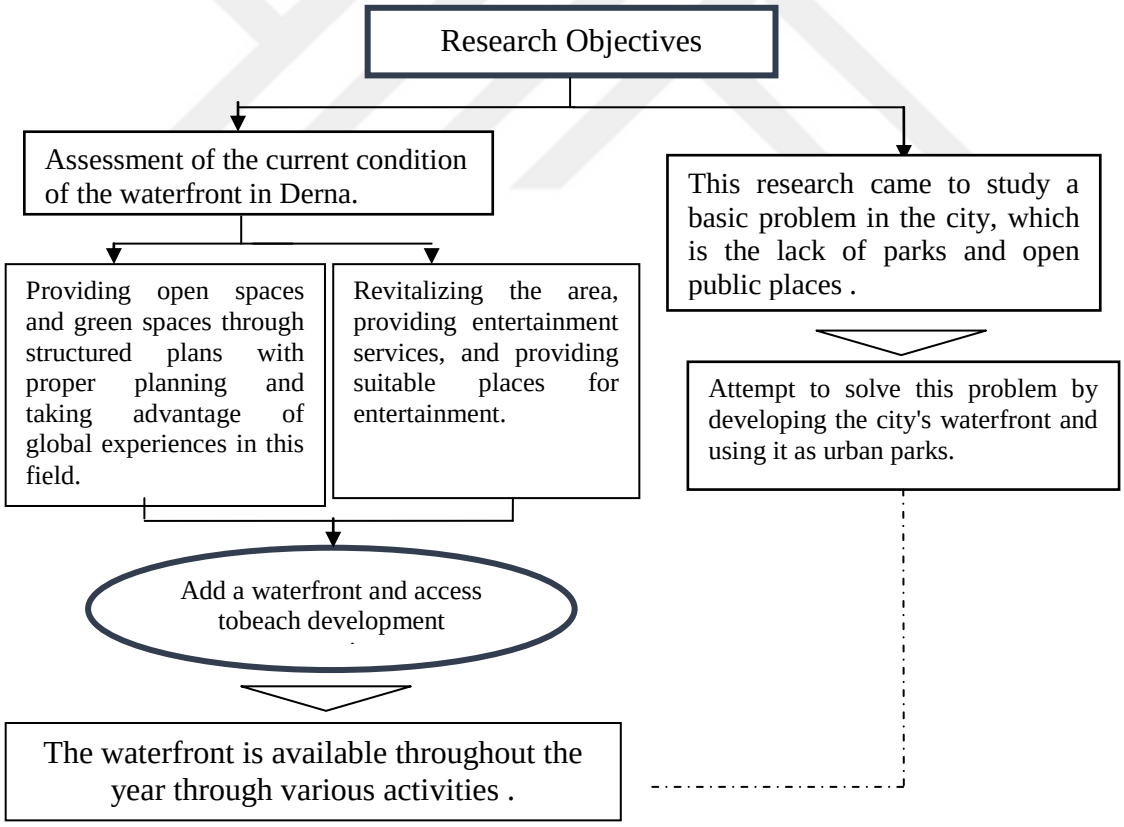


Figure 1.1. Objectives of research

1.3. STUDY CONTRIBUTION AND SIGNIFICANCE

The connection between open green spaces and recreational spaces, and the wellbeing of a city residents is the main problem identified in this research. In the case of Derna, an issue is identified with the lack of these facilities in comparison with the urban development and population growth of the city. It is expected that improvement in green spaces, including parks and entertainment public spaces, would bridge the development gap in the city. The fact that Derna is coastal city provides an additional opportunity to leverage the location for that purpose in a manner that emphasizes the identity and heritage of the city and increases the sense of place and belonging for its citizens through the consideration of their social and cultural needs.

The current urban development in Derna is towards multistorey buildings to accommodate the population growth. Nonetheless, this trend is not accompanied with a master urban plan to account for the social, cultural, and environmental needs of the city. Although the city does not have a lot to offer in its waterfront, residents perform different types of recreational activities at it. Furthermore, the current stage, where urban development is increasing in the city to accommodate the population, it is beneficial to think of a wider plan for the city, so the development occurs through sustainable methods.

The problem identified in this study is mainly emerging due to neglection and lack of planning. Thus, the contribution of the research is presenting a valid solution, considering the advantageous location of city, to enhance green spaces and recreational facilities through leveraging its waterfront. The study offers a conceptual plan for Derna's waterfront that can address several issues on many levels, including its social, cultural, environmental, urban planning, and heritage aspects. The continuation towards randomized urban development creates issues in all those domains that can be only expected to worsen if not resolved. Therefore, the research offers a suitable solution that can go along with the urban development of the city, while considering all aspects of sustainability.

The study presents an important issue that needs attention and follow-up, which is the problem of the lack of parks, public spaces and urban parks and their impact on people's

health and the urgent need to improve these spaces . The waterfront in the city of Derna is considered an outlet for the population due to the increasing trend towards multi-storey residential buildings that lack spaces in which residents of different ages practice their own activities for recreation. Therefore, residents are heading towards the waterfront despite its lack of the basic elements.

Therefore, the study raises an issue. A task that needs attention and follow-up, which is the problem of the lack of parks, public places and urban parks and their impact on people's health, and the urgent need to improve these spaces. The study will focus on developing the waterfront in Derna into urban parks that improve the quality of life and meet people's needs for entertainment and recreation, and provide sustainable open spaces as an integrated part of a sustainable city.Research significance is illustrated in Figure 1.2.

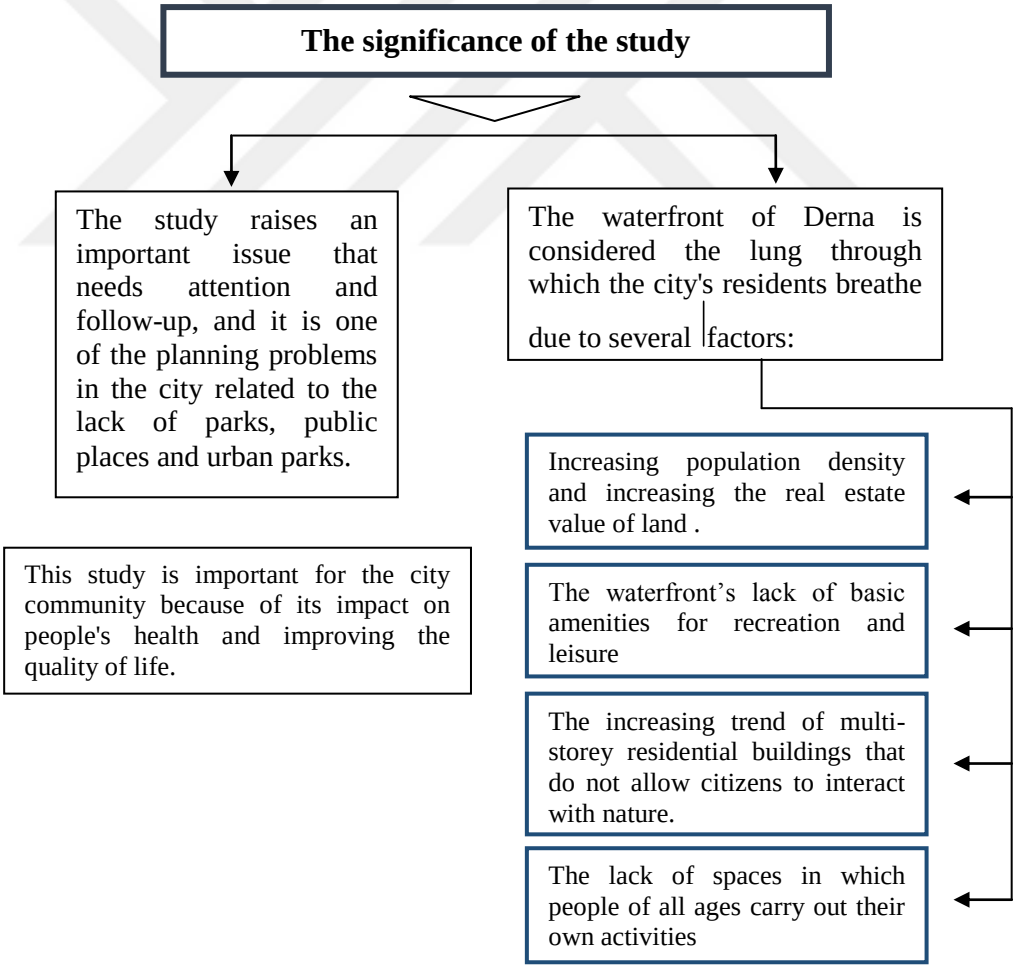


Figure 1.2. Research Significance

1.4. RESEARCH LIMITATIONS

The city of Derna, which is the subject of study, is distinguished by its privileged location, its commercial port, and its richness in natural resources. The city is located in northeastern Libya, a coastal city bordered by mountains from the south. The city has a striped stretch along the coast.

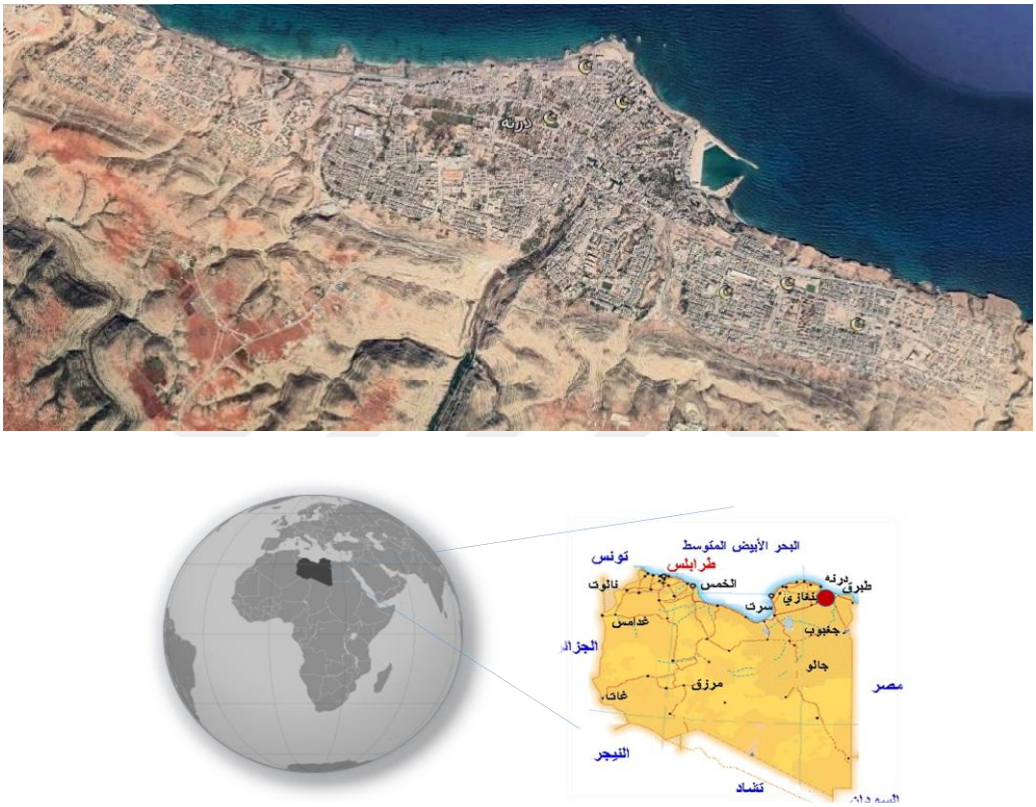


Figure 1.3. Geographic limitation of the study

The city went through several stages of urban development, which led to the emergence of new neighborhoods. After the war, it resulted in random growth without taking into account the correct planning standards, which reflected negatively on the city, as the lands were divided and used in random construction, including the waterfront of the city.This uncoordinated growth has caused visual and architectural pollution and deformation of the city waterfront.

Despite the consideration of a multidimensional method in the current research, there are a few challenges and limitations that are necessary to mention. It is evident that

Derna suffers from a major lack of public parks and recreational facilities. However, the current solution is meant to provide a partial solution by empowering the waterfront of Derna to contribute into the overall solution of the city's park problem. Moreover, there are challenges in obtaining proper urban planning information and plans from the municipal authorities in Derna that can affect the coordination of the project with current plans, if any.

1.5. RESEARCH QUESTIONS AND HYPOTHESIS

The main question targeted by the current research is:

How can the waterfront of the city of Derna be developed in a way that considers the urban, economic, social, and cultural needs of its inhabitants?

To answer the main question of the study it is important to answer several sub-questions in the development process:

Q1: What are the current utilizations for the waterfront of Derna?

Q2: What are the needs and interests of the city residents that can be fulfilled through the development of the waterfront?

Q3: How can the development of the waterfront affect the social, cultural, economic, and environmental status of the waterfront, city, and the residents.

Based on the study of the current usage of the waterfront in Derna, it is apparent that the waterfront is not fully utilized to address the desires and needs of the residents from several aspects. Thus, the hypothesis that is tested is structured as:

"The development of the waterfront in Derna is able to enrich and fulfil the needs of the residents in the social, cultural, economic, and environmental aspects"

Testing the hypothesis is performed through an architectural analysis of the waterfront of Derna and its development opportunities, as well as a questionnaire with participants from the residents to understand their needs and desires.

1.6. RESEARCH STRUCTURE

The approaches adopted in the research cover the theoretical and practical aspects of a waterfront solution for Derna. Therefore, the research is divided into five main chapters, as follows:

- Introduction: a definition of the research problem and a structure of its main aim and objectives. The chapter provides the significance of the subject and the study contribution to enhance the waterfront in Derna.
- Literature review: a theoretical study of the relationships between human, environment, city, and coast. A survey of the main factors to be considered in a waterfront development is performed, including site selection, historic, cultural, social, economic, and environmental factors. Moreover, the development considerations of the at waterfronts in these aspects are investigated, especially from an urban development point of view. A few coastal development case studies are reviewed in order to understand the methods and considerations in existing projects.
- Study definition and methodology: a focused study on the Libyan coast and the city of Derna in the aspects of geography, history, economy, and demographics. A site selection exercise is carried out to suggest the best location for a waterfront development in Derna. The exercise starts with understanding the current urban development and morphology of the city, followed by a review of a few candidate sites, definition of objectives and needs, and development of assessment criteria. A survey is performed on the city residents through a designed questionnaire and SWOT analysis.
- Case analysis and findings: a presentation of the different findings of the research: site selection, objectives and needs, and factor priorities. A site analysis is performed on the candidate sites based on the developed assessment criteria and a SWOT analysis. Furthermore, the final findings are stated and guidelines for waterfront development at Derna's coast are provided. A conceptual design of the waterfront facility is offered as an architectural

proposal for the future development. Finally, the results of the research are compared to literature outcomes in the discussion section.

- Conclusion: the final findings of the research based on its different elements. The main guidelines and conceptual design aspects are presented, along with recommendations for offered outcomes and future research.

CHAPTER 2:THEORETICAL FRAMEWORK

2.1. DEFINITION OF WATERFRONT

In the literature, there are several definitions for waterfronts. Keyvanfar (2018) defined waterfronts as “the zone of interaction between urban development and the water where the needs of the city and its inhabitants blend together”. Turkoglu and Secmen (2019) described it as “the open space located along a water source such as a sea, river, canal or lake”. Timor (2013) addressed several aspects of the waterfront definition:

- From the language perspective and according to the Oxford dictionary as waterfront is “the part of a twon or a city adjoining a river, lake, harbour, etc.”.
- The architectural studies described waterfronts as urban development areas with direct interaction with a waterbody. Others defined it as “the water edge in cities and towns or urban areas of all sizes”.

The general and architectural understanding of waterfronts can be defined as the coastal areas with direct interaction between the urban development of cities or towns and a waterbody of different types, river, sea, ocean, canal, etc., where its characteristics reflect the social, cultural, economic, and historic characteristics of the inhabitants.

2.1.1. Physical Characteristics of Waterfront

There is a growing interest in creating coastal developments that can emphasize the aesthetic values of waterfronts over the past years. It is incentivised by the desire of urban planners topreserve cultural and historic values, natural landscape and

environment, and the protection of ecosystem elements, in addition to expected economic returns that can thrive employment and returns. Several characteristics are stated by researchers for waterfront developments, including accessibility and urban planning, aesthetic values, environmental enhancements, identity preservation, and

cultural place belonging. These characteristics have the main goal of working towards a sustainable development for waterfronts due to their massive impact on several dimensions for communities on the long-term (Yildiz, Senlier, & Guzel, 2015).

Pinto and Kondolf (2020) discussed five main domains that are critical for the success of waterfront developments: cultural, social, urban, environmental, and economic. The authors listed several mistakes that have took place with many projects and advised developers to avoid them when taking critical steps throughout planning, execution, and management. The location of waterfront development is deemed to be on the top of the list of characteristics, where typical mistakes are trying to copy successful models from a different location, ignoring domestic identity, not considering city morphology and scale, and ignoring connectivity to the rest of the city parts. The second characteristic is budget with developers often tending to oversize their projects and increase their maintenance costs, imposing additional costs by attempting to regulate water levels through closed water basins and bypasses, and overlooking public accountability. The facilities, that waterfront projects offer, are a critical characteristic for waterfronts. Failed waterfront developments often dedicate project to a narrow user base, lack diversified income streams, focus on most profitable facilities, and ignore other ones that can add to aesthetic and cultural values, turn down private sector funding and programs, and experience poor connectivity with city parts. Project planning is crucial for this type of projects, where mistakes often occur in lacking a clear investment timeline, turning down the option of phasing the development and desiring to build it all at once, no clear investment strategy, and accumulating a failed-investment image. Finally, it is important to consider environmental and ecological improvements as shortcomings in this domain would affect the aesthetic value of the development, create incompatibilities with the hydrology and climateof the location, create

dysconnectivity in marine migration and sedimentation, and affect critical ecological indicators, like water quality.

Accessibility is a key characteristic for urban planning of waterfront developments. Primarily, it is more feasible to redevelop an existing location rather than starting off a project at a new location, as an existing location would contain established

infrastructure that can increase its compatibility and enhance its cost effectiveness. For instance, a location that serves as a port for a city would have transportation networks, utilities, and coastal structures, in addition to a prime location if it was developed a long time ago. Moreover, urban expansion can be simulated if a waterfront development is planned at an isolated location, which would increase its attractiveness and land value, therefore, encouraging investment into adjacent locations. An important urban planning characteristic is constructing a thorough study on the way a new waterfront would be connected to existing infrastructure, such as mass transit and utility networks. Developers and urban planners may consider building new infrastructure to serve the project based on population growth and urban expansion patterns. Urban planners should also consider simulation of investment into new waterfront developments to increase efficiency in terms of infrastructure and cost (Gordon, 1996).

One of the most important aspects to determine is the purpose of development. The type of waterfront develop is determined by the economic, social, and cultural needs of the city. For example, a city that lacks recreational facilities may priorities them in waterfront development, while an industry-based community may require business developments with cargo and manufacturing facilities. Urban planning is a public task of municipal entities, which requires them to carry out a comprehensive plan for land acquisition, land preparation that may require filling and slop protection, road and mass transit construction, utility provisions, land management, establishing a commercial plan for intended usage, development of contractual documents, and tendering for construction (Stevens, 2021).

When developing waterfronts in recent years, urban planning has faced several challenges, especially at redevelopment locations. Land ownership is one of the most complicated issues as lands within or adjacent to the planned project can have private or

commercial ownership that hinders facility and infrastructure development. Moreover, heritage and culture are important to consider when developing the waterfront, as the latter represents the city image that can be perceived differently. Social justice is an important characteristic as waterfront development can serve a part of the city but deprive another part from its advantages, especially if there were connectivity obstacles. Finally, the environment remains one of the most important matters that is necessary for sustainability. Thus, waterfront developments planning needs to understand its limitations and priorities (Avni & Teschner, 2019).

2.1.1.2.Types Of Waterfronts (Sea, Lake, River)

Waterfronts can be characterized through two main classifications: location and usage. Based on location, waterfronts differ in terms of their ability to connect the city to other parts within the waterbody, as shown in Figure 2.1. It is evident that waterfronts that lay on seas and oceans provide higher accessibility to other significant urban developments, which increase its economic value. Waterfronts that lay on rivers and canals can have a comparable value depending on the size and length of the river, as well as its ability to provide accessibility to other significant cities and towns. The waterfronts located on lakes can be of an ecological and recreational value more than their economic nature. Moreover, developments of waterfront depend mainly on their geographical type. Major cities that lay on oceans choose to maximize their economic benefits from waterfront projects in order to increase the city value and production(Turkoglu & Secmen, 2019).

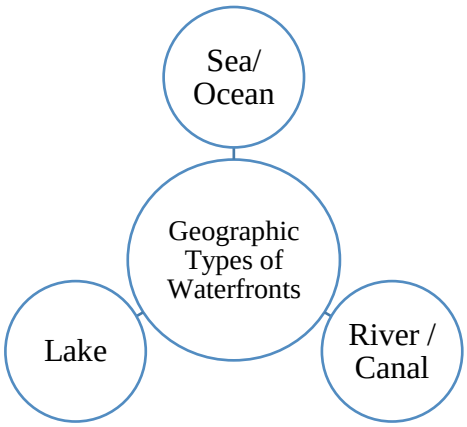


Figure 2.1. Geographic classification of waterfronts(Turkoglu & Secmen, 2019)

Another way to classify waterfronts is according to their usage, which is divided into four types: industrial, logistical, recreational, and urban, as shown in Figure 2.2. The industrial type of waterfront is dedicated to manufacturing facilities that are dependent on sea access, such as sea product manufacturing, water desalination, and ship manufacturing. The ecological and environmental considerations of this types are considered a priority as they can impose irreversible impacts on the waterfront. The logistical type is dedicated for the economic connectivity between the city and other parts accessible through the waterfront, which is portrayed through seaports, harbours, and fishing docks. The recreational type is dedicated for city residents and visitors to appreciate the attractiveness of the waterfront, where several activities and facilities are included, such as parks and sea sports. The urban type is dedicated to urban development activities that are related to residential and commercial uses to increase the liveability of the waterfront. Cities tend to use this type to increase the attractiveness of the city for residents and newcomers, in addition to simulate investment opportunities in the waterfront (Timur, 2013).

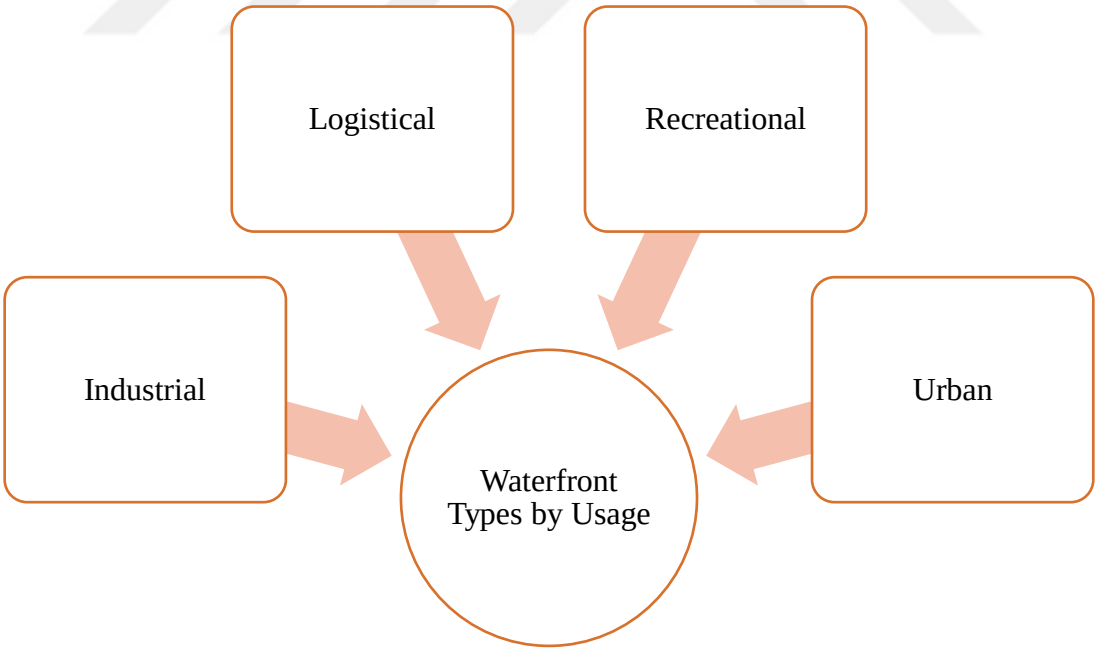


Figure 2.2. Classification of waterfront by usage (Timur, 2013)

2.1.2. Social Characteristics of Waterfront

The social characteristics of waterfronts emerge from their ability to influence the quality of life of the city residents. The waterfront has the ability to eliminate or increase the differences between the different social groups that form the community. The development in waterfront areas should consider different social group differences in terms of gender, age, ethnicity, and physical ability. It also should consider the different interest differences within each of their groups. The sense of belonging of different social groups with different interests is the way waterfront is characterized for the ability to provide inclusion and participation. The waterfront facility should allow for the best social interaction between all groups, regardless of their diversity, where it has great potential in strengthening social connections and consensus. All social classes should be accommodated within the design of the facility to add to positive effects of social interaction, as well as the inclusion of minority groups, such as the elderly and those with special needs.

2.1.3 Cultural Characteristics of Waterfront

The cultural characteristics in planning and designing a waterfront facility is not limited to reflecting them into the facilities, but also ensuring a balance between their different elements to strengthen the sense of belonging within all cultural groups. Accessibility majorly contributes into empowering cultural values through connecting the waterfront to all city residents by mass transit, streets, and biking lanes. Moreover, the culture and history of the residents should be reflected into the design and activities that are provided within the facility. Citizens may discard using public facilities of their sense of place is not satisfied. The design of the waterfront should be inspired by the history of the city in a contemporary context. Cultural diversity is also promoted through adopting domestic and universal symbols in order to create place attachment (Shetawy, 2017). The target for successful waterfront developments is creating a balanced cultural and social theme that fits all users, as shown in Figure 2.3.

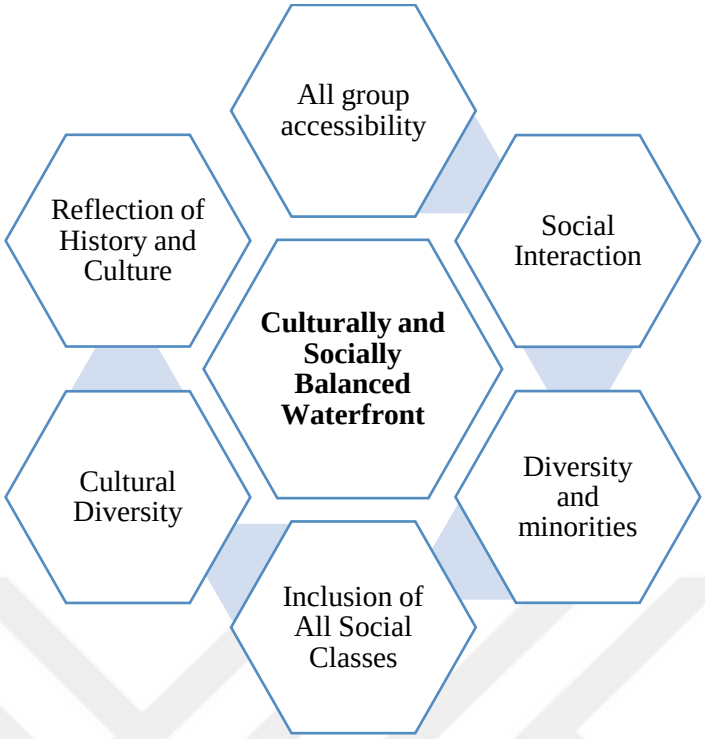


Figure 2.3. Elements of a culturally and socially balanced waterfront characteristics (Shetawy, 2017)

2.1.4. Relationship between Human, Environment, and City

The influence of surroundings on the economic, psychological, physical, and social wellbeing of humans was early realized since ancient times. Therefore, the locations and the methods that were used to develop civilizations and cities were closely considered to leverage their opportunities and provide maximized benefits to the inhabitants. Nonetheless, it was not until fifty years ago that the extent of this influence is investigated through scientific methods in order to quantify and prioritise affecting factors. The relationship between humans and their surroundings is not limited to the things the nature does to humans, but also to the way humans affect these surroundings. Humans have the ability to establish their developments in the most efficient manners but equally can deprive themselves from using available resources in the best ways possible and extend such mistakes to harming their surroundings(Hinds & Sparks, 2011).

Research on this two-way relationship had been reviewed by Seymour (2016), who identified four types of connections in the literature: cultural, impact on nature, the conflict between surrounding and human economic benefit, and power relationship that touches on the social aspect of the problem. The author focused the study on the impact of the surroundings, in terms of nature, on human health from social, psychological, and physiological perspectives. The wellbeing of the ecosystem was considered a key part in the relationship that humans cannot ignore. The finally developed understanding of the nature identified three types of interactions that defines the relationship: biophysical, biotic, and cultural. Through the insights of the literature on the relationship, it can be comprehended that the human-surrounding relationship is more complex that it was imagined in early historic eras. The following section of the literature review focuses on studying this relationship from three dimensions: the relationships with the environment, city, and coast, in order to identify the factors that signifies the development of waterfront regions from the perspective of these relationship.

2.1.4.1. Relationship between Human and Environment

One of most fundamental and ancient human relationships is the one with the environment. The essence of the relationship is the vital need of humans for environment to survive and sustain living. The perception of man towards the relationship plays a major role in his ability to understand the required equilibrium that need to be preserved between the needs and the ecosystem. Seymour (2016) reviewed the different concepts on the human-environment relationship and developed an understanding that there are three essential human wellbeing factors: physical, mental, and social (Figure 2.4).

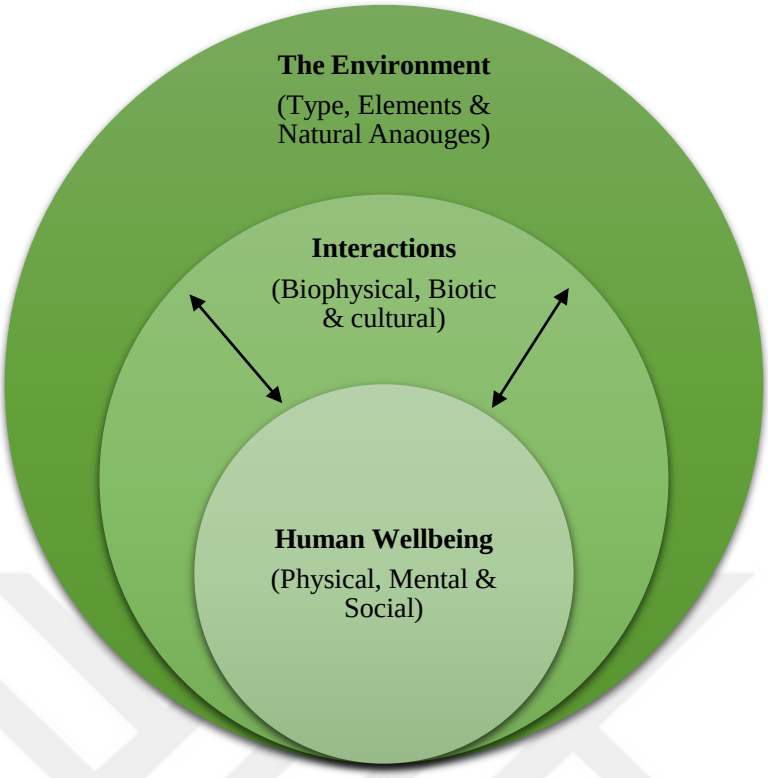


Figure 2.4. Relationship model for the relationship between human and environment (Seymour, 2016)

The environment in the outer circle of the model defines three elements of the environment, which are the type of environment, the elements of the environment, and the other living and non-living creatures that share the environment with humans (natural analogues) The model identifies three two-way interactions between human and the environment (Seymour, 2016):

- Biophysical: the interaction of mankind with the ecosystem and the alterations that are imposed due to their activities.
- Biotic: the interaction of mankind with the living creatures within the ecosystem and the way they affect each other.
- Cultural: the interaction of mankind with the ecosystem to get non-material benefits, such as spirituality, health, aesthetic enjoyment, and recreational advantages.

The interest of human in studying their relationship with the environment increased significantly in the second half of the century due to the noticeable impact of

accelerated human activities on the ecosystem and the expansion of its problems on a global scale. Soil, water, and air are three abiotic elements in the ecosystem that all witnessed substantial changes. The impact on biotic elements is equally important, especially with increased forest fires, extinctions, and major species migration. Thus, the subject of sustainable land use is one of the most urging ones on the relationship between mankind and the environment. Exponential population increases and scarcity of vital resource add to the challenge with dilemma of increased consumption while trying to avoid environmental adverse effects, such as pollution, overgrazing, erosion, and nutrient mining. The population growth enforces another need for urban expansion that increases emissions and requires additional natural resources to be deployed (Buscardo et al., 2021).

Sustainable development is a bundle of solutions to issues in the relationship between mankind and their environment. The most crucial elements that are targeted by sustainable systems are the ones that are vital to human existence, including natural resources, ecosystem layers, and those that provide recreational benefits. There is no doubt that a collective human action can affect the negative effects and prevent expected ones in the future. A more comprehensive understanding of sustainable development incentivised specialists to expand its definition to include economic and social indicators, in addition to environmental indicators, as shown in Figure 2.5. The perception of the environmental problem was broadened through understanding that economic and social activities affect the whole environment, or parts of it, in a way or another. For instance, an enhanced educational achievement is an indication of increased human awareness towards the problems that face humanity within their environment. Hence, a better educated generation has the ability to identify problems and find solutions in a more efficiently (Kates, 2001).

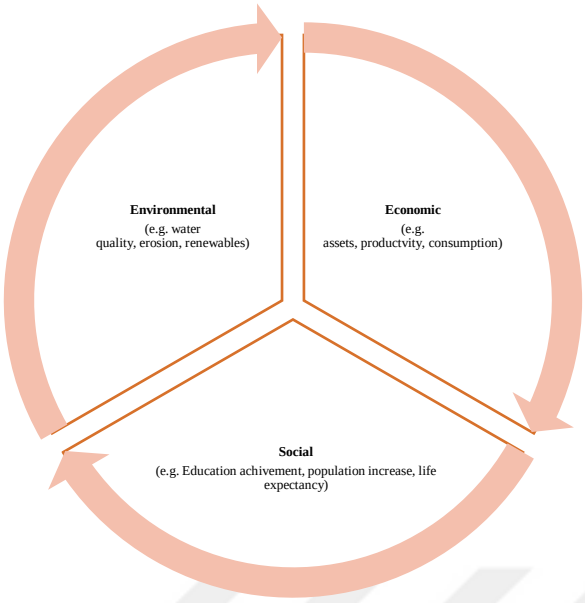


Figure 2.5. Elements of sustainable development determining human-environment relationship (Kates, 2001)

2.1.4.2. Relationship between Human and City

Dwelling is one of the most important human needs with several factors affecting decisions on location, size, and type. The location of habitat is mainly determined by the ability of a person to work and sustain a living at it, which is related to the type of economic activity it offers. The size is dependent on the population as a driver for urban activities in many perspectives. The type of dwelling depends on locally available resources and the need for protection from environmental conditions. A human civilization starts due to resource attractions and social needs, which makes economy and society the two fundamental factors in building a human community at a certain location. Moreover, the type of interactions within the community defines its structure, while the size of interaction and population defines its size of being a village, a town, or a city. Research confirms that the increase in scale in human economic and social interactions results in increasing city sizes proportionally (Schlapfer, et al., 2014).

Transportation is an important element within the city as a key factor for accessibility and mobility for its residents. The urban characteristics can change depending on the

ability of the city to provide sufficient, convenient, and affordable accessibility options. Subsequently, the relationship between human and city is shaped by the latter's mobility structure, which affects several elements, such as resident satisfaction, rental prices, and comfort (Graells-Garrido, et al., 2021).Additionally, the urban structure of the city was to affect the human behaviour and perception, which provides the connection between the city and human psychology (McCash Jr, 1976).

The natural elements within the city are key for the recreational, psychological, and social needs of its residents. While this issue was not critical in ancient eras, intensive urban development of cities to accommodate population increase and economic activities often overlooked this element. Furthermore, the type, distribution, size of natural elements deeply affects the relationship between residents and their city. Current approaches to urbanism indicate that there is an urgent need to reconciliate cities with nature as part of sustainable development and to restore the effects of city dominance that have occurred in the past(Taghvaee, Kamyar, & Moradi, 2017). The human-nature relationship was greatly affected by urbanization and opportunities for recreational activities that reinforces this relationship has been ignored for a long time. Current calls for the importance of human-nature relationship through dedicating a minimum requirement for green spaces within urban zones a governmental policy (Colding, et al., 2020).

2.1.4.3. Relationship between City and Coast

The location of the city on a coastal region is mainly driven by economic activities, which imposes coastal risks, such as pollution and threats to marine ecosystem. Coastal areas provide high economic advantage mainly due to accessibility and shipping opportunities, which is signified by the existing fourteen out of the seventeen world major cities on coasts(Creel, 2003) and the concentration of around 40% of world population within coastal regions(CIESIN, 2007). Sustainable development in coastal regions is challenged by many risks that are not present in continental regions, as shown in Figure 2.6. The decline in biodiversity is caused by urban expansion near the coast, which is leading to the destruction of vital natural habitat. The increase of economic activities at coastal regions caused a quick increase in population and resources overconsumption. The rapid population increase caused poorly planned urbanization

that increased impermeable surfaces and lack of green surfaces. Moreover, the global issue of climate change and rising sea levels are also considered significant risks to coastal cities (Yilmaz & Terzi, 2019).

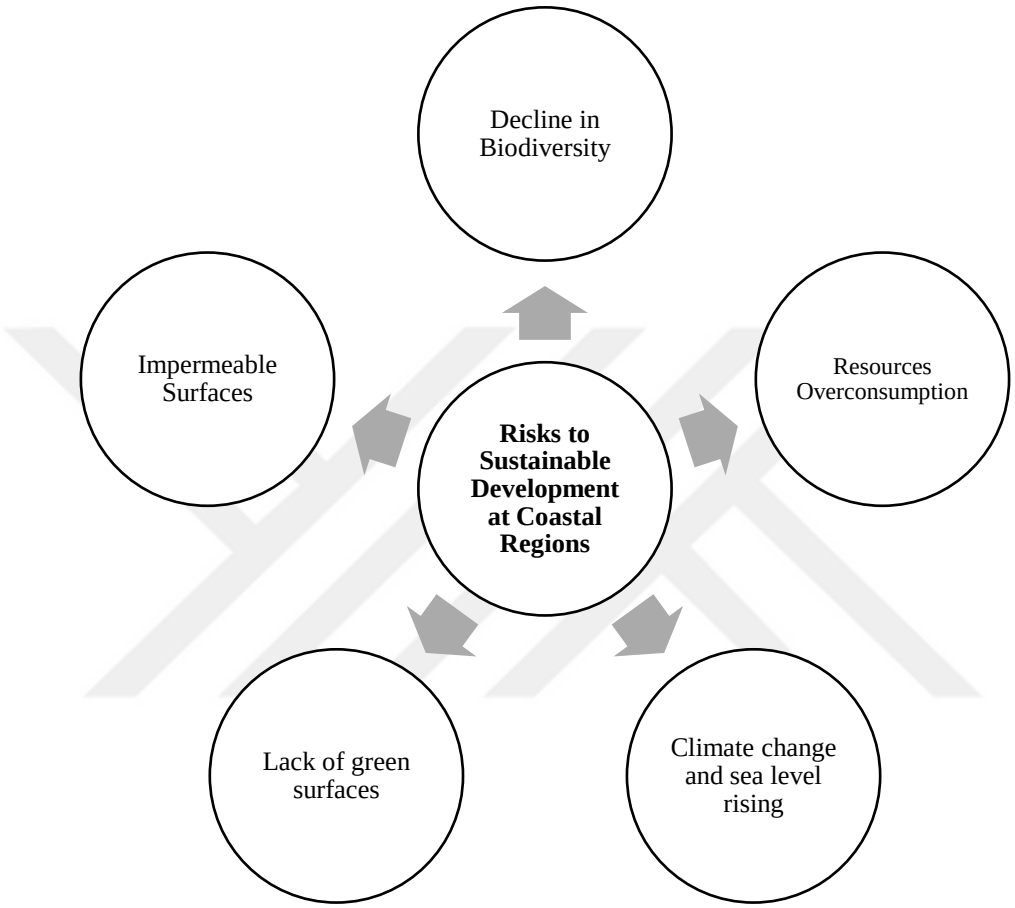


Figure 2.6. Risks to sustainable development at coastal regions(Yilmaz & Terzi, 2019)

2.2. DEVELOPMENT OF COASTAL WATERFRONTS

There are several factors that influence city planners to develop waterfronts. The suitability of the site is an important factor in a time when sustainable development is a priority. Developers desire to ensure that their projects do not threaten the ecosystem or marine life. Apart from that, the factors of waterfront development include historic influence, cultural and social needs, economic factors, geographic and ecological factors, and strategic factors.

2.2.1. Site Selection Factors and Processes

Waterfront site selection is one of the most important factors that impacts the city and its coastal region. Ilhamdaniah (2018) specified six criteria for waterfront park facility allocation in New York: proximity between community and site, availability of splash pads, distance to currently available splash pads, age distribution of community, occupational density of parks within community, and site slope. Through GIS data, the author identified four sites near waterbodies: two near the coast, one near a lake, and another on a river site. One of the coastal sites was selected due to its proximity to community and ability to fulfil the need for recreational facilities. The study did not consider environmental or sustainable factors in site selection, nor the subject was discussed.

Othman et al. (2021) specified accessibility as a critical factor in waterfront site selection and established its relationship with the wellbeing of residents. The authors stated that the accessibility factor has direct impact on three key personal values: employment, relationships, and health. The study deployed several filters in the selection process:

- Proximity to mass transit infrastructure.
- The morphology of the city and the trend of urban expansion.
- The socio-economic status of different locations.

Consequently, several attributes were developed under four main categories, as shown in Figure 2.7. The land use pattern included the activities currently performed at candidate locations and the attractiveness and diversity or land use at them. The street pattern focused on street connectivity with city parts and their capacity. Mass transport included the different modes that are available, travel durations and costs, spatial distribution, and user safety. The temporal attribute included the potential participation frequency of users and their intensities throughout the day (Othman et al., 2021).

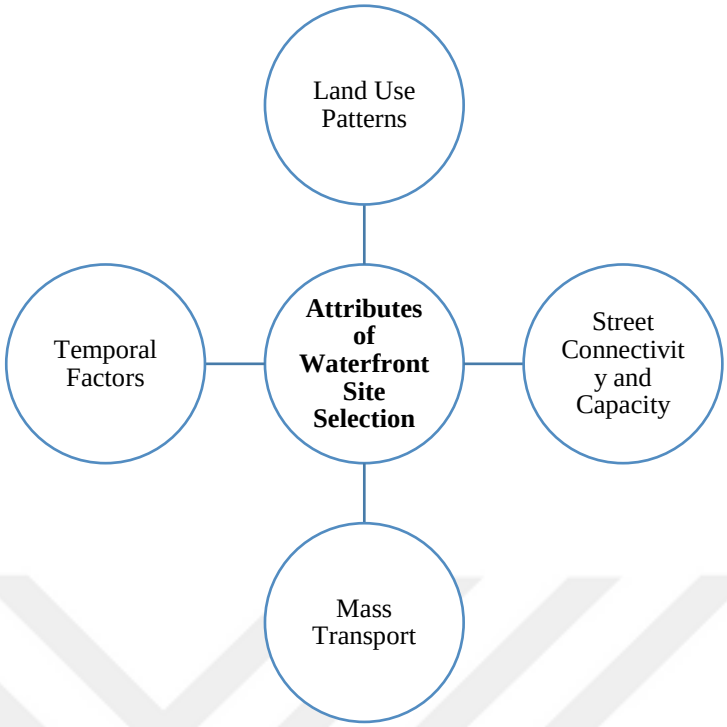


Figure 2.7. Attributes of waterfront development site selection (Othman et al., 2021)

Buckman (2016) developed a comprehensive model for waterfront site selection and development criteria that is based on Four main key attributes: sociability, uses and activities, comfort and image, and access linkages (accessibility), as shown in Figure 2.8. Each attribute had its intangible values and measurement factors that can assist urban planners and designers select waterfront sites and develop its components to match the population and city characteristics. The intangibles of the sociability attribute were mainly the diversity, stewardship, cooperation, neighbourly, pride, friendly, interactive, and welcoming values of the waterfront space, while demographics, social structures, evening activities, and street activities were the measurement factors for it. Uses and activities had several intangibles of being fun, active, vital, special, real, useful, indigenous, celebratory, and sustainable, which can be measured through local business ownership, land-use patterns, property values, rent levels, and retail sales. The intangibles of comfort and image are safety, cleanness, walkability, being sittable, charm, attractiveness, and historic value of the waterfront, which can be measured through crime statistics, sanitation rating, building conditions, and environmental data. Finally, access and linkage had several intangibles, such as continuity, proximity,

connectivity, convenience, and accessibility, which are measured through traffic data, mode splits, transit usage, pedestrian activity, and parking usage patterns.

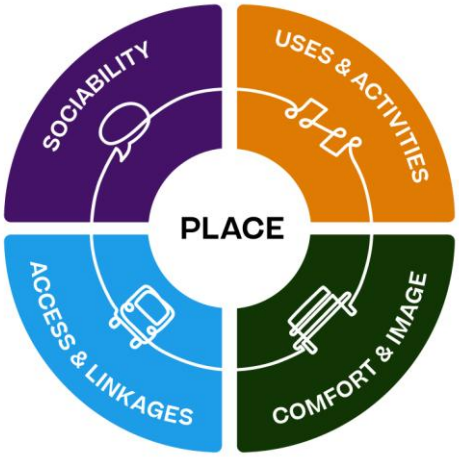


Figure 2.8. Key success factors for public waterfront space site selection and design (Buckman, 2016)

2.2.2. Historic Factors

The history of the coastal region is considered in any waterfront development or rehabilitation works, in case of the existence of archaeological remains on site. Moreover, the history of the city is a strong design concept that reflects the identity of the city on its waterfront, as well as empowering the sense of belonging for its citizens. Keyvanfar et al. (2018) investigated criteria that are to be considered within the historic factor in developing a waterfront at a historic location for a city using a multi-criteria decision-making methodology. The finalized criteria were categorized under three main classifications: social and cultural, physical and environmental, and economic and functional, as shown in Figure 2.9(Keyvanfar, et al., 2018):

- Social and cultural: the development should reinforce the city identity and cultural authenticity, take the safety and wellbeing of residents into consideration, create a distinctive sense of place, contain social areas, and be able to give users a sense of enjoyment.

- Physical and environmental: the development should preserve natural habitat, minimize pollution, have good accessibility, have a dynamic site design, contain facilities for walking, and provide users with sufficient facilities and amenities according to their needs.
- Economic and functional: the development should be designed for mixed-use to satisfy the desires and needs of potential users, provide employment opportunities for citizens, and have a diversified income potential.

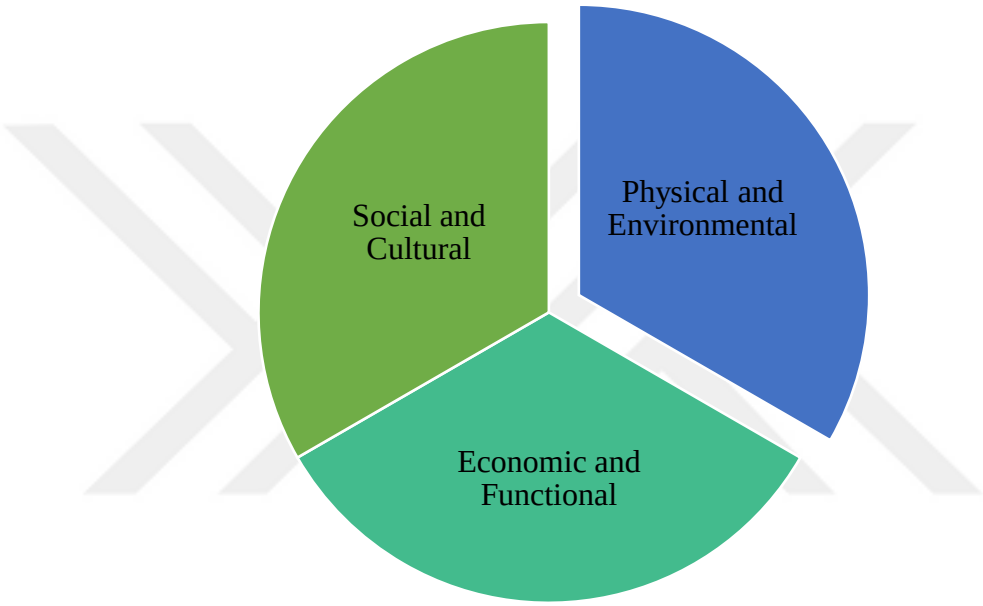


Figure 2.9. Criteria required for the development of historic waterfronts(Keyvanfar, et al., 2018)

The sense of place is one the key historic factors in waterfront development. The preservation of historic values becomes a priority in cities that have extended history along several eras. The term is defined as the sense of emotional attachment and perspective of what a place feels like when being at it (Mohamed & Salim, 2018). It is imperative that the development works in harmony with the history of the place in order to empower its identity, which would add to the historic value of the location and encourage local and international tourism to thrive with a new attractive historic manifestation (Hussain et al., 2015).

2.2.3. Cultural and Social Factors

The community within the city with waterfront development is a key stakeholder in decision-making and design processes. Therefore, the social and cultural values of the population affect any public project in order for it to become successful and achieve its objectives. A study performed on the state of Philadelphia indicated that changes in the cultural values of the population led to a redistribution of intensities towards waterfronts. The desire of the community to emphasize their city's unique assets, the newfound attention of citizens towards water activities, the focus of young generation on activities that can be performed in parks, the affordability of living near waterfronts, and development of desirable public spaces are all cultural changes that occurred and changed the community behaviour towards waterfronts (McGovern, 2008). In Egypt, a study on a minor city showed that social and cultural alterations can change the purpose and interests toward the usage of waterfronts. El-Minya city was developed in segments along the Nile in different historic periods, where each segment has different waterfront characteristics according to those changes. The research concluded that current waterfront development needs more focus on recreational activities based on modern cultural and social needs (Shaker et al., 2019).

2.2.4. Economic Factors

Waterfronts are proposed as solutions for creative and sustainable developments from the economic perspective, especially for communities and cities that are looking to expand their land value and investment returns (Girard et al., 2014). After eras that focused on labour and production activities at the waterfronts, the current era is focused mainly on recreational and touristic activities that can attract more revenues towards coastal regions. Moreover, research and preservation of marine and ecological aspects ensures that the coastal environment is sustained for years to come, which makes investment into waterfronts a long-term economic success (Chen, 2015).

When comparing different waterfront types, coastal waterfront developments witnessed the highest value increase among other developments located on rivers, canals, and lakes. Nonetheless, all waterfront development data showed that its value increased

significantly overtime with the focus on creational activities and tourism. Furthermore, waterfront properties had significant value increase when compared with non-waterfront ones over a ten-year period (Dumm et al., 2016). Additionally, investment into waterfront development had been proven as one of the most successful urban planning projects from an economic perspective. This type of development has proven a stable economic growth for communities through increase of land value, additional employment opportunities, and increasing the attractiveness of the coastal regions for investment (Wah & Omran, 2012).

Waterfronts are developed not only to emphasize city identity and culture, and provide recreational facilities for its residents, but also to generate revenues from direct and indirect streams. A well-established and well-planned waterfront project would ensure the presence of private sector facilities, which can assist the project both in the funding and management stages. Private sector facilities include bank branches, shops, amusement parks, hotels, and event arenas. Private investment is important when developing big scale projects, therefore, developers should ensure to reflect the best image of the city and highlight its investment advantages and potentials in order to attract private investors (Thorning et al., 2019).

The design of the waterfront is a major contributor to its economic success. Bays (2020) suggested that a seamless facility that removes barriers between its segments encourages users to navigate efficiently, hence, allowing more commercial activities. The main barrier that needs to be minimized is between recreational and touristic segments and those designated for commercial use. The goal can be achieved through minimizing and eliminating roads, redundant structures, and landscape barriers. Pedestrian connectivity is crucial for efficient navigation, while a more family-focused waterfront allows for a broadened user variety. Furthermore, public amenities can seem to be an added cost with no significant revenue. Nevertheless, the sufficiency and quality of those amenities, like toilets and parking spaces, are important increasing the attractiveness of the waterfront, which promotes economic returns. Finally, the variety of offering within the waterfront allow developers to leverage all demographic groups and their tastes in order to drive higher satisfaction levels and more returns.

2.2.5. Environmental and Ecological Factors

Human development has its toll on the environment, as well as its ecological components. Subsequently, it is essential to understand the factors that affect waterfront development from that perspective. Several environmental considerations were stated by Angradi et al. (2019) as benefits of developing waterfronts for coastal communities. Table 2.1 shows the environmental objective of waterfronts and the key indicators that fall under each one of them. The most urging objective of coastal development is preserving ecological components from pollution and degradation that are caused by human activities. Wetlands, green spaces, aquatic habitat, natural heritage, and native fauna and flora are all elements that form the environmental essence of waterfronts. Moreover, strategies that target the ecological elements of waterfronts contribute to reversing the adverse effects of climate change and natural disasters, as well as protect coastal communities.

Table 2.1. Environmental objectives of waterfront development (Angradi et al., 2019)

Environmental Objective	Key Indicators
Preserve wetland and storm water functions and biofiltration	Strom water solutions Natural habitat Native plants Green land cover Carbon storage
Preserve waterfront green spaces	Litter removal Plant treatments Parks and trails Natural habitat Native plants Green land cover Carbon storage
Preserve aquatic habitat	Native plants Strom water solutions Birding areas Shorelines
Preserve natural heritage	Wayfinding and signage View spaces Sentinel wildlife Views Natural habitat Plant treatment
Preserve rare and native fauna and flora	Charismatic wildlife Sentinel wildlife Natural habitat
Control natural and climate disasters	Impervious surface Storm water solutions

Environmental Objective	Key Indicators
	Hydrologic response
Enhance public safety and accessibility	Beach closures Water trails Views Recreational amenities Parks and trails Marine use Birding areas Access to water

Waterfront development can also become a solution for environmental and ecological issues that arose from irresponsible expansions of the past. Toomy et al. (2021) structured a framework that theorised a positive impact of waterfront development on increasing community's place attachment and meaning. It was achieved through creating activities that were absent along a polluted shoreline, which increased stewardship and encouraged community action. The framework concluded that this relationship between social-ecological sense of place and place making activities are key for waterfront protection.

A sustainable development is required to protect the environmental and ecological aspects of the location, in addition to its cultural and social aspects (Permana et al., 2017). The environmental consideration is concerned with minimizing the footprint of the waterfront on the ecosystem, as well as seeking opportunities to enhance and support its biodiversity and hydrology (Al-Sulbi, 2018). Therefore, an environmental and ecological assessment is used to ensure that all elements of the ecosystem are considered and risks that are associated with the development is managed through effective solutions. Environmental assessments are concerned with five main domains, as shown in Figure 2.10: ecology, water, energy, waste, and materials (El Deeb et al., 2015).

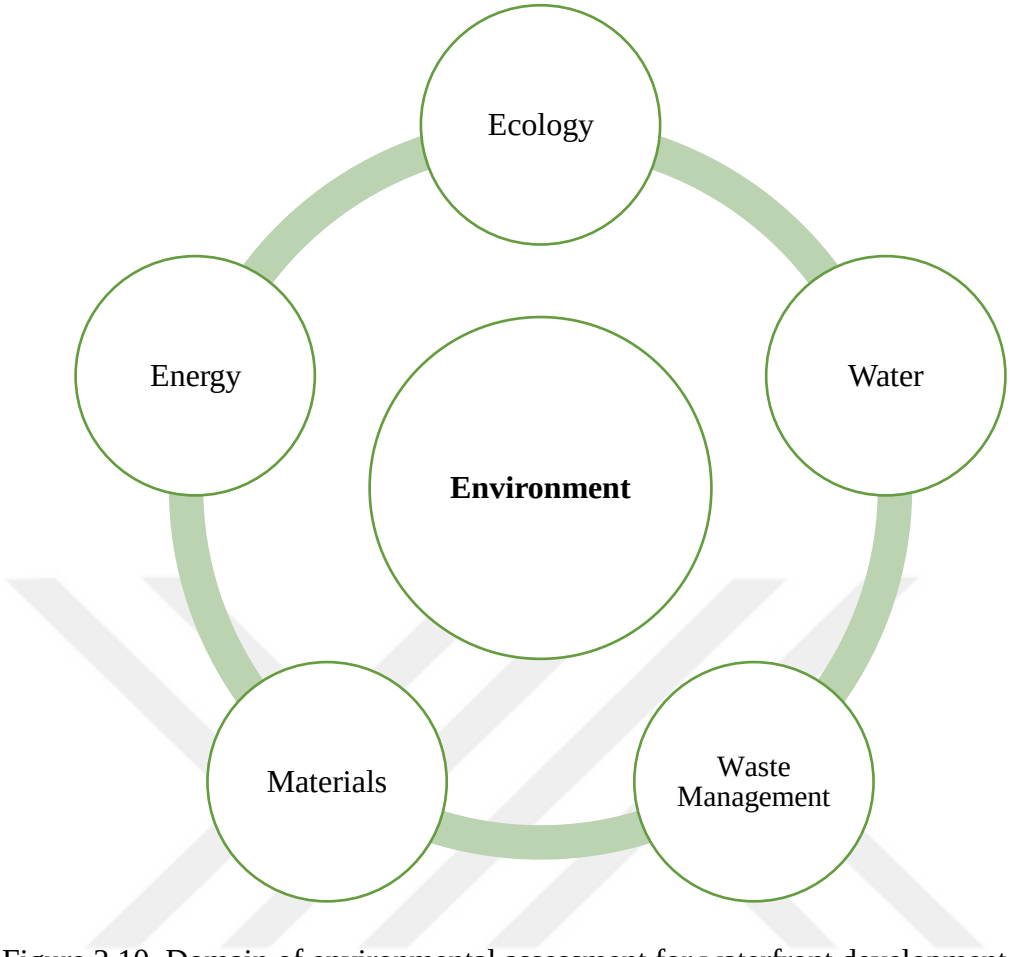


Figure 2.10. Domain of environmental assessment for waterfront development (El Deeb et al., 2015)

The ecological domain includes the protection of its elements at the development site and around it, such as wetlands and waterbodies, heat island reduction, site disturbance minimization, biodiversity risk assessment, native flora, land redemption, reuse of land, habitat creation and restoration, balanced food system, and reuse of land. The water domain aims to preserve water resources in terms of quality and hydrology, including stormwater management, flood risk, hazardous leakage detection, and reduction of water use in landscape and water features. The energy domain seeks dependency on sustainable energy sources and independency of external sources. Therefore, opportunities for renewable energy generation are always considered in strategic public development like waterfronts, in addition to increasing energy consumption efficiency. Waste management targets eliminating the effects of waste on the ecosystem, such as hazardous waste, as well as investigating opportunities for management and recycling.

Finally, the materials domain focuses on sourcing them from local resources, elimination of environmentally hazardous materials and timber, and increasing dependency on local plantations (El Deeb et al., 2015).

2.3. COASTAL DEVELOPMENT CASE STUDIES

2.3.1. Schenectady and Scotiawaterfronts, New York, United States

Schenectady and Scotia are a city and a village in the State of New York in the United States with a total population of 73,000 capita that created a collaboration plan for the development of their waterfronts along the Mohawk River, as shown in Figure 2.11. The plan included building facilities on both riverbanks for recreational purposes, while connecting the parts with a pedestrian crossing. The aim of the waterfront development is to enrich the heritage of the communities and connecting the commercial and recreational facilities on both banks. Moreover, the waterfront intended to improve and simulate developments to make the community more desirable for tourism and investment. The developers confirmed in their plan that economic, environmental, heritage, cultural, and social aspects were taken into consideration for an effective waterfront (Synthesis, 2005).

Figure 2.11. Masterplan for waterfront development in Schenectady and Scotia (Synthesis, 2005)

The developers of the project considered current market conditions, location constraints, and public participation for ideas through a panel of residents, community representatives, and business owners. As a result of the study, a proposal was conceived for the facilities. In Schenectady, the waterfront (Figure 2.12) included as numbered on the figure:

1. Parking spaces and a welcome centre with a restaurant
2. Bus terminal
3. Passive waterfront park
4. Multi-family housing
5. Streetscape improvements and wayfinding
6. Connections with city's traffic intersection and bike trail
7. Improvements to adjacent street connecting waterfront to the city
8. Addition of green spaces and alignment with city intersection
9. Creation of boulevard from a local street
10. Pedestrian bridge connecting city to waterfront
11. Residential and commercial neighbourhood
12. Bed and Breakfast facility

Figure 2.12. Elements of Schenectady waterfront (Synthesis, 2005)

The scotia waterfront (Figure 2.13) included more developments to increase the connection between the city and the village, as well as provide recreational facilities that benefit both of them. The improvements as shown numbered on the figure are:

1. Create entrance from village to facility
2. River walkway
3. Shifting all hanging power lines to underground power to enhance visual attractiveness
4. Parking spaces
5. Family Park
6. Erosion mitigation structures
7. Bank protections
8. Recreational Park
9. A lodge
10. Enhancement of connection with neighbourhood

11. Boat basin for cruise and fishing boats
12. Improvements to neighbourhood
13. Crew facility
14. Riverfront Park
15. Boat launch
16. Bike trail connections
17. Private business property

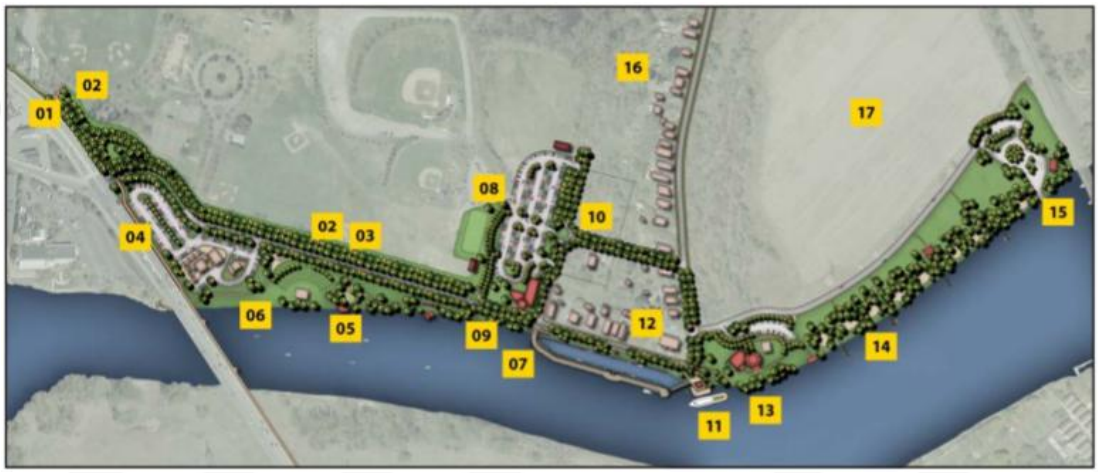


Figure 2.13. Elements of Scotia waterfront (Synthesis, 2005)

2.3.2. Janzour Waterfront Development, Tripoli, Libya

The coastal development for a waterfront in Janzour is a private investment between a local investment fund and an international real estate developer. The value of the project is 500 million USD and it is mainly focused on touristic residential facilities, as shown in Figure 2.14. The project includes a five-star hotel, more than 60 hotel villas, and more than 365 apartments targeted at mid-to-high income residents, in addition to a sewage treatment plan and water station. The planning stage included an infrastructure and environmental plan, which studies the impact of the project on the local ecosystem (RW Armstrong, 2013).

Figure 2.14. Renders of proposed Janzour waterfront development (RW Armstrong, 2013)

2.3.3. Maltepe Fill Area, Istanbul, Turkey

The need for the waterfront development at Maltepe, as shown in Figure 2.15, arose from the need for a coastal road to cross the area, which was hindered due to the congestion of the urban development at the coast. Moreover, the city municipality evaluated that the area needs to be supplemented with additional entertainment and sport opportunities.Thecrossing road has imposed traffic congestions on the area; however, Seda and Nevnihal (2016) accused the project of breaking the damaged relationship between Istanbul and its waterfront at the location.

Figure 2.15. Maltepe waterfront development (Seda & Nevnihal, 2016)

Seda and Nevnihal (2016) argued in their study that waterfronts should be evaluated based on their quality. The authors presented a compilation of twenty-six concepts that are necessary to be used when planning or assessing any waterfront development. Based on the evaluation of the authors, the Maltepe development satisfied five out of these quality requirements. The concepts are:

- Enhancement of public space by surrounding buildings.
- Limits should be clear between the development and its residential developments.
- Activities within the development should be continuously offered to the community on a 24/7 basis.
- Flexible design for better adaptability.
- Innovative amenities.
- Increase accessibility by all means of transport.
- Development represents local identity.
- The water at the development is the centre of attention.
- Availability of iconic structures.
- Rehabilitation of existent waterfront.
- Private-public partnerships.
- Focus on social objectives of the community.
- Smooth integration between the development and its urban surroundings.
- Availability of maritime activities.
- Investing in the spatial values of water.
- Develop a connection with other waterfront developments.
- Correlate the development with built environment around it.
- Availability of multipurpose buildings.
- Flexibility of development availability.
- Creation of unique identity.
- Availability of passive open spaces.
- Balance of social and environmental benefits.
- Consideration of social diversities to create a barrier free development.

- Empowerment of sensory experience.
- Coherence within the different facilities in the development.

2.4. CHAPTER SUMMERY

A waterfront is the coastal areas with direct interaction between the urban development of cities or towns and a waterbody of different types, river, sea, ocean, canal, etc., where its characteristics reflect the social, cultural, economic, and historic characteristics of the inhabitants. The characteristics of the waterfront are based on its physical, social, and cultural traits. The physical characteristics are dependent on its geographic location and usage (sea, lake, river, etc.). The social characteristics are determined through the ability of the waterfront development to provide inclusion and sense of belonging to different social groups and to address their interest differences. The cultural characteristics emerge from the ability of the development to capture the historical essence of the city and present it through the waterfront. The relationships between humans, their environment, the city and the waterfront is critical to address these characteristics. The essence of the relationship between the human and the environment is the vital need of humans for environment to survive and sustain living. The perception of man towards the relationship plays a major role in his ability to understand the required equilibrium that need to be preserved between the needs and the ecosystem.

There are various factors that determine the development of waterfronts. In site selection, six criteria were specified for waterfronts: proximity between community and site, availability of splash pads, distance to currently available splash pads, age distribution of community, occupational density of parks within community, and site slope. The history of the coastal region is considered in any waterfront development or rehabilitation works, in case of the existence of archaeological remains on site.The sense of place is one the key historic factors in waterfront development. The preservation of historic values becomes a priority in cities that have extended history along several eras. Furthermore, the community within the city with waterfront development is a key stakeholder in decision-making and design processes. Additionally, waterfronts are proposed as solutions for creative and sustainable

developments from the economic perspective, especially for communities and cities that are looking to expand their land value and investment returns. In the environmental and ecological aspects, objectives were determined to control development at waterfronts in order to ensure the harmony between the city and the coast in those perspectives.

CHAPTER 3: CASE STUDY DEFINITION AND METHODOLOGY

3.1. CITY OF DERNA

The case study is applied to the coastline of Derna, Libya. Thus, the following sections present the geographic, geologic, historic, economic, and demographic characteristics of the city.

3.1.1. Geography and Geology

Derna is one of the most significant cities that lies on the Mediterranean within the Libyan coastal region, which extends along 1900 km from the Egyptian boarders at East to the Tunisian boarders at West.The geography of Derna starts at Ras Alhilal to the south, which is a rocky hill that extends along 1.5 km and creates the gulf that contains the city. The geographic location of Derna is shown in Figure 3.1.Derna lies at the estuary of a valley that is rich with palm trees, where the city extends on both its sides. To the east side of the city, a dock was built for small boats with protection from western winds(Bulukma & Alkzeizi, 1997).

Figure 3.1. Geographic location of Derna

The geological formation of Derna is classified under the Mesozoic era. The lowest part of the formation consists of fine grain limestone, while the upper part consists of algae and coral limestone with nummulites. The formation is found along the beach of Derna starting from 20 km to the east of the city, which led to the creation of caves and reefs in several areas. The modern continental geological formation in Derna consists of valley sedimentations of pebbles, sand, and silt in most areas. These sedimentations are characterized with its high thickness especially at the estuary to form a dry delta(Bulukma & Alkzeizi, 1997).

3.1.2. History

The Libyan coastal region is filled with historical significance due to the establishment of several civilizations on it and its location that allowed the communication of other significant civilizations in western Asia, southern Europe, and northern Africa. The facilitation of marine transport allowed the Northern Libyan region to be controlled by several powers throughout history. Soldiers and warfare equipment were easily transported using ships. Another factor that adds to the historic significance of the Libyan coastal region is its role as a connection between western Asia and North Africa that allowed different arising powers to expand between these distal areas. According to the British Royal mission recorded in 1828 that started in Tripoli and ended in Derna, several notes were appointed about Ras Hilal and Derna. The mission recorded that Derna at the time was ruled by a son to the Turkish family that controlled most of the Libyan coastal region. Despite its natural southern defence, the northern side of the city was not prepared for any aggression. A single fort was built on the coast with few canons, and it was not a threat to any attack according to the mission(Bulukma & Alkzeizi, 1997).

The arrival of the Greeks to the north-eastern Libyan coast, which includes Derna, formed an important era to both civilizations as it allowed them to expand their activities from their conventional agriculture towards trading. Moreover, they realized the logistical importance of the region. Thus, they constructed economic and military ports to move production towards their mainland, including the port of Derna (known as Darnis in Greek sources). The ports were developed by the Ottomans afterwards during

their four-century rule of the region to form a political and economic connection with Istanbul and the Southern Mediterranean coast. The connections between Derna and other countries, such as Sweden, England, France, and the United States, was strengthened after the political change in 1711 by the Karamenli Turkish family due to several trading agreements. The Italian occupation that colonized after two centuries considered Derna a key logistical point for its military operations towards other parts of north Africa. It also allowed the transfer of different civilized forms from Europe(Bulukma & Alkzeizi, 1997).

3.1.3. Economy and Demographics

The Mediterranean coast is one of the most strategic locations in the world due to its central location, richness in marine resources, and high potential of raw materials and energy resources. In ancient eras, logistics in the region formed one of the most challenging issues for economic activities due to harsh terrains and high costs. Therefore, marine transportation became a successful solution for moving goods inwards and outwards. It allowed the northern Libyan region to become an economic hub for trading and exchange of human values. Eastern goods were transferred to the region along with other spiritual and demographic substances. Several geographic factors allowed the development of marine economic activities in the region and increased its demographic appeal, as follows(Bulukma & Alkzeizi, 1997):

- The availability of fertile coastal lands and valleys, which attracted the population to settle in it.
- The availability of functional seaports with near water sources allowed fishing and trading activities.
- Ship manufacturing thrived in the region due to the existence of substantial forests in the adjacent mountainous region.
- The existence of the desert separation that forced the population to depend on exchange through the coastal region.

Dernah depended to a high extent on its seaport in its economic exchange of goods with passing ships. The region between Derna and Crete was known as the golden sea as

most of the eastern trading movement passed through it. The Karamenli rule in 1711 formed the best times for economic activities and trading in Derna due to the several agreements. These activities started diminishing around 1835 and the port of the city was given less importance during the Italian occupation. However, several economic activities continued to thrive, such as fishing and sponge hunting.

The last estimation of population in Derna was performed in 2012, which showed that the city had more than 155,000 capita of which more than 96% are Libyan citizens. The total household in the city is 22,713 and population density is calculated as 1.86 per square kilometre(Bulukma & Alkzeizi, 1997).

3.2. DEVELOPMENT OF DERNA

Derna is a mountainous city located on the Mediterranean coast in northeastern Libya(Sasi, 2007). It is bordered on the north via the Mediterranean Sea and on the south via a series of green mountain hills. The city is Titled (Pearl Barqa); (Elhassadi, 2008); (Brown, 1912) bisects the course of the valley into two halves, as well as this valley is termed as Wadi Derna, which is one of the large wadis known in Libya. In,(2011), the population of Derna is (80,000)(Elhassadi, 2008); (Brown, 1912); (Salama, 2019). Derna is a Mediterranean port city located in Eastern Libya, with a population of (250,000 to 300,000)(Elhassadi, 2008); (Brown, 1912); (Salama, 2019).

The city of Derna is located on the Green Mountain Coastal region. It is the administrative center of the municipality of Derna, also the city was famous for its location as well as mountain bushes as it was irrigated with fresh water flowing to it through the water channels from two rich springs, one of which is known as Ain Al-Bilad also the second under the name of Ain Bouansour, and this water descends from a high hill to the valley drainage termed as the waterfall Bouansour. The classical as well as non-classical poets sang the beauty of Derna, its growing greenness, its lush shades, its fresh water and its fresh air, also they praised the generosity of its people as well as their character. Arab and foreign writers as well as tourists spoke about its neighborhoods and monuments, and some termed as it the bride of Libya also the pearl of theMediterranean (Al-Qaziri S. K., 2005).

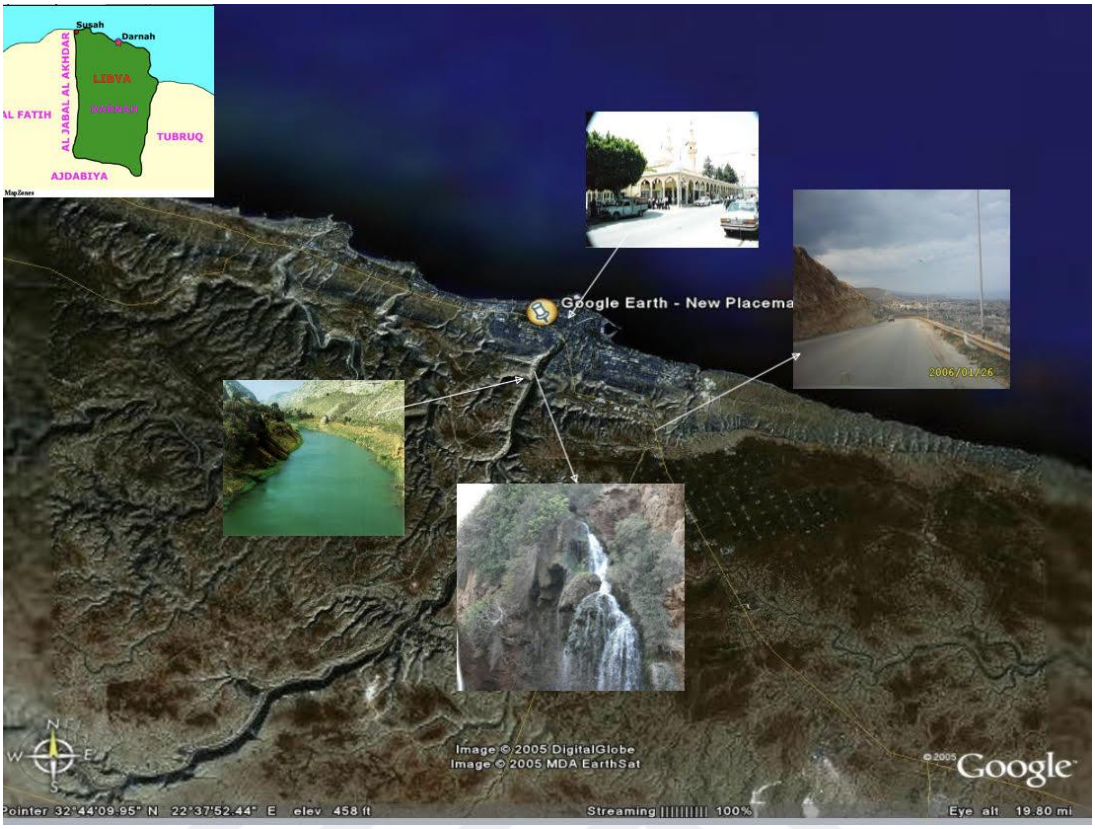


Figure 3.2. Landmarks of Derna

The main part of the city is located on a narrow coastal plain that extends for a distance of 3 kilometers and has an average width of 800 metres. To the south, a slope divides the plain from a rocky plateau 60 meters above sea level encircling the city, leaving narrow strips of land of an average width of 300 meters on both sides of the extension of the coast, and another slope runs parallel to the coast and reaches a height of about 10 meters above sea level, which are sand dunes that have hardened and formed due to the retreat of the sea This is the neighborhood of (Al Jubaila) and Dar Al Hamam(Al-Qaziri S. K., 2005).

3.2.1. Historic Development

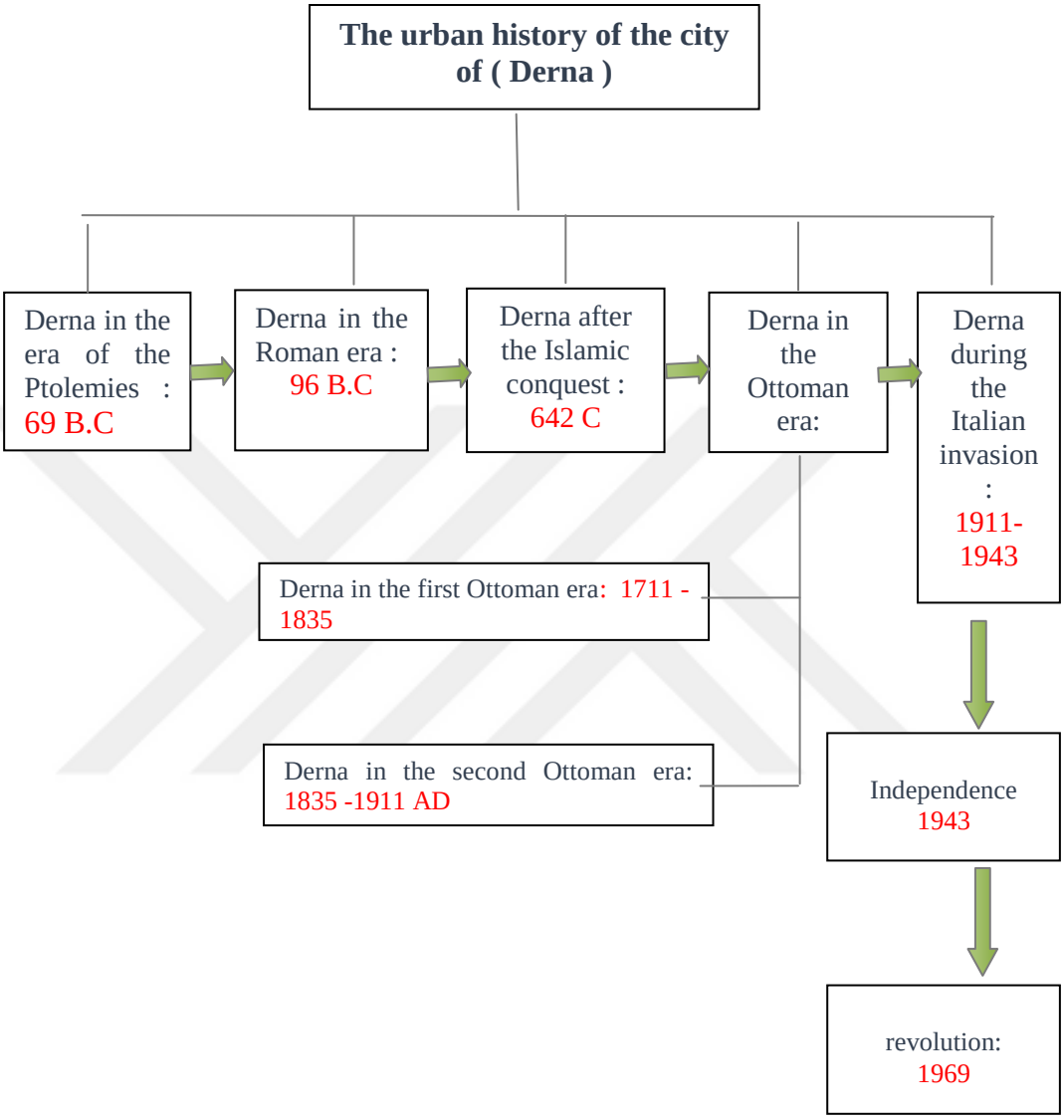


Figure 3.3. The urban historic development of Derna

Derna appeared as a settlement located at the eastern end of the Pentapolis region. Known as Darnes, it was settled by some members of the ancient Libyan tribes, and some Greeks. Its importance appeared during the era of the Ptolemaic dynasty that ruled Egypt.

- **Derna in the era of the Ptolemies (69 B.C.):**

The first to mention Derna is **Ptolemus** (an astronomer and geographer who appeared in the second century AD and wrote a book on geography. He said in his book (that Barqa ends eastward with the borders of Marmarica from the port of Derna and north at the longitude (15.52) an at the latitude.It was known as Darnes, and it is likely that this Libyan name was kept by the Ptolemies on its ancient origin.Professor Ali Fahmy Khushaim says in his study Libyan Readings: "As for Darnas, it is the current city of Derna, which is a Libyan word meaning (between the mountains) as it is the location of Derna". He also says: "In his great book (The Eastern Libyans), Betts traced the origins of the ancient Libyan language and found the word (Erasa), which Herodotus mentioned that Greece landed in it before (Cyrene)During the Ptolemaic era **69 B.C**, the city was known as the capital of the eastern region .Thus Derna was the capital of Libya which included all lands of the east of Derna until the boarders of Alexandria including the Seyouah oasis.In this era, the city's caves were used for warships, and the port of this era lasted for more than 5 centuries. It was a Ptolemaic city until the Romans ruled Libya.

- **Derna in the era of the Roman era (96 B.C.)**:

The rule of Cyrenaica moved from the rule of the Ptolemies to the rule of the Romans in the year **(96) BC**, after the death of (**Ptolemus** of Appion) the last king of Cyrenaica from the Ptolemies, and thus Libya became a Roman Byzantine state. As for the spread of **Christianity** after the Romans embraced the religion of Christ, peace be upon him, Derna and its surroundings were an episcopal seat since the first centuries of the Christian era . It is possible that the caves located in the east of the city and which are still remaining, these caves are called (**the church**)(AL Trapolci, 1999).

The researchers mention (**Wadi Marqus**), located between the city of Derna and the town of Sousse, in relation to the disciple Mark (**Saint Mark**), the owner of the Bible named after him and who founded the first church in the province of Cyrenaica.There is also the (**Valley of the Gospels**) located to the west of Wadi Markus, 40 km west of Derna(AL Trapolci, 1999).

- **Derna after the Islamic conquest (642 A.D.):**

The name of Darna was not mentioned on the date of the first conquest of the countries of the Maghreb, as the people of Cyrenaica reconciled the leader of the first conquest (Amr ibn al-Aas) for a tribute they give to the House of Money in Egypt every year.The name Derna emerged in the last third of the first Hijri century, when the leader Zuhair bin Qais al-Balawi and his companions and followers were martyred and were all buried in Derna 689 C .The tombs of the martyrs are still there, and they are built in the Andalusian style(AL Trapolci, 1999).

- **Andalusian families in Derna**:

The beginning of the arrival of Andalusian families to Derna was before the end of the tenth century AH, that is, the sixteenth century AD. These groups came in two groups. The **first group** left Tunisia to go for Hajj, and upon their return from the Hijaz, they landed in the city of Derna and settled there.As for the coming of **the second** batch of Andalusian groups (1637), when Musa Tigharin, a deputy governor of Tripoli, asked (Youssef Bey Tunis) to supply him with a group of Andalusian residents in Tunisia to build (Cyrenaica), which is characterized by the fertility of its land. Bay Tunis responded to his request and prepared four boats with **800** farmers on board who came to the city of Derna and settled there. This was the first period of prosperity for the city because they helped to cultivate its land and dug canals and constructed residential buildings that had an Andalusian pattern. This period was marked by the construction of domes and arches; they also built a wall to protect the city and established mills for the harvests(AL Trapolci, 1999).

- **Derna in the first Ottoman era (1711 – 1835):**

The Ottomans expelled the Knights of Saint John from Tripoli (1551AD), thus Libya became an Ottoman province limited to Tripoli and its environs. As for the Cyrenaica region, it was not subject to the governors of Tripoli who were appointed by the Ottoman Sultan until long after the date of the Ottoman era. Andalusian families have increased their activity in investing large areas of arable land and in bringing water to them from an eye known as Ain Al-Bilad.Derna during the reign of (Muhammad Bey),

whose tenure lasted until 1698 AD, when he settled in the city and among the most important works that he founded in the city of Derna during his reign(AL Trapolci, 1999):

1. The Great Mosque **(Al-Atiq Mosque)** .In the construction of this mosque, Mhammed Bey used the help of two engineers who came to the city of Derna from Istanbul, one of whom died in the city of Derna and was buried in the room adjacent to the minaret . The inhabitants of the city of Derna participated in building the mosque by inheriting the skill of the Andalusian families in the art of building and architecture.
2. Creating water channels: When the Andalusian families came, they opened the water channels and used the city's water to irrigate the fields, and that was limited to the spring (Ain al-Bilad).

During the reign of Muhammad Bey, the spring of (Ain Bu Mansour) was taken advantage of, as he opened canals along the two banks of the valley to include all parts of the city. The city was hit by an epidemic in the early nineteenth century, and (Dalachla), who visited Derna in 1816 AD, indicates that the epidemic had spread and killed lives. This epidemic was preceded by the arrival of the American forces in (1803 AD), and the population of Derna was divided, as was the population of Cyrenaica, into two groups, a group supporting Yusuf Pasha al-Qarmanli in Tripoli, and a group supporting Ahmed al-Qarmanli, the younger brother of Yusef, who fled from Yusuf's brutality and oppression to Egypt and was brought by the Americans to fight his brother Yusuf, whose ships controlled the Mediterranean and imposed on the countries of the world the payment of royalties. The Tawajir, the Tawahir, and the Zughaibat supported Yusuf. As for the Misratans, they supported Ahmed and lived in Al-Maghar under the protection of the American fortress that they built in the south of Al-Maghar, and they stayed there for several months until the problem was solved(Al-Qaziri S. K., 2021).

The city was also the location of the famous Battle of Derna (1805), the first victory achieved via the US Military on foreign soil. Occurring during the First Barbary War, the battle was fought between a force of roughly 500 US Marines as well as Mediterranean mercenaries which is associated with four or five thousand Barbary troops.

- **Derna during the Italian invasion (1911 – 1943):**

The city of Derna was at the forefront of the coastal cities that were bombed by the cannons of the Italian fleet after Italy sent its war warning to the Ottoman Empire.The first thing that these missiles targeted was the wireless poles built near the beach, which were built at the end of the second Ottoman era, the Turkish garrison barracks, the customs building, and some other buildings adjacent to the beach, until it was able to occupy the city (October 17, 1911).The occupation authorities began building the **rock wall** (the wall) after the first years of the occupation of the city. It is about 3 meters high, about 3 km long, and has four gates. The Italians built the first **theater** in the city of Derna, about eight years after the occupation, and called it **(Teatro Verdi).**In 1935, **a youth club** (the Arab Litorio) was established, with the aim of spreading the fascist spirit among the youth of the nation(AL Trapolci, 1999).

Italian installations in the city of Derna (AL Trapolci, 1999):

1. Rock wall (the fence) 1912-1916 :The occupation authorities began building the rock wall (the wall) after the first years of the occupation of the city. It is about 3 meters high, about 3 km long, and has four gates .
2. A bridge connecting the two opposite banks of the valley in the middle of the city:(1914-1916):it was constructed of compact rock, and has three openings over which cars and vehicles pass, and on either side of it are two pedestrian sidewalks
3. Mutasarrifate headquarters: And in it the office of the Italian administrator, and his job is to implement the Italian policy.
4. Civil Hospital: 1914 :There was an Italian doctor and a number of Italian nurses in it (sorele) and a few Arab nurses.
5. Post Office and Telephone: (1914).
6. Agricultural Conservation Department: It was established in the early twenties on a large area of land in the Al-Jabela neighborhood

7. The new dock (port): The Italians built a new berth for the port on the eastern side of the city, and abolished the old port, which was built in the second Ottoman era.
8. Real Estate Office: (1914).

- **Derna during the British era (1943-1952):**

The British forces occupied the city of Derna on the fifteenth of November 1942 AD, and the Italian forces were finally withdrawn in January 1943 AD. During the era of the English administration, Derna was the center of the Derna province. It was Cyrenaica divided into three provinces: Benghazi, Derna, and Al Jabal. During this period, 15 housing units were built for the residence of the British in Al Jubaila neighborhood, Barclays Bank, Al Noor School, and the construction of a camp The British Army on the East Coast.

The English administration was austere in its management of cities, and tried to preserve the existing reality. The fate of Libya was uncertain until the United Nations passed a draft resolution providing for the independence of Libya before 1952 AD, and on December 24, 1951 AD, the independence of Libya was declared as a United Kingdom with a federal constitution under the auspices of His Majesty King Muhammad Idris Al-Senussi I. In 1963 AD, the kingdom adopted a new constitution that ended the federal era and transformed the kingdom into a central state(Al-Qaziri S. K., 2021).

The important landmarks that were built in Derna during the different historic eras.

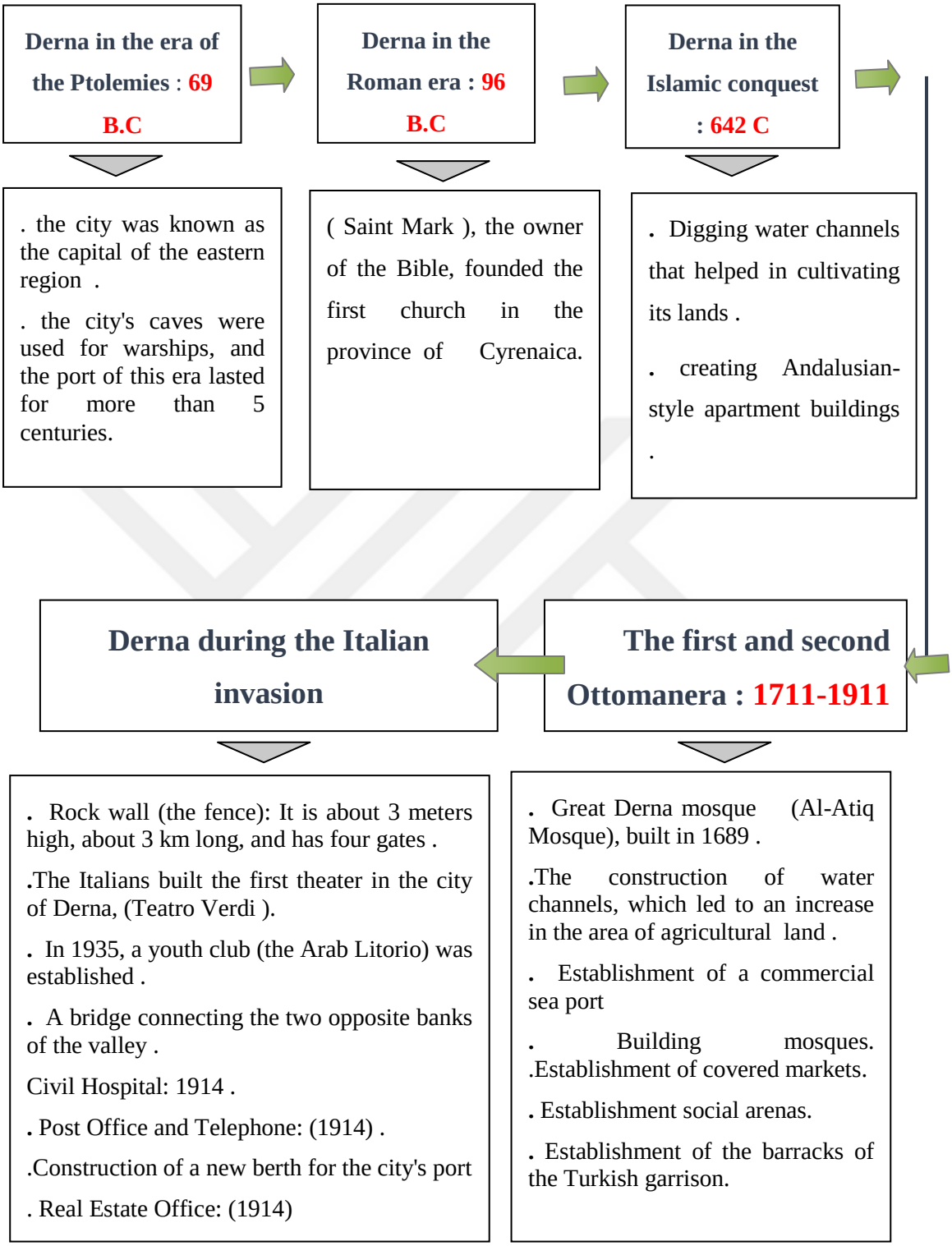


Figure 3.4. important landmarks that were built in Derna during the different historic eras

3.2.2. Morphological Development

When we say the morphology of the Libyan city, the first look at the Libyan cities necessitates that we describe them as modern planned cities, but at the same time they can be described as scattered and have no special character.Like oil cities or mining cities, they emerge and grow rapidly because more than eighty percent of their areas were established in the last thirty years, meaning that they did not develop gradually until they acquired a character that distinguished them, with the exception of the old cities, from this generalization. Or the old neighborhoods within the cities of Ghadames, Ghat, Tripoli, Benghazi, Yafran, Nalut, Gharyan, and thus the Al-Bilad neighborhood in the city of Derna(Al-Qaziri S. , 1995).

The morphology of the city of Derna has changed amazingly, and it has grown and expanded, and taken different forms. These changes came as a result of the development and urban development that the country witnessed due to the intervention of the state. The state here represents the external growth factor for Libyan cities. The morphology of the city is affected by the location of the site on which it extends. While the site determines the spatial relations between cities within a specific region, the location has an impact on the internal structure of the city, and the shape it takes. There are flat, plain-land cities such as Al-Marj, Ajdabiya, Misurata, and Tripoli, and there are mountainous cities that affect the heights and valleys that penetrate them in their morphology, such as Constantine in Algeria, Ifrane, Zintan, Bani Walid and others. As for the valley of Derna in the Delta Al-Deltawi plain, it affected the shape of the city, so the city was divided into two parts. And the heights in the south of the city prevented it from extending to the south, so it extended over the feet of the mountain in (Shiha) and (Eastern Coast)(Al-Qaziri S. K., 2021).

The city's morphology and land use system are affected by the city's function, or functions. The job is the justification for the city’s existence (Raison D’etre), and knowing whether the city has an administrative, commercial, service, industrial, residential, or multifunctional function . The old city of Derna is a vivid example of Arab cities whose urban fabric responded to the surrounding influences, which was reflected in the general features of the city such as privacy, gradation, and containment.

This came as a result of the urban planning response of the city with the influences of the surrounding environment, which formed a balance between the urban fabric and the needs of the community.

The morphology of the city of Derna suffers at the present time from an imbalance between the traditional urban fabric in the Al-Bilad neighborhood, and the accelerated leaps that accompanied the numerous developments, and the economic, social, and urban transformations that the city witnessed and coinciding with the adoption of the schemes of imported planning and design standards imported from abroad without A logical gradation, which led to a change in the general features of the urban fabric and the result of rapid and large expansion, and this is what we witness in the neighborhoods and neighborhoods of Shiha, (the eastern coast), and Bab Tobruk.The urban fabric of any city is a product of the needs and requirements of the population during a specific period of time, and in response to the influences of the cultural and natural environment, the geography of the region, its climate, building materials and others.

The site of the martyrdom of the Companions became a shrine and a symbol of the city of Derna, and gave the city a point of attraction inside and outside it. The stability of Andalusian families in Derna also played a role in its growth and expansion. And they say: The Andalusians came with some planning standards, and architectural elements that overlapped with what already exists, such as the schematic pattern, and the introduction of the elements of the external environment inside, and attention to plants and greenery, and the vastness of orchards that characterize the city of Derna(Al-Qaziri S. K., 2021).

The entry of Islam with all its spiritual, religious, mundane and human values had a radical role in shaping the fabric of the city, the effects of which became clear in planning movement paths, directing building blocks, and designing buildings and housing units that achieved the principles of privacy. protection, and social convergence. Al-Bilad neighborhood represents the nucleus of forming the city, and there are still many monuments and buildings of historical and architectural value, which must be preserved through restoration and rehabilitation. Among the most important architectural elements in the city center, which are located within the

traditional urban fabric, include the Dark Market, Al-Kharraza Market, Al-Attarin Market, Al-Hasadi Agency, Trabelsi Agency, Red Square, Al-Kharraza Square, the Old Mosque, the Jewish Church' Catholic Church, and Arab houses with their inner courtyards(Al-Qaziri S. K., 2021).

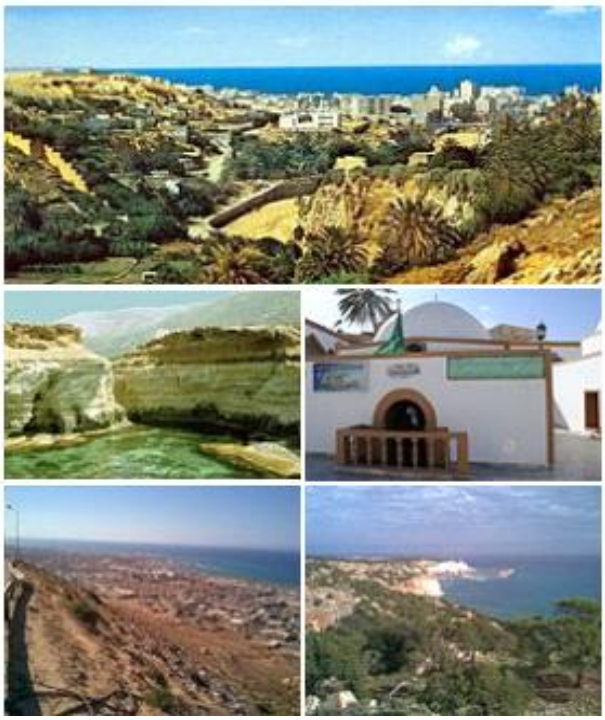


Figure 3.5. General also physical characteristics of Derna today

Figure 3.6. Mahallas in Derna (Libya Herald, 2018)

There are some important as well as famous places which are East coast, west coast, Bab Tobruk, Maghar Bab Shiha. Jubaylah. Alkwi which is associated with Bou Mansour. Fateh and Ambakh Valley (Sasi, 2007).

Figure 3.7. Al-Sahaba Mosque, one of the most famous mosques in Derna and Ateeq.

The most important squares of the city are Zawia Square, Al Sahaba Square, Al Bayasah Al Hamra which is associated with Al Tayer Square. The most important markets of the city, the dark market, al-farda market, al-Kharaza market, the green market, the hotel market(Lapworth and Zimmern, 1912); (Sasi, 2007).

3.2.3. Trasportation and Land use

The port is located near the mouth of the valley of Derna, and the reason for the existence of the small port of Derna, which was used in the Turkish era, is a lack of access to the city by road, In the early days of the Italian occupation, the port of Derna was the only means through which the Derna region could communicate with the rest of Libya and the countries of the world. The Italians built two piers to protect the port, one of which was about 350 meters long and the other 100 meters long.

And the movement in the port of Derna was very weak during the period that followed the war, and the port was used to export sheep to Greece and other countries. In 1964, a contract was signed with a Danish company to carry out some repair works, including

the construction of a berth of 160 meters in length, with a depth of 4 meters along the berth. Thus, ships with a draft of between 9 and 14 feet were able to moor on it(Al-Qaziri S. K., 2021).

Derna is linked with the town of Shahat via two roads, the first is the main internal road passing through the dome (which is part of the Libyan coastal road), as well as the second is the coastal road passing through the town of Sousse as well as Ras al-Hilal (Sasi, 2007).

The distance between Derna and Benghazi is estimated at about three hundred kilometers to the west, and between it as well as the city of Al-Bayda a distance of one hundred kilometers, and it is about 1,300 kilometers east of the capital, Tripoli, as well as (1050 kilometers) west of the Egyptian capital, Cairo. The heavy traffic on the coastal road passes through the city which is associated with separates the east coast area from the rest of the city (Sasi, 2007).

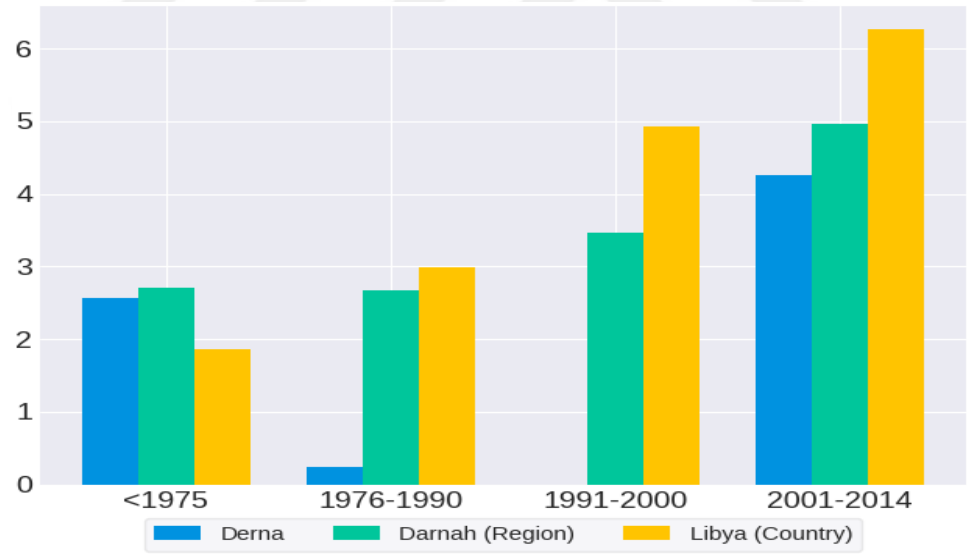


Figure 3.8.SNDi of street constructions in Derna(source: https://sprawlmap.org).

Derna and Darnah do not follow the same trend in the dis-connectivity of their street network constructions. There was not enough data from the city, while the SNDi of street constructions in Darnah was at its lowest in (1976-1990). Most recently in (2001-2014), street construction in Derna was the 1st-most disconnected out of the 1 cities in

Darnah. Its position in the ranks since (1975) has not changed. Derna ranked 1st in (1975), 1st in (1976-1990) and 1st in (2001-2014) (https://sprawlmap.org). There was no ranking in (1991-2000) attributable to unavailable data. Derna and Libya do not follow the same trend in the dis-connectivity of their street network constructions. There was not enough data from the city, while the street constructions in Libya rose steadily. Most recently in (2001-2014), street construction in Derna was the 5th-most disconnected out of the 15 cities in Libya. Its position in the ranks since (1975) has fallen; relative to other cities in Libya, street construction in Derna has become more connected. Derna ranked 2nd in (1975), 15th in (1976-1990); (2001-2014). There was no ranking in (1991-2000) due to unavailable data (https://sprawlmap.org).

- **The Main Coastal Road**: running parallel to the coast of the sea in the north, creating a boundary separating the city from the sea and the proposed regional road links between the towns of Tobruk and Benghazi and will remain the main road of the city later.
- **The Main Interior Road**: the existing road extends from east to west passing through the centre of the city as is illustrated by the map.
- **The Main Southern Road:** it is a proposed highway that will be the southern boundary of the city which separates it from the second slope behind AL Wahda and Sheeha neighborhoods, and also connects with the regional road to ease the pressure on the coastal road.
- **The problem of the formerly planned main road network**: The town is an important center of transportation on the coastal road that runs the full length of the territory. Currently this road enters the city from its western end and extends along the sea front, alongside the city centre and then turns east for its incursion into the city before it begins to rise over the slope. Therefore the course of this road causes many problems that are expected to grow more acute in the future, for two main reasons: The heavy traffic on the coastal road passes through the city and practically separates the east coast area from the rest of the city. Transit traffic, which includes trucks and other heavy vehicles use the Derna line at a time when it must be used for recreational purposes.

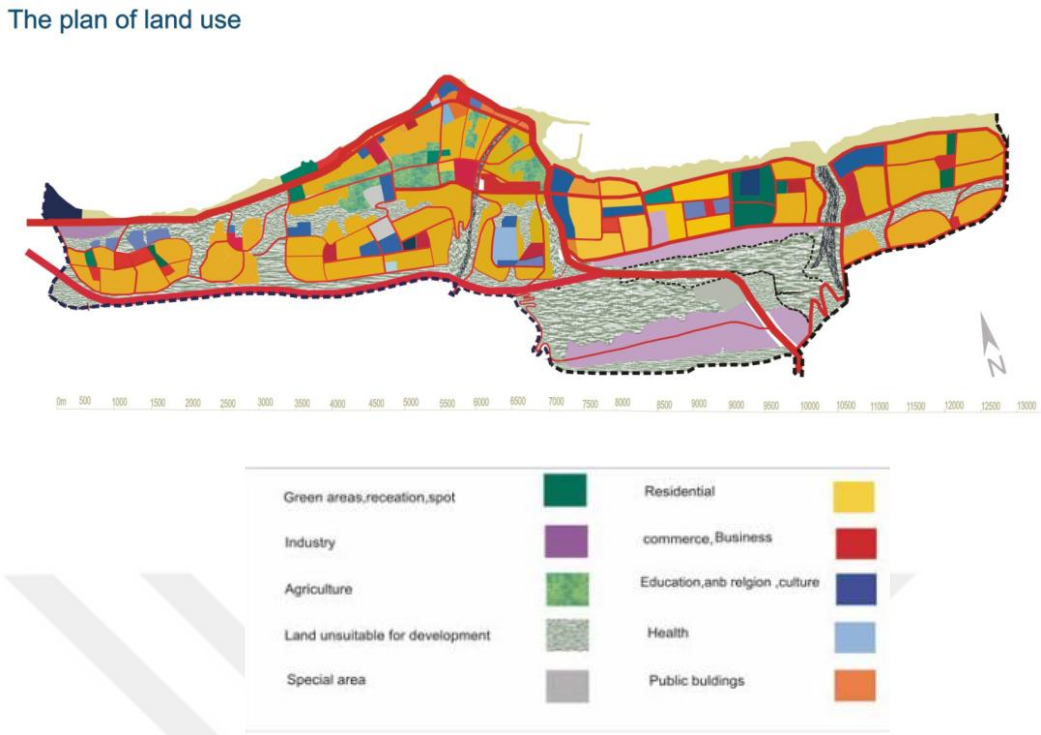
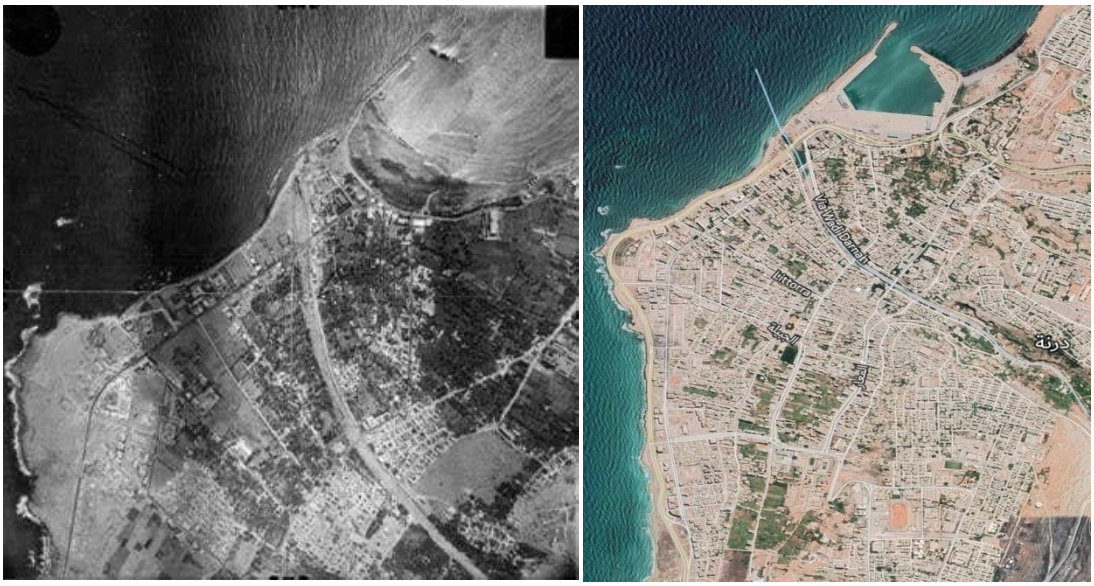


Figure 3.9. Landuse of Derna 2000 (Sasi, E)

3.2.4. Urban Development and City Planning



Derna **1912** AD - Derna archiveDerna **2021** AD - Derna archive

Figure 3.10 Urban development of Derna between 1912 and 2021

3.2.4.1 Stages of urban development

a .Old city

It came in the book (Frederick and Henry Becchi) and a description of Darnah that the city was built at the mouth of a wide valley, over a low area extending from a barren mountain edge at a distance of about a mile and a half from the sea.

Darna houses are distinguished by their quality, in addition to being surrounded by gardens that produce a lot of grapes, figs, oranges and bananas, in addition to being surrounded by a fence of palm trees that give the city a special aesthetic character. A waterfall emerges from the rock higher to take its way through several streets, providing the water needed to irrigate the gardens. The streets of the city as a whole are narrow and irregular, and grape trees cover most of the walls, houses and roofed roads(Abu Luqma, 1985)(Al-Qaziri S. K., 2021).

(Figure 3.6) Location of the old city, Derna

(Figure 3.7) Plan of the old city, Derna

(Figure 3.8) Form of the old city, Derna

Figure 3.11. The old city in Derna (Sasi, E)

b. Derna in the Othman era :

The Ottoman era began in Libya in 1551 AD, but the organization of cities and the emergence of the municipal system began in the late eighteenth century. This stage can be considered a development in the management of municipalities and the provision of some services rather than an understanding of city planning. The city's maps were considered military secrets, and were not circulating documents. The period of Ottoman rule in Libya was a period of urban development in Europe by applying many new discoveries in daily life such as electricity, telephone and means of transportation. and industries(Al-Qaziri S. K., 2021, p. 57).

In the first Ottoman era (1551-1711 AD), the Ottoman rulers' control over Libya remained confined only to the Tripolitania and its environs. As for the eastern part of Libya, the Cyrenaica region, it was not completely under the control of the Ottoman governors in Tripoli until 1638 AD. When the people of the city of Benghazi rebelled against the men of the Ottoman garrison, and they asked for help from the people of Derna, so they gave them help, and surrounded the men of the Ottoman garrison inside its fortress, only to be saved by Othman Pasha Al-Saqzli, who took control of the city of Benghazi and then the city of Derna, and since that time entered the city of Derna under the control of the Ottomans(AL Trapolci, 1999).

During this era, Muhammad Bey Al-Qarmanli took over the administration of the city of Derna, and did a lot of great works in the city of Derna, and among the most important works he carried out: the construction of the Great Mosque in 1689 AD. This mosque is one of the most important landmarks of the city and has 42 domes. Also, water channels known locally as the Saqia were built with a length of more than 3 km. The water was distributed to the orchards through side channels. He also presented land to be a waqf, which is the cemetery of Sidi Muhammad Bey, which is adjacent to the tombs of the Companions in the Boumansour neighborhood.

And it was removed during the era of the late Chancellor Mohamed Abdel Karim Azzouz, who was the mayor of the municipality of Derna during the era of Abdel Hamid Al-Bakoush, the prime minister. This removal was an implementation of

Doxiades' plan for the city in the mid-sixties of the twentieth century, and the Sahaba Mosque was built in its place later.

In this era, Derna was divided into fourMahallas: Boumansour, Al-Jubaila, Al-Maghar, and Al-Bilad. A municipality building, a post office, a telegraph building, and a grain mill were built, and a building was built for the Turkish ruler. The Americans also established during this period a fortress in the Shiha area on the plateau, and the Jews established a synagogue in the second Ottoman era, specifically in the year 1890 AD, the city of Derna became the headquarters of a residency, followed by five districts: Shahat, Al-Qubba, Al-Bamba, Tobruk and Salloum. The Zawia Mosque was established in Boumansour, the Rashid Mosque was established in Maghar, the Souk al-Zalam, the Trabelsi Agency, and the Al-Hasadi Agency, and two schools were established, one of which was called the Rashidiya School in Municipal Square(Al-Qaziri S. K., 2021, pp. 58-60).

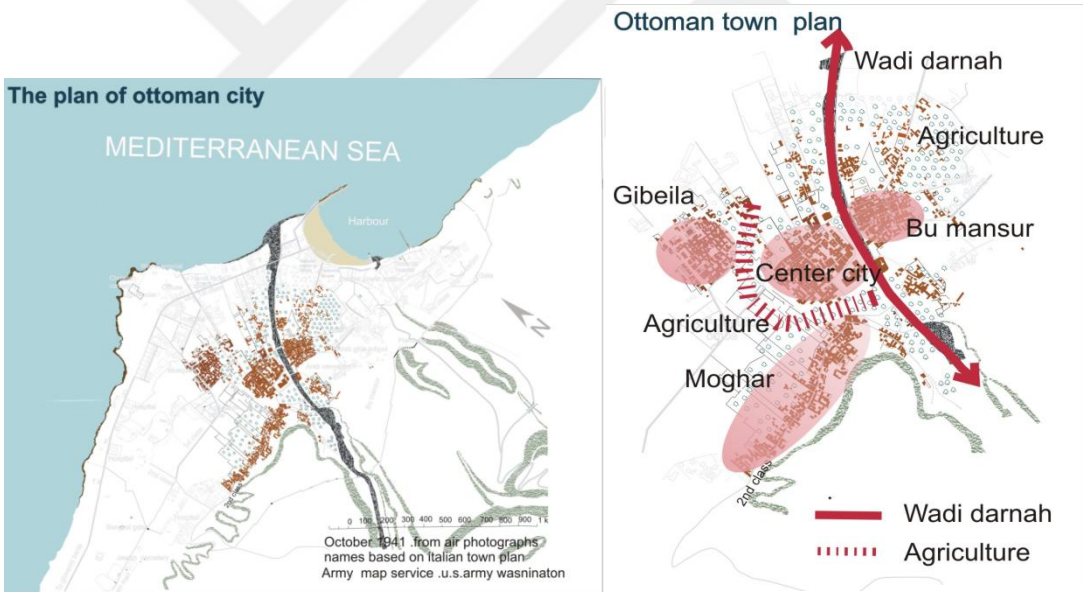


Figure 3.12. Urban planning of Derna during the Ottoman era(Sasi, E)

c.Derna during the Italianand British invasion :

This period extends from 1911 to 1951. During the Italian era, urban planning began in the modern sense. The Italian Army Corps of Engineers carried out surveys and prepared special maps for the cities of Tripoli and Benghazi. The heights of the buildings were also determined with seven floors, as is the case in Omar Al-Mukhtar

Street in Tripoli, and Omar Al-Mukhtar Street in Benghazi, and sites were allocated for houses, workshops and squares such as Municipal Square in Benghazi and Algeria Square in Tripoli. They also paid attention to the aesthetic aspects of constructing gardens and fountains, and afforestation of streets, leaving the old neighborhoods of Arab cities, and building new cities next to them. Economic and social life. This was due to a colonial racist policy implemented by General Lyautey to avoid unhealthy mixing between Europeans and the indigenous populatio.

It should be noted that the Italian colonizer was interested in the issue of cities that contain Roman antiquities, aiming to link his presence to the Roman period in the history of Libya. One of the results of World War II was the defeat of the Axis forces in the two worlds, and Tobruk and their withdrawal to Sicily. The Italians were evacuated from Libyan lands in 1943 AD and were replaced by the British administration in Tripoli, Cyrenaica, and the French administration in Fezzan. The Libyan cities remained the same, and no kind of planning took place in them. The expansion of the cities was limited, but the demographic structure of the cities changed with the return of the Libyans to the cities.

At the end of the Ottoman era, Italy began to prepare for the occupation of Libya, and these preparations took several forms, the most important of which are the movement of travelers, cultural invasion, and missionary movements. This was represented in Derna in the arrival of Italian communities, the establishment of a branch of the Bank of Rome, the establishment of a Catholic church, the establishment of a school affiliated to the (Franciscan) mission, and the establishment of a commercial agency. And in September of 1911, Italy declared its war on the Turks in Libya, and the city of Derna was bombed, and on the eighteenth the Italian forces landed in Derna, and on the twenty-fourth day of October, the Italian government announced the control of Derna(Al-Qaziri S. K., 2021, pp. 60-64).

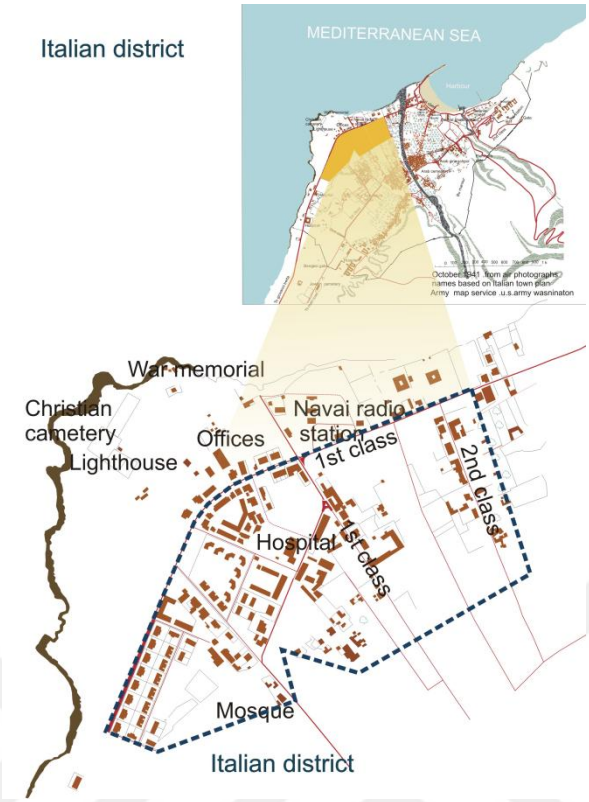


Figure 3.13. Italian district in Derna(Sasi, E)

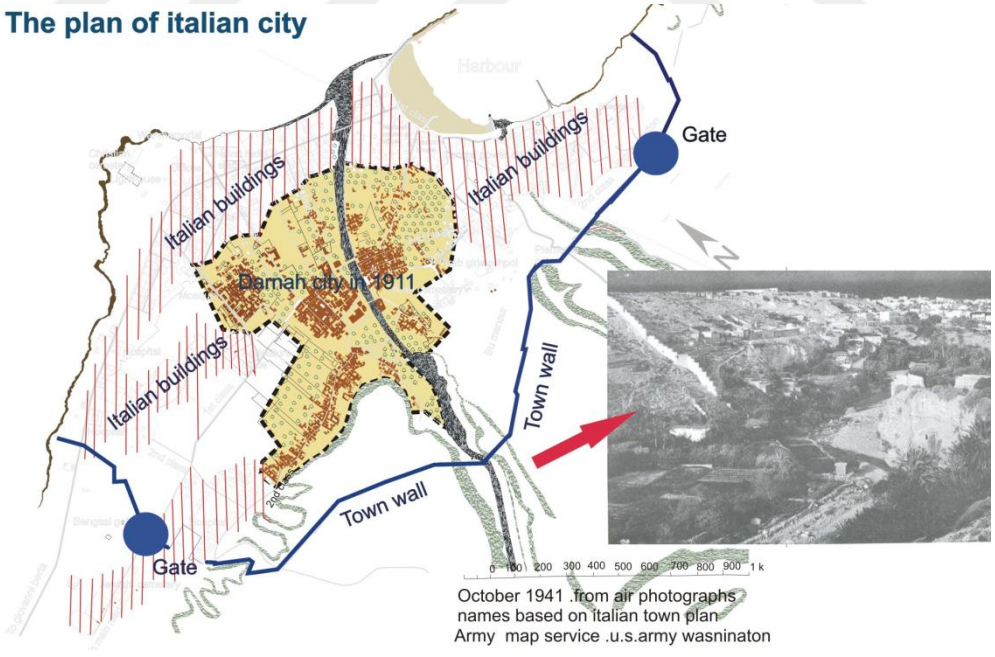


Figure 3.14. Urban planning of Derna during Italian colonization(Sasi, E)

In a study(**De Augustiny**) in the fourth part, a survey of urban centers in Cyrenaica in **1925** A.D. on the city of Derna stated that it is divided into the four old neighborhoods within the city walls, namely Abu Mansour, Al-Maghar, Al-Bilad, and Al-Jubaila. Its population reached about (9700) People, including (9450) Muslims, and (250) Jews who used to live in the locality of(al-Bilad).

1. **Abi Mansour neighborhood**: It is located to the east of the city, and it is the widest neighborhood in terms of extension, and the most populated of them, as it is inhabited by more than (4800) people.
2. District (**Al-Maghar**): This neighborhood is located above and below the first mountain edge, and it is inhabited by more than two thousand people, and they were the ones who supported Ahmed Al-Qara Manli, who fled from the might of his brother Yusuf Pasha of Tripoli, and turned to residence under the protection of the American fortress that they built on this dominant site.
3. District (**al-Bilad**): It is the oldest neighborhood of the city, and a section of the wall can still be seen, and it is smaller than the other neighborhoods in terms of extension and number of residents, but it is considered the most active neighborhood in the city, with a population of about 1250 people, and all the Jews of the city are found in this neighborhood.
4. District (**Al Jubaila**): This neighborhood is known by the name of the high that rises above it, and it was abandoned after the famous epidemic that hit the city, and it did not return to construction until years later, and its population does not exceed (1500) people(Gostini, 1923, pp. 400-495)(Al-Qaziri S. K., 2021, pp. 15-17).

The **British forces** occupied the city of Derna on the fifteenth of November 1942 AD, and the Italian forces were finally withdrawn in January **1943** AD. During the era of the English administration, Derna was the center of the Derna province. It was Cyrenaica divided into three provinces: Benghazi, Derna, and Al Jabal. During this period, 15 housing units were built for the residence of the British in Al Jubaila neighborhood, Barclays Bank, Al Noor School, and the construction of a camp The British Army on the East Coast.

The English administration was austere in its management of cities, and tried to preserve the existing reality. The fate of Libya was uncertain until the United Nations passed a draft resolution providing for the independence of Libya before 1952 AD, and on December 24, 1951 AD, the independence of Libya was declared as a United Kingdom with a federal constitution under the auspices of His Majesty King Muhammad Idris Al-Senussi I. In 1963 AD, the kingdom adopted a new constitution that ended the federal era and transformed the kingdom into a central state(Al-Qaziri S. K., 2021, pp. 60-64).

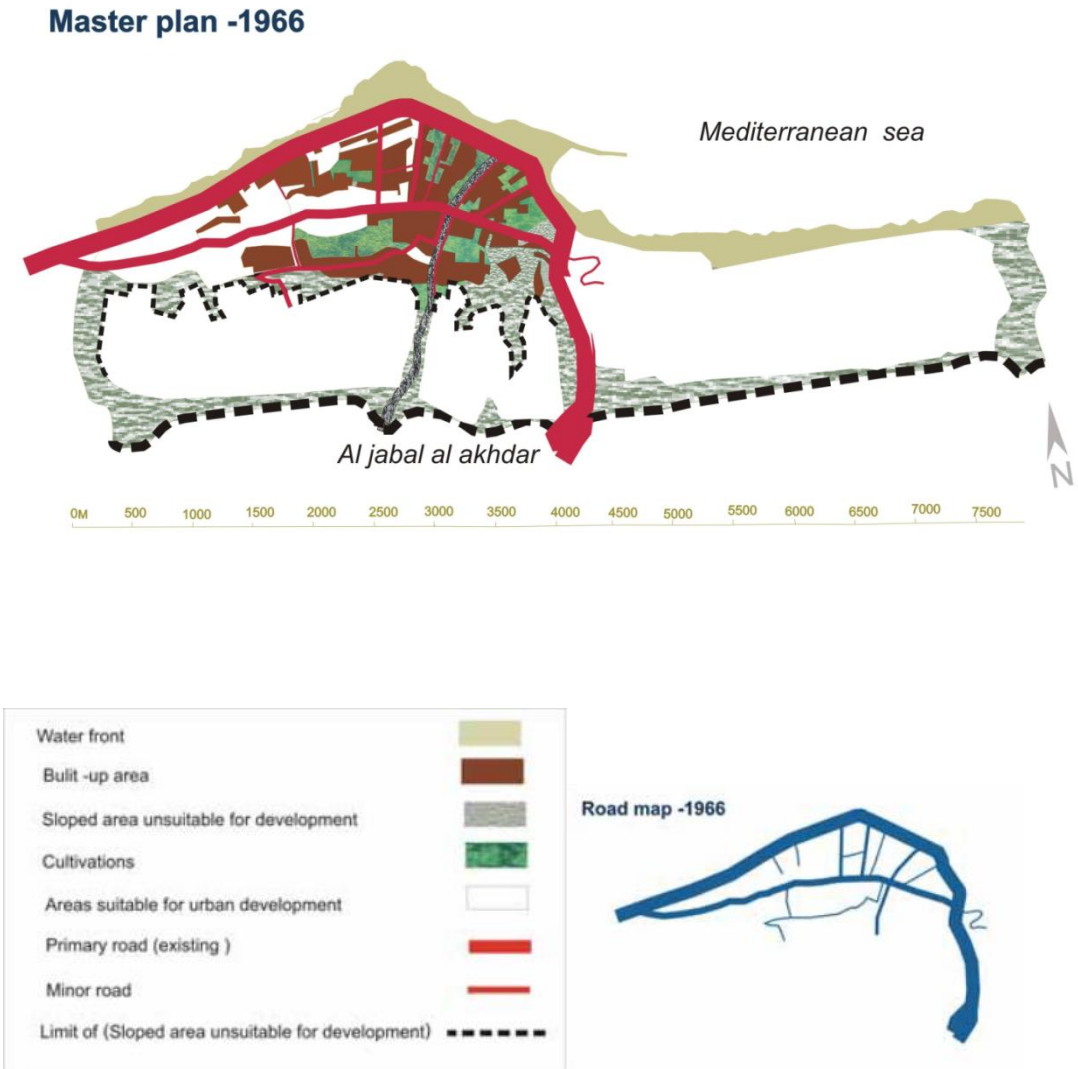


Figure 3.15. Derna Master plan in 1966(Sasi, E)

d. The first generation plans in 1968-1980 :

The Ministry of Planning and Development in Libya during the period of independence entrusted in March 1966 the Greek company Dioxides with the mission of studying Derna and other cities. (Doxiadis, 1984) The city in 1966 The area of the city was 463.27 and the city limits were AL Makar from the south, the sea from the north, the Muslim cemetery from the west and the military barracks from the east, large tracts of agricultural land were located within the city fragmentingits structure. There is also a clear difference in the structure of its neighborhoods as a result of the different periods of reconstruction and development of the city. There is also a weak network of roads from the remnants of roads built by the colonial power. (Doxiadis, 1984)

in the absence of real urban planning in the city, it is natural that the city's expansion was chaotic. After the colonizer's departure, who had stopped the development of the city for a long time-except for his own modern neighborhoods , chaotic neighborhoods appeared in AL Makar and Abu Mansour, while modern buildings were constructed in the western section of AL Jubelh. (Sasi, 2007)

Poor city services: the city lacks modern industrial services except for good handicrafts which accounted for 1.29% of the area of the city. There is also a lack of parks and playing fields which only make up 0.39% of the city's area. (Doxiadis, 1984)

Figure 3.16. Derna master plan in 1978(Sasi, E)

The city in 1978

Population: 47.300 The area of the city: 1225.6 Hectares The constructed environment of Derna has many elements of importance seen in the diversity of its neighborhoods and the times of its growth from the old city's dense buildings and narrow streets to the colonizer's neighborhoods and high separate buildings, wide streets and finally to the new neighborhoods with their relatively scattered buildings. The city also expanded quickly on a wide scope according to the first generation plan and the city limits reached the first slope on which the neighborhoods of AL Wahda and Sheeha were established southward and a small part of the eastern coast. Architecture also covered many of the fertile agricultural lands, and constituted an area of almost 122.6 hectares. The most important landmark of the evolution of the city is the network of modern roads such as the main coastal road and linking it to the regional road as well as the establishment of key internal roads which helped to connect the city's parts to each other (they formed the proportion of 130.2 instead of the 155.5 hectares proposed by the first generation plan).There also emerged residential neighborhoods on extensive areas of the city whether old fashioned districts in the east coast in Sheeha or high condominiums in wide areas the most important of which lies on the coast of the sea and thus the housing crisis in the city was solved . The problems that resulted from this type of housing only appeared later. (Dioxides, 1984)

The green areas consisted mostly of privately owned farms except for two public parks which are not enough to meet the needs of the city.Impediments to the growth of the city: The city is limited from the north by the Mediterranean Sea and from the south by the slopes, which constitute obstacles to the growth of the city and renders the need of additional areas for urban expansion, and there are also tracts of agricultural land in the western part of the city that should be maintained. There are also two valleys that limit the city from the east and the west and constitute separating lines between the areas of the proposed future city.

e. The second generation plans (1980-2000) :

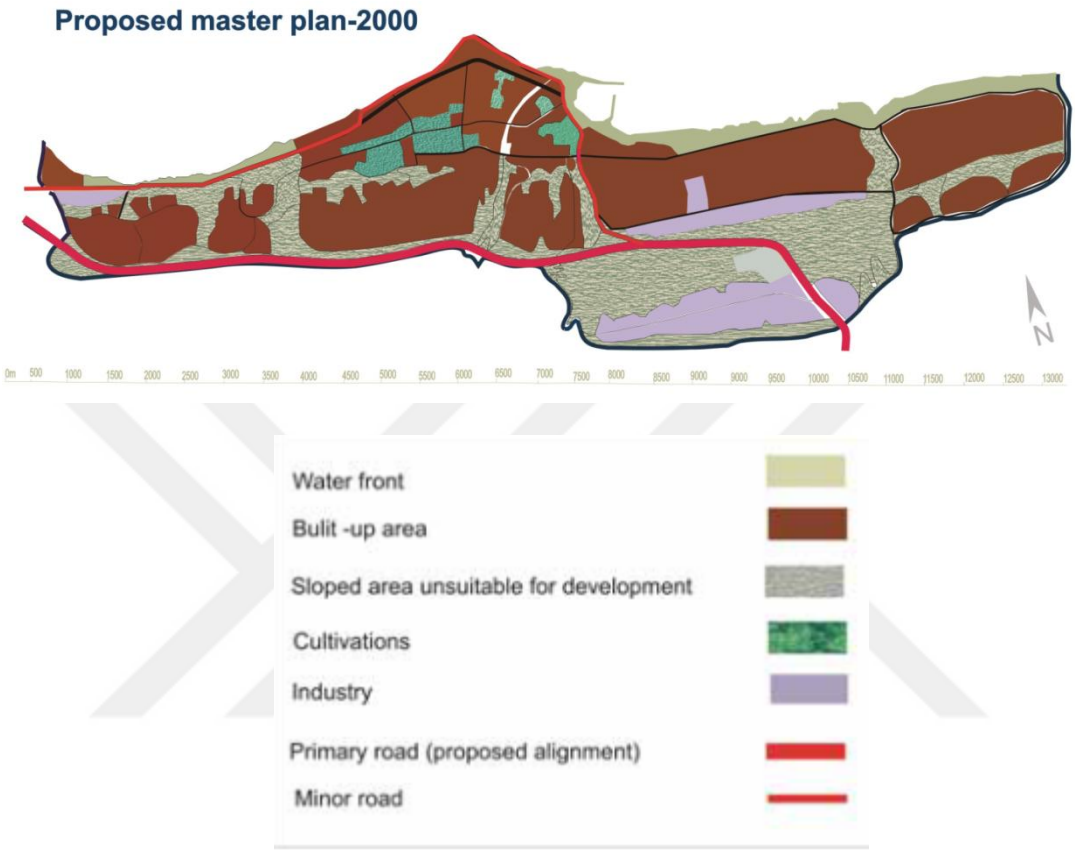


Figure 3.17. Derna master plan in 2000(Sasi, E)

The old city of Derna and the central area was distinguished by its own urban character. Its urbanization is based on the inner courtyard, closed from the outside and open towards the inside, and its urban fabric was affected by the requirements of the city's location, which required a linear longitudinal urban expansion parallel to the sea coast to suit the topography of the land whose slope is directed towards the sea, which requires the opening of its streets towards it to drain rain and open towards the coast. Therefore, its parallel and orthogonal, rectangular, orthogonal lattice schematic pattern came to the sea coast and the Derna Valley alike, which characterized the eastern coast, eastern and western Shiha, and the western coast. Some of the detailed treatments adopted the checkered grid pattern to secure two streets for each residential plot, or to

ensure ease of rainwater drainage and vertical movement on the main axes parallel to the sea coast, as in the western and eastern Shiha and the eastern coast. The central area was distinguished by its multiple axes, which grew in a linear and stripe pattern towards the axes of urban expansion such as Omar Al-Mukhtar Street, which contained various shops selling electrical appliances, spare and food tools, libraries, reproduction and photography shops, and other home shops, cafes and bakeries. The same applies to the axis of Al-Bahr Street, Al-Fanar Street, Al-Sahaba Street, Al-Madina axis, Al-Jaish Street and Ahmed Al-Rifai Street. All of them included commercial hubs that utilized the facade overlooking the street on the ground floor for commercial use and mainly the other floors of the residential apartments (Al-Shamry & Hussein, 2007).

The traditional architecture of the city of Derna was characterized by the adoption of the central courtyard. However, the new buildings that were produced in the seventies were adopted with a new character that was characterized by the openness to the outside and the dispensation of the central courtyard by adopting the basement system (padron) on the half-ground floor and the adoption of the first floor for the main functions of the residential unit for living, kitchen and receiving guests. While commercial architecture came to invest the ground floor for the commercial function and other floors for housing or for other commercial functions such as offices, medical clinics, hotels and other commercial uses. Thus, architecture came with a new style that depends on the investment of functional spaces open to the outside which has contributed to social openness and is compatible with the moderate climatic environment that allows the openness of the inside to the outside. So, the windows of the buildings were characterized by three functions: closing and total openness towards the outside climate, by opening the windows completely to see the courtyards and the outside views. Finally, being closed from the outside, whether from rain, wind or external heat, exposed the architecture that is characterized by flexibility, compliance and environmental adaptation to changes. This also contributed to the freedom to use flexible formal configurations. Hence, we note the compatibility of the flexible architecture style and the Hordi system that spread in the city because of its freedom to change the functional terms, both during and after the construction process. Despite this, modern and contemporary architecture maintains an implicit open space as a reflection

of the necessity of the presence of the central courtyard in any form (Al-Shamry& Hussein., 2007).

Al-Shamry, N.& Hussein.A. (2007). Architectural and planning features of the city of Derna (the central area). Journal of the planner and development, (16).

f. The Third generation plans (2000-2025) :

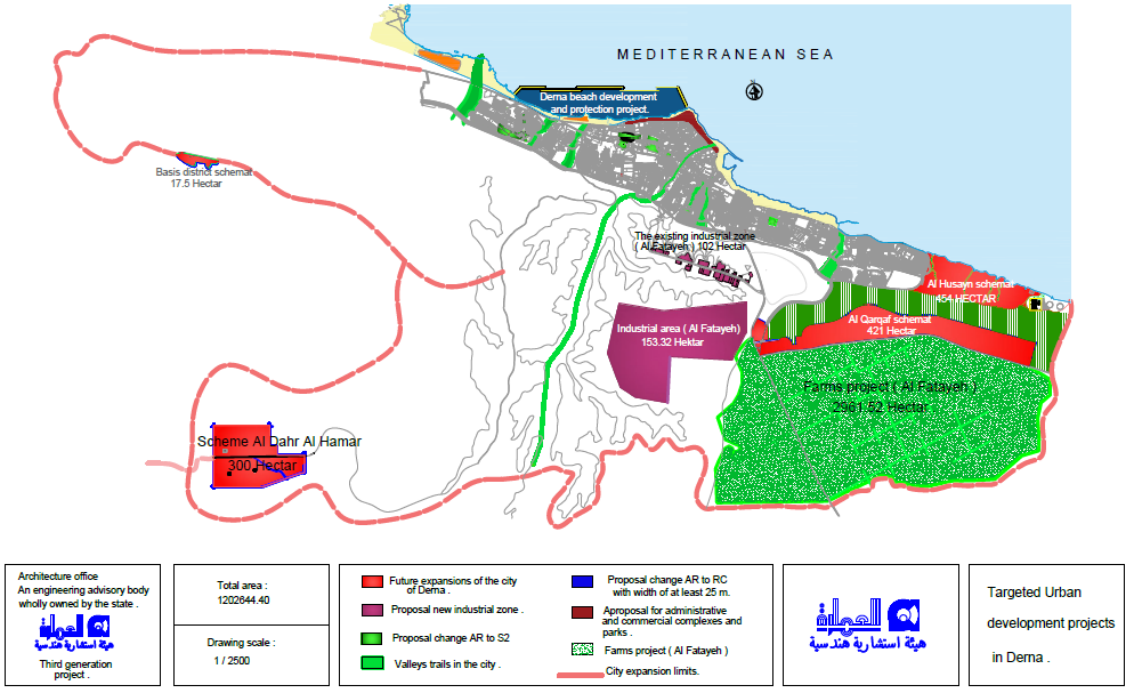


Figure 3.18 Targeted urban development projects in Derna .

Third generation project (2000 - 2025)

The development of Derna city from (1711 to 2022) .

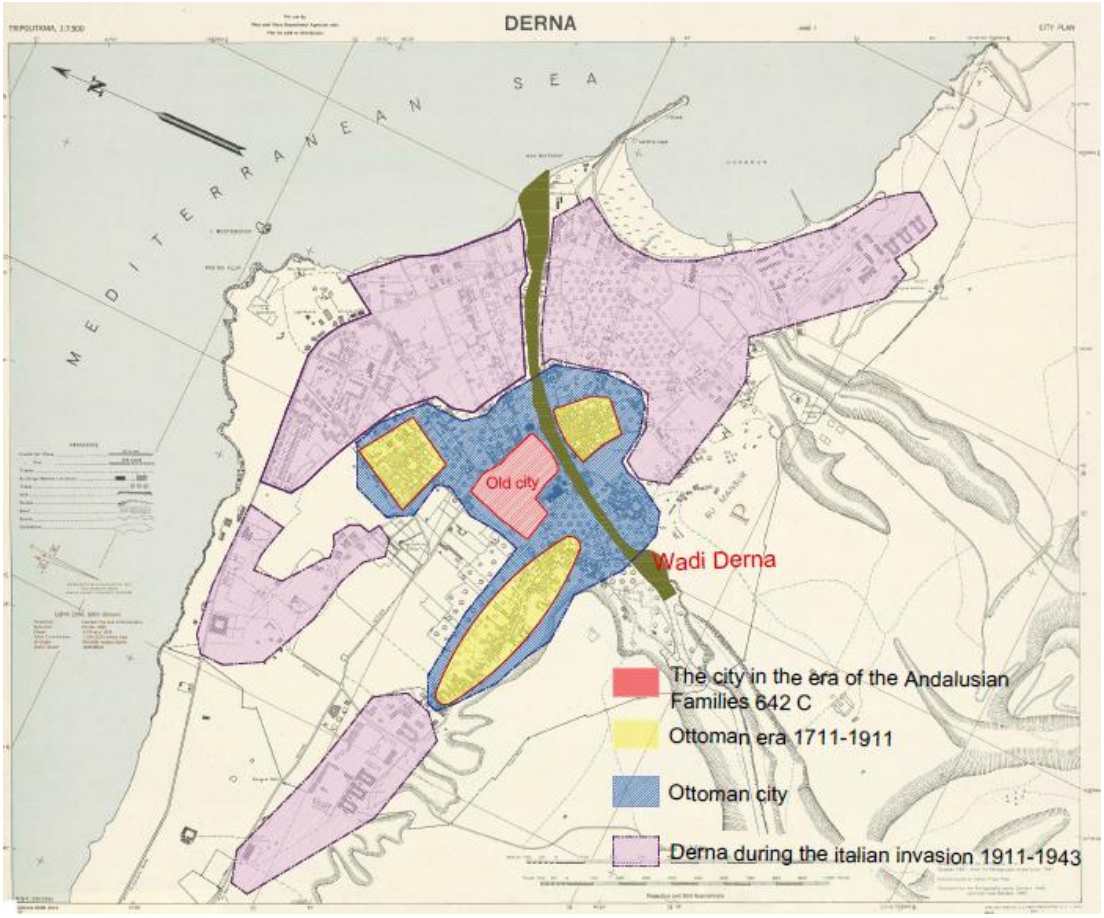


Figure 3.19 The development of Derna city from (642 to 1943).

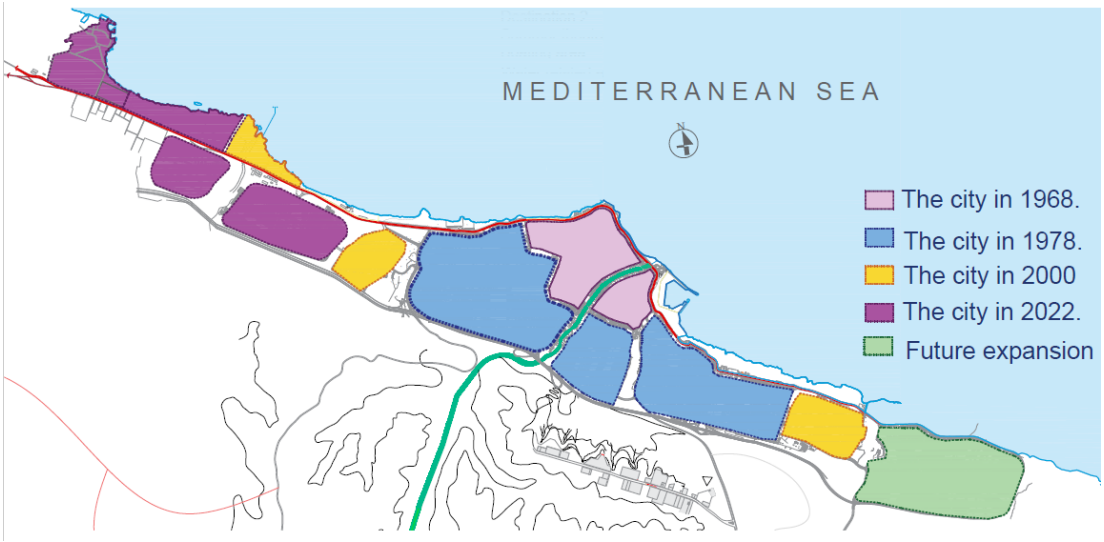


Figure 3.20 The development of Derna city from (1968 to 2022).

3.3. CURRENT CITY PLANNING AND PARKS

Derna is bordered from the south with mountains, which concentrates its urban development within the coastal plain. Moreover, the valley that extends from the mountain and contains most of its agricultural activities divides the city into two eastern and western parts, as highlighted in red in Figure 3.21.

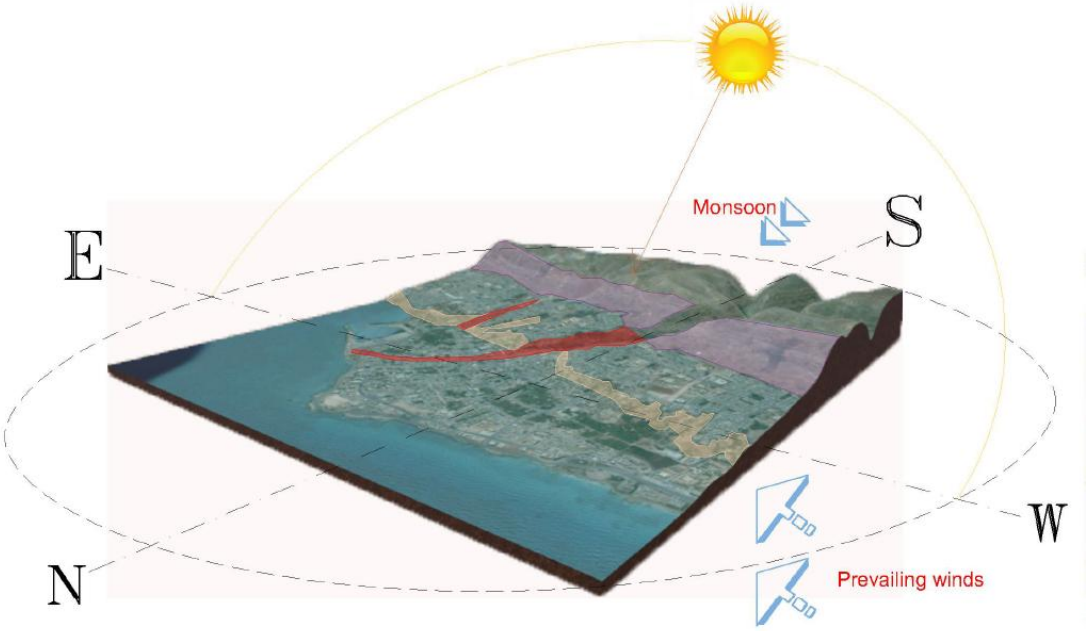


Figure 3.21 Orientation and morphology of Derna

The geographical and geological nature of Derna allows for urban expansion along the coastline rather than towards the continental depth. Thus, the city extends from the east to the west with a centre along the valley and gets denser towards the seaport, as shown in Figure 3.22 Commercial establishments are concentrated in the city centre; however, there is no distinction between commercial and residential zones. Away from the centre and towards the mountains, residential areas are established near the historic zones of the city. Further residential and historic areas extend beyond the main part of the city with some commercial and industrial establishments.

Figure 3.22 Main zones and city planning of Derna

For recreational facilities in Derna, an investigation of city planning reveals their inadequacy in terms of their number, coverage, and quality. As shown in Figure 3.23, there is a single park available in the city centre zone, which is designed as a playground for children with greenery and seating areas. Nonetheless, the area of the park is humble in comparison with the city centre. Moreover, there are no other public parks in any of the city commercial or residential zones. There are few soccer courts that are available in the city, but they cannot be considered as public parks. Therefore, it is evident that Derna has an urgent need of sufficient planning for additional public parks to satisfy the recreational needs of its residents.

Figure 3.23 Public parks in city centre of Derna

3.4. DEFINITION OF OBJECTIVES AND NEEDS

It is evident through the initial assessment of urban planning and development of Derna that the city suffers from the lack of public parks. However, there is a great advantage in the city that can be leveraged to provide high quality recreational facilities through waterfront developments. Since the proposed waterfront is the first of its kind in the city, location is vital for it to serve most of the city zones. The need of public parks in the city is easily identified, but it is crucial to understand the specific facilities that need to be included in the development to increase its functionality, usability, and efficiency in addressing the needs of the residents. According to Muhamadan and Anuar (2017), the main facilities that need to be included in public parks to serve residents are playgrounds, sports facilities, jogging and biking trails, and sport courts. Additional facilities are included such as bicycle racks, picnic area, open spaces, shaded spaces, restrooms, and parking spaces.Commercial facilities like canteens can be added to serve visitors.

The main objective of the waterfront development proposed in the study is bridging the gap of public parks in Derna to fulfil the social, cultural, environmental, and economic

needs of the community. The development is required to contain all or most of the amenities that are needed by the community and exclude those that are available in the city or not suitable for the social, cultural, environmental, or economic needs. Derna has several public soccer fields distributed around the city. In addition to space limitations at the waterfront, it is deemed unnecessary to include sport courts in the design. The evaluation of objectives and needs is further detailed through the different methods that are performed in this research. A survey to the residents of the city and an architectural analysis should allows the objectives and needs to be specified in detailed and accurate manners.

3.5. ASSESSMENT CRITERIA

Based on the theoretical study of the research, there are several assessment criteria of waterfront developments that fall under four main dimensions: urban planning, socio-culture, economic, and environmental. Table 3.2 shows the four dimensions and the criteria that is used in the assessment as compiled from the literature.

Table 3.1. Dimensions and assessment criteria for waterfront development in Derna

Dimension	Criteria
Urban planning	Accessibility
	Existing versus new location
	Availability of infrastructure
	Simulation of urban development
	Need for public parks
	Land ownership issues
	Quality and attractiveness
	Public amenities
Socio-culture	All group accessibility
	Social interaction
	Diversity and minorities
	Inclusion of all social classes
	Cultural diversity

Dimension	Criteria
	Reflection of history, culture, and identity
Economic	Simulation of investment
	Private sector involvement
	Support of city economic activities
	Maximization of commercial use
	Family-focused waterfronts
Environmental	Ecology and habitat preservation
	Water consumption and management
	Energy consumption and management
	Waste management
	Materials

3.6. QUESTIONNAIRE

The residents of Derna, participated in this research to evaluate the objectives and needs of the waterfront development. Based on the needs and objectives defined in Muhamadan and Anuar (2017), a further study is performed to identify the objectives and needs of the residents. Two main sections form the questionnaire taken by the participants. A template of the questionnaire form is provided in Appendix 1, where are divided, as follows:

- The first section is the demographics of the participants.
- The second section is

3.6.1. Analysis Techniques

After the evaluation of questionnaire completion by participants, descriptive statistics are provided through means, percentages, and standard deviations. In the objectives and needs evaluations, items with high means are to be prioritized in the future waterfront development. Based on the priority evaluation of the assessment criteria, a mean score is assigned to each criterion. The selection of the facility in each criterion is performed and the mean scores from the priority evaluation is assigned accordingly.

3.7. ANALYTICAL METHOD

Based on the results of the survey conducted by the residents, a selection of activities and facilities is made, and an appropriate site is selected for these activities that the residents need. Next, a detailed assessment of the criteria for the site is conducted, in addition to a SWOT analysis .

3.7.1. Method Definition and Criteria

An analysis is carried out for the site (the architectural analysis). Each of the assessment criteria is applied to the site in details to understand challenges and possible solutions. Figure 3.21 below shows the process flow for the preceding and succussing steps of the analysis.

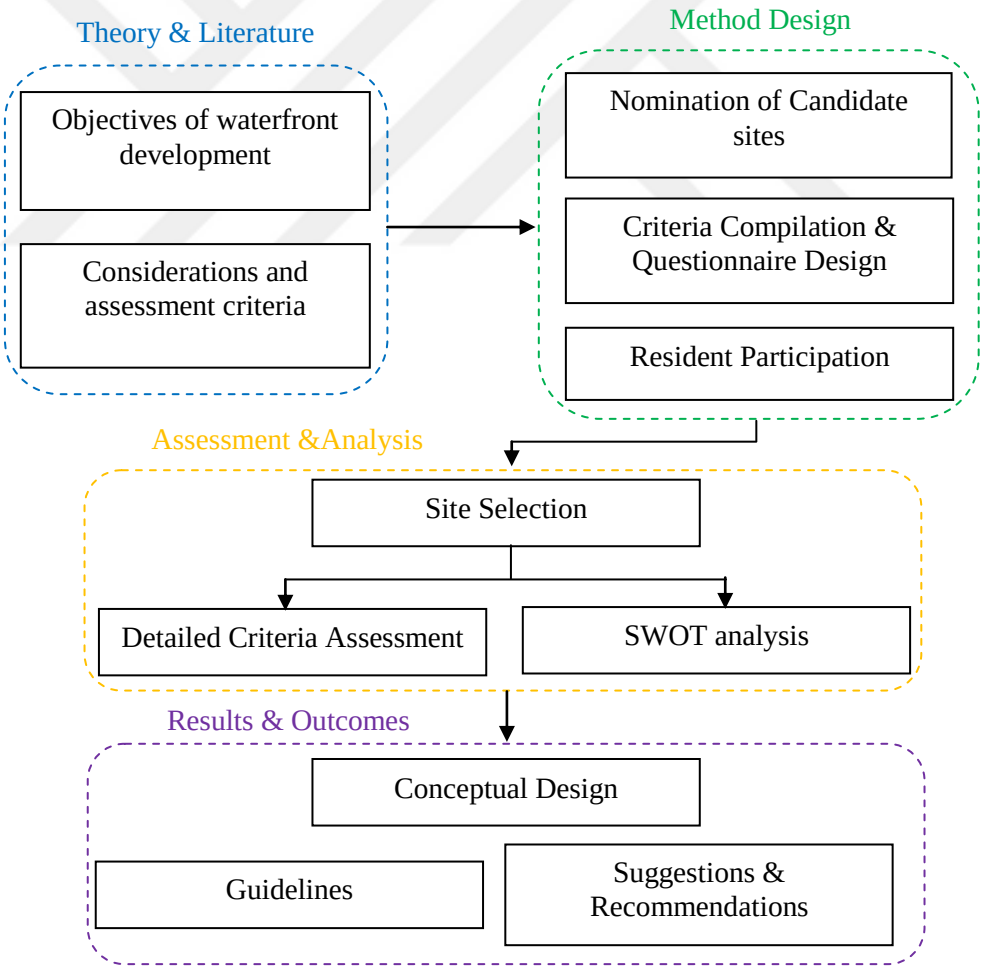


Figure 3.24 Method definition and design.

3.7.2. SWOT Analysis

Following the detailed architectural analysis, an overall SWOT analysis is carried out for the selected site for applicable assessment criteria based on the model elements: strengths, weaknesses, opportunities, and threats. This exercise should facilitate a complete evaluation of the proposed waterfront development to anticipate possibilities of further enhancements, as well as risk identification for efficient management of the project.

3.8. EXPECTED OUTCOMES

The questionnaire's main outcome is the prioritization of needed facilities, in addition to the selection of best location for Derna's waterfront development. In the analysis part of the study, a comprehensive architectural assessment and SWOT analysis should provide a complete understanding of the opportunities and obstacles that are anticipated in the project. Furthermore, a conceptual design of the waterfront development is presented according to the defined objectives and needs as per the local residents' feedback. Finally, suggestions, recommendations, and guidelines are provided for urban planners and architects in Derna for the best application of the proposed development

CHAPTER 4: ANALYTICAL STUDY OF THE STUDY AREA

4.1. POPULATION STUDY

(POPULATION CHARACTERSTICS OF THE CITY OF DERNA) :

4.1.1 Stages of Population Growth :

4.1.1.1 The First Stage (1968-1988) :

According to the study conducted by Doxiades of the status quo in 1966 AD, the city's population in 1954 was about **(**15,891**)** people, it rose to (22,700) in 1966 AD, which means that the growth rate is 3% per year.For this reason, he expected that population growth would increase in the future due to the opportunities available in the city and the increase in per capita income, which increased in the country due to the emergence of oil.Al-Qaziri, S. K. (2021).

Expected first generation plans for 1988 :

TOWN	**1968**	**1980**	**1984**	**2000**	**1988** EXPECTAION	**2000** EXPECTATION
DERNA	**24.2000**	**52.500**	**60.9811**	**81**	**47.300.8**	**119.000**

Table 4.1compare with population of Derna between (1988 - 1984) (Dioxides 1984

4.1.1.2 The Second Stage : (1980-2000) :

Doxiades predicted that the city's population would grow from 52,000 in 1980 AD to 85,000 in 1990 AD until it reached 119,000 in 2000 AD. The consultant believed that the city will continue as the center of the municipality, and its importance will increase with the increase in the size of its population and the services available to its residents.Doxiadis Associates , (1984)

Sign second-generation plans for 2000:

A reduction in the number of invisible population of expectations for the second generation plans because of the budget and economic interest in the relative major cities.

the following table shows a comparison between the major coastal cities from 1911 and projected 2000: As a result of the economic imbalance, the population was concentrated in development areas in search of industrial work after the decline of agricultural work. Darnawas the fourth major coastal city before the establishment of AL Bayda and

City	1911	1936	1968	1980	1984	**Expected** 2000
Tripoli	29.869	981.664	99.145	268.700	784.000	1.600.000
Benghazi	16.500	48.500	109.700	387.000	449.849	743.000
Derna	9.500		24.200	52.500	60.981	119.000

Table 4.2 compare with population of the major coastal cities between (1911 - 2000)

As we see from the table the rate of population doubled in major cities between 1911 and 1984 with high rates as follows:

Tripoli 32 times Benghazi 27 times Darna 7 - 4 times it is noted that Darna has not doubled the number of its inhabitants, like other major cities, although it was the fourth city prior to the establishment of AL Bayda. The developmental delay of Darna is due to several reasons:

1) Focusing on the unbalanced economic development of the cities of Tripoli and Benghazi.

2) The establishment of the city of AL Bayda which replaced the city of Darna gradually.

3) The emergence of the strategic importance of the city of Tobruk.

4) Exploitation of its sea port and the freezing of Darna's commercial port.

5) The industry that was a goal of the proposed plan was not implemented in the easternregion nor in the affiliated: Industry in not worth mentioning in the city, regardless of the cement plant and furniture factory in the AL Fatyah area outside the city limits.

4.1.1.3 The Third Stage (2000 - 2006) :

According to the data of the field study conducted by The Architecture Office for Engineering Consultants , the population of Derna in 2006 amounted to 79,101 people in a built area (1,246.8) hectares.

The population of the city of Derna increased from approximately 37,142 people in 1973 AD, to 79.101 people in 2006, with an annual growth rate of (4.61) percent.

However, the growth of the city of Derna abruptly declined in the second half of the nineties of the last century, referring to the large emigration due to the economic stagnation of the entire city, which greatly affected the region of Derna, The city of Derna constitutes 51% of the population of the sub-region.

The birth rate decreased from (47.5) births to (38.2) births per 1000 people during the seventies and eighties of the last century, and this decline continued from (26.8) births per 1000 people in 1990 AD to 7.23 births in2000 AD, then to 19.8births born in 2005 AD.These rates are in one way or another parallel to the general decline in birth rates in Libya in general due to the delay in the age of marriage, which led to a decrease in the birth rate.(Al-Kikhia M).

As for the age structure, the statistics in 2006 indicate that (50.3) percent of the population of Derna are males and 49.7 percent are females.

The age group under the age of 15 and above the age of 65 is considered a segment of society that is dependent on others, and the proportion of this group in the city of Derna

to the total population is 39.6 percent.The age group between 15-65 years is considered to be the economically active population, with a percentage of 60.4 percent.(Al-Qaziri S.K,pp 44).

Figure 4. 1

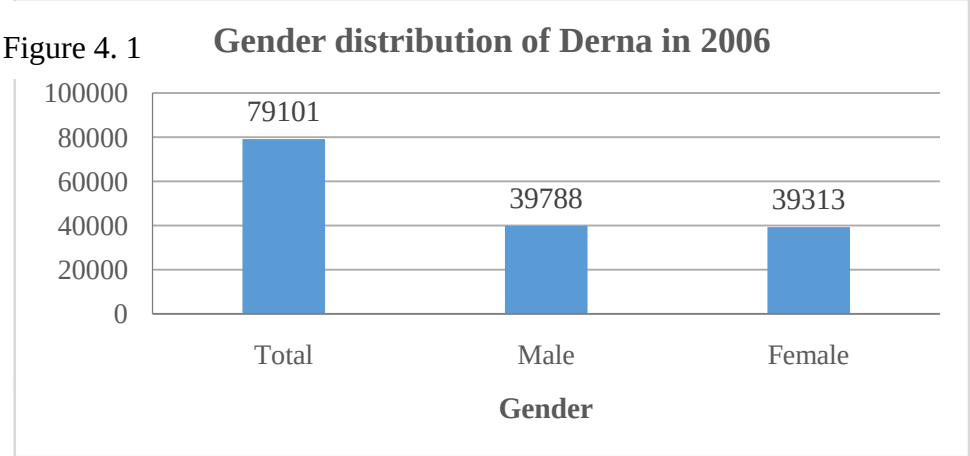
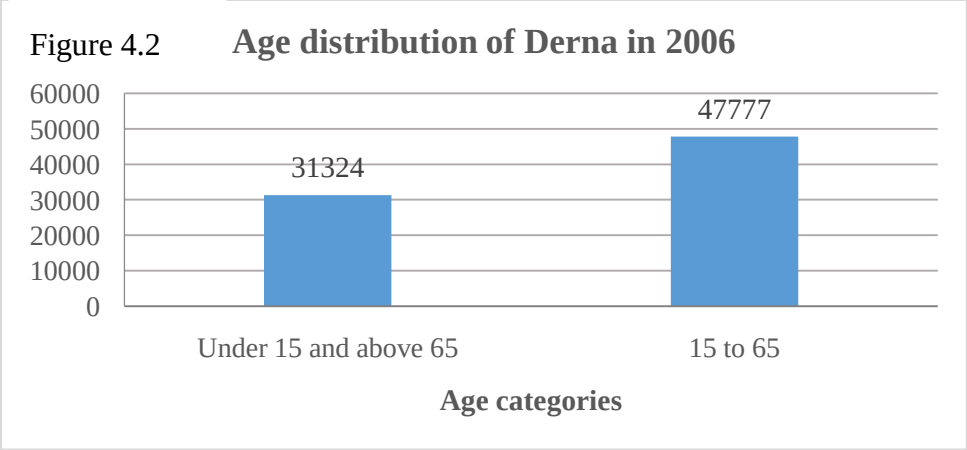


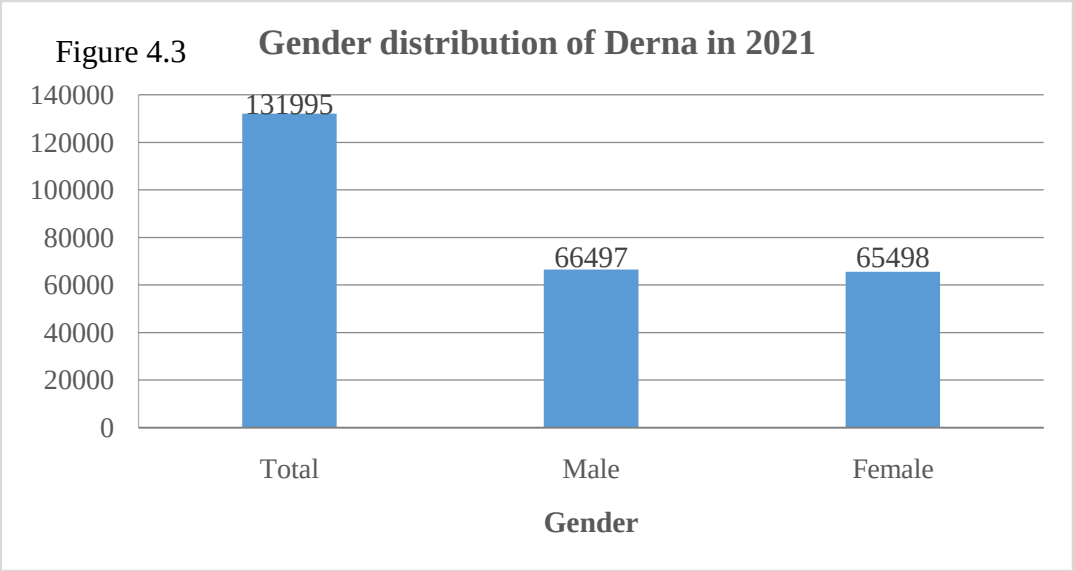
Figure 4.2



4.1.1.4 Fourth Stage (2006 - 2021) :

The population of Derna for the year 2021 is (131,995) people, where the number of males is 66.497 with a percentage of 50.38%.The number of females is 65,498, with a percentage of 49.62%.

Figure 4.3



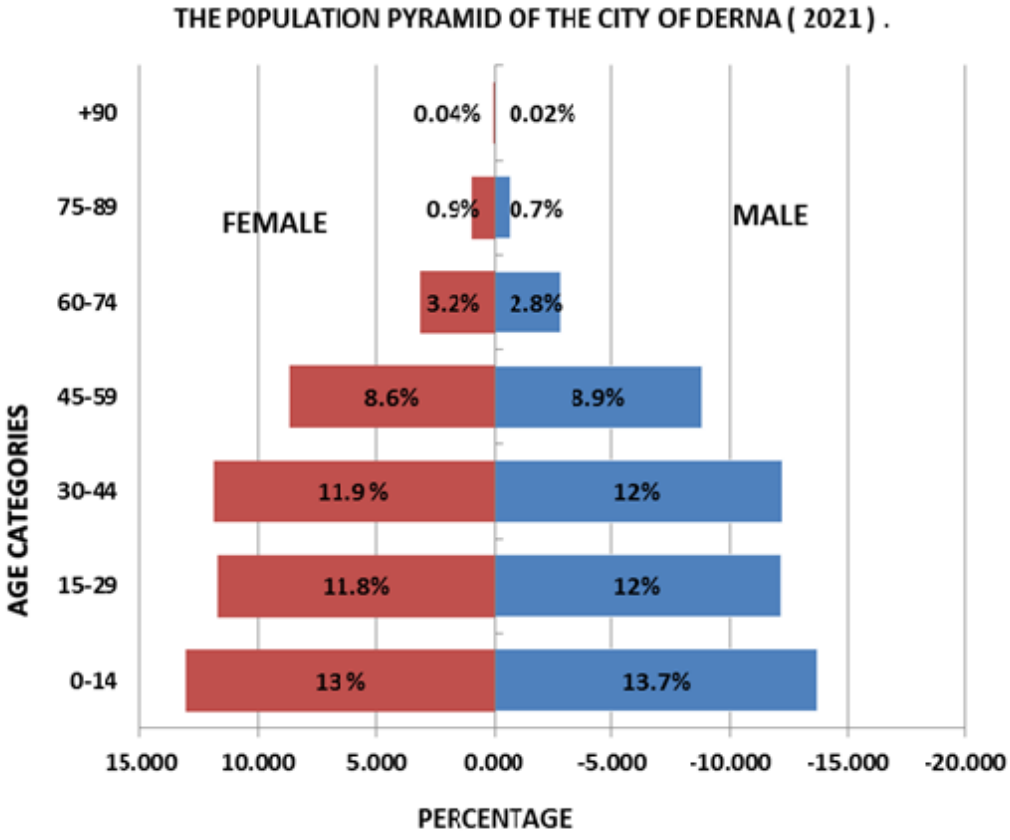


Figure 4.4. The population Pyramid of the city of Derna (2021). Prepared by the researcher.

4.1.2 . AGE CATEGORIES (2021) :

According to the information provided by the Office of Information Technology and Documentation Derna branch, the population of Derna for the year 2021 AD (131995) people, distributed according to age groups according to the following table:

GENDER/ AGES	0-14	15-29	30-44	45-59	60-74	75-89	+ 90	TOTAL
MALE	18117	16017	16064	11701	3691	881	26	66497
PERCENTAGE	13.726	12.135	12.170	8.865	2.796	0.667	0.0197	50.378 %
FEMALE	17244	15522	15751	11459	4217	1251	54	65498
PERCENTAGE	13.064	11.760	11.933	8.681	3.195	0.948	0.041	49.622 %
TOTAL	35361	31539	31815	23160	7908	2132	80	131995
PERCENTAGE	27 %	23.9%	24%	17.5%	6 %	1.65%	0.06%	100 %

Table 4.3. distribution of age groups for the population of Derna (2021) .

Source: Information Technology and Documentation Office, Derna Branch . Prepared by the researcher

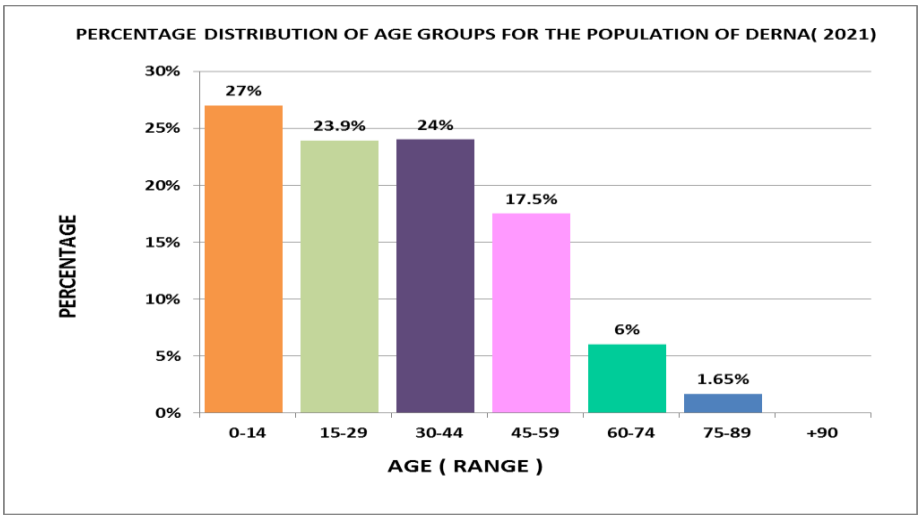


Figure 4.5 Percentage Distribution of the age groups of the population in 2021.

Source: Prepared by the researcher.

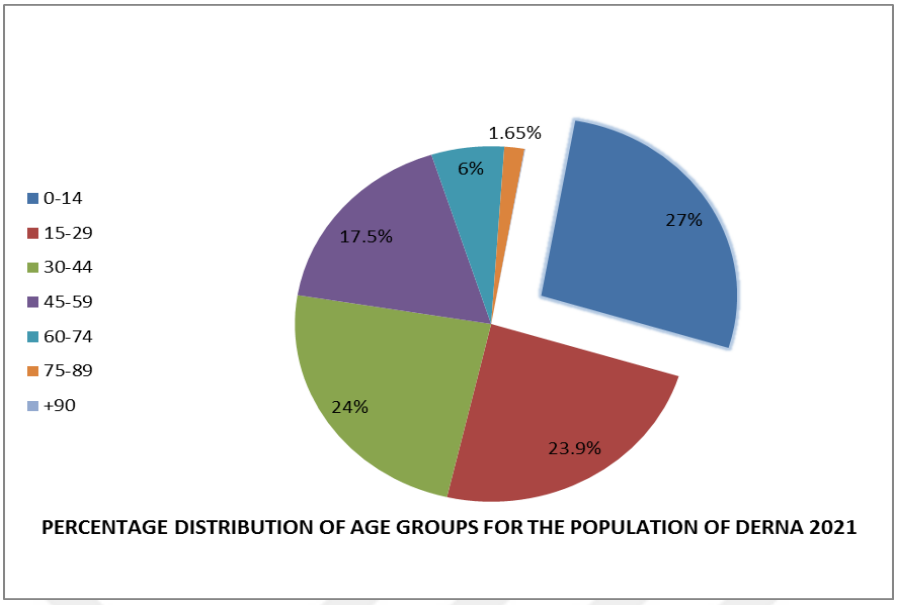


Figure 4.6 Distribution of the age groups of the population in 2021.

Source: Prepared by the researcher.

Through the table and figure that represent the distribution of the population by age groups, we note that the group from**(0-14 years**)is the dominant group in the city.

4.1.3 . POPULATION DENSITY :

The area of the city is estimated at 1800 hectares, and given that the population of the city is estimated at 131,995, the population density is approximately 73people / hectare.

The area of the city (Derna) approximately 18 square kilometers, (1800 hectar). The population is approximately (131.995) Most of them are stable in the coastal area.

Their tribal affiliations, as a leading location of the city (Derna), vary as an argument between Mashreq and Morocco attracted migrations from Libya and from outside.

4.2. MAHALLAINDERNACITY :

- ElJebilah
- Al Maghar (Embakh)
- Al Maghar
- Al Bilad
- Bu Mansur
- Al Sahil
- Al Sahil 400
- Al Sahil (Al Husayn)

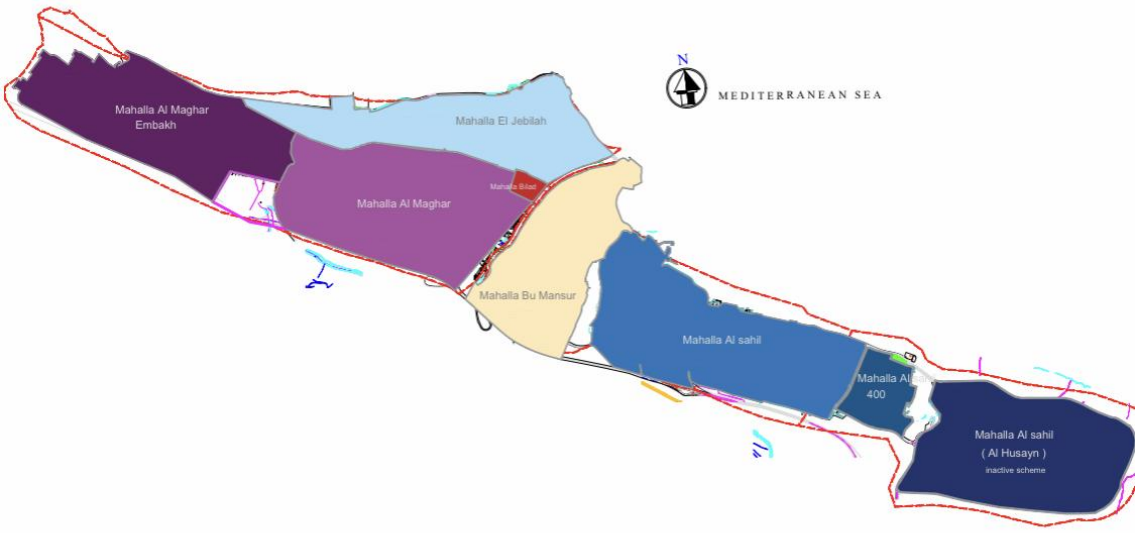


Figure (4.7) Mahalla in Derna city .

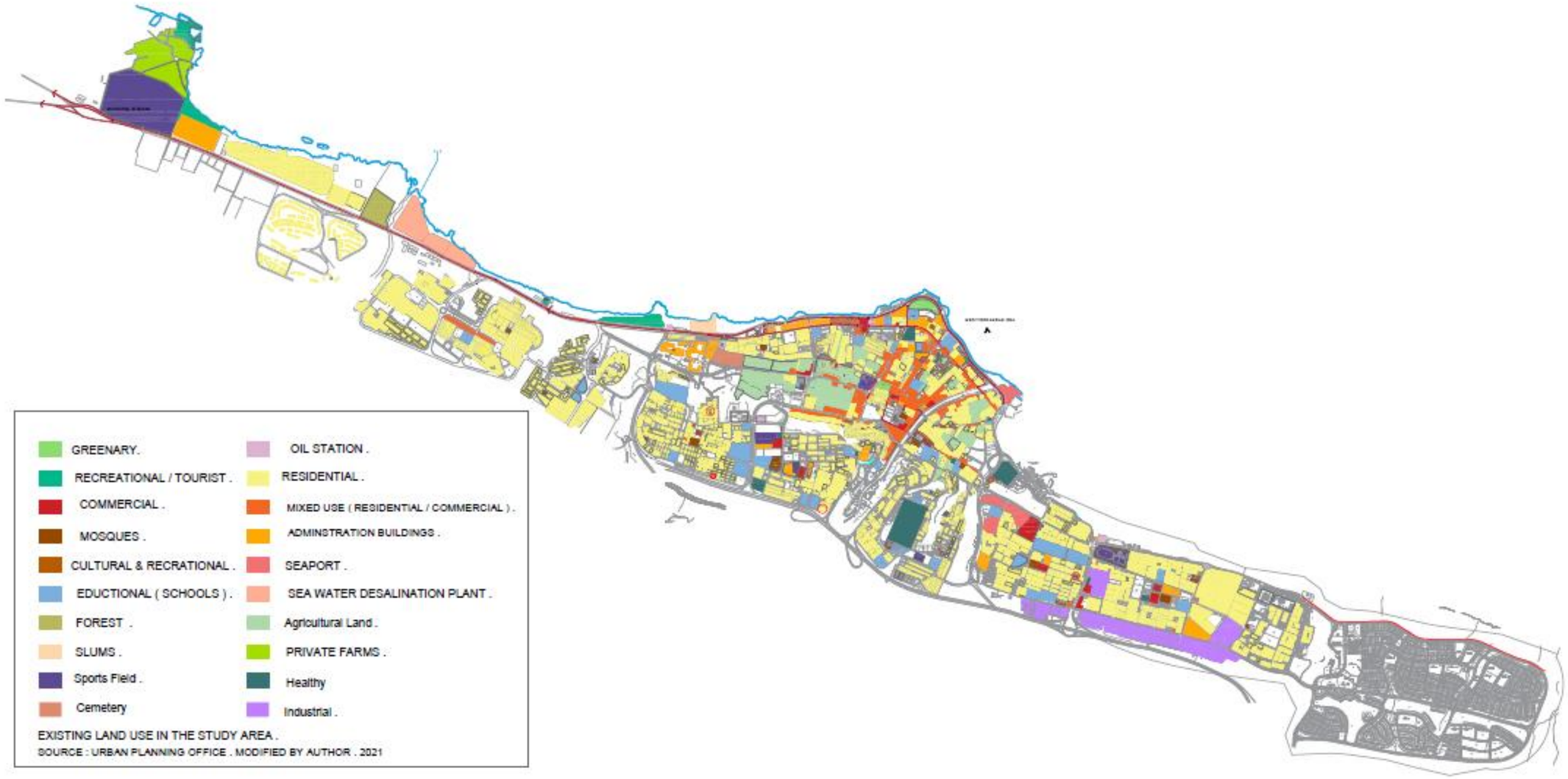


Figure (4.8) Exising land use for the city of Derna (2022) .Prepared by the researcher.

4.3. EXISTING LAND USE FOR THE CITY OF DERNA (2022) :

Type of use	Area in hectares	Percentage %
Residential	**480**	**26.6 %**
Mixed use (residential / commercial)	**35**	**2 %**
Commercial	**15**	**0.8 %**
Social institutions		
_ Educational	**42**	**2 %**
_ Health	**17**	**0.9 %**
_ Cultural	**10**	**0.6 %**
Administrative	**34**	**1.9 %**
Sports fields	**47**	**2.6 %**
parks	**3**	**0.2 %**
Industrial	**30**	**1.7 %**
The road network .	**250**	**14 %**
Facilities	**30**	**1.7 %**
Agricultural land	**57**	**3 %**
Open areas and valleys	**750**	**42 %**
Total	**1800**	**100 %**

Table 4.4 Existing Land use for the city of Derna (2022).

Source: Prepared by the researcher.

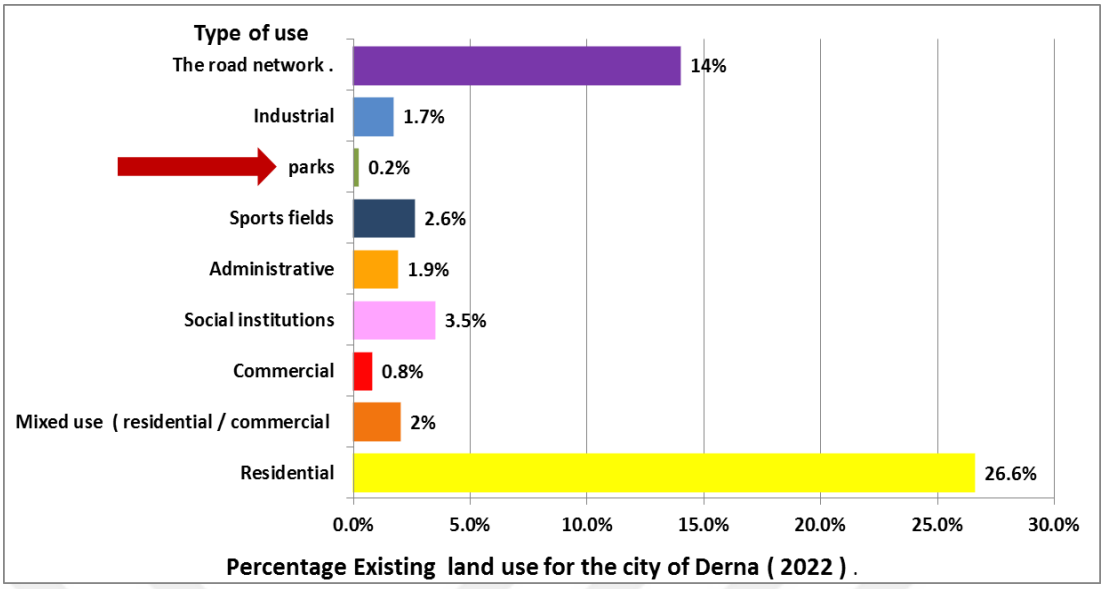


Figure (4.9) Percentage Exising land use for the city of Derna (2022) .

Prepared by the researcher.

4.4. EXISTING PARKS IN THE CITY OF DERNA (2022):

The researcher noticed through the field survey that the city suffers from a severe shortage of parks, green spaces and places for recreation, where the citizen does not find a place to go for himself or meet with other people except for one garden known as **Children's Park** and its area is (**0.8 hectares**).and the **Corniche Park**, where work is currently suspended and has not been completed, and has an area of (**2.3 hectares**).

Thus, the area of parks is currently(**3 hectares**) in the city, and therefore the per capita share in the city of Derna is less than the minimum according to urban planning standards in Libya, where the per capita green space is **10 m2**.

Looking at the comprehensive plan of the city of Derna, we find that the area of land allocated for gardens, but not used, is (**28 hectares**) .

Existing Parks (A)	**Children's Park**	**0.8 hectares**	**3 hectares**	**0.2 %**
	Corniche Park	**2.3 hectares**		
Non user (B)			**28 hectares**	

Table 4.5 Existing Parks in the city of Derna (2022). Prepared by the researcher

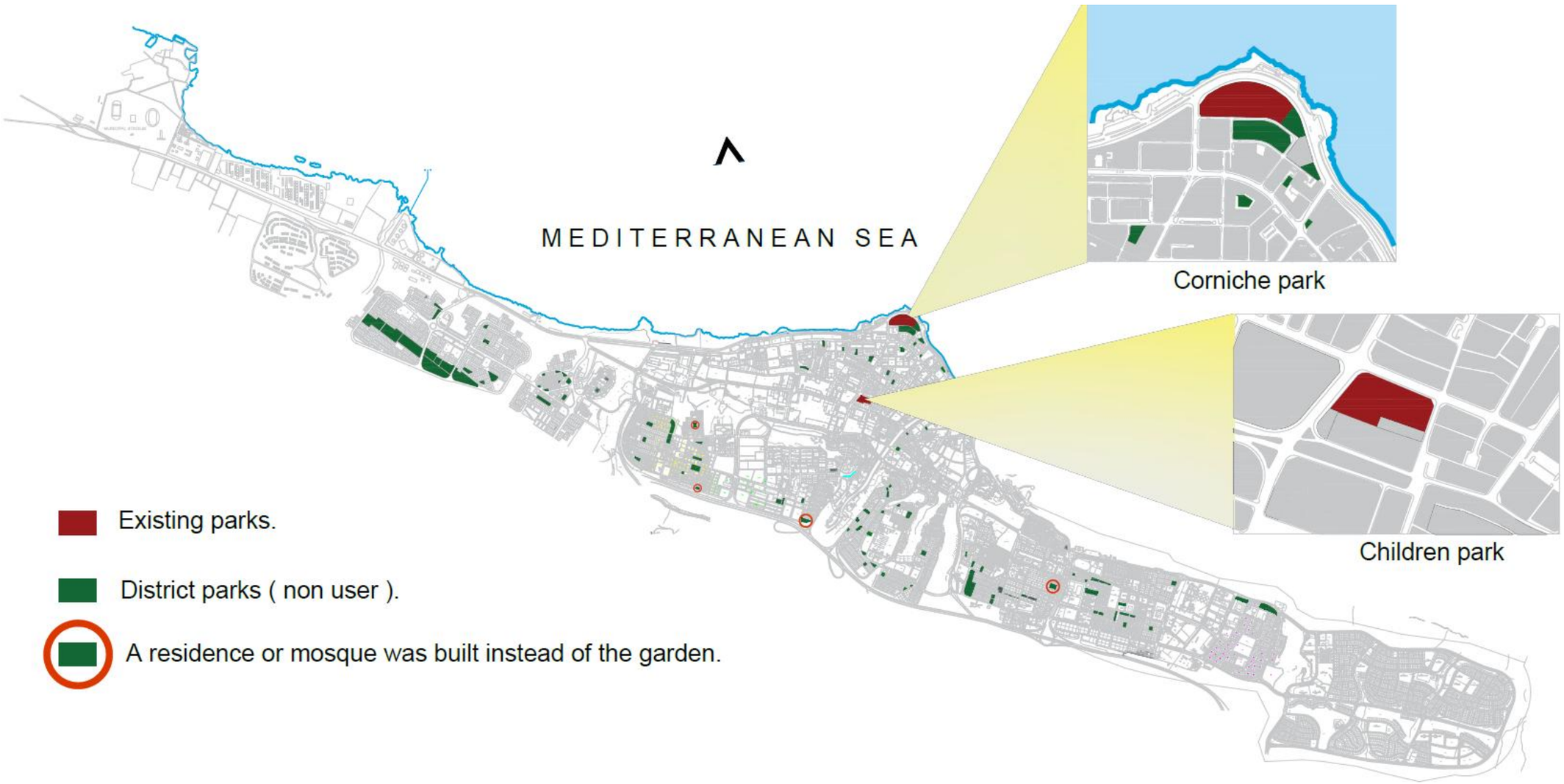
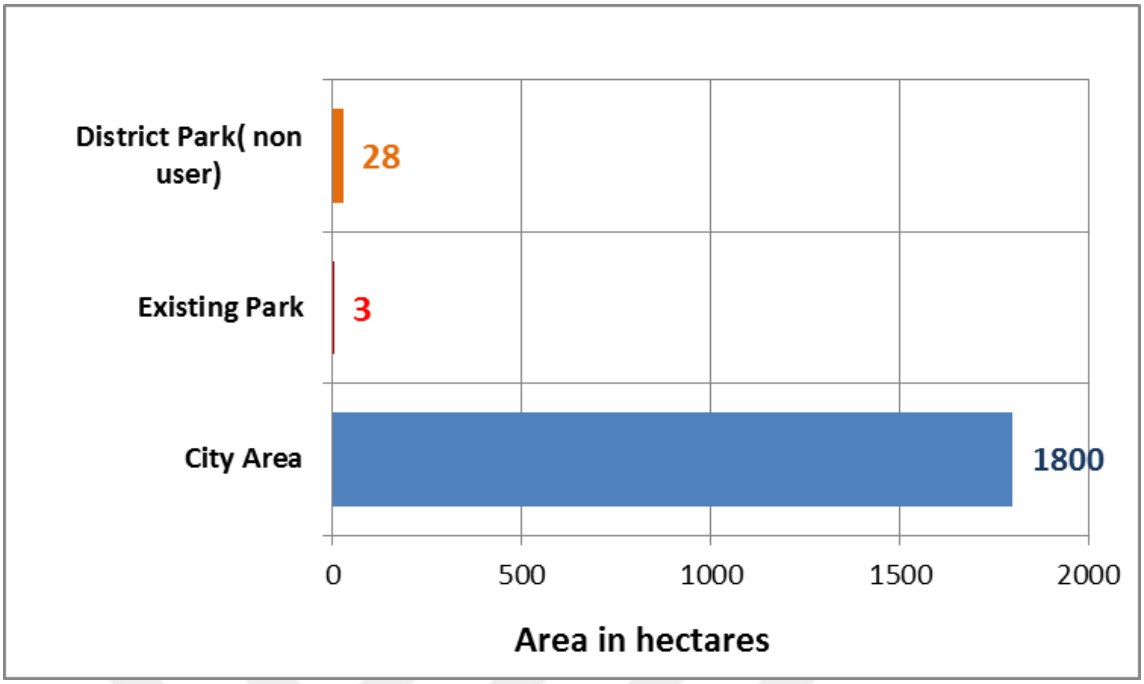


Figure (4.10)Existing Parks in the city of Derna (2022).

Prepared by the researcher.



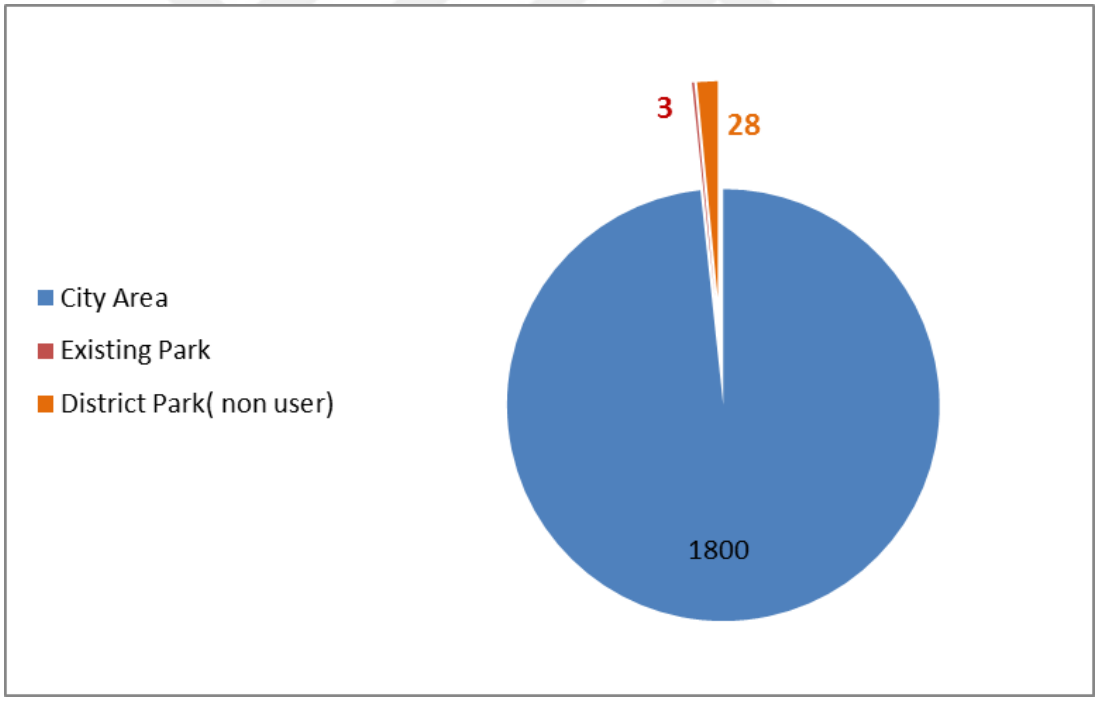


Figure (4.11)Existing Parks in the city of Derna (2022).

Prepared by the researcher.

Calculating a person's share of green spaces = $\frac{\text{The total area of green spaces in the city}}{\text{The city's total population}}$

Existing Parks (A)= 3 hectares = 30000 m2

Person's share = 30000 / 131995 = 0.23 m2

Non user (B) = 28 hectares = 280000 m2

Person's share = 280000 / 131995 = 2.1 m2

A + B = 30000 + 280000 = 310000 m2

Person's share = A + B / population = 310000 / 131995 = 2.35 m2

We find that the per capita share of (**2.35 m2**), less than **10 m²**, is the minimum per capita percentage of green spaces according to urban planning standards.

How many square meters of green space should be available to the city according to urban planning standards = Population X 10 m2 = 131995 x 10 = 1.319.950 m2

= 132 hectare

4.5 THE PROBLEMS EXPERIENCED BY THE WATERFRONT OF THE CITY OF DERNA:

The waterfront and the Corniche Road in Derna suffer from severe waves and the resulting spray Which caused the collapse of the sidewalks and the foundation layers on which the Corniche Road was built , And the consequent disintegration and continuous erosion of walls and concrete, and the spread of sea spray, which led to the erosion of all metal and concrete installations, and the sea entering many parts of the road, especially in winter.

Accordingly, a contract was made between the Public Housing and Utilities Projects Authority, and the Architecture Office for Engineering Consultations to prepare a study

on this problem and propose solutions. Dr. Saad Khalil Al-Qaziri was assigned to prepare and supervise the study through his work as a consultant in the office.

The scope of the study extended from the (Ras Al Mataris) at the port of Derna to the mouth of Wadi Bu Musafir along the Corniche road and its extension to the west, and the depths of the sea in front of the beach above the continental shelf or the so-called continental shelf were studied at different depths between 250 to 300 meters. The cliff in front of Darna descends a gentle slope until it reaches a depth of 60 meters at a distance of 2 km from the shore, then until it reaches a depth of 2,700 meters at a distance of 60 km from Darna.

- **The geomorphology of the coast of Derna**

has been studied, and the factors affecting it such as wave movement, sea currents, tides, rock formations, and the nature of the coastline, which is characterized by the presence of three marine heads starting from (Ras Bu Musafir) and (Ras Bu Azza) and (Ras al-Mataris), in addition to the presence of three bands in which the coast line overlaps relatively towards the land, and as a result of this meandering in the coast line was the formation of bands for carving and others for sediment, for the parts of the coast that represent areas of sedimentation in front of the coast of Derna are those that The coast line overlaps towards the land, where it represents semi-bays in which the movement of wate is relatively calm , For this reason, the sedimentation areas are identified in the beach of Derna in the port area between Ras Al-Mataris in the west, and the eastern coastal cliff in the east, as this area represents a small bay in which the sea port of Derna was established.

There was also another range of sandy sediments located in the west of the city on two parts, the first from the entrance to the city, that is, at the end of the western part of Ras Bu Azza up to Iliwa (Belroman), then from Iliwa (Belroman) to Ras Boumsafer. This part of the coast is considered the longest range of sediments, as the coastline recedes about 4 km in length, in which sea water receives its cargo of fine sandy sediments, which represent a good sandy beach.

The waterfront of the city of Derna suffers from many problems due to the attack of the high and strong waves of the installations on the Corniche Road. The marine impacts can be summarized as follows :

1 . The retaining walls of the road body became in poor condition and prone to collapse due to direct exposure to the waves.

2 . The continuation of the erosion of the foundation layers of the road as a result of the waves and the consequent fragmentation and continuous erosion processes.

3 . Continuing erosion and fragmentation of the rocky layers on the beach in front of the retaining walls because they are incoherent sandy rocks.

4 . The high waves on the road caused the accumulation of large amounts of water and the spread of this water saturated with salt, which corroded the metal and concrete installations.

5 . It became clear from the study that the area between Ras Bu Azza in the east and the entrance to the city in the west is the most part of the beach and the road exposed to the influence of natural factors, due to its perpendicularity to the course of the waves.

6 . It was observed that landslides consisted of gravel and crumbled soils, and erosion and deterioration of large parts of the bases on which the wall was built due to the movement of rocks and gravels by the waves and the entry of water between the rocks on which the wall was built even in good weather, due to the lack of protection from the suds of the waves and Its spray, which leads to the formation of gaps under the base, and this phenomenon increases in the case of storms, which leads to the entry of water to the bottom of the rocks and concrete bases, which leads to a movement in the rocks and sand that make up the base.(Al-Qaziri S.K).

- **The development of waterfront of Derna city from 1943 to 2022**

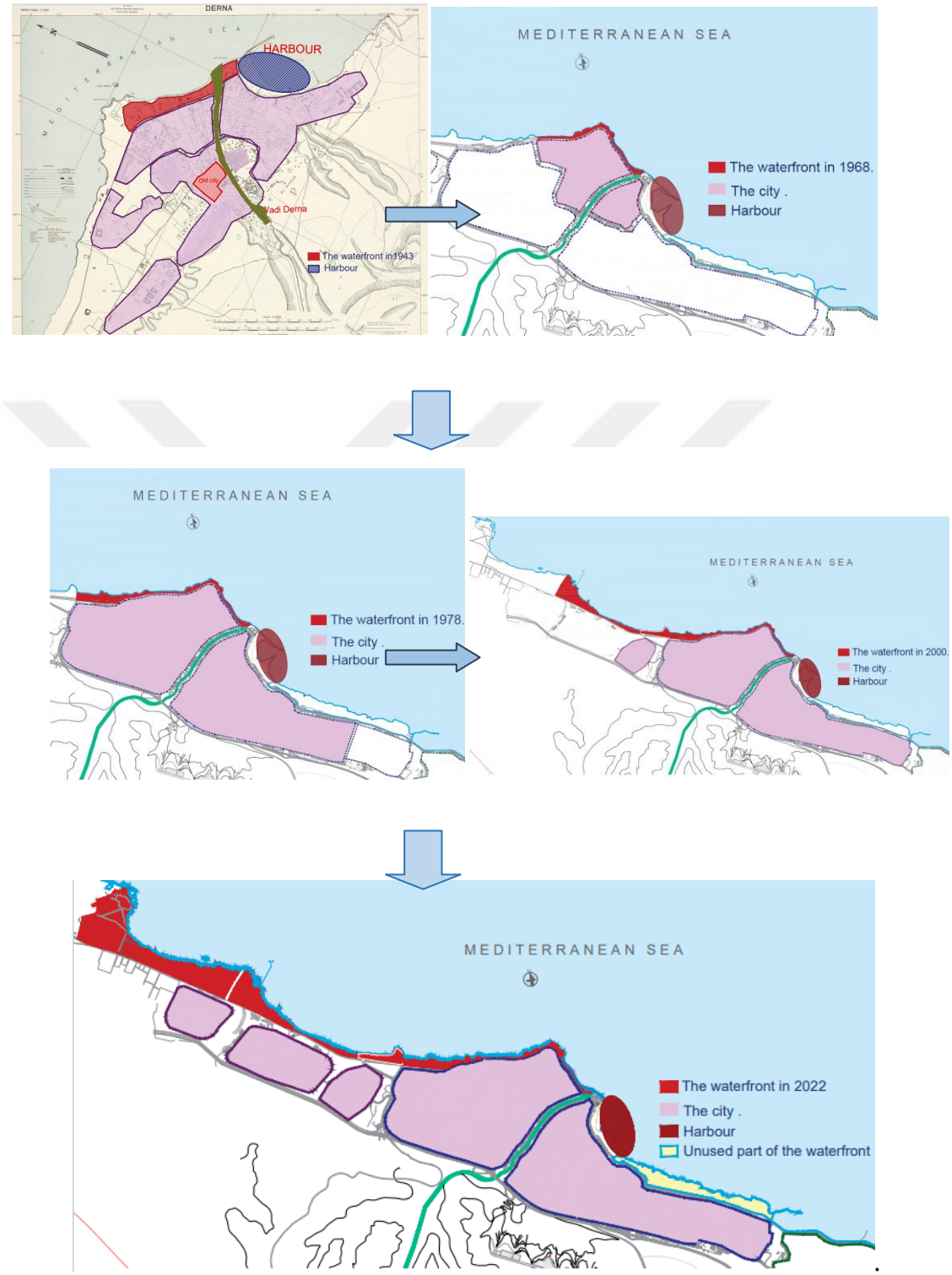


Figure (4.12) The development of waterfront of Derna city from 1943 to 2022.

Prepared by the researcher.

4.6. THE RELATIONSHIP OF THE CITY TO THE STUDY AREA :

The waterfront of the city of Derna stretches for a length of 13.5 km.The western part of it appears with its character (the plain),Which extends from the western entrance of the city to the port of the city.It is 10 kilometers long, and behind it are beaches and mountains that hug the blue of the sea . While the eastern part of the waterfront, which extends from the port to (Mahalla of Al Sahil 400), appears in its rocky and mountainous nature and is 3.5 km long..

The study area plays a major role in the development of the city.It represents the gateway to the city and the most powerful areas An influence on the city due to its natural features.

On the other hand, the study area is considered a major economic pillar in the case of developing the waterfront, and the establishment of various activities and services and the creation of many job opportunities, which in turn lead to a reduction in unemployment in the city, especially in the summer season, which contributes to the development of the city.

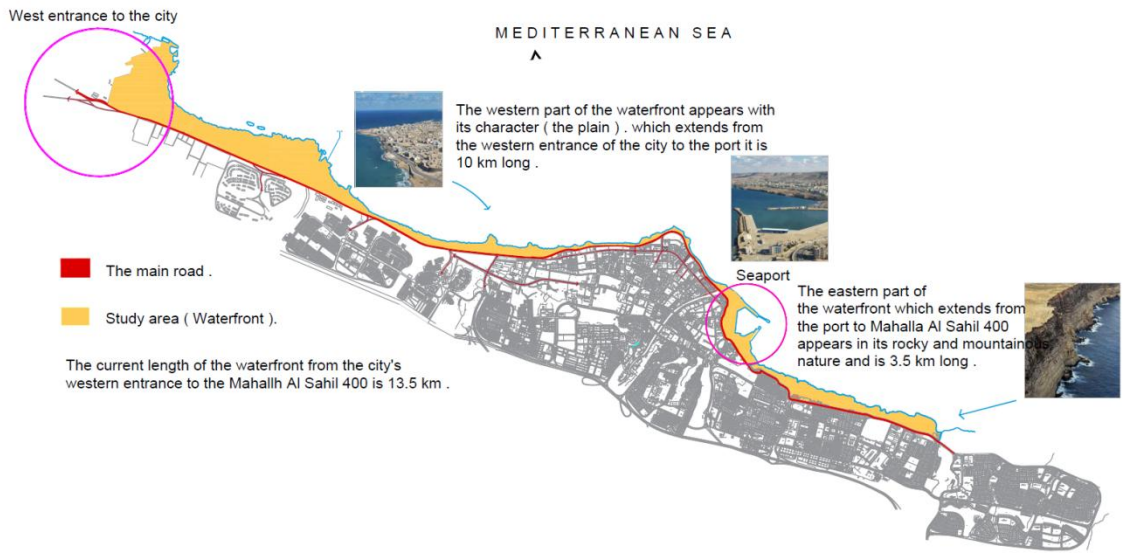


Figure (4.13) Coastal strip of the city of Derna .

4.7 ANALYTICAL STUDY OF THE WATERFRONT OF THE CITY OF DERNA :

In this chapter, we will study and analyze the waterfront of the city of Derna, as well as the SWOT analysis of the study area, as well as the analysis of the questionnaire that we distributed to a random sample in each neighbourhood of the city.

4.7.1. Natural Study :

The waterfront of the city of Derna is a magnet for residents, whether from inside or outside the city, due to its natural features .

4.7.1.1 The Geographical Location and Area :

The waterfront is located in the northern part of the cityof Derna. It is between the sea and the main road that connects the city from west to east with other cities. The length of the waterfront is currently 13.5 km , and the total area of the waterfront is estimated at 305 hectares .

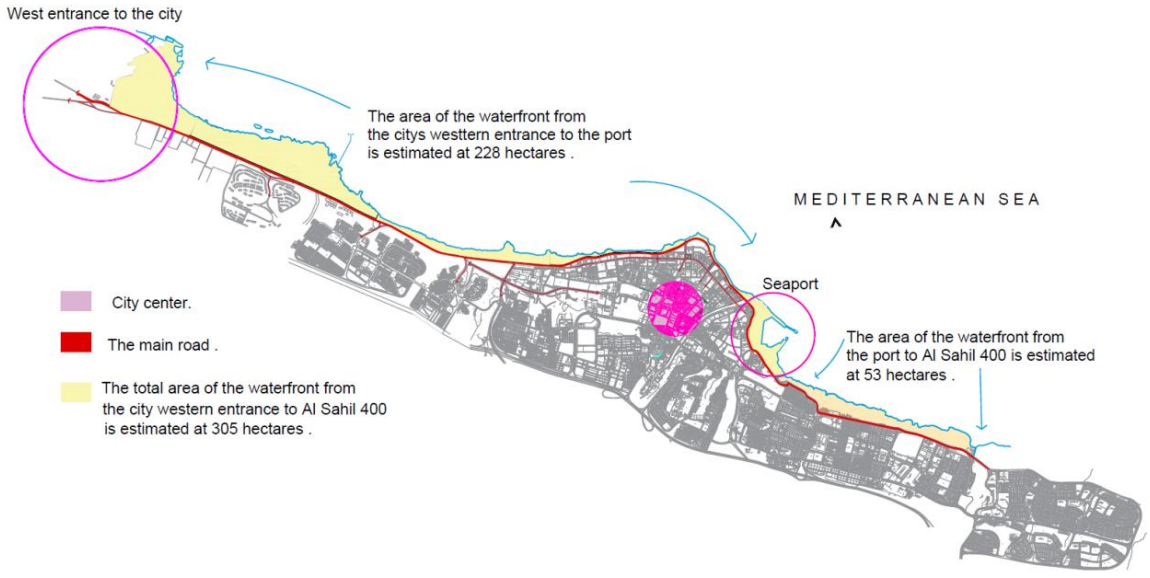


Figure (4.14) The geographical location and area of the study area .

4.7.1. 2 Position :

a . Topography and The Regressions :

Topographically, the city of Derna is located on the regressions of the Green Mountain.The waterfront of the city (the study area) is located on the first degree representing the coastal plain on which Benghazi and Sousse are located, extending in Derna and ending in the sea at the port, then reappearing in Ras Al-Tin and Al-Tamimi.

And the second degree appears in the city of Derna in Shiha region and Al Sahil.

And the third degree appears in the city of Derna at the top of the mountain in the areas of Al-Dhahr Al-Hamr, Al-Fatih, Sidi Aziz, and Sidi Aoun.(Al-Qaziri S. K., 2021).

As for the altitudes, in the first degree (coastal) it reaches between 10 and 60 meters, the second rises between 80 and 120 meters, and the third is between 250 and 600 meters.

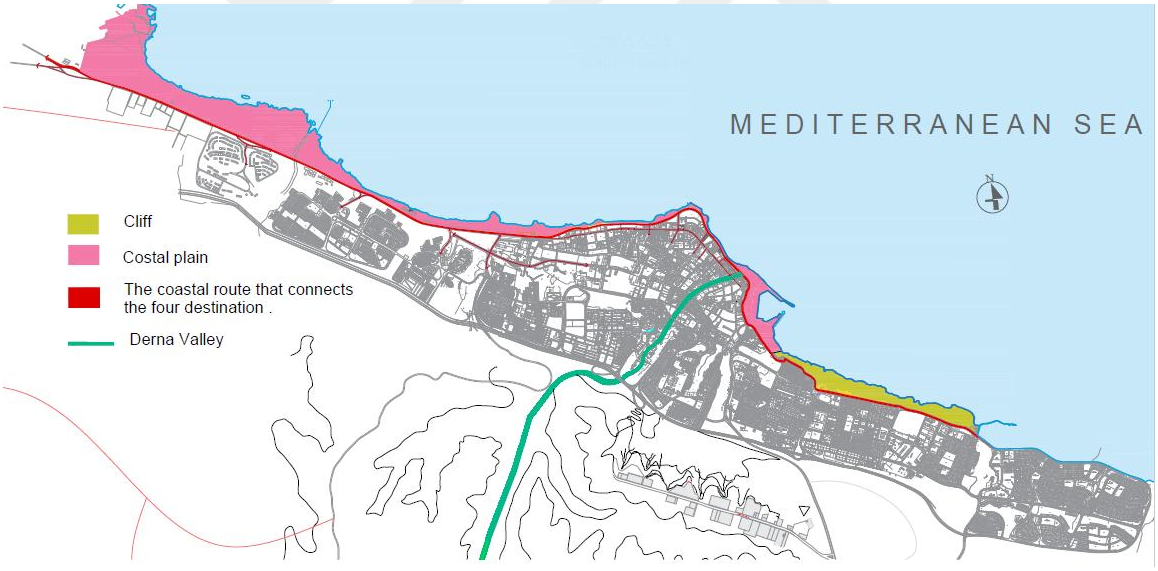


Figure (4.15) Topography and The Regressions .

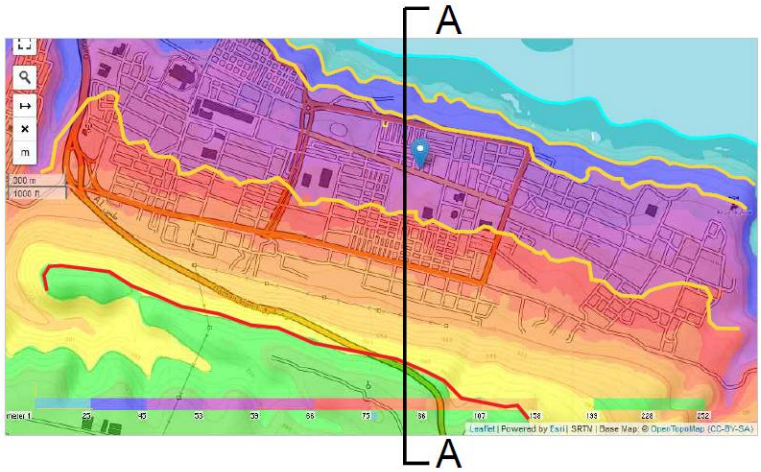


Figure (4.16) Topography and The RegressionsAl Sahil

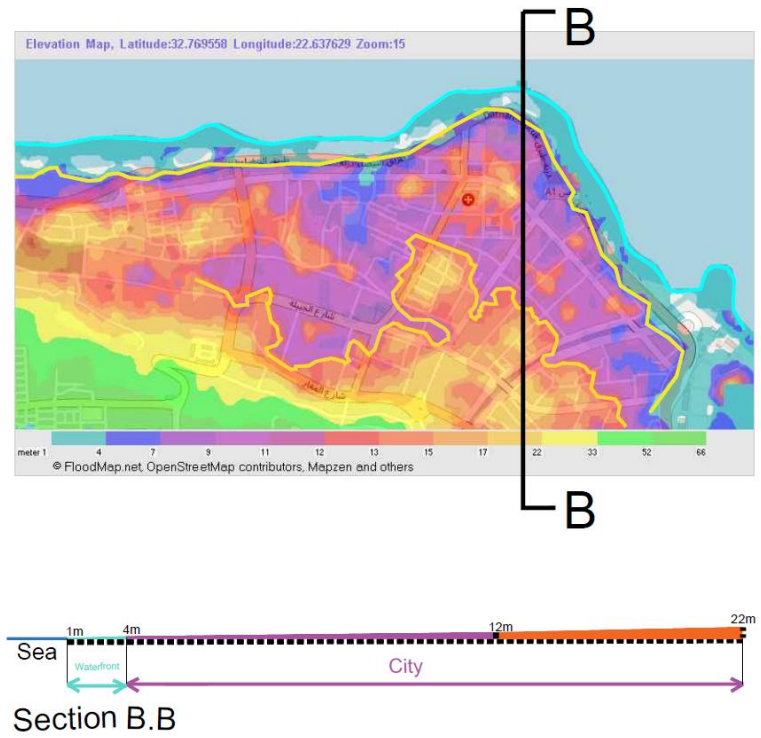
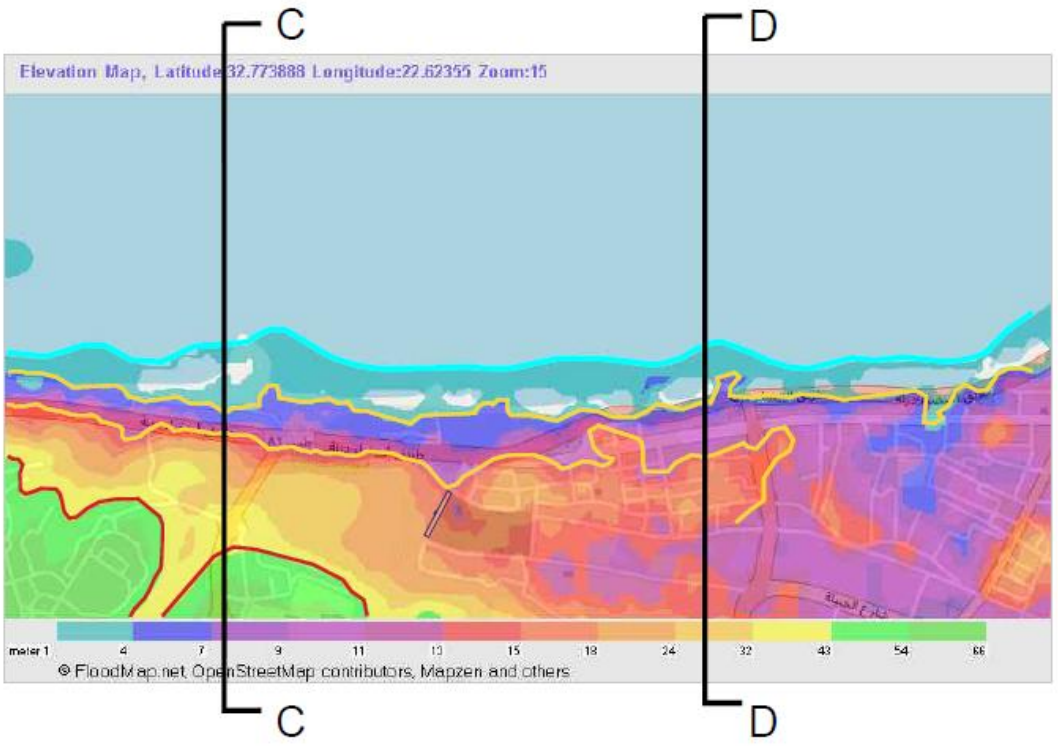


Figure (4.17) Topography and The Regressions in ElJebilah 1



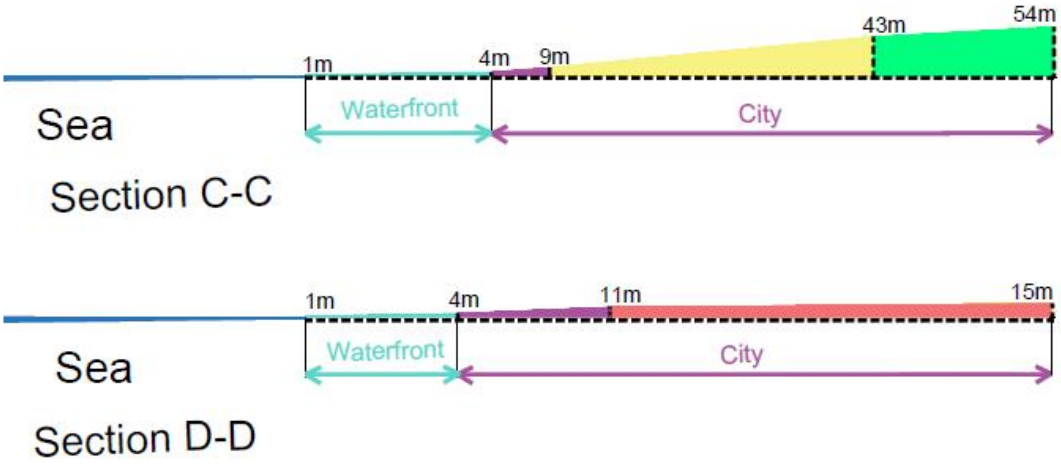


Figure (4.18) Topography and The Regressions in ElJebilah 2

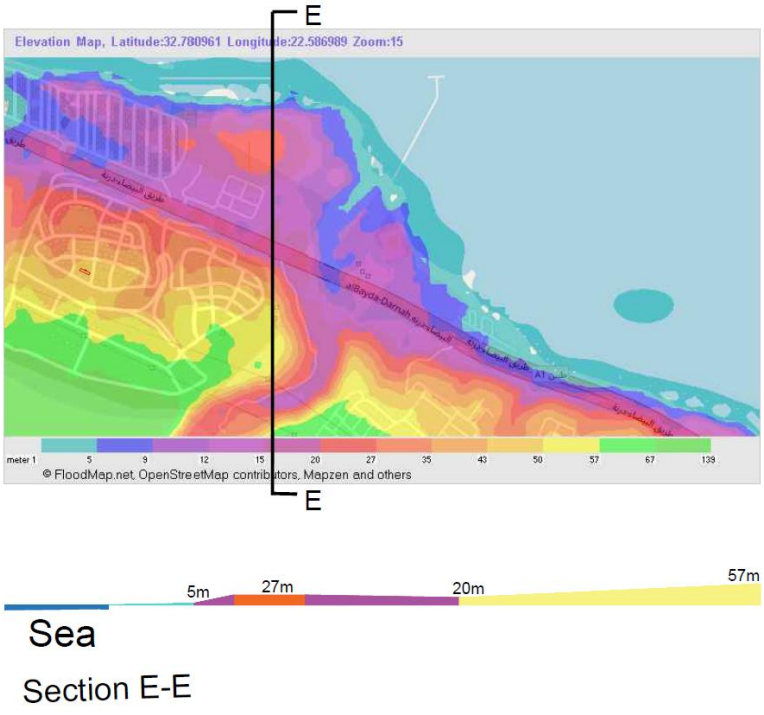


Figure (4.19) Topography and The Regressions in ElJebilah3

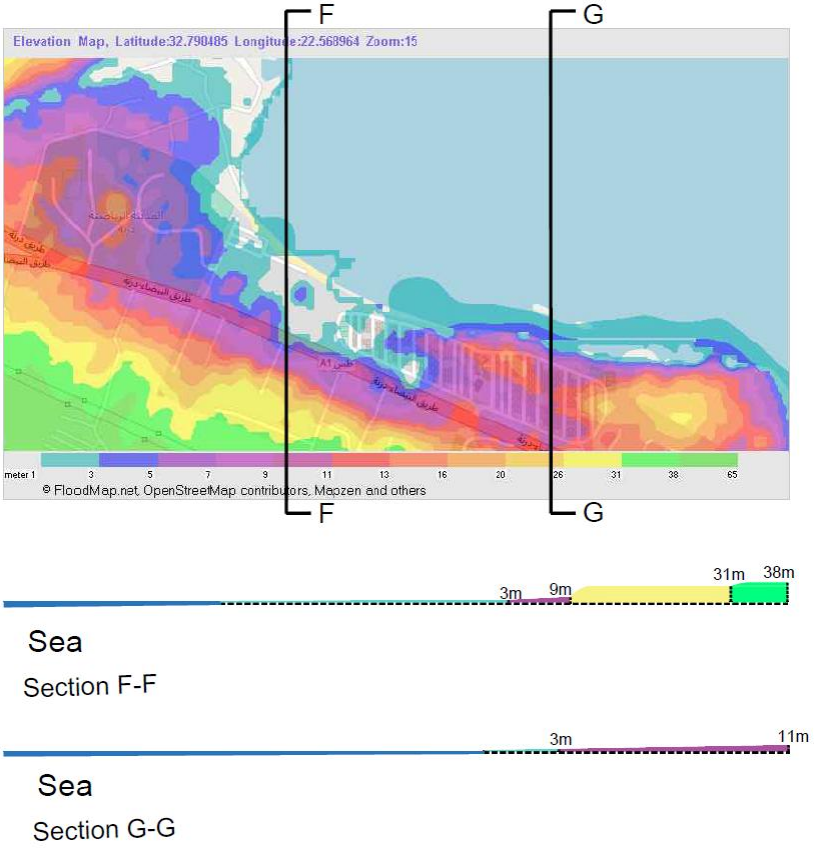


Figure (4.20) Topography and The Regressions in Sayda Khadija.

Regression is an important factor in determining the suitability of the land for construction, and it also has a role in the expansion of the urban fabric.

The study area is characterized by a slope ranging between (0 - 5%) , which is a slope that facilitates the construction process in the region.

b . Marine Conditions :

The city of Derna is located on the Mediterranean Sea, and the sea extends in Derna from the mouth of Wadi Bint to the mouth of Wadi Al-Naqa.

The continental shelf in front of the Derna beach is characterized by its relatively low depth and a soft slope of its surface. It starts from sea level with a slight slope until it reaches a depth of about 10 meters, 25 meters from the shoreline.

Then it reaches a depth of 20 meters, approximately 1,500 meters from the shore line.Its slope continues until it reaches a depth of 40 meters at a distance of 8.5 kilometers from the shore line, until it reaches a depth of 60 meters at a distance of 12 kilometers . The coast is characterized by the presence of sea capes, which are Ras Barricades, Ras Bouazza, and Ras Bo-Musafer.(Al-Qaziri S. K., 2021)

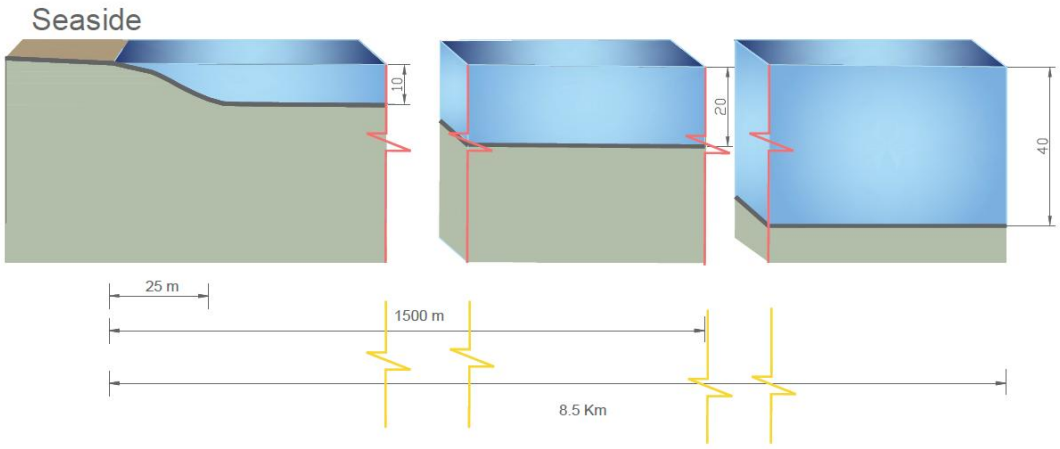


Figure (4.21) Depth of the sea in the coastal plain of Derna city .

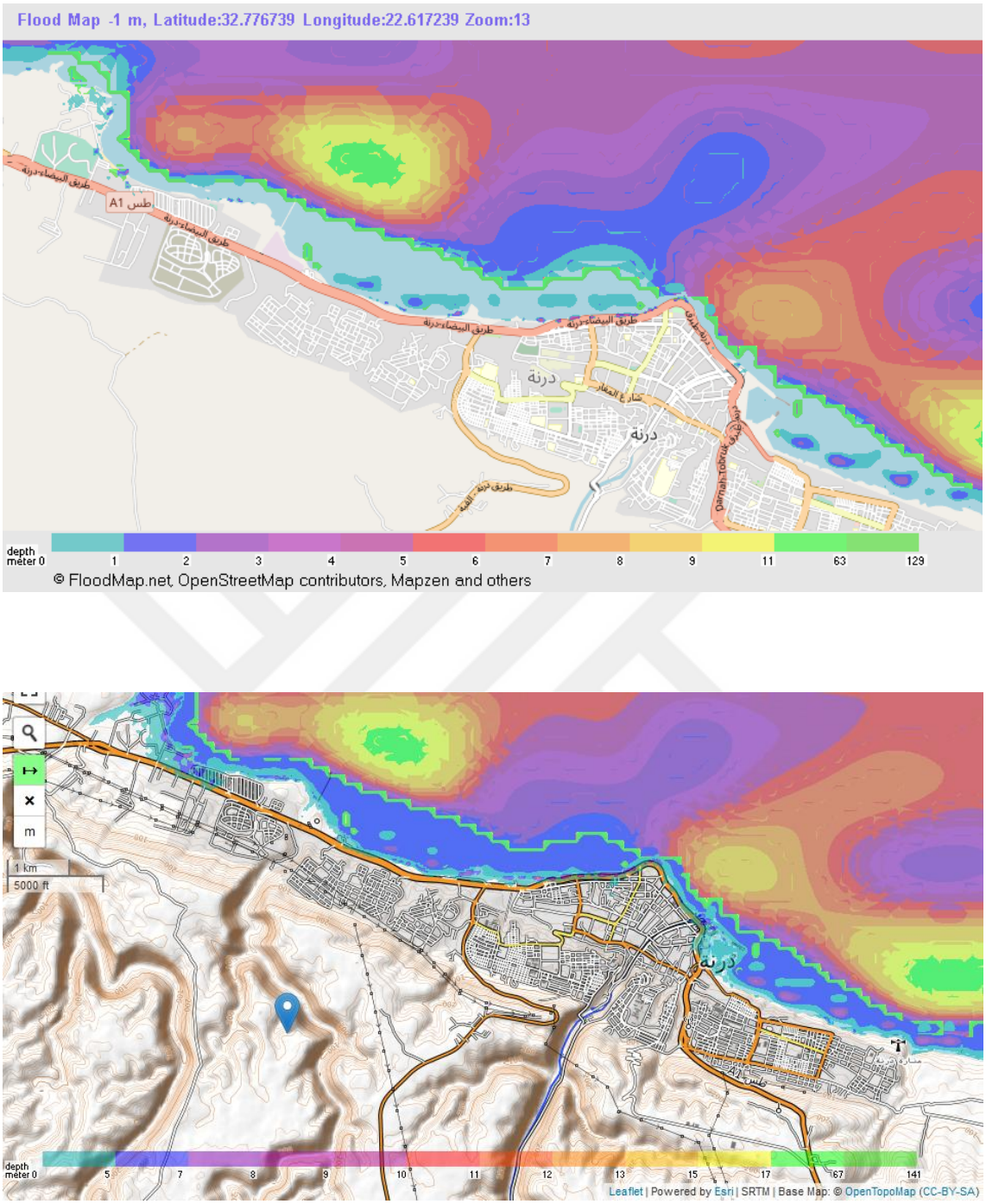


Figure (4.22) Depth of the sea in Derna city .

c . Climate Change and Sea Level Rise :

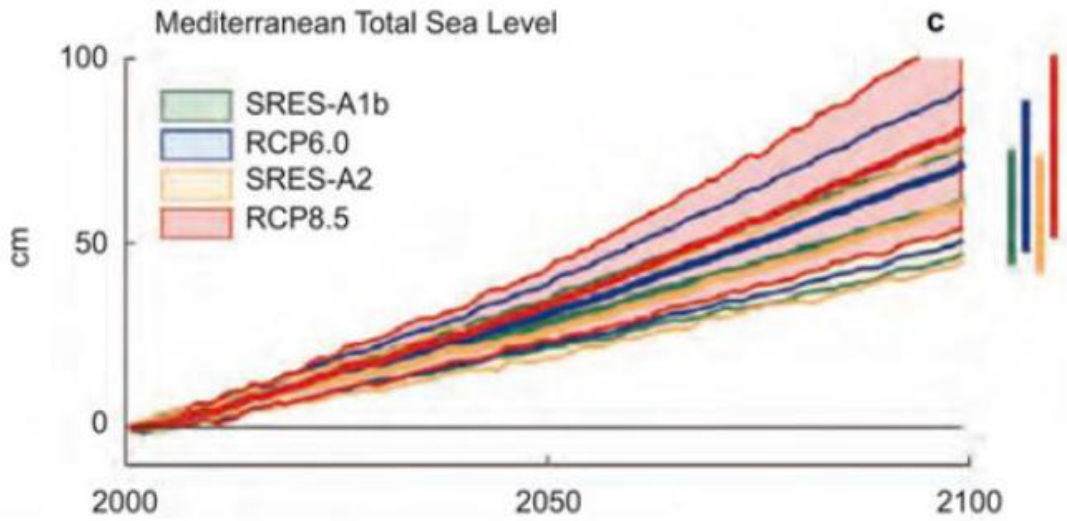


Figure (4.23) Presenting information about projected sea level rise, (Marcos, M., Jorda, G., & Le Cozannet, G., 2018).

Due to climate change, sea levels may rise up to one meter in the upcoming decades, the red colored areas in the map are projected to be under sea level with one meter sea level rise.

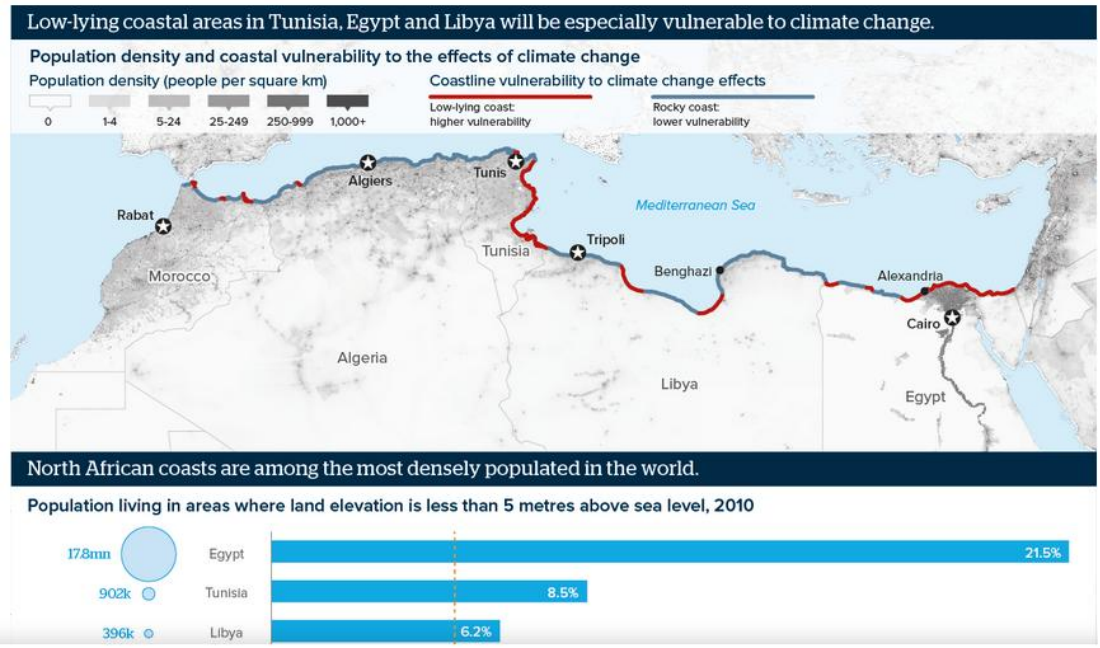


Figure (4.24) climate change effect on the Arab region.

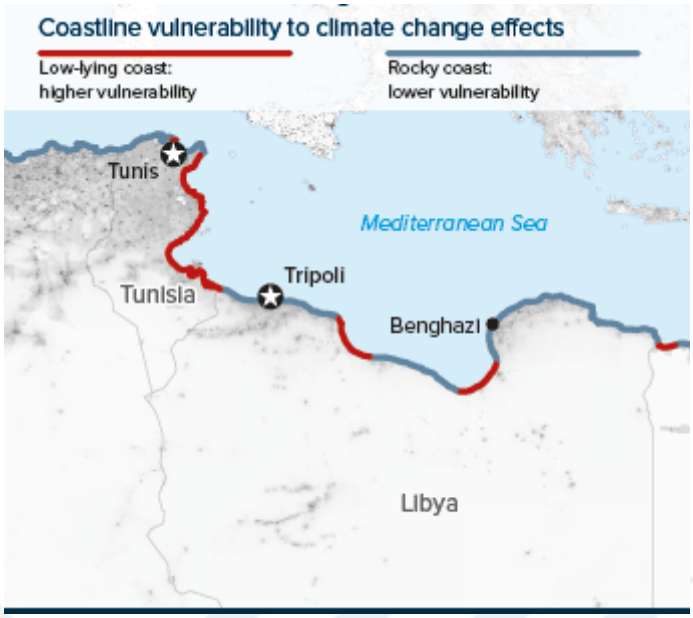


Figure (4.25) climate change effect on coastline of Libya.

Direct inundation may occur on low land areas in Western Libya, such us Zuwara , Sofuljeen ,and Ajdabiya in the east , due to sea level rise.Direct inundation will have implications on the coastal shape, resources and tourism .

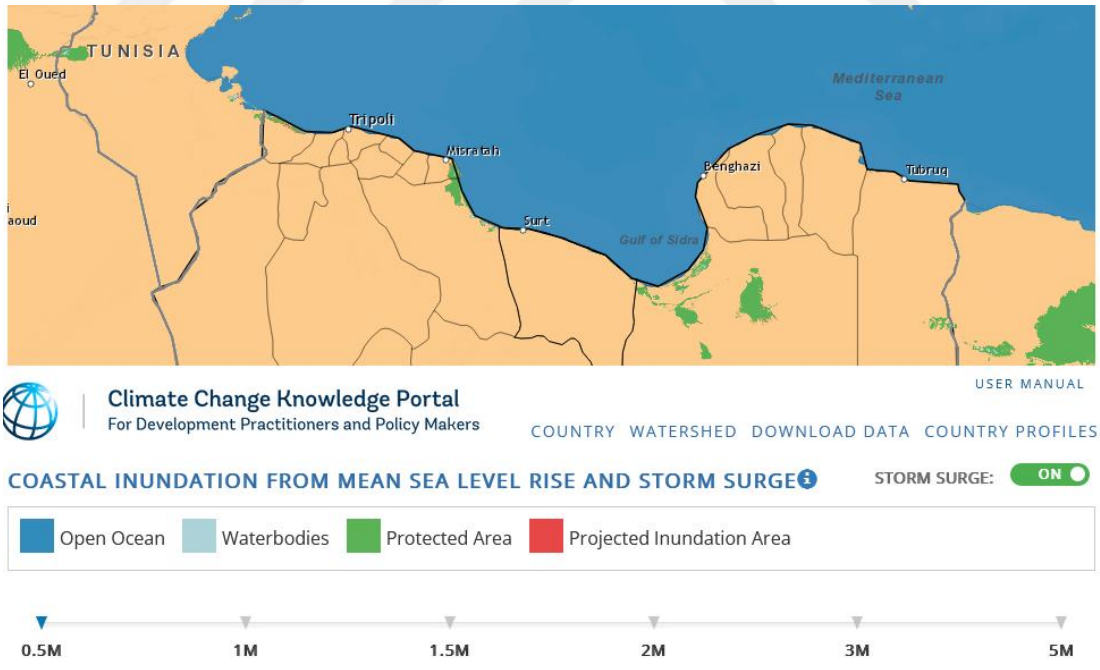


Figure (4.26) projected impact of sea level rise on coastline of Libya.

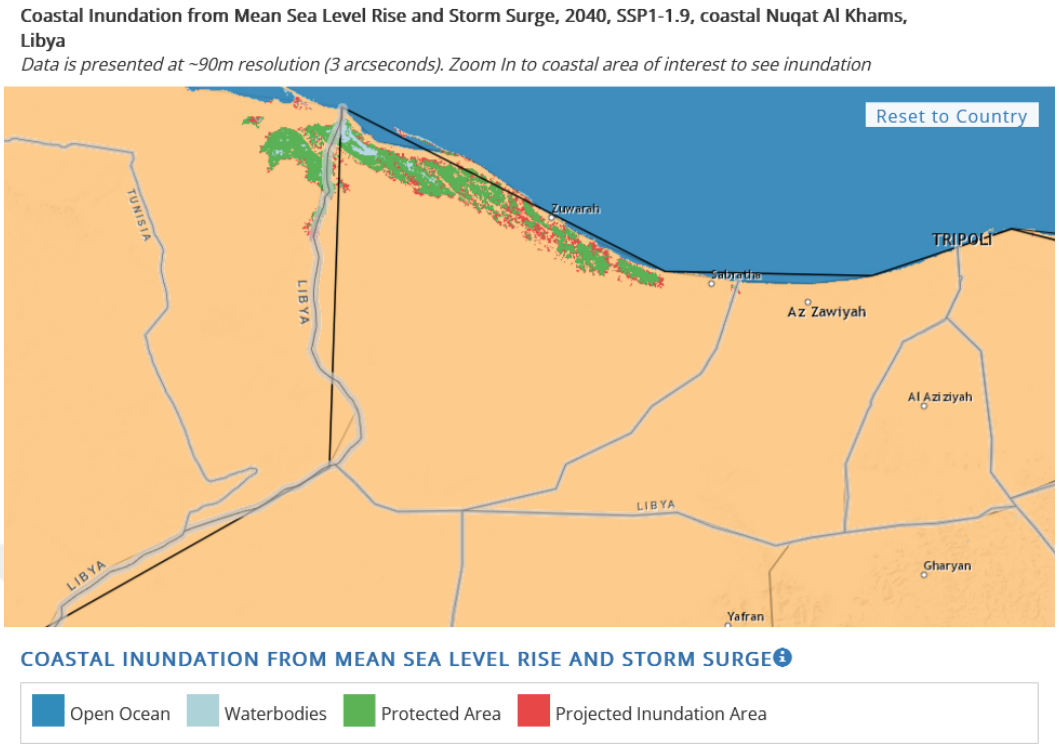


Figure (4.27) projected impact of sea level rise on the city of Zuwara

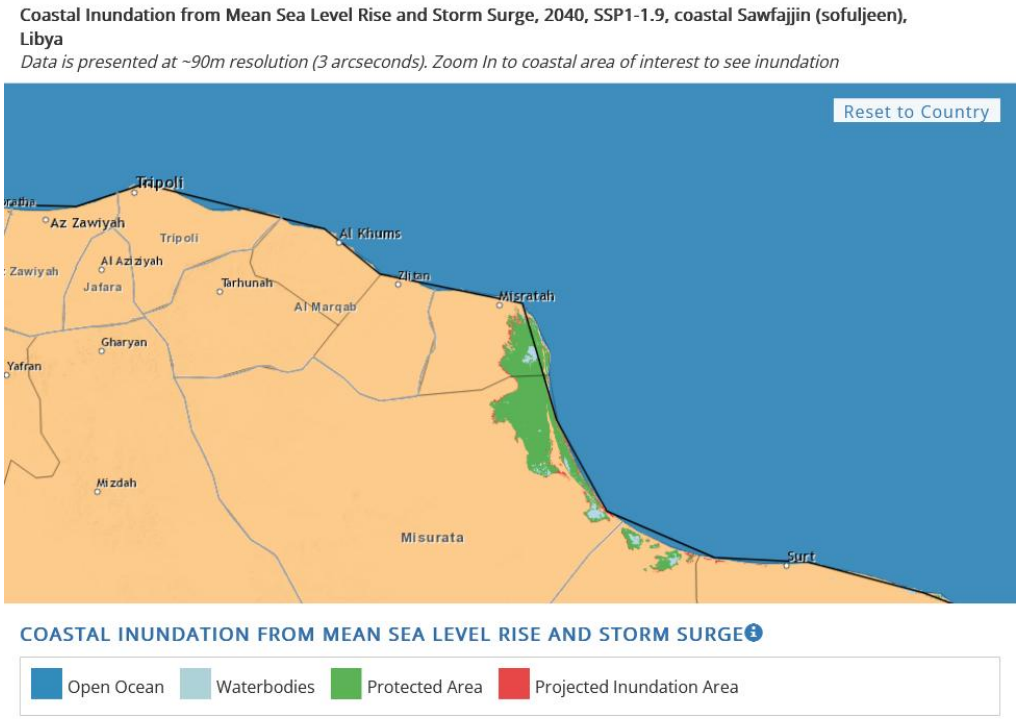


Figure 4.28 projected impact of sea level rise on Sofuljeen .

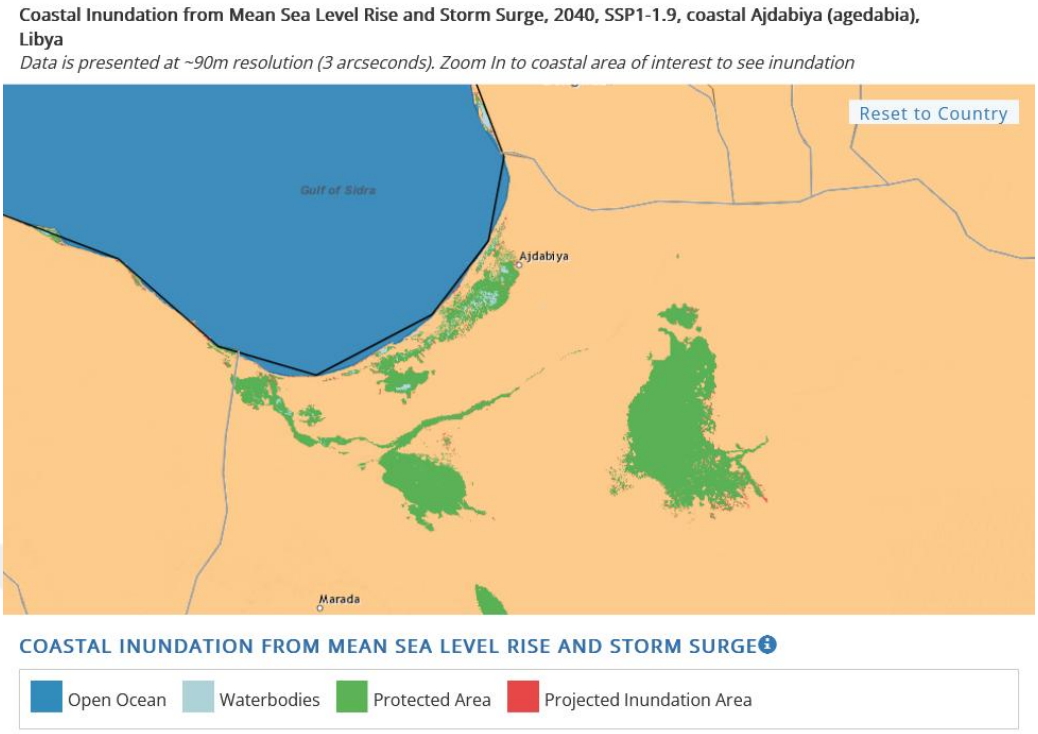


Figure (4.29) projected impact of sea level rise on Ajdabiya .

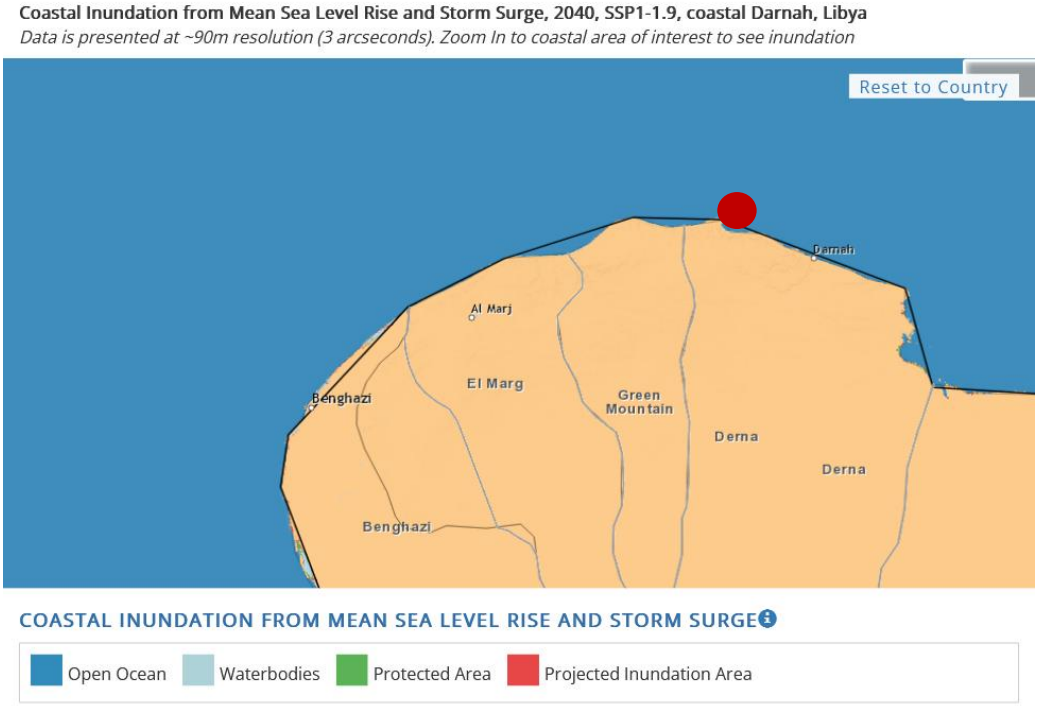


Figure (4.30) projected impact of sea level rise on the city of Derna .

Through the figure, we find that the city of Derna is not among the areas exposed to inundation due to the rise in sea level, and this is due to the topography of the region.

d. Geology:

The lands in Derna and its areas consist over a series of sedimentary rock formations dating back to the third and fourth periods, most of which were formed of limestone, dolomitic limestone and marl.

The geological structure of the study area consists of rock formations from the sediments of the Oligocene and Miocene periods, which include sandy natural formations characterized by sand and sandstone.

4.7.2. Study of The Built Structure

One of the basic components of any district being studied for development is the built structure ,Therefore, it is necessary to make a comprehensive analysis of its various components, in terms of the following:

4.7.2.1 Land Use

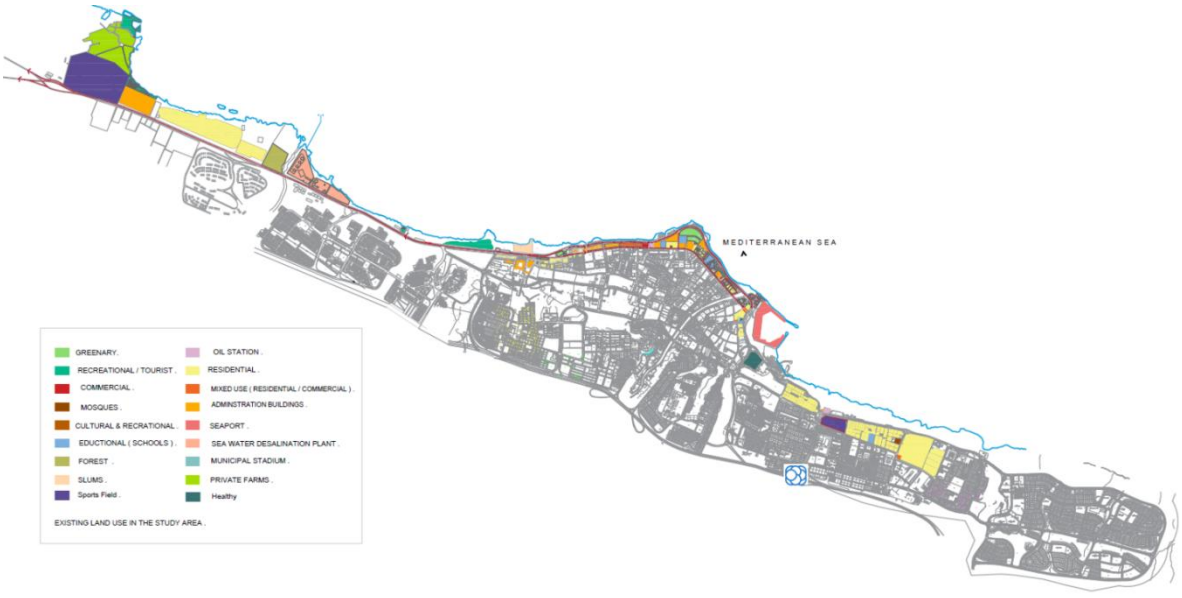


Figure (4.31)Existing land use in the study area .

4.7.2.2 Buildings Patterns

Construction types and elements**.**

In the study area, there are several types of buildings extending along the waterfront, including residential buildings and public buildings, which is represented in :

a . The residences : There are two housings represented in :

- apartments house in block :This type of housing consists of four-storey buildings that may reach eight floors, Stationed in the area near the port.

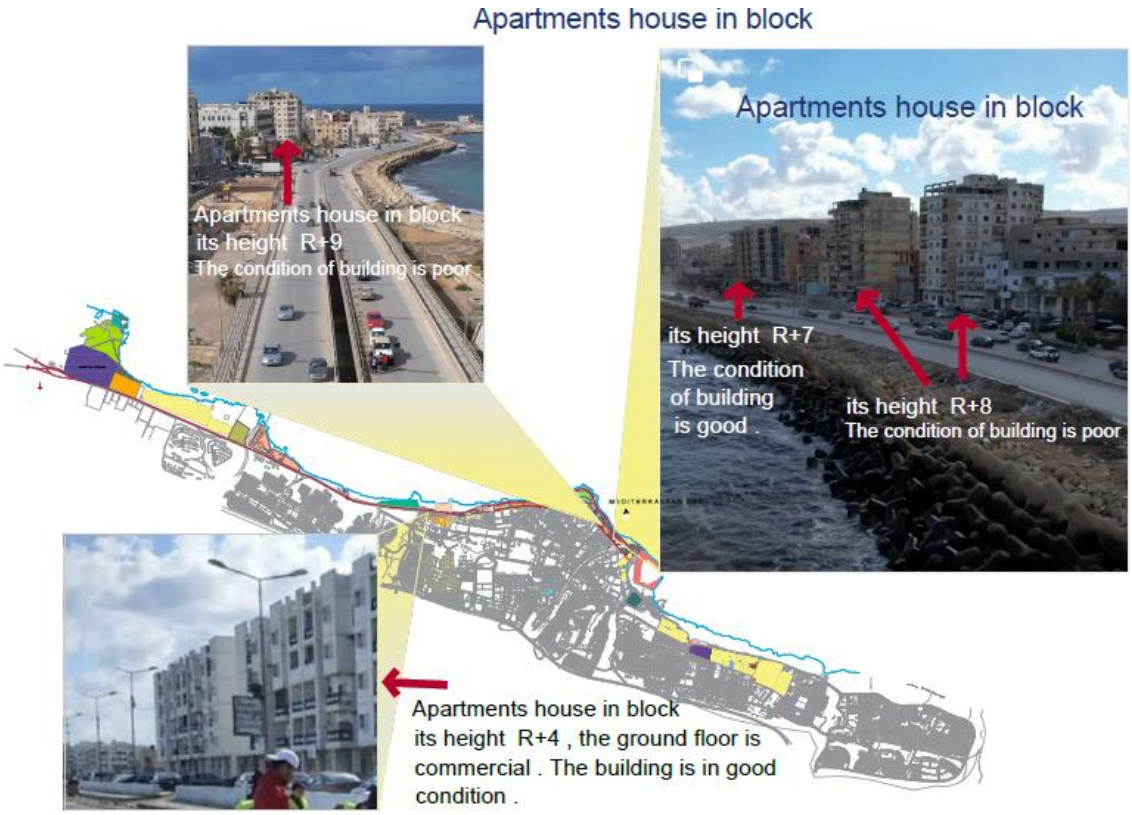


Figure (4.32)apartment house in block.

- Detached house : This type is distributed along the waterfront, and its heights range between R +1 and R +4

Figure (4.33) Detached houses in the study area .

b. public buildings (Facilities)

Facilities in the study area can be classified as follows:

- Administrative facilities
- Educational facilities
- Tourist facilities
- Sports facilities
- Sea water desalination plant

Figure (4.34)Facilities in the study area.

Figure (4.35) Facilities in the study area .

4.7.2.3 Height of The buildings

Figure (4.36)The height of the buildings in the study area .

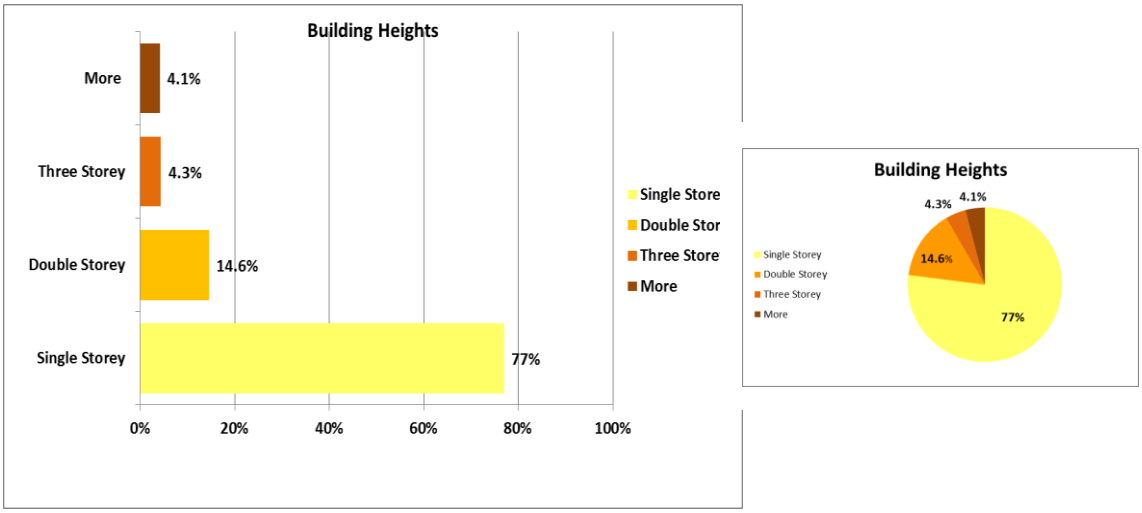


Figure (4.37)PercentageThe height of the buildings in the study area .

4.7.2.4 Ownership Pattern

Real estate ownership of the study area is owned by the state by 68%, and this facilitates the process of developing the study area, avoiding the purchase and expropriation of property in favor of the public interest.Hence, we find the development process without obstacles in terms of real estate ownership of the study area.

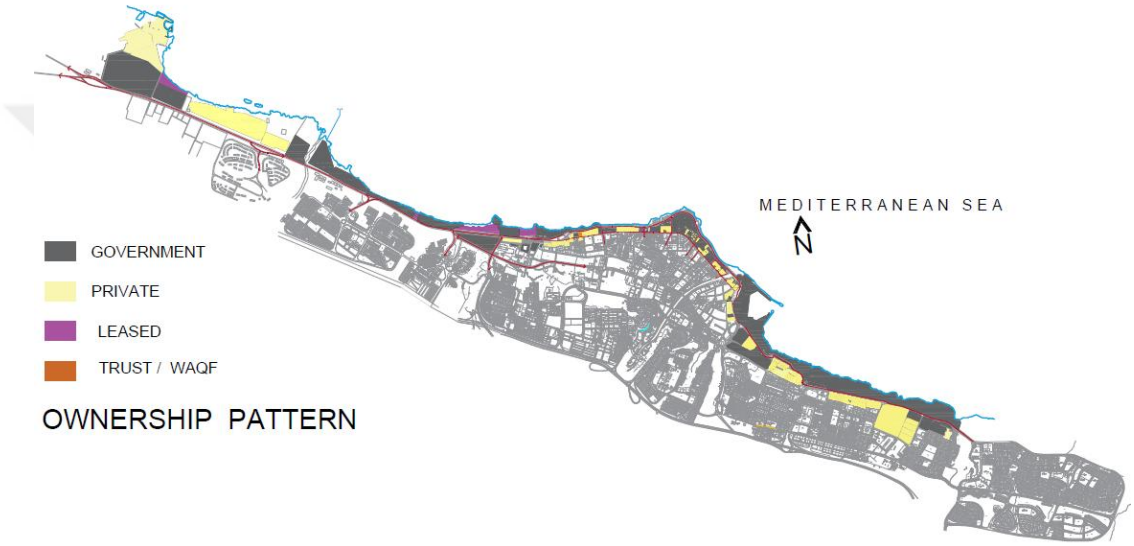


Figure (4.38)Ownership pattern in the study area .

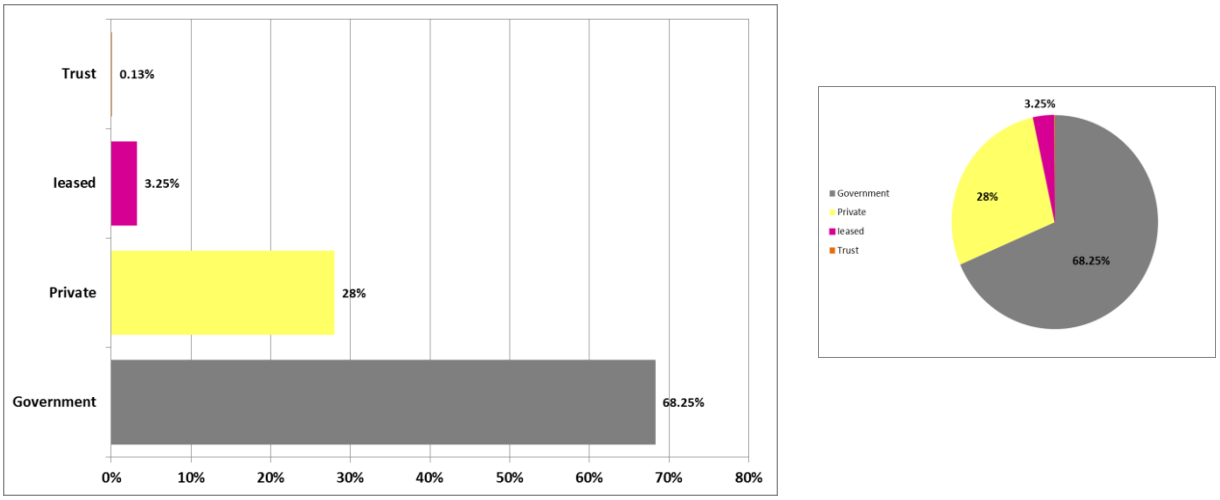


Figure (4.39) PercentageOwnership pattern in the study area .

4.7.3. Study of The unbuilt Structure

4.7.3.1 Roads and accessibility.

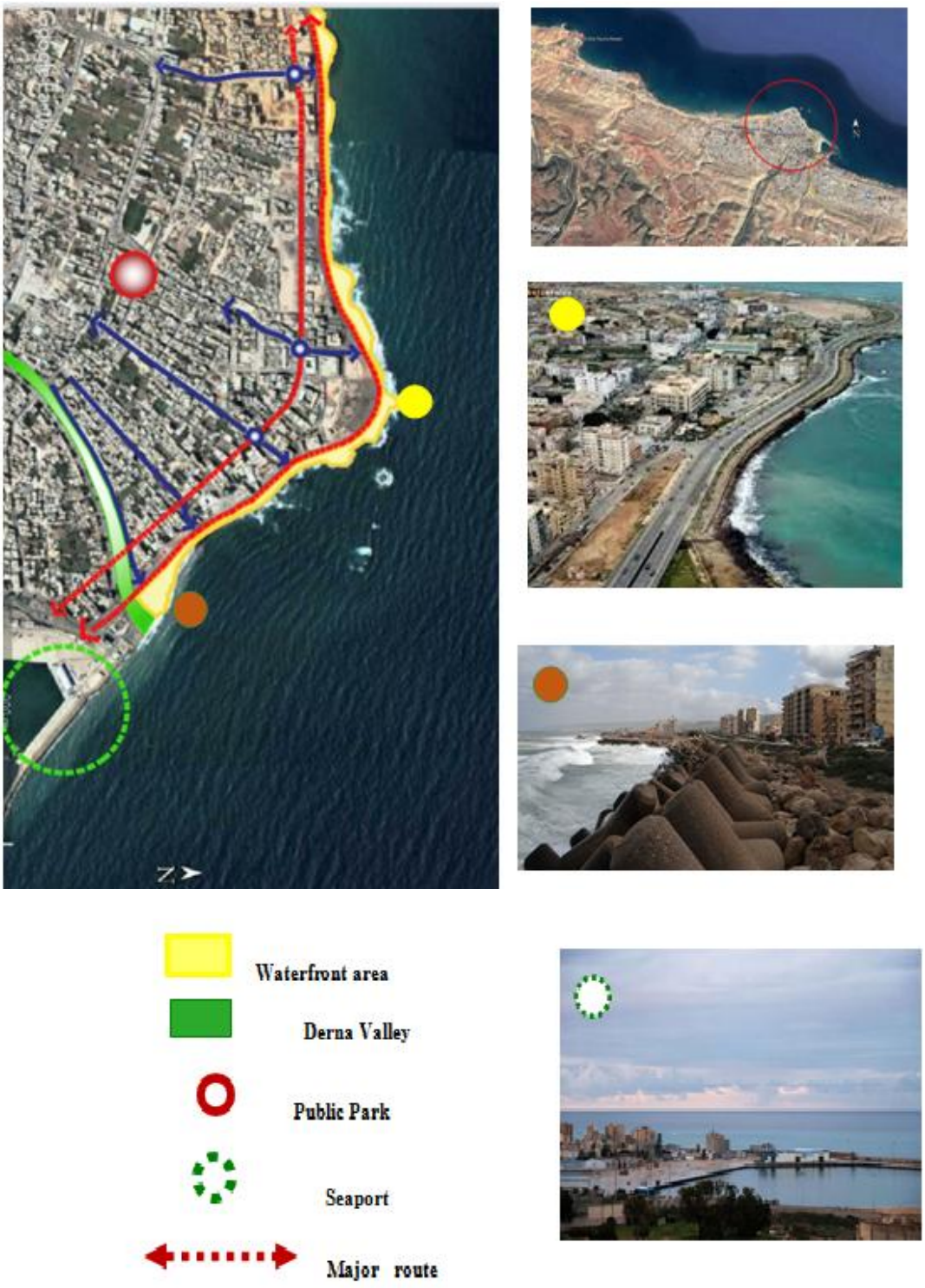


Figure (4.40)Roads and accessibility 1.

Figure . Map of accessibility . source : Author.

Figure (4.41)Roads and accessibility 2.

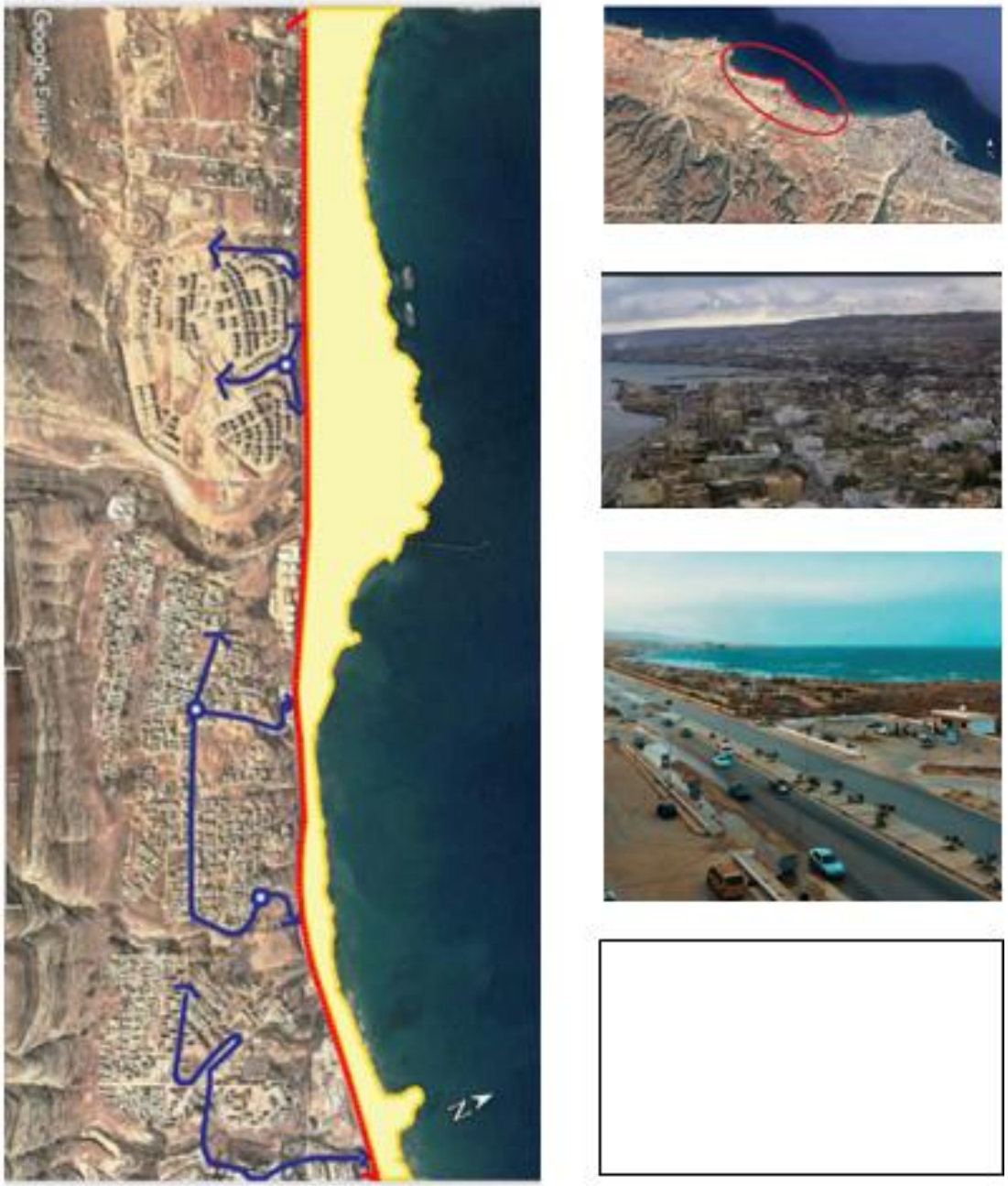


Figure (4.42)Roads and accessibility 3.

Figure (4.43)Roads and accessibility 4.

4.7.3.2 Public Squares and Ggreen Spaces .

These spaces are considered completely neglected, although they are of important social and environmental value for the city as a whole.

According to the field study that we conducted, we find that the citizen, especially those with limited income, does not find a place to go for himself, or meet with other people, and here we mean public spaces and parks.

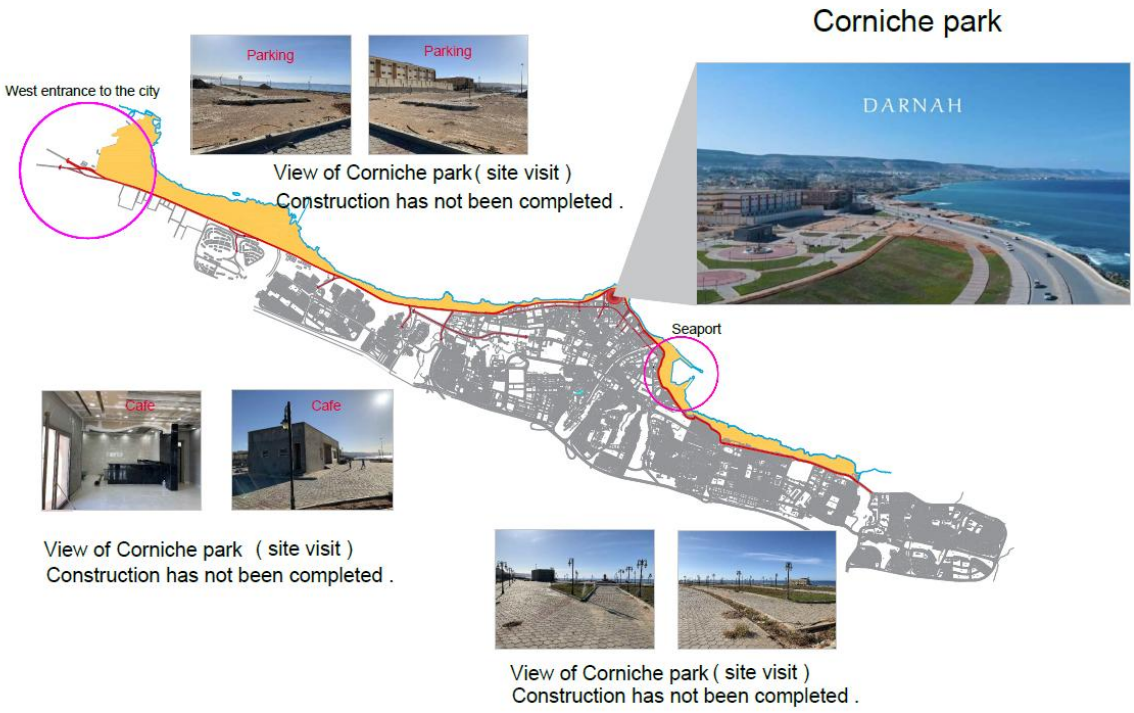


Figure (4.44) Corniche park .

4.8. QUESTIONNAIRE RESULTS

A questionnaire is distributed the households of Derna of different districts. A total 167 questionnaires were returned and completed. The sections below show the analysis of the questionnaire. Additional statistical information and tables can be found in the appendix section.

4.8.1 Demographics

- **Count of household members :**

Figure below show the average household counts and their percentages in the surveyed households in Derna. The average household count is 4.8, while the majority of the households have 5 members (22.8%), followed by 3 and 4 members (15.6% each), then households with 6 members (14.4%).

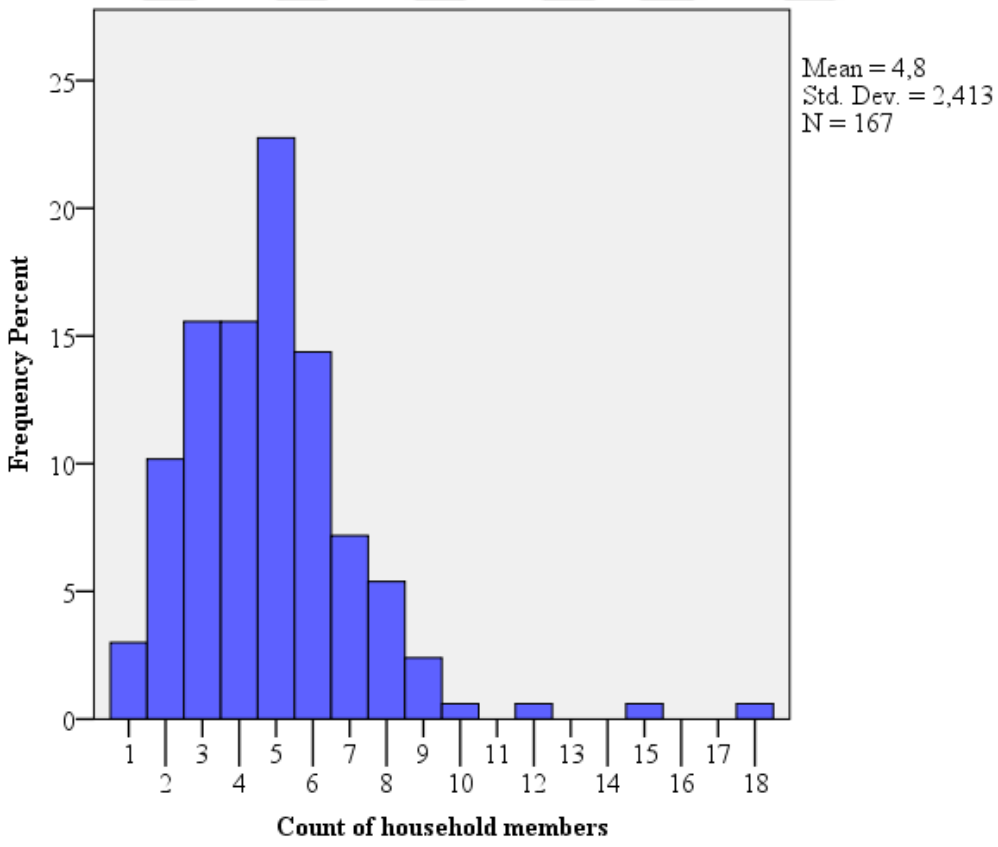


Figure 4.45Count of household members .

- **Average age categories of the household :**

The Figure below also shows the age category distribution for the average age of the household. The majortiy average age of the household ranges between 21 and 40 years-old.

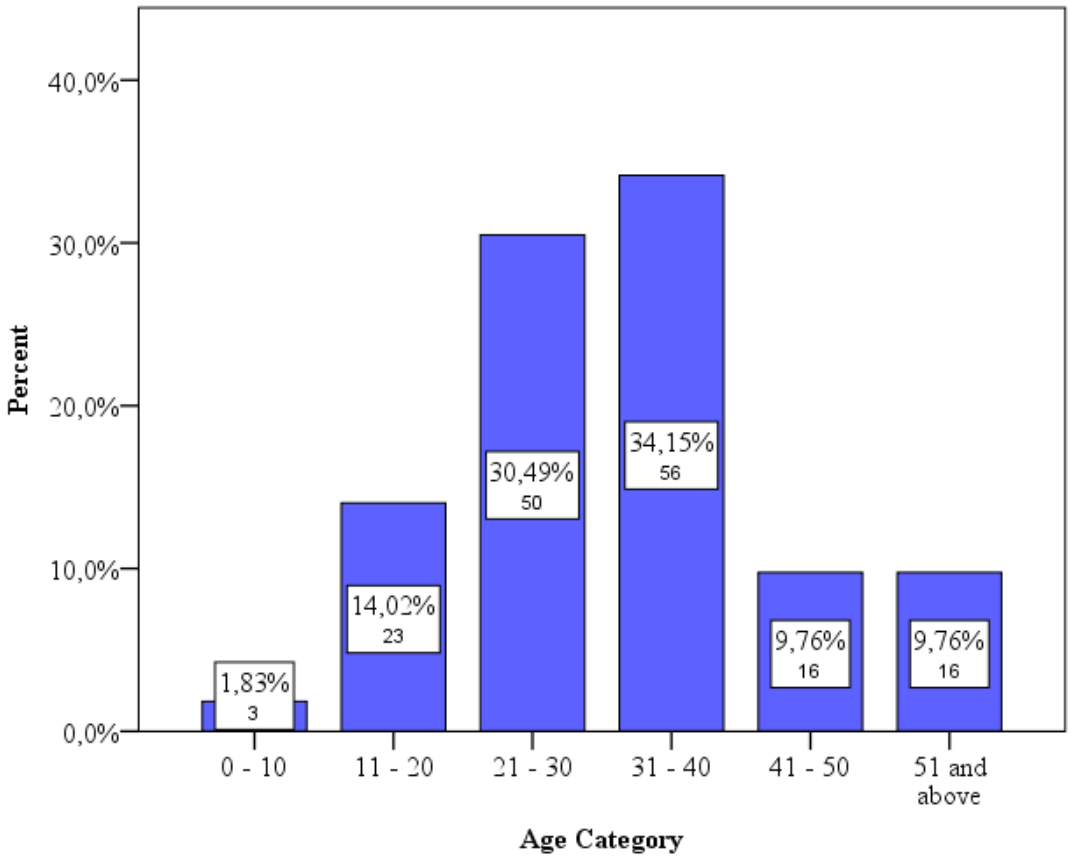


Figure 4.46 Average age categories of the household

- **The parents demographics :**

The parents demogrpahics are significant to understand for the social and economic properties of the surveyed households. Figures below show the counts, education levels, occupations, job roles, and monthly incomes of father in the families, followed by similar charactersitics for the mothers. A total of 141 participating households have father members of the family (84.4%). The mean age of fathers is 48.71 years-old .

- **Education levels of fathers :**

In the education level of the father, the majority of the fathers has a university degree (44.88%), followed by those who hold a vocational school education (24.41%). The percentage of fathers who are illeterate or with primary education is relativly very small (1.58%).

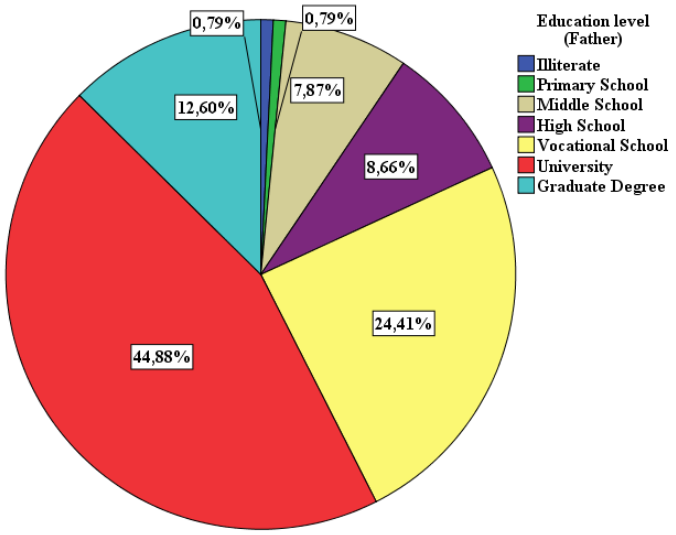


Figure 4.47. Education levels of fathers

- **Occupations of fathers :**

In occupations of the fathers, the majority of the fathers are employed by the public sector (54.10%), followed by those who are self-employed (29.51%). Moreover, Teachers were the highest type of occupancy for this category with 15.13%. Business owners and merchants also formed together 16.80% of the fathers in the sampled households. The majority of public sector workers imposes an issue to the recurring challenge of late wages.

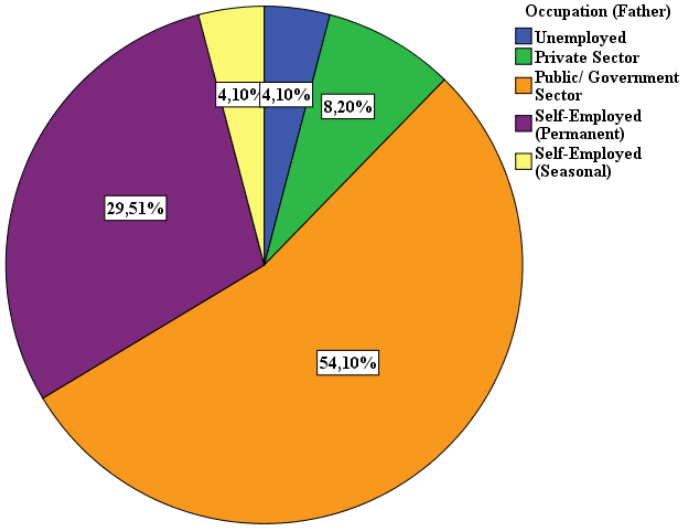


Figure. 4.48 Occupations of fathers

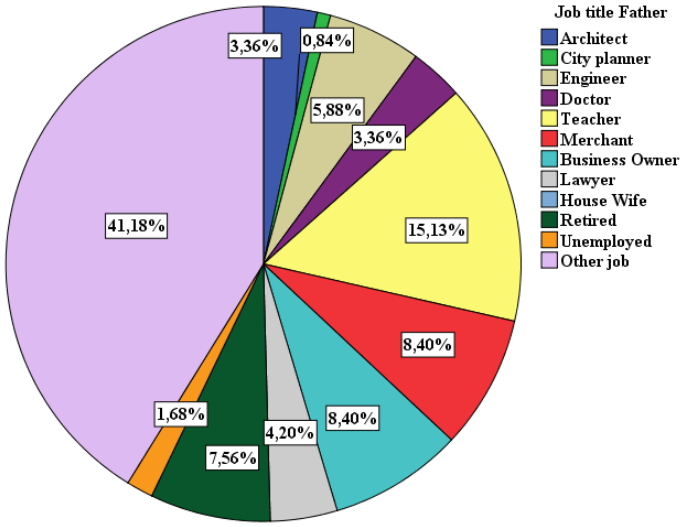


Figure 4.49. Job titles of fathers

- **Monthly income for fathers :**

The majority of fathers earned a monthly income ranging between 1000 to 2000 Libyan Dinars (LYD) (47.1%), while no household indicated no income for the father.

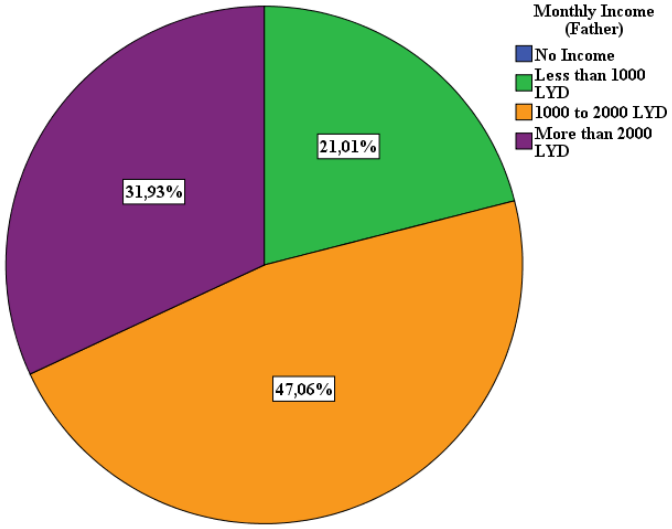


Figure 4.50. Monthly income for fathers

For mother members' statistics, a total of 150 participating households have mother members of the family (89.8%). The mean age of mothers is 43.35 years-old.

- **Education level of mothers :**

In the education level of the mother, the majority of the mothers has a university degree (51.80%), followed by those who hold a high school education (15.83%). The percentage of mothers who are illiterate or with primary education is relativly very small (1.44%).

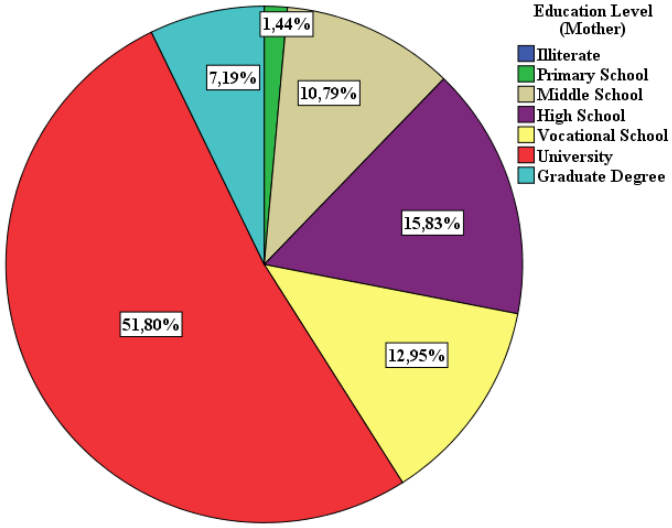


Figure 4.51. Education level of mothers

- **Occupation and Income of mothers:**

In occupation, the majority of mothers are employed by the public sector (58.6%), followed by a significant percentage of unemployment (30.1%), which mostly represents those who chose to be housewives. The majority of public sector workers imposes an issue to the recurring challenge of late wages. In job titles, the majority of mothers work as teachers (40.2%), followed by housewives (26.0%). The distribution of mothers in other job types is relatively very small among other jobs. The majority of mothers earn between 1000 LYD and 2000 LYD (52.0%), while 25.2% have no income.

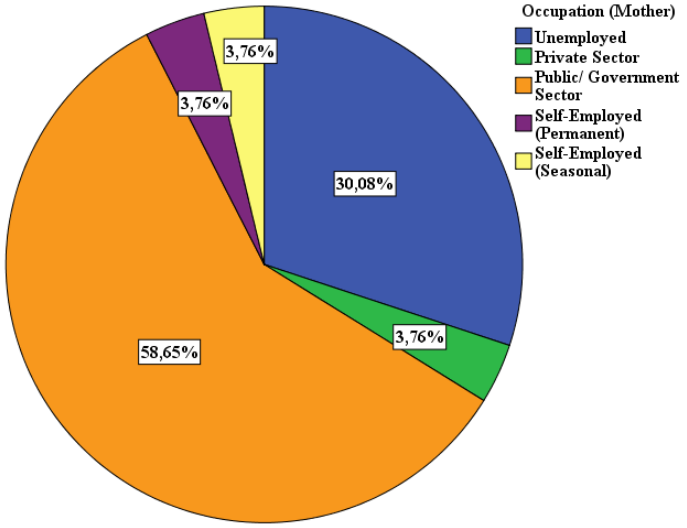


Figure 4.52 Occupation of mothers

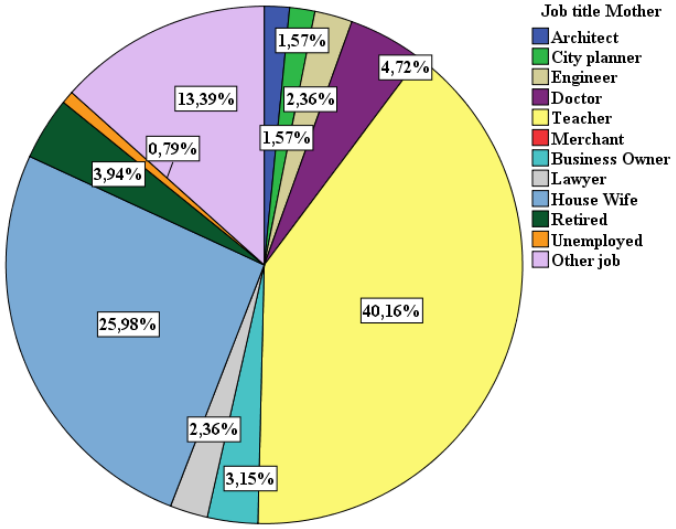


Figure 4.53. Job titles of mothers

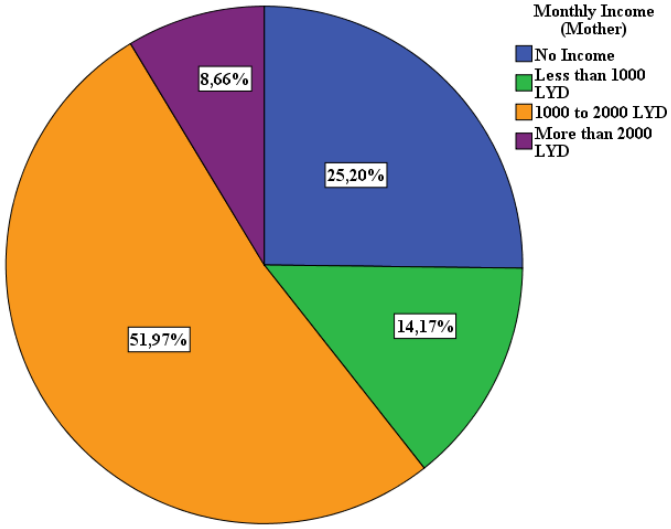


Figure 4.54. Income of mothers

4.8.2 Family History in Derna

- **Are you originally from Derna ?**

Based on family history, figure show that 64.7% of the participants are orignially from Derna, while the reminaing 35.3% are from other Libyan regions. Of the people that moved to Derna, 22.03% moved from different parts of Libya, while 20.34% moved from Benghazi. Furthermore, 11.86% of the sample indicated that they moved from Tripoli.

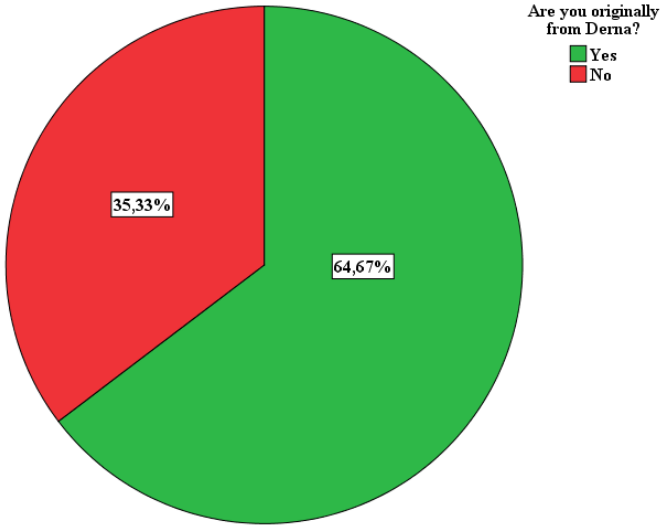


Figure 4.55. Participant origins to Derna

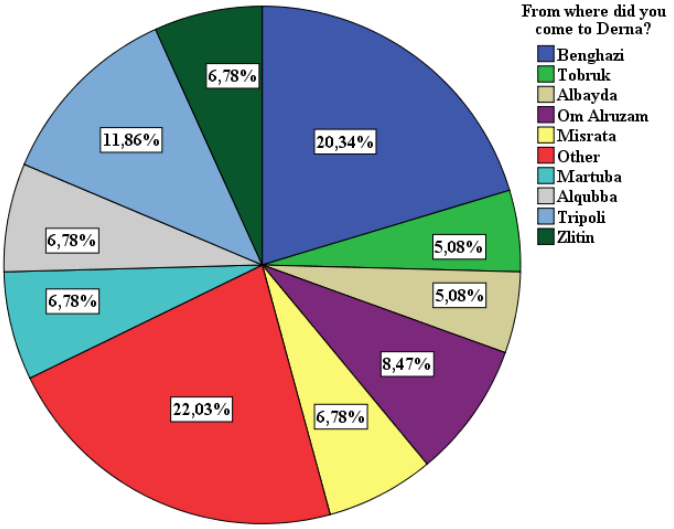


Figure 4.56 . Origins of participants who are not originally from Derna

- **Where did you work before coming to Derna ?**

The majority of the sample indicated that they owned their own business before moving to Derna (38.18%), followed by those who worked in the education sector (20%), then those who worked in government jobs (10.91%).

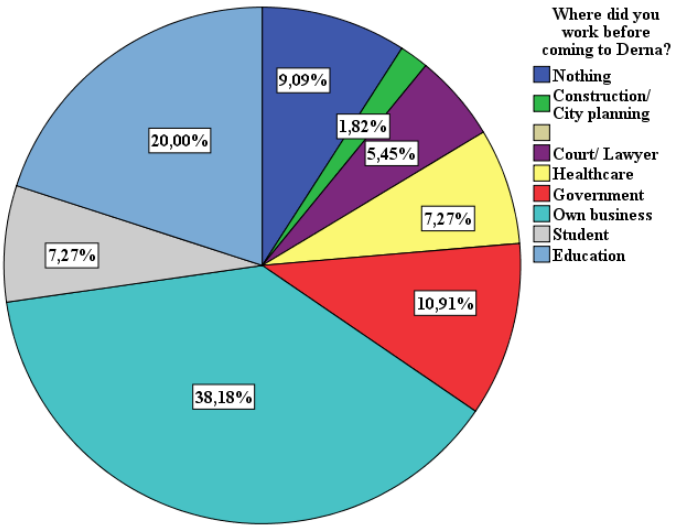


Figure 4.57 . Occupations of participants before arriving to Derna

- **What was your first work after coming to Derna ?**

After arriving to Derna, 33.33% indicated that they owned their own business, 19.30% worked in the education sector, 14.04% worked in government jobs, and 10.53% were unemployed.

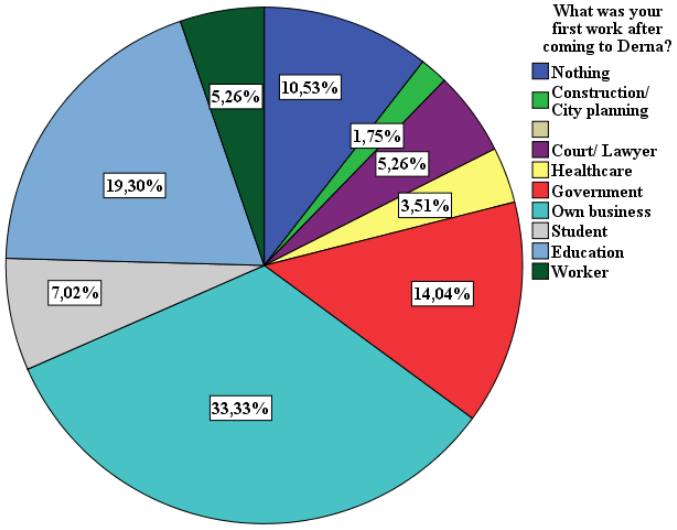


Figure 4.58 . Occupations of participants after arriving to Derna

- **How many times did you change jobs since coming to Derna ?**

As shown in Figures below, the majority of the participants did not change their jobs since their arrived to Derna (63.6%).

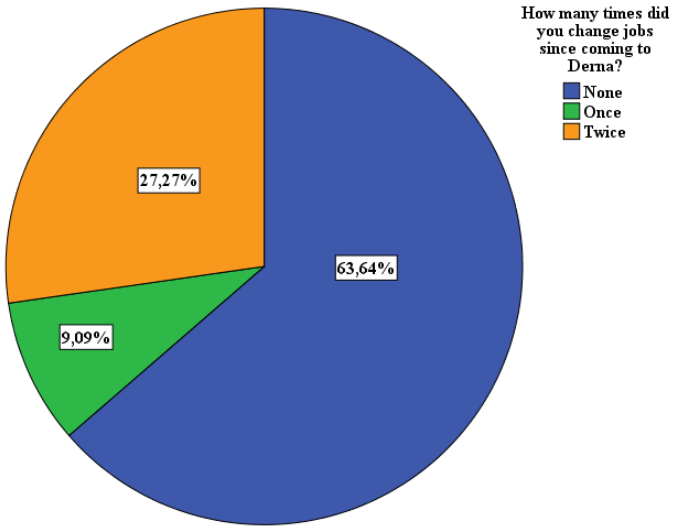


Figure 4.59 Times of job change

- **Who from the family came first to Derna ?**

As shown in Figure below, the majority either moved together as a family to city (29.8%) or the father was the first member of the family to move (28.1%).

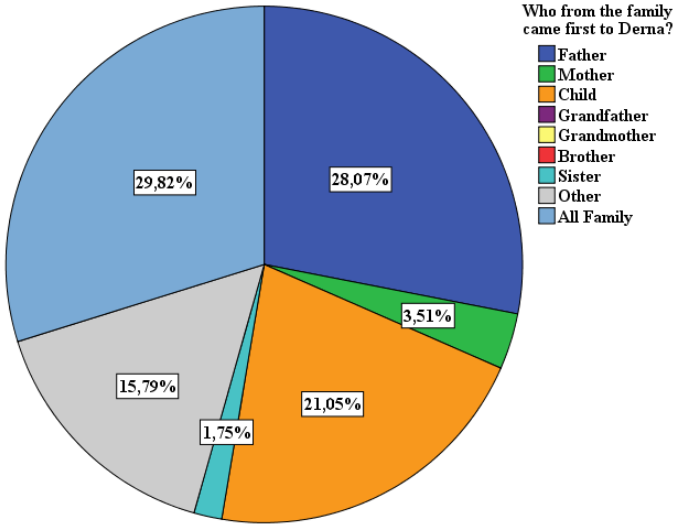


Figure 4.60 First family member to move to Derna

- **Date of arrival to Derna?**

The majority of the households that are not originally from Derna moved in 1999 or before (55.9%). The migration movement before 1999 is driven by the migration from suburban areas to the city. However, movement to Derna witnessed an increase in 2011 due to the insecure situation of the country, which was disturbed with the appearance of terrorist organizations in the city between 2014 and 2016.

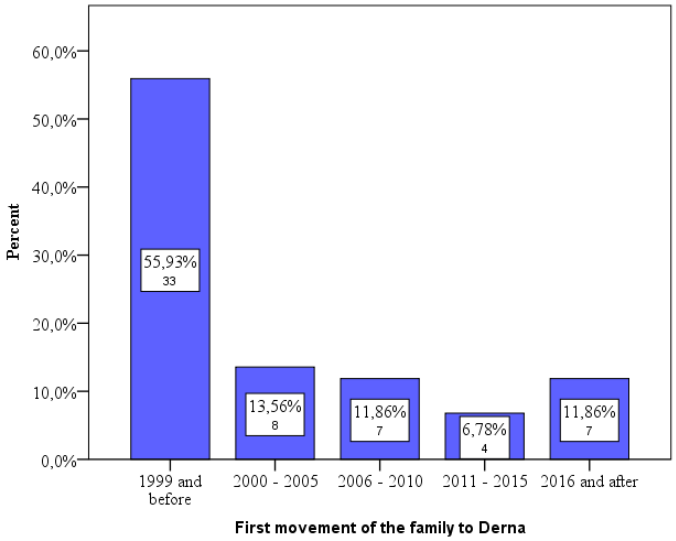


Figure 4.61 Periods of movement to Derna

- **In Which neighbourhood (Mehalleh) do you live ?**

The population of the sample is distributed evenly among the eight neighbouhoods of Derna, as shown in Figure.

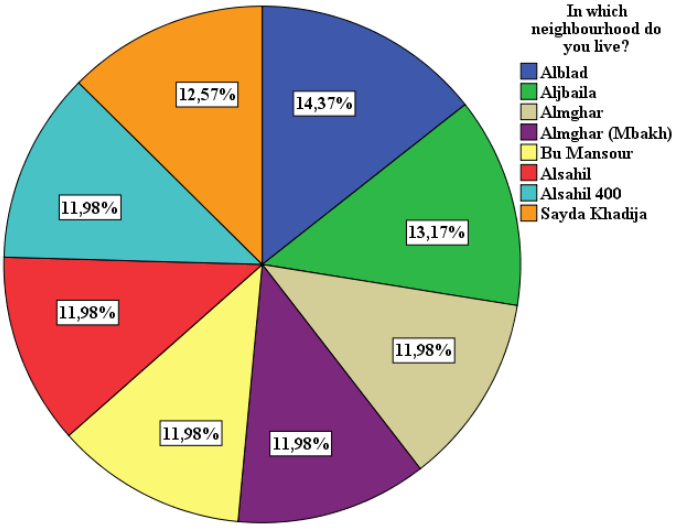


Figure 4.62 Distribution of participants among the eight neighbourhoods of Derna

- **How many times did you change neighbourhood in Derna ?**

The majority of the participants arrived to their current neighbourhoods after 2010 (40.71%), which is mainly attributed to the security situation in the country as Derna was considered a safe city at the time. Moreover, the majority of the participants indicated that they changed their neighbourhood at least once (41.92%), while 29.94% did not change it. This low rate of change is due to the high ownership rate of houses in the city. However, people who had the change of residence more than once is attributed to the damages in houses due to instabilities.

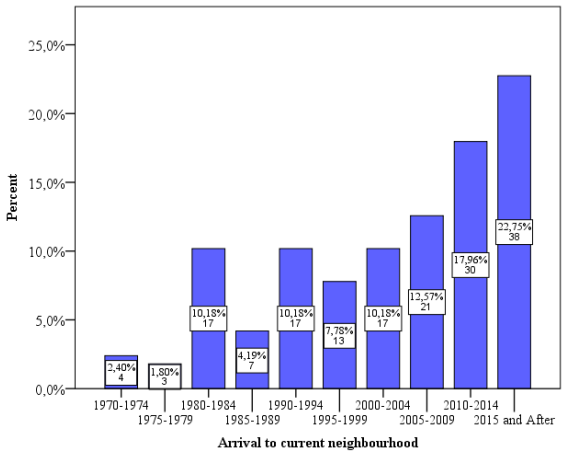


Figure 4.63 Period of arrival of participants to their current neighbourhoods

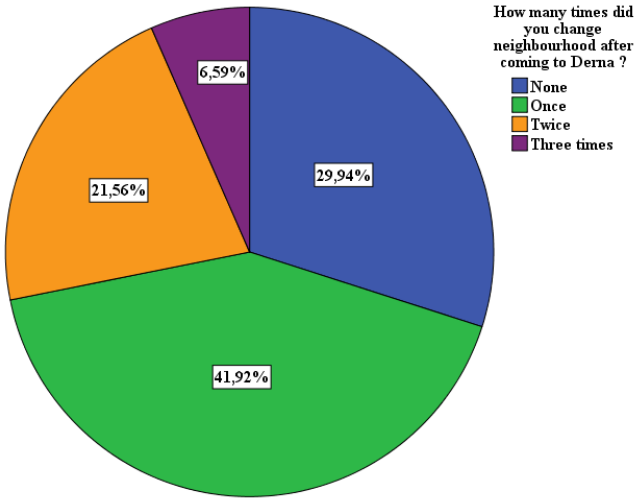


Figure 4.64 Number of times of neighbourhood change

- **CURRENT SİTUATİON**

4.8.3. Usage Ppatterns and Preferences

- **Frequency of public facility usage by age :**

Based on the cross-tabulation analysis in Table 4.6 , it is shown that Through the field survey, it became clear that the city suffers from an acute shortage of urban parks and district parks, so the answers of the participants regarding the part allocated to urban parks and district parks were about the only park in the city, which is the children's park. it is clear that the majority of the population and ages do not use it frequently due to the need for major works in them. Youth expressed their heavy use of playgrounds, while sports areas were among the most used public facilities .

Table 4.6 Cross-tabulation for frequency of public facility usage by age .

			Age Category.						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Never	**Count**	**1**	**6**	**18**	**11**	**6**	**7**	**49**
		%	**100,0%**	**66,7%**	**60,0%**	**47,8%**	**85,7%**	**63,6%**	**60,5%**
Frequency (Urban Park)	Once a year	Count	0	0	3	1	0	2	6
		%	0,0%	0,0%	10,0%	4,3%	0,0%	18,2%	7,4%
	Once a month	Count	0	0	3	6	0	2	11
		%	0,0%	0,0%	10,0%	26,1%	0,0%	18,2%	13,6%
	Once a	Count	0	2	6	5	1	0	14

			Age Category.						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	week	%	0,0%	22,2%	20,0%	21,7%	14,3%	0,0%	17,3%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	11,1%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	9	30	23	7	11	81
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Never	**Count**	**1**	**4**	**14**	**10**	**2**	**4**	**35**
		%	**100,0%**	**36,4%**	**41,2%**	**35,7%**	**28,6%**	**36,4%**	**38,0%**
Frequency (District park)	Once a year	Count	0	0	0	1	0	1	2
		%	0,0%	0,0%	0,0%	3,6%	0,0%	9,1%	2,2%
	Once a month	Count	0	2	9	8	3	1	23
		%	0,0%	18,2%	26,5%	28,6%	42,9%	9,1%	25,0%
	Once a week	Count	0	3	7	7	2	4	23
		%	0,0%	27,3%	20,6%	25,0%	28,6%	36,4%	25,0%
	Daily	Count	0	2	4	2	0	1	9
		%	0,0%	18,2%	11,8%	7,1%	0,0%	9,1%	9,8%
Total		Count	1	11	34	28	7	11	92
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Never	Count	0	5	17	9	4	7	42
		%	0,0%	27,8%	44,7%	28,1%	57,1%	63,6%	38,9%
Frequency (Playground areas)	Once a year	Count	1	1	1	3	1	2	9
		%	50,0%	5,6%	2,6%	9,4%	14,3%	18,2%	8,3%
	Once a month	Count	1	9	12	13	2	0	37
		%	50,0%	50,0%	31,6%	40,6%	28,6%	0,0%	34,3%
	Once a week	Count	0	2	8	5	0	2	17
		%	0,0%	11,1%	21,1%	15,6%	0,0%	18,2%	15,7%
	Daily	Count	0	1	0	2	0	0	3
		%	0,0%	5,6%	0,0%	6,2%	0,0%	0,0%	2,8%
Total		Count	2	18	38	32	7	11	108
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Never	Count	0	5	19	10	4	7	45
		%	0,0%	25,0%	43,2%	23,8%	30,8%	58,3%	34,1%
Frequency (Sport areas)	Once a year	Count	1	1	1	4	0	1	8
		%	100,0%	5,0%	2,3%	9,5%	0,0%	8,3%	6,1%
	Once a month	Count	0	2	5	6	1	1	15
		%	0,0%	10,0%	11,4%	14,3%	7,7%	8,3%	11,4%
	Once a week	**Count**	**0**	**11**	**19**	**20**	**7**	**3**	**60**
		%	**0,0%**	**55,0%**	**43,2%**	**47,6%**	**53,8%**	**25,0%**	**45,5%**
	Daily	Count	0	1	0	2	1	0	4
		%	0,0%	5,0%	0,0%	4,8%	7,7%	0,0%	3,0%
Total		Count	1	20	44	42	13	12	132
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

- **How do you access the activity areas in Derna ?**

Participants were asked about the means of accessing the activity areas that are listed in the previous question. As shown in the Figure, the majority of the participants indicated

that they access activities using private cars (87.95%). The lack of public transportation in the city is noticeable.

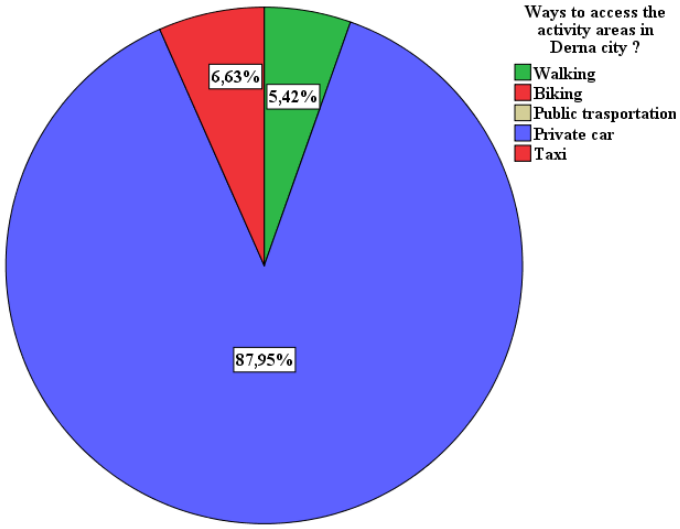


Figure 4.65 Ways of accessing public activities in Derna

- **The different requirements in the several public facilities.**

Table below show the cross-tabulation analysis to highlight the requirements based on age categories about the question B3. (What kind of requirement do you have from the perspective of public open spaces in Derna city ?)

Table 4.7 Cross-tabulation forthe different requirements of public facility usage by age

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Seating and BBQ areas	**Count**	**2**	**5**	**10**	**7**	**4**	**3**	**31**
		%	**66,7%**	**31,2%**	**26,3%**	**17,1%**	**36,4%**	**30,0%**	**26,1%**
	Arcade Games	Count	1	1	10	7	1	1	21
		%	33,3%	6,2%	26,3%	17,1%	9,1%	10,0%	17,6%
	Playgrounds	**Count**	**0**	**7**	**4**	**2**	**0**	**1**	**14**
		%	**0,0%**	**43,8%**	**10,5%**	**4,9%**	**0,0%**	**10,0%**	**11,8%**
Urban park	Sports areas and equipment	Count	0	1	2	4	1	1	9
		%	0,0%	6,2%	5,3%	9,8%	9,1%	10,0%	7,6%
	Adjustment to special needs and elderly	Count	0	0	2	7	2	0	11
		%	0,0%	0,0%	5,3%	17,1%	18,2%	0,0%	9,2%
	Cultural Activities	Count	0	2	1	6	0	0	9
		%	0,0%	12,5%	2,6%	14,6%	0,0%	0,0%	7,6%
	Shaded walking and biking Lanes	Count	0	0	4	4	3	4	15
		%	0,0%	0,0%	10,5%	9,8%	27,3%	40,0%	12,6%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Green spaces and trees	Count	0	0	4	4	0	0	8
		%	0,0%	0,0%	10,5%	9,8%	0,0%	0,0%	6,7%
	Toilets and service facilities	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,6%	0,0%	0,0%	0,0%	0,8%
	Total	Count	3	16	38	41	11	10	119
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Walking lanes	**Count**	**0**	**7**	**15**	**13**	**2**	**4**	**41**
		%	**0,0%**	**38,9%**	**37,5%**	**30,2%**	**16,7%**	**33,3%**	**32,0%**
	Shades/ Trees	**Count**	**2**	**9**	**12**	**15**	**2**	**4**	**44**
		%	**66,7%**	**50,0%**	**30,0%**	**34,9%**	**16,7%**	**33,3%**	**34,4%**
Walking along the coast	Food canteens	Count	0	1	6	6	3	3	19
		%	0,0%	5,6%	15,0%	14,0%	25,0%	25,0%	14,8%
	Seating areas	Count	1	1	4	2	2	0	10
		%	33,3%	5,6%	10,0%	4,7%	16,7%	0,0%	7,8%
	Special needs and elderly lanes	Count	0	0	2	6	2	0	10
		%	0,0%	0,0%	5,0%	14,0%	16,7%	0,0%	7,8%
	Play areas for children	Count	0	0	1	1	1	1	4
		%	0,0%	0,0%	2,5%	2,3%	8,3%	8,3%	3,1%
	Total	Count	3	18	40	43	12	12	128
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Seating, BBQ areas and facilities	**Count**	**3**	**15**	**23**	**36**	**9**	**7**	**93**
		%	**100,0%**	**83,3%**	**57,5%**	**85,7%**	**81,8%**	**63,6%**	**74,4%**
Outdoor dining along the coast	Shades	Count	0	1	4	0	0	0	5
		%	0,0%	5,6%	10,0%	0,0%	0,0%	0,0%	4,0%
	Cafes and restaurants	Count	0	0	9	3	1	1	14
		%	0,0%	0,0%	22,5%	7,1%	9,1%	9,1%	11,2%
	Walkways, green spaces, and playgrounds	Count	0	2	2	0	0	1	5
		%	0,0%	11,1%	5,0%	0,0%	0,0%	9,1%	4,0%
	Family and women zones	Count	0	0	2	3	1	2	8
		%	0,0%	0,0%	5,0%	7,1%	9,1%	18,2%	6,4%
	Total	Count	3	18	40	42	11	11	125
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Variety of sports	**Count**	**0**	**2**	**7**	**4**	**5**	**0**	**18**
		%	**0,0%**	**100,0%**	**43,8%**	**33,3%**	**62,5%**	**0,0%**	**45,0%**
	Closed and private (e.g. for women)	**Count**	**1**	**0**	**6**	**0**	**1**	**1**	**9**
Outdoor gym along the coast		**%**	**100,0%**	**0,0%**	**37,5%**	**0,0%**	**12,5%**	**100,0%**	**22,5%**
	Areas for special needs and elderly	Count	0	0	1	3	0	0	4
		%	0,0%	0,0%	6,2%	25,0%	0,0%	0,0%	10,0%
	Water sports	Count	0	0	2	5	2	0	9
		%	0,0%	0,0%	12,5%	41,7%	25,0%	0,0%	22,5%
	Total	Count	1	2	16	12	8	1	40
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Swimming	**Family and women pools**	**Count**	**1**	**10**	**15**	**22**	**9**	**4**	**61**
		%	**33,3%**	**58,8%**	**42,9%**	**59,5%**	**69,2%**	**50,0%**	**54,0%**
	Changing facilities and toilets	Count	2	5	7	6	3	2	25
		%	66,7%	29,4%	20,0%	16,2%	23,1%	25,0%	22,1%
	Clean and healthy pools	Count	0	2	13	9	1	2	27
		%	0,0%	11,8%	37,1%	24,3%	7,7%	25,0%	23,9%
Total		Count	3	17	35	37	13	8	113
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Biking along the coast	**Designated biking lanes**	**Count**	**1**	**3**	**17**	**8**	**3**	**2**	**34**
		%	**100,0%**	**42,9%**	**77,3%**	**61,5%**	**50,0%**	**66,7%**	**65,4%**
	Bike renting	**Count**	**0**	**4**	**5**	**5**	**3**	**1**	**18**
		%	**0,0%**	**57,1%**	**22,7%**	**38,5%**	**50,0%**	**33,3%**	**34,6%**
Total		Count	1	7	22	13	6	3	52
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Boats strolling	**Marine trips**	**Count**	**2**	**5**	**10**	**13**	**5**	**0**	**35**
		%	**100,0%**	**55,6%**	**40,0%**	**56,5%**	**62,5%**	**0,0%**	**50,0%**
	Special docks	Count	0	4	11	8	3	1	27
		%	0,0%	44,4%	44,0%	34,8%	37,5%	33,3%	38,6%
	Boat renting	Count	0	0	4	2	0	2	8
		%	0,0%	0,0%	16,0%	8,7%	0,0%	**66,7%**	11,4%
Total		Count	2	9	25	23	8	3	70
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Through the cross-tabulation analysis to highlight the requirements of the population based on the age category the results indicate the following:

- **Urban parks:** The largest percentage is for seating and BBQ area for the 0-10 age category , then the 41-50 age category
- **Walking along the coast:**we find that the largest percentage of requirements are for shaded places and aforestation, followed by walking lanes .
- **Outdoor dining along the coast :** we find that the largest percentage of requirements are for (seating BBQ area) and facilities, followed by cafes and restaurants .
- **Gym and cycling along the coast:** we find that the largest proportion of the requirements are for the variety of sports, then closed and private gym for women .
- **Biking :** we find that the largest percentage for designated biking lanes for age category 0-10 then age category 21-30 .

- **Swimming :** The largest percentage was for family and women pools for all age category , especially the to age category from 41-50 . then changing facilities and toilets .
- **Boats strolling :** we find that the largest percentage of marine trips.

- **Best season for activity areas :**

B4.(Which season is the best for you to go to listed activity areas in the matrix ?)
In this question, participants were asked to indicate the preferred season to attend each of the public facilities. A cross-tabulation was performed with age categories for better data illustration, as shown in Table4.8 .

Table 4.8 Cross-tabulation for best season for activity area susage by age .

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Best season for walking along the coast	Spring	Count	0	3	17	11	3	3	37
		%	0,0%	14,3%	34,7%	20,8%	20,0%	18,8%	23,6%
	Summer	Count	2	17	31	41	12	12	115
		%	66,7%	81,0%	63,3%	77,4%	80,0%	75,0%	73,2%
	Fall	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,0%	0,0%	0,0%	0,0%	0,6%
	Winter	Count	1	1	0	1	0	1	4
		%	33,3%	4,8%	0,0%	1,9%	0,0%	6,2%	2,5%
Total		Count	3	21	49	53	15	16	157
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for outdoor dining along the coast	Spring	Count	1	3	17	11	2	3	37
		%	33,3%	13,6%	34,0%	20,8%	13,3%	20,0%	23,4%
	Summer	Count	2	18	32	41	11	12	116
		%	66,7%	81,8%	64,0%	77,4%	73,3%	80,0%	73,4%
	Fall	Count	0	1	1	1	1	0	4
		%	0,0%	4,5%	2,0%	1,9%	6,7%	0,0%	2,5%
	Winter	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	6,7%	0,0%	0,6%
Total		Count	3	22	50	53	15	15	158
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for swimming	Spring	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,2%	0,0%	0,0%	0,0%	0,7%
	Summer	Count	3	20	45	53	13	13	147
		%	100,0%	95,2%	97,8%	100,0%	92,9%	100,0%	98,0%
	Fall	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	7,1%	0,0%	0,7%
	Winter	Count	0	1	0	0	0	0	1
		%	0,0%	4,8%	0,0%	0,0%	0,0%	0,0%	0,7%
Total		Count	3	21	46	53	14	13	150
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Based on the cross-tabulation analysis in Table 4.8 , we noted that the current activities of the residents on the waterfront are just there are 3 activities, which are walking, swimming, and outdoor dining .

As for the best season for each of these activities, according to the participation of the population, we find that the population prefers walking along the coast in the summer with a rate of 73% .

Regarding outdoor dining, 73% preferred the summer season. Regarding swimming, the largest percentage was in the summer 98% .

B7.What elements could be added to the public open spaces in Derna city to increase accessibility ?

The participants were asked to indicate the elements that could be added to the public open spaces in Derna city to increase accessibility. Table below show the multiple response cases that correspond with each suggestion. The majority of the participants indicated that tress and plantation (93.8%), as well as sitting equipment (93.1%), are the most important elements that need to be added, as shown in Table 4.9.

Table 4.9 the elements that could be added to the public open spaces in Derna city.

		Responses		Percent of Cases
		N	Percent	
Q7_**Accessibility**[a]	Good lighting	77	14,0%	48,1%
	Tree and plantation	150	27,3%	93,8%
	Security/ Guard	112	20,4%	70,0%
	equipment	149	27,1%	93,1%
	Boundary elements	62	11,3%	38,8%
Total		550	100,0%	343,8%

a. Dichotomy group tabulated at value 1.

4.8.4. Issues with Waterfront and its Development

C1. What are the problems experienced by the waterfront in Derna?

The participants were asked to evaluate the current issues that are witnessed in the waterfront of Derna. A multiple response analysis is presented in Table. The majority of

the responses indicate the main issues are lack of green spaces (88.5%) and lack of suitable paths and walkways (88.5%). Another issue is the abcense of of children's play areas (84.8%), followed by neglection (69.1%).

Table 4.10 The problems experienced by the waterfront in Derna .

		Responses		Percent of Cases
		N	Percent	
$C1_WF_Problems[a]	Neglection	114	15,8%	69,1%
	Deterioration	67	9,3%	40,6%
	Pollution	47	6,5%	28,5%
	Lack of equipment	67	9,3%	40,6%
	Lack of green spaces	146	20,2%	88,5%
	Lack of suitable paths for walking	141	19,5%	85,5%
	Absence of children's play areas	140	19,4%	84,8%
Total		722	100,0%	437,6%

a. Dichotomy group tabulated at value 1.

COAST USAGE

- **Does the sea negatively affect the waterfront of the city of Derna?**

The participants were also asked if the sea negatively affects the waterfront of the city of Derna. The majority of the responses indicated that they agree with the statement (64.67%), as shown in Figure.

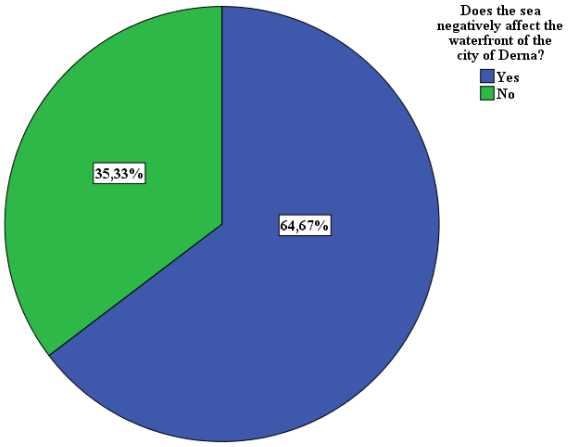


Figure 4.66 Existence of negative effect of the sea on the waterfront

- **How does the sea negatively affect the waterfront of the city of Derna ?**

On the previous questions, participants who indicated that there is a negative effect of the sea on the waterfront of Derna were asked to specify the type of the negative effect, as shown in Figure. The majority of the responses show that the main negative effect is high humidity (61.45%).

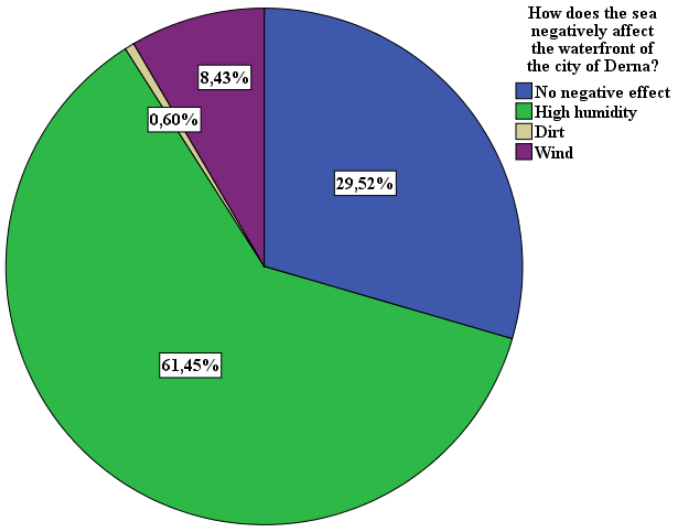


Figure 4.67 The negative effect of the sea on the waterfront in Derna

- **Do residents wish to establish projects on the waterfront of the city of Derna?**

The participants were requested to indicate if they wish to see projects established on the waterfront of Derna . The majority of the responses were positive (98.8%), as shown in Figure.

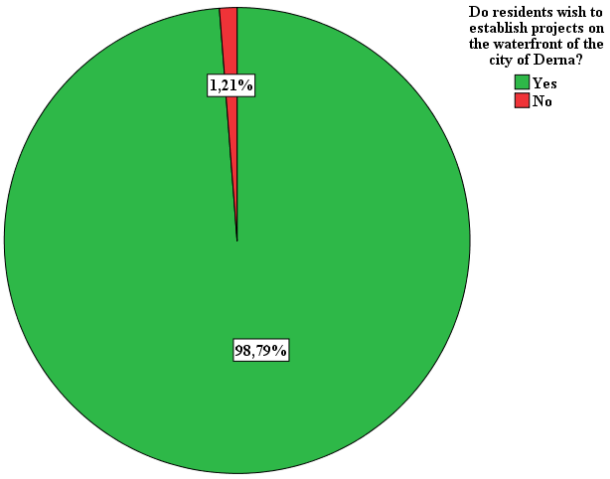


Figure 4.68 The wish to see project established on waterfront in Derna

- **What is the nature of desired waterfront projects?**

The participants were asked to indicate the types of projects they wish to see on the waterfront of Derna, where the majority of the responses indicated their need for entertainment projects, as shown in Figure.

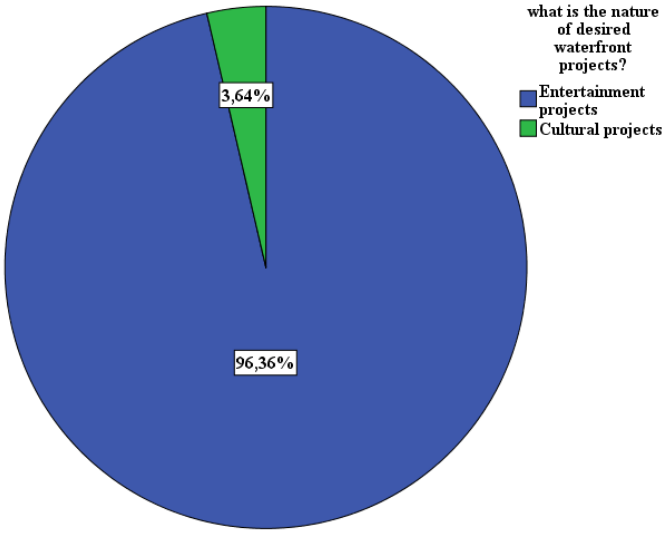


Figure 4.69 Types of projects preferred at the waterfront

- **Which frequency does people visit the waterfront of Derna city ?**

The participants were also asked to indicate their knowledge of the frequency people visit the waterfront in Derna. As shown in Figure, the majority of the responses indicated that weekends is the most frequent pattern of visit (59.6%), followed by the summer season (24.1%).

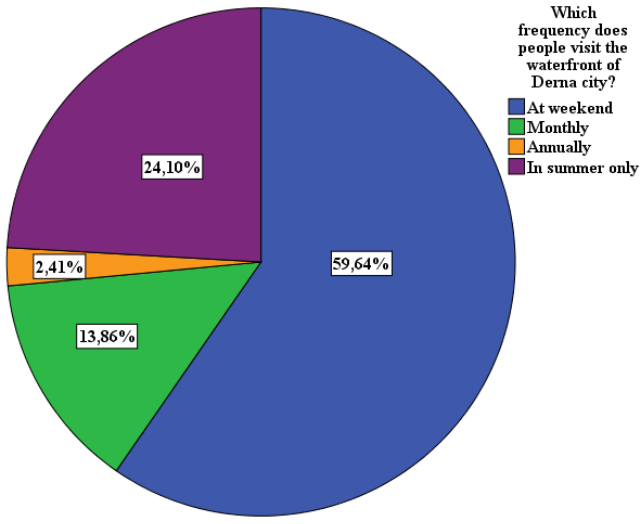


Figure. 4.70 Frequency of visit to waterfront in Derna

- **Are there enough places to sit ?**

A question is asked if the seating area at the waterfront are sufficient. As shown in Figure, the majority of the responses indicate that that there are no sufficient seating areas (97.6%).

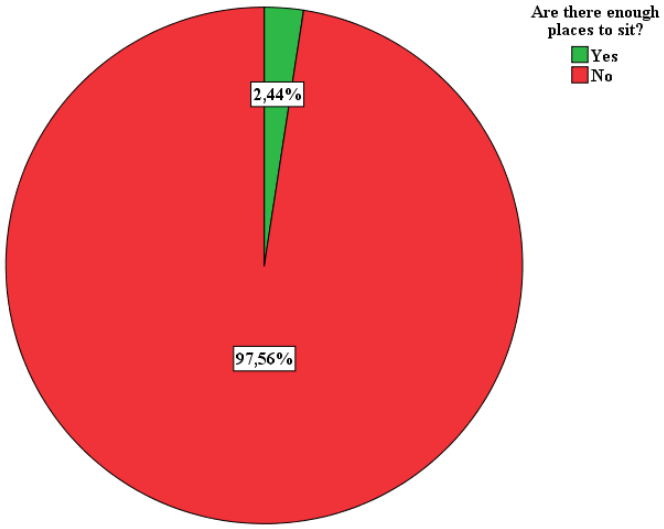


Figure. 4.71 Sufficiency of seating areas at the waterfront in Derna

- **Are seats conveniently located ?**

The convenience of the seating was questions, as shown in Figure, where the majority of the responses indicated that the available seating area are not placed conveniently (92.1%).

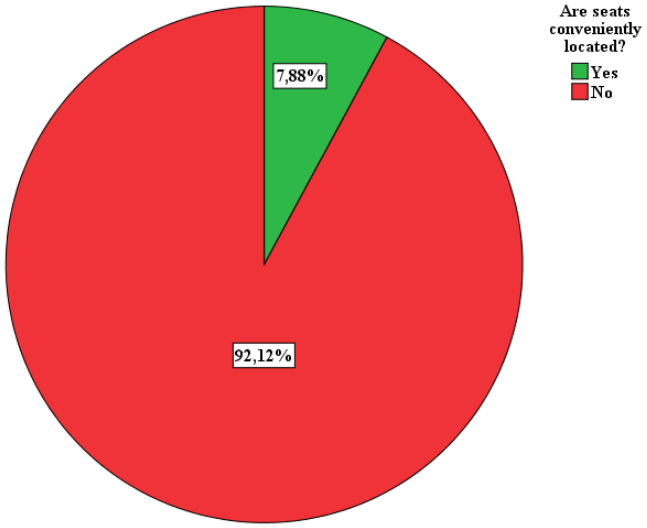


Figure. 4.72 Convenience of seating location at the waterfront of Derna

- **Do people have is have a choice of places to sit , either in the sun or shade ?**

Figure shows the responses to the ability of the residents to choose seating areas, whether in sun on in shade. The responses were negative with 87.2%.

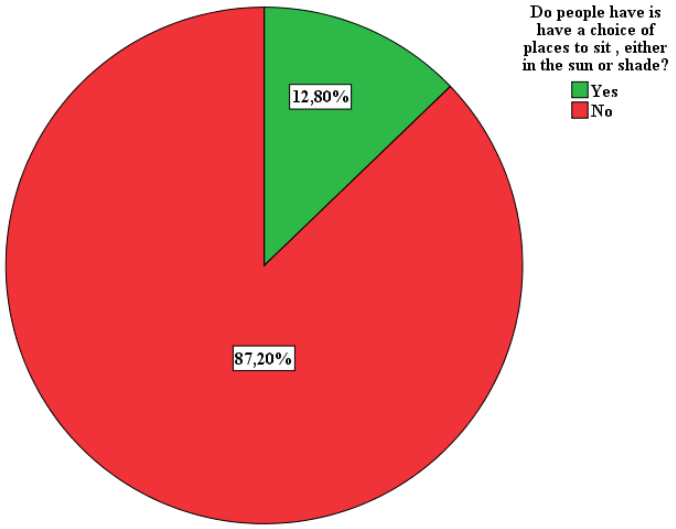


Figure. 4.73 Ability of residents to choose seating areas

- **Are there suitable paths for walking?**

Participants were asked for the availability of some activities on the current waterfront, as shown in Figures, 92.7% of people indicated that there are no suitable paths or walkways.

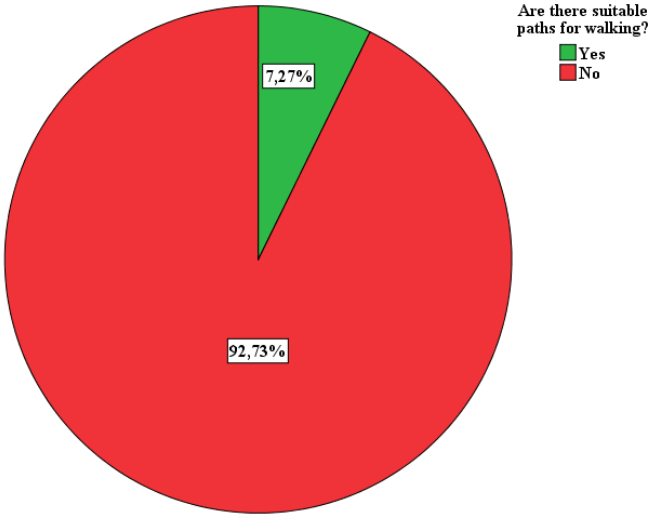


Figure. 4.74 Availability of suitable paths for walking in current waterfront

- **Are there places for children to play?**

97.0% indicated that there are no areas for children to play.

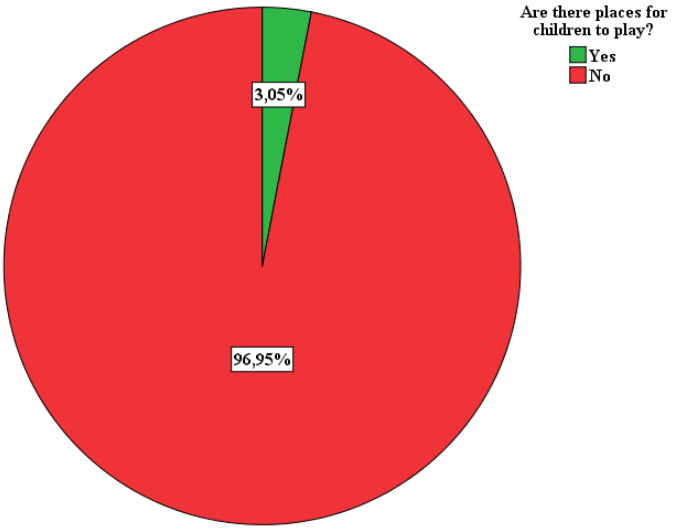


Figure.4.75 Availability of children play areas in current waterfront

- **Are there places suitable for swimming?**

73.3% indicated that there are no suitable areas for swimming.

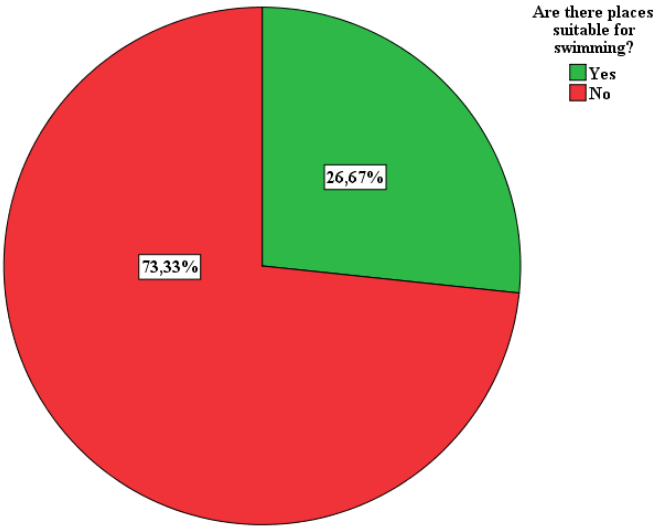


Figure.4.76 Availability of suitable swimming facilities at the waterfront

- **Is the waterfront suitable for people with disabilities ?**

98.2% indicated that the waterfront is not suitable for residents with disabilities.

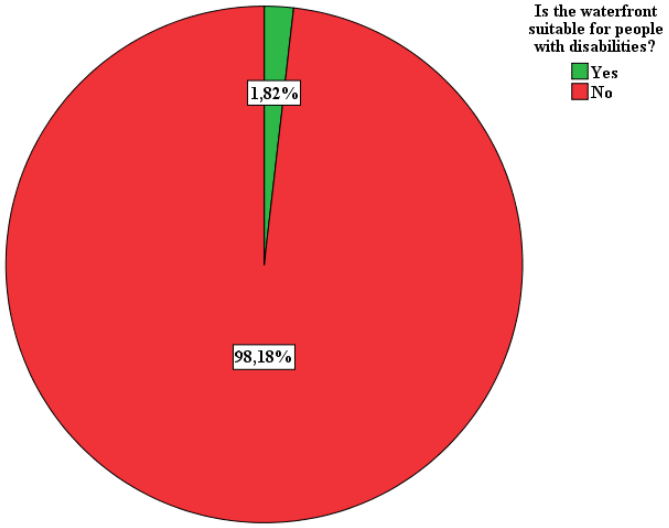


Figure. 4.77 Suitability of waterfront for residents with disabilities

The participants were asked to indicate the types of activities that they would like to see at the waterfront throughout the year. Figure indicated that sport events are the most popular (57.1%), followed by entertainment events (24.5%), and cultural events (12.9%). A cross-tabulation analysis was performed to illustrate the data according to age categories.

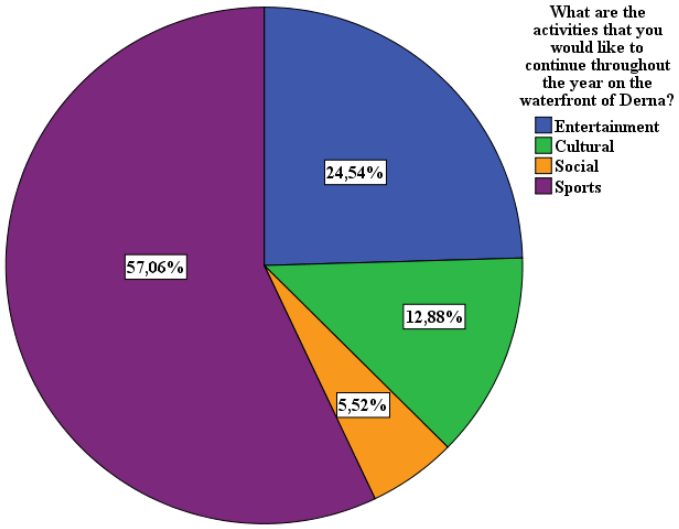


Figure. 4.78 Preferred types of events that residents would like to see at the waterfront

4.9. SWOT ANALYSIS

By relying on the analytical study of the waterfront, we will analyze the SWOT, which depends on four main points:Strengths, weaknesses , opportunities , and Threats .

Strengths

- The length of the coastal strip of the city. Which is currently 13.5 km.
- Ease of access from all neighborhoods of the city and from outside it because of the coastal road that connects the city from the east and west.It also connects the city with other cities .
- What is characterized by the waterfront of the city of natural features and a splendid view.
- Topography of the area (flat plain) .
- The urban landscape that the region provides between the mountain and the sea .

weaknesses

- Lack of green spaces and entertainment for all age groups.
- Damage to installations and the road due to sea spray and humidity.
- The deterioration of the coastal strip resulting from misuse .
- The severe shortage of urban furniture .
- Absence of necessary equipment and services to attract visitors.
- Unavailability of public transportation.

opportunities

- Area topography.
- Ease of accessibility.
- The good climate of the area.

Threats

- Unplanned development and the danger of its development in the region .
- construction and demolition waste.

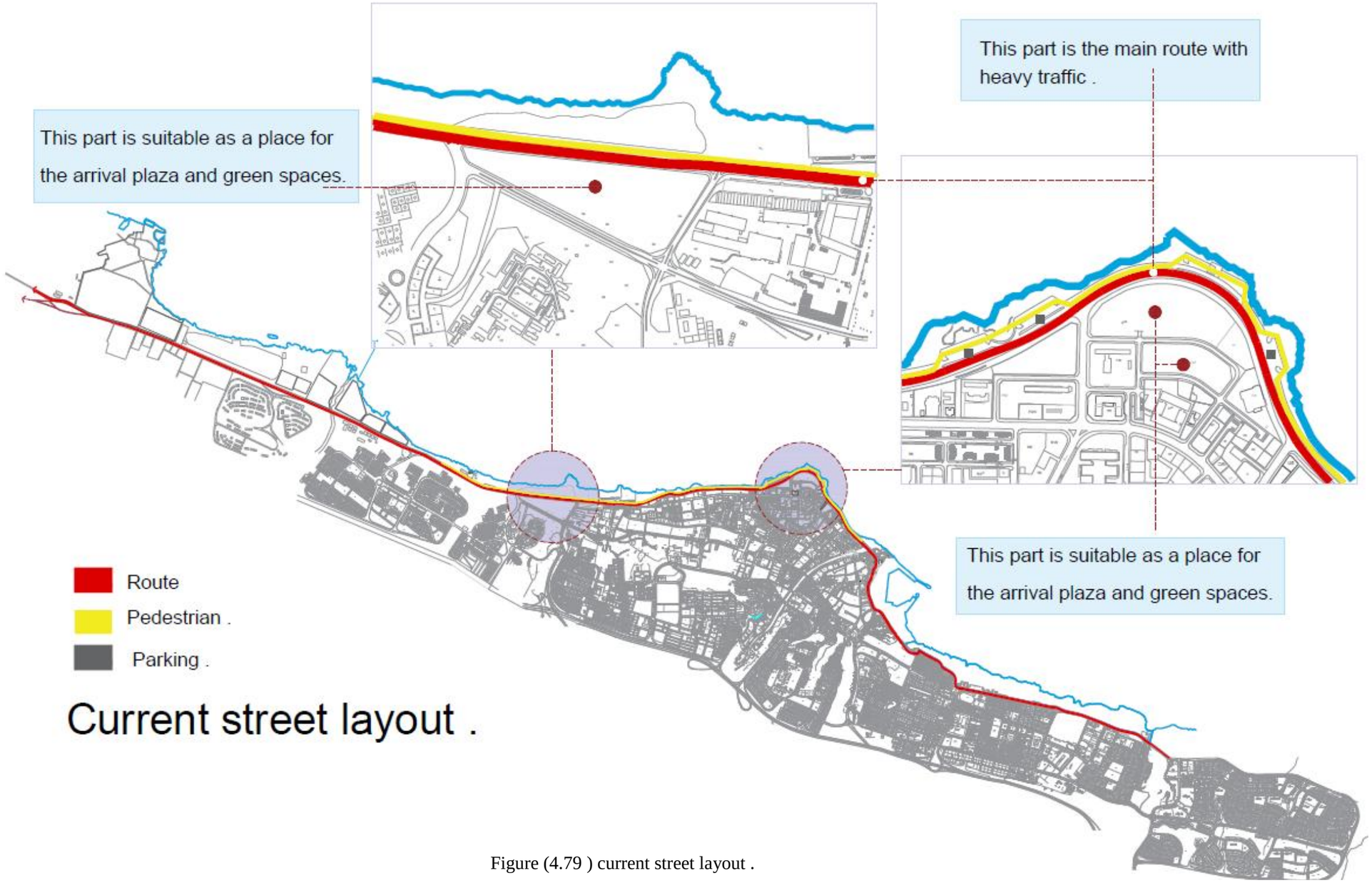


Figure (4.79) current street layout .

4.10.CONCEPTUAL PROPOSAL

The proposal is to turn the waterfront into a series of sustainable areas. In which urban areas are combined with green parks and waterfront activities.

The proposal works to connect the city center with the waterfront, and redevelop the waterfront area so that it is available all year round, and accessible to everyone of all age groups, by car, bike or on foot.

The proposal is to establish destinations along the entire waterfront so that the focus is on these destinations and moving through them to the waterfront through bridges for pedestrian and bicycle traffic,Each destination contains many activities and events in line with the needs of each region.

The various destinations and activities are linked to achieving continuity through pedestrian and cycle paths.Walking and cycling are an important part of the means of accessing the waterfront other than by private vehicles.So are the parks and gardens on the waterfront, which feature pedestrian and bicycle paths.Unhindered by cars or parking, it is one of the best parks.

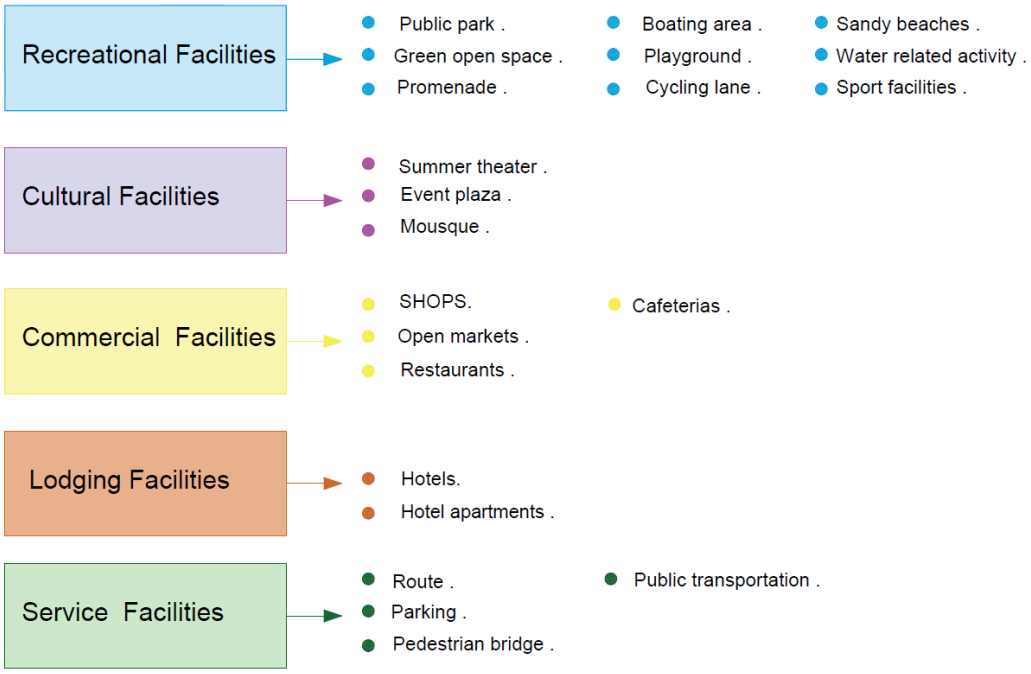


Figure (4.80) Facilities proposal

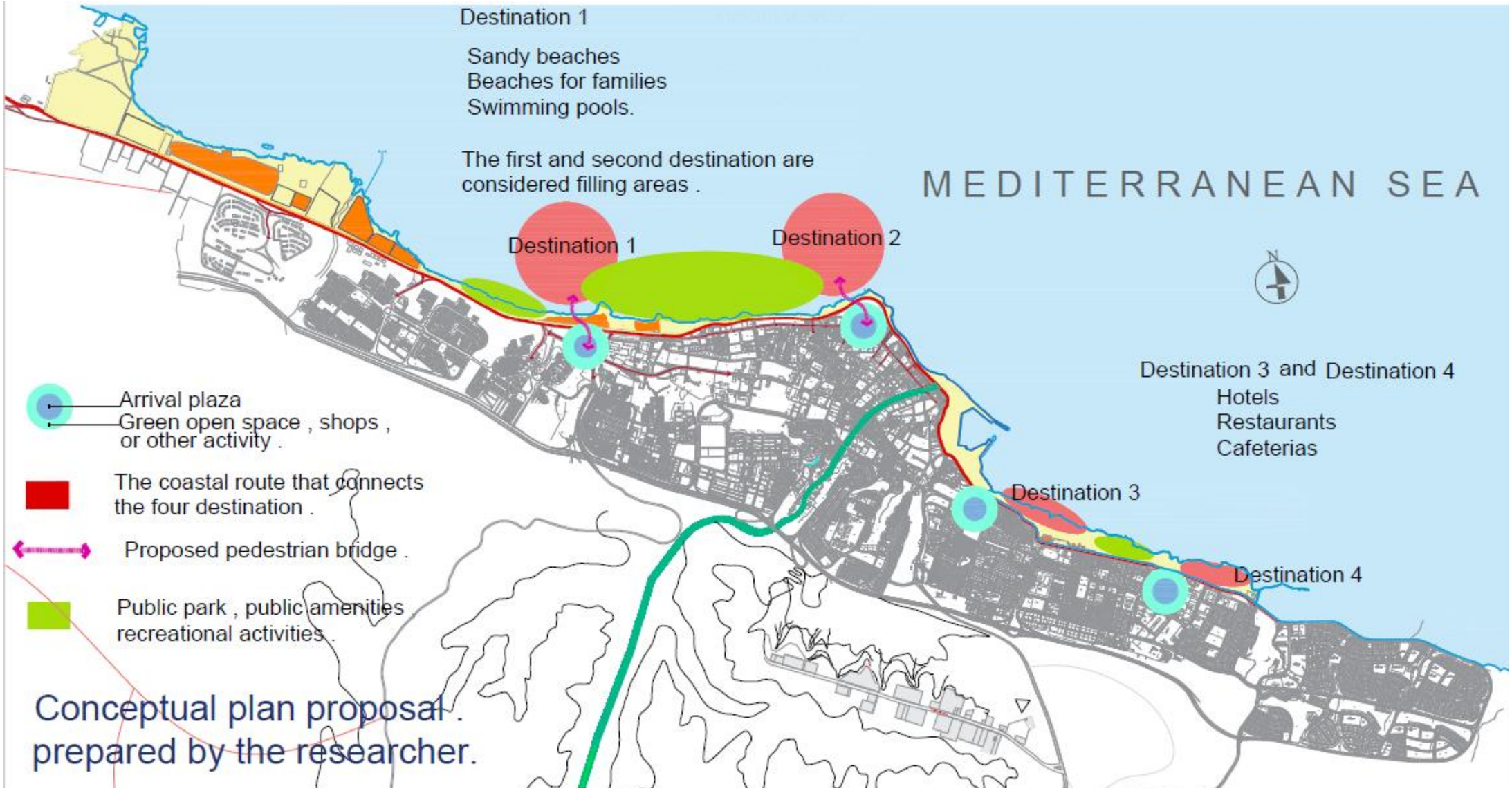
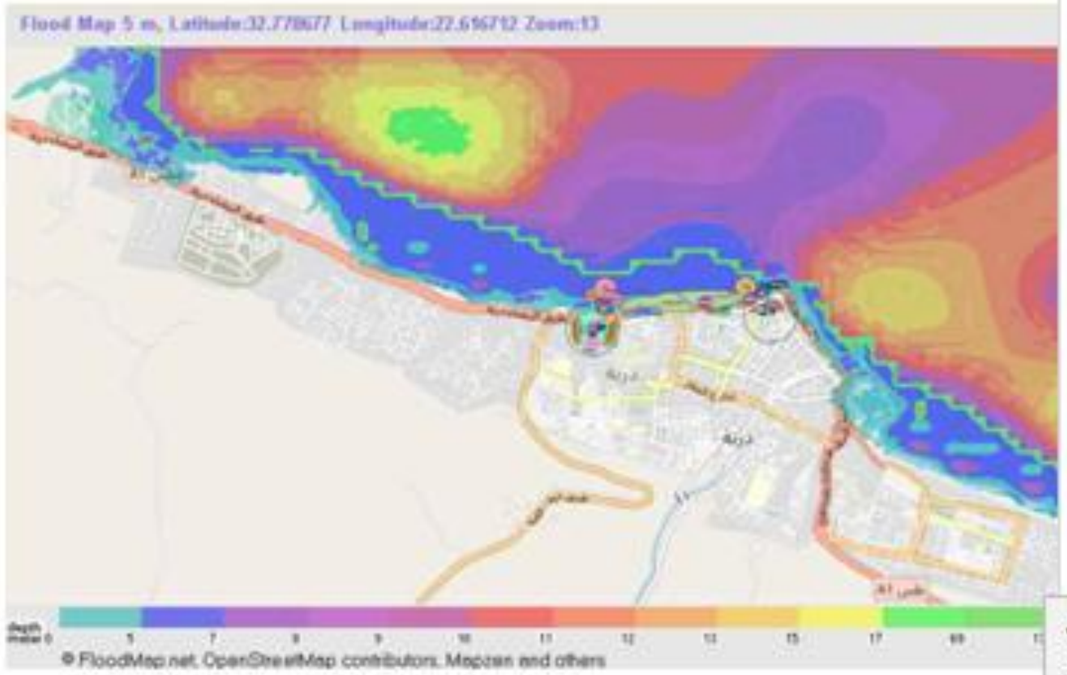
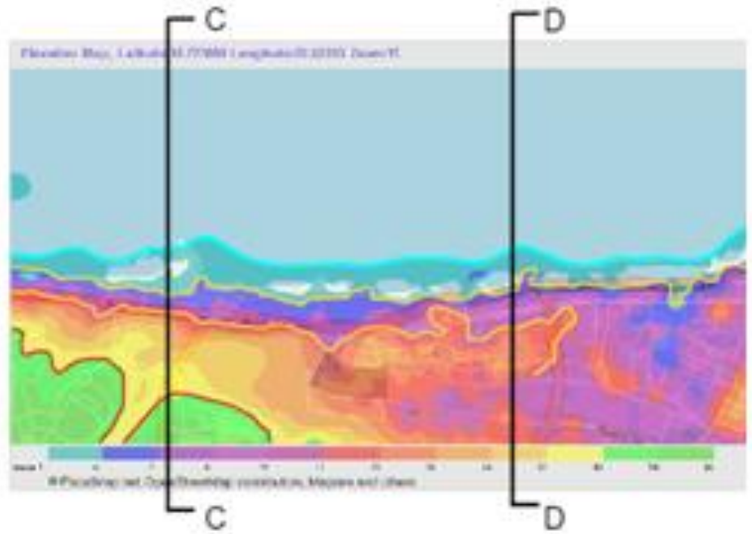


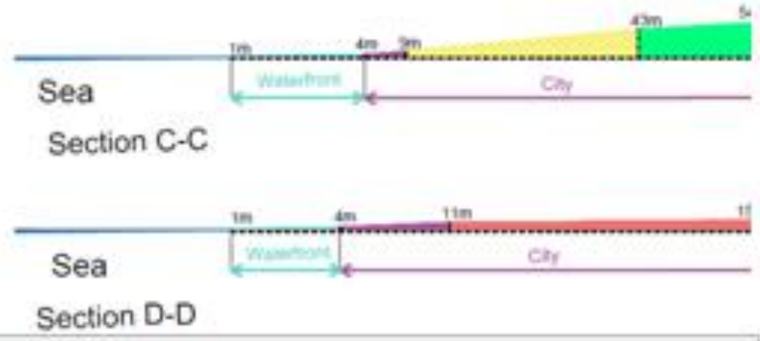
Figure (4.81) Conceptual plan proposal

Topographically, the city of Derna is located on the regressions of the Green Mountain.The waterfront of the city (the study area) is located on the first degree representing the coastal plain .

The study area is characterized by a slope ranging between (0 - 5%) .



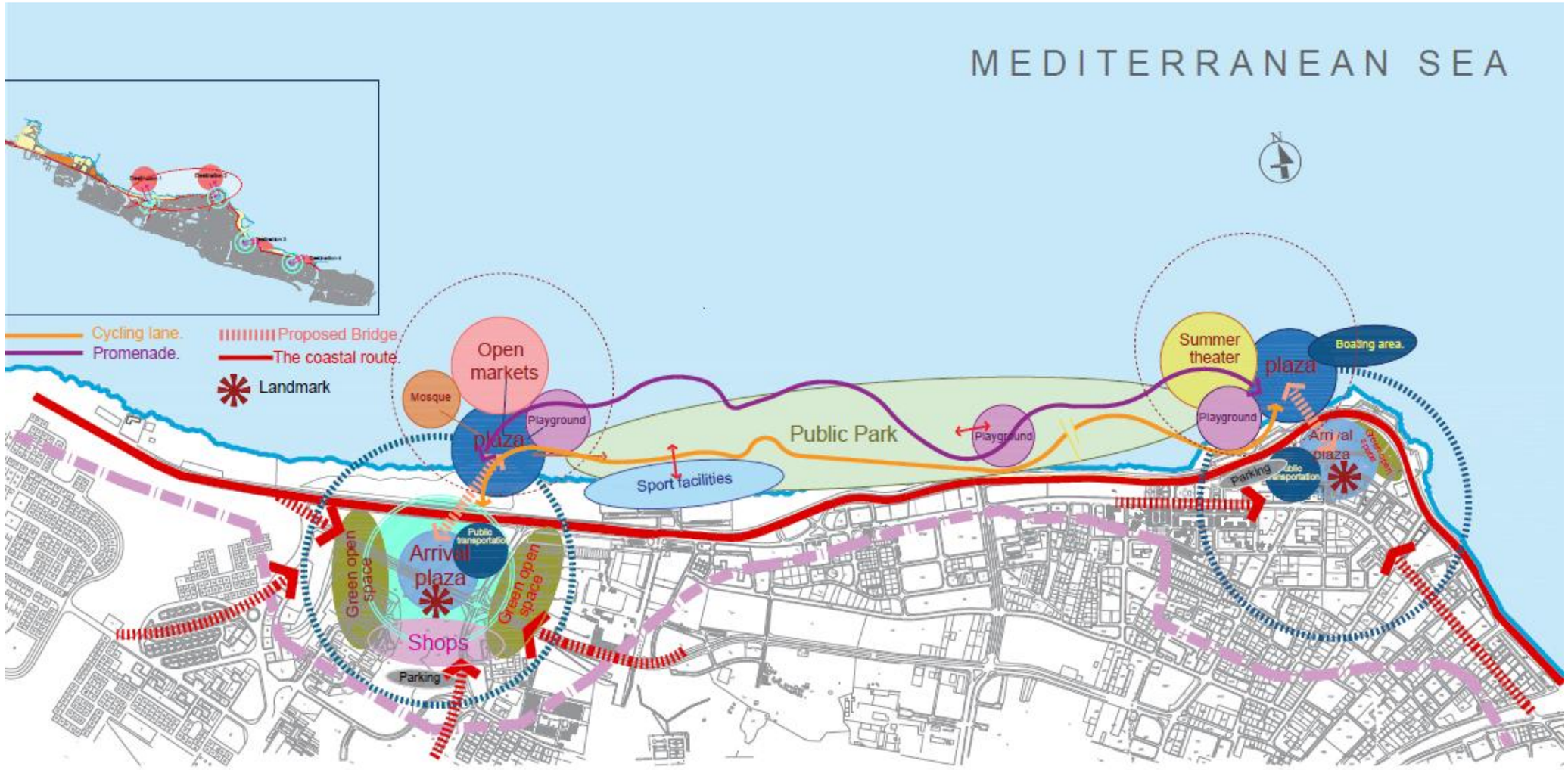




The continental shelf in front of the Derna beach is characterized by its relatively low depth and a soft slope of its surface. It starts from sea level with a slight slope until it reaches a depth of about 7 meters, 1000 meters from the shoreline.

Figure (4.82) Conceptual plan proposal .

Figure (4.83) Conceptual plan proposal for destination 1 and destination and destination 2.



Conceptual plan proposal for destination 1 and destination 2 .

Figure (4.84) Conceptual plan proposal for destination 1 and destination 2

CHAPTER 5 : DISCUSSION AND CONCLUSION

5.1 FINDING OF THE QUESTIONNAIRE

To achieve the objectives of the study and answer its questions, the SPSS program was used to apply the following statistical methods

1-Calculating the frequencies and percentages of social and demographic information for the study sample.

2- A graph to show the percentages of social and demographic information for the study sample, and the population's needs for open spaces, parks, and the waterfront.

5.1.1 Socio-Demographic In formation of The Respondents

A questionnaire is distributed the households of Derna of different districts (8 Mahallahs). A total of 167 questionnaires were returned and completed. The sections below describe the analysis of the questionnaire. Additional statistical information and tables can be found in the Appendix section.

The average household count is 4.8, while the majority of the households have 5 members (22.8%), followed by 3 and 4 members (15.6% each), then households with 6 members (14.4%).

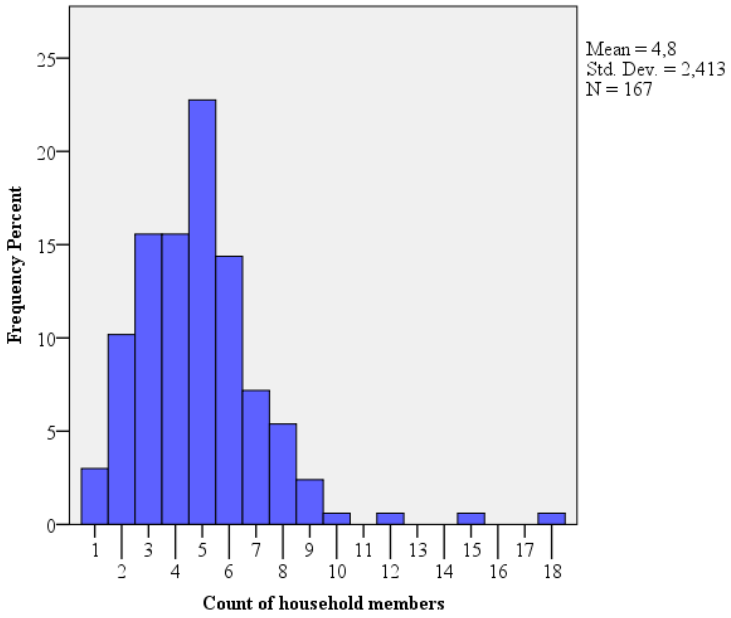


Figure (5.1) Count household members.

The Figure below also shows the age category distribution for the average age of the household. The majortiy average age of the household ranges between 21 and 40 years-old.

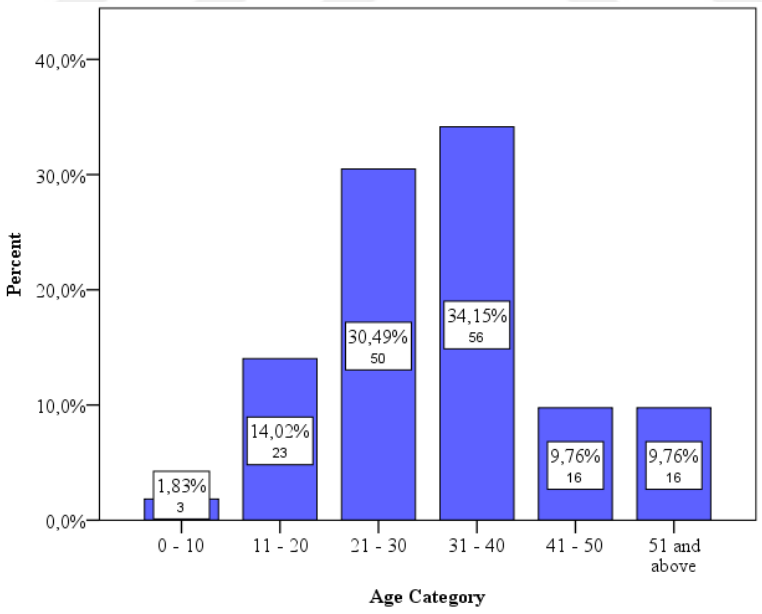


Figure 5.2 Average age categories of Household .

The parents demographics are significant to understand for the social and economic properties of the surveyed households.

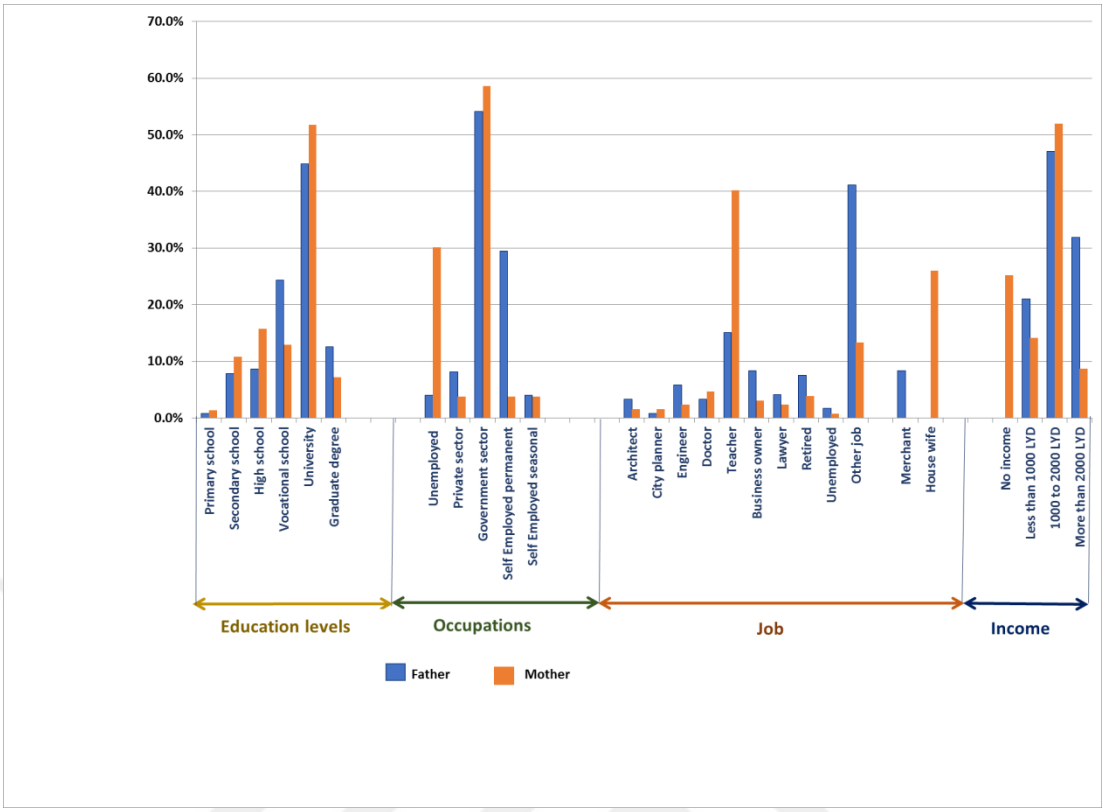


Figure 5.3 The parents demographics.

the majority of the fathers has a university degree (44.88%), followed by those who hold a vocational school education (24.41%). The percentage of fathers who are illiterate or with primary education is relatively very small (1.58%).

In occupations of the fathers, the majority of the fathers are employed by the public sector (54.10%), followed by those who are self-employed (29.51%). Moreover, Teachers were the highest type of occupancy for this category with 15.13%. Business owners and merchants also formed together 16.80% of the fathers in the sampled households. The majority of public sector workers imposes an issue to the recurring challenge of late wages

The majority of fathers earned a monthly income ranging between 1000 to 2000 Libyan Dinars (LYD) (47.1%), while no household indicated no income for the father.

In the education level of the mother, the majority of the mothers has a university degree (51.80%), followed by those who hold a high school education (15.83%). The

percentage of mothers who are illiterate or with primary education is relatively very small (1.44%).

In occupation, the majority of mothers are employed by the public sector (58.6%), followed by a significant percentage of unemployment (30.1%), which mostly represents those who chose to be housewives. The majority of public sector workers imposes an issue to the recurring challenge of late wages. In job titles, the majority of mothers work as teachers (40.2%), followed by housewives (26.0%). The distribution of mothers in other job types is relatively very small among other jobs. The majority of mothers earn between 1000 LYD and 2000 LYD (52.0%), while 25.2% have no income.

5.1.2 Evaluation of The Current Use of The Waterfront of The City of Derna

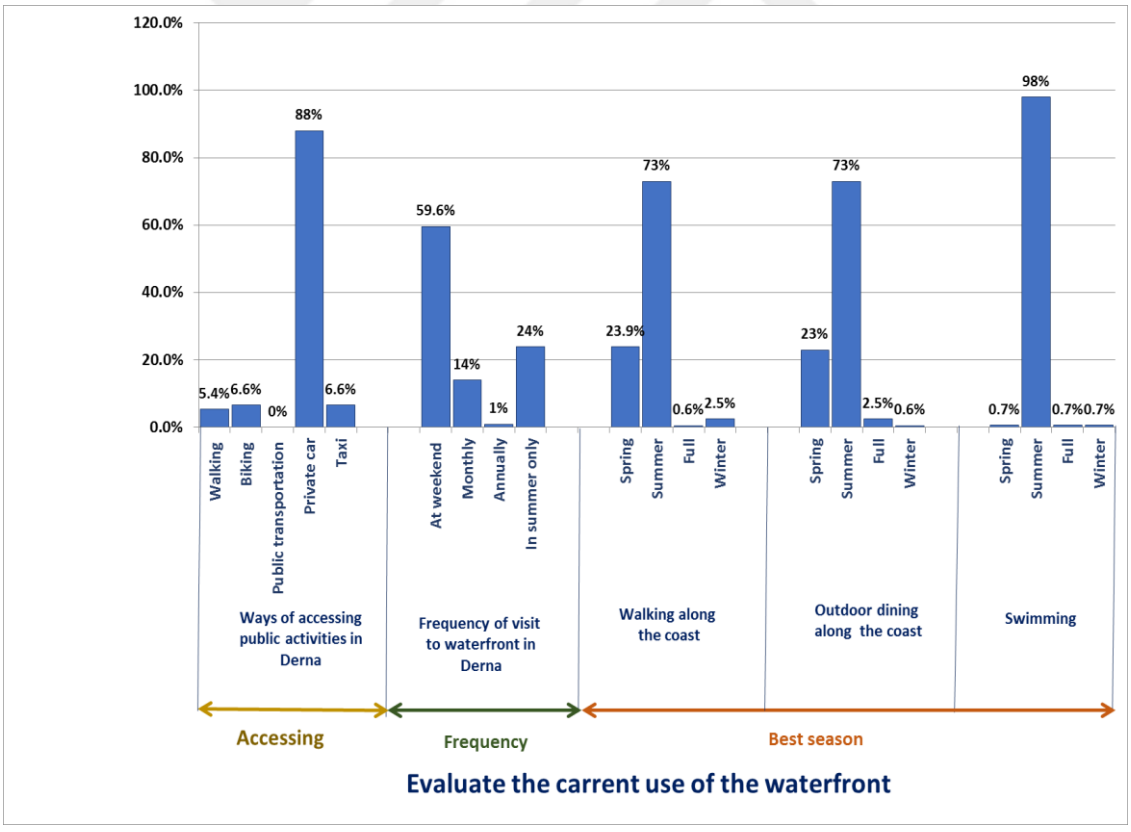


Figure 5.4 Evaluate the current use of the waterfront in Derna city.

- **Accessing :**

It is clear from figure 5.4 Regarding accessing , 88% of the participants answered the question **B2**(How do you access the activity areas in Derna city according to question B1) using private cars , We note that the percentage of using public transportation in the city is 0%. This proves that there is no public transportation in the city.

- **Frequency :**

regarding frequency visit the waterfront , answered the question **C4**(Which frequency does people visit the waterfront of Derna city ?) , the majority of the responses indicated that weekends is the most frequent pattern of visit (59.6%), followed by the summer season (24.1%).

- **Best season :**

regarding the question **B4**.(Which season is the best for you to go to listed activity areas in the matrix ?) we noted that the current activities of the residents on the waterfront are just there are 3 activities, which are walking, swimming, and outdoor dinning .

As for the best season for each of these activities, according to the participation of the population, we find that the population prefers walking along the coast in the summer with a rate of 73%.

Regarding outdoor dining, 73% preferred the summer season. Regarding swimming, the largest percentage was in the summer 98%.

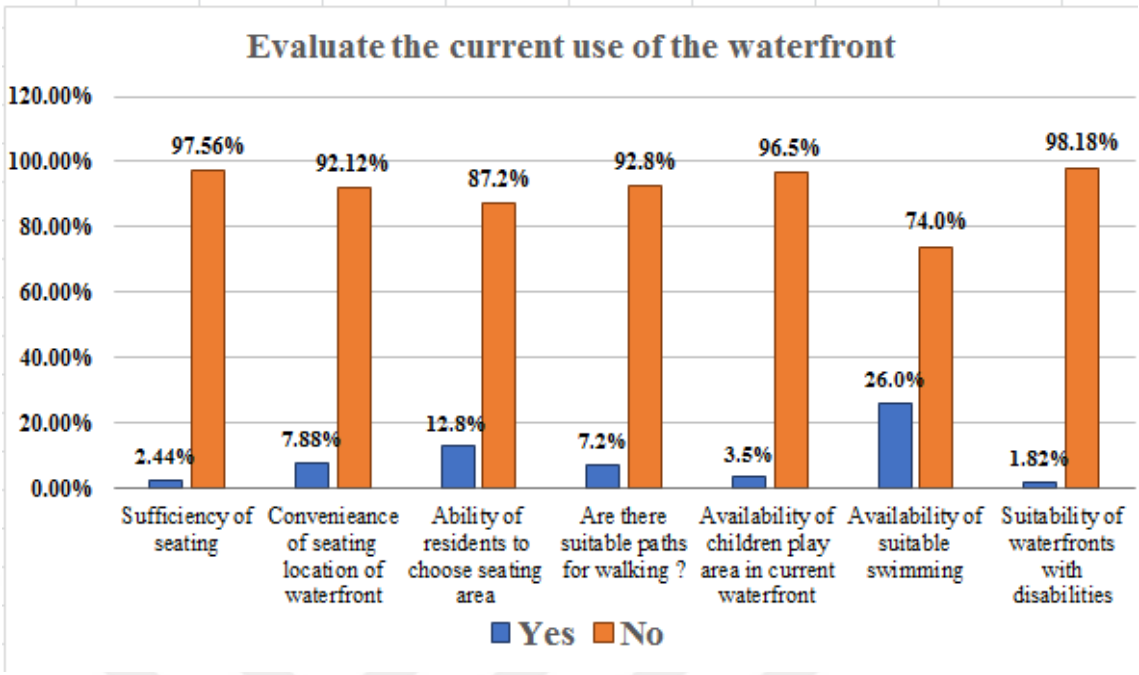


Figure 5.5 Evaluate the current use of the waterfront in Derna city.

From Figure 5.5 it is clear that all the answers were “no” with high rates ranging from 74% to 98% for the question **C5**.(Please select one option about the material quality of the waterfront of Derna? Yes No)

Are there enough places to sit?

Are the seats properly located?

Do people have the freedom to choose where to sit, either in the sun or in the shade?

Are there suitable paths for walking?

Are there places for children to play?

Are there places suitable for swimming?

Is the waterfront suitable for people with disabilities?

Findings from the survey respondents to Q (C5) It is clear that the current urban plan of the waterfront lacks public facilities that meet the needs of the residents.

5.1.3 Population Requirements from The Perspective of Public Open Spaces and The Waterfront in Derna

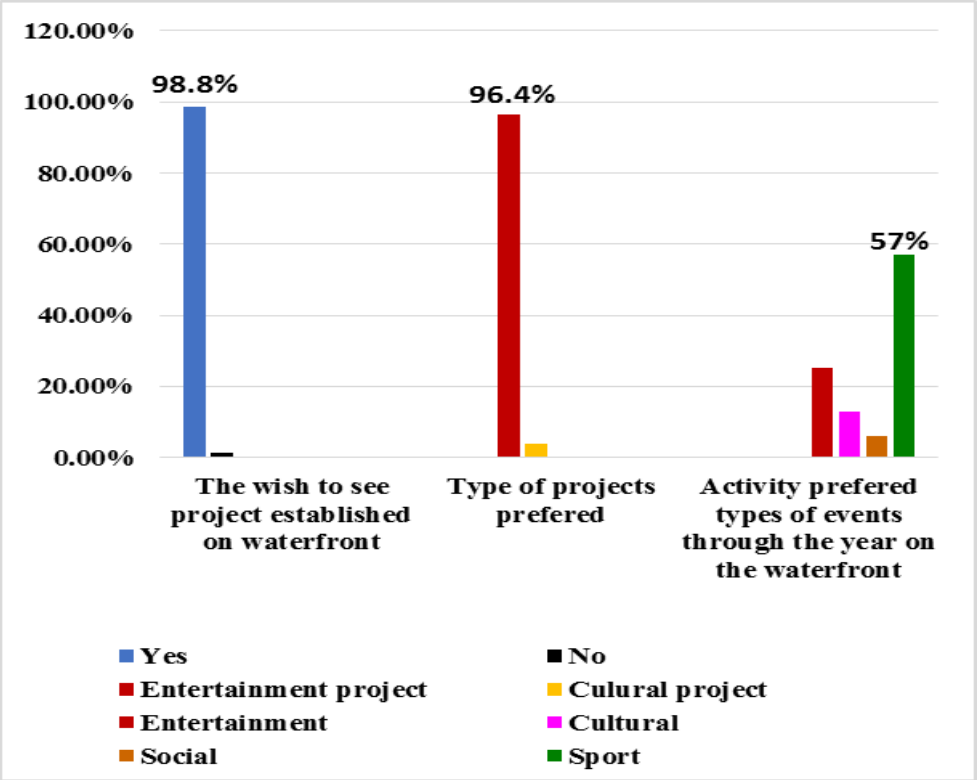


Figure 5.6 projects and Activities preferred by residents in the waterfront of the city of Derna .

In Q- C3.(Do residents wish to establish projects on the waterfront of the city of Derna ? And what is the nature of these projects?

Yes Noa) Entertainment projects b) cultural projects) .

The participants of the survey proved that 98% of the residents want to establish projects on the waterfront 96% prefer recreational projects .

In Q-C6.(What are the activities that you would like to continue throughout the year on the waterfront of Derna?),results from the survey indicate that 57% prefer sports activities throughout the year.

- **Activities preferred by residents according to age category throughout the year in the waterfront of the city of Derna**

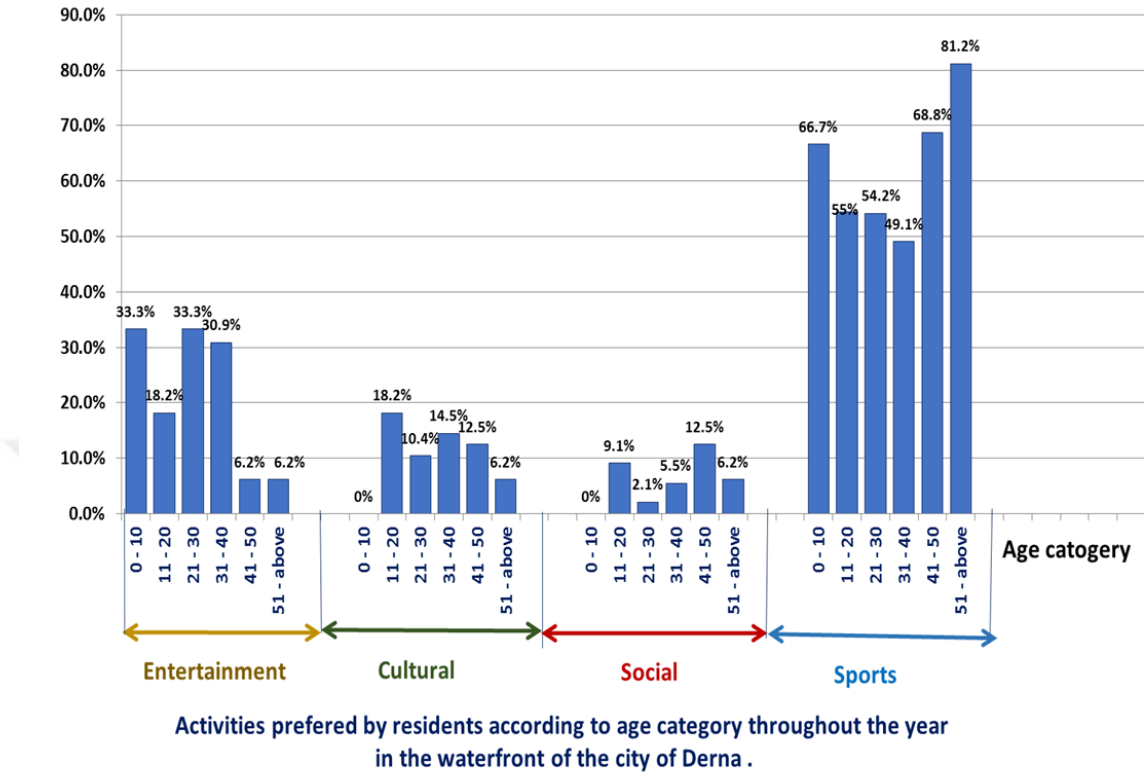


Figure 5.7Activities preferred by residents according to age category throughout the year in the waterfront of the city of Derna.

Through a cross tabulation analysis to highlight the preferences of the population based on the age category from table about the question Q-C6 (What activities would you like to continue throughout the year on the waterfront in Derna?), the results indicate that :

- **Entertainment :** we find that the largest percentage is for the 0-10 age group, then the 21-30 age category.
- **Culture :** we find that the largest percentage is for the 11-20 age category, then the 31-40 age category.
- **Social :** we find that the largest percentage is for the agecategory 41-50.
- **Sports :** While sports activities were among the most preferred activities for all age groups, the largest percentage was for the age category 51 and over.

- **Requirements for walking along the coast according to age category.**

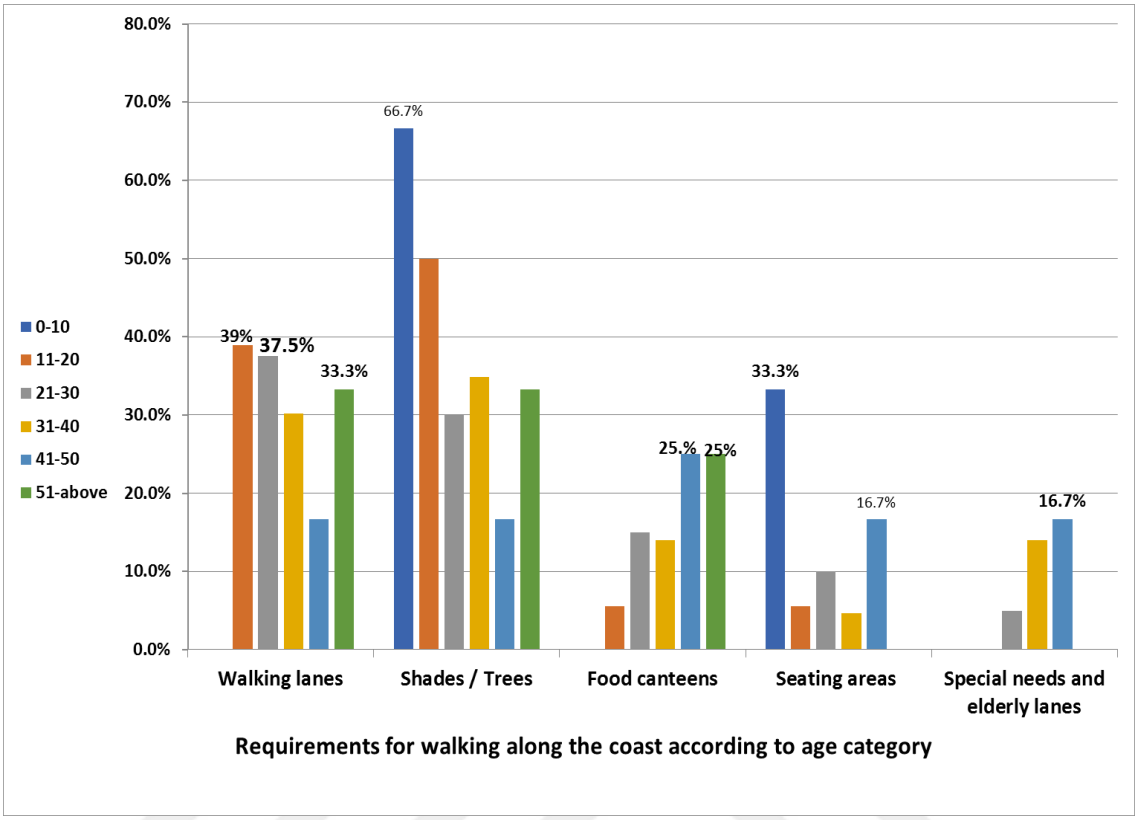


Figure 5.8 Requirements for walking along the coast according to age category.

Based on the cross-tabulation analysis to highlight the requirements based on age categories in Table 4.6 about the question B3. (What kind of requirement do you have from the perspective of public open spaces in Derna city ?) , it is shown that Regarding **walking along the coast**, we find that the largest percentage of requirements are for shaded places and aforestation, followed by walking lanes .

- **Requirements for outdoor dining along the coast according to age category**

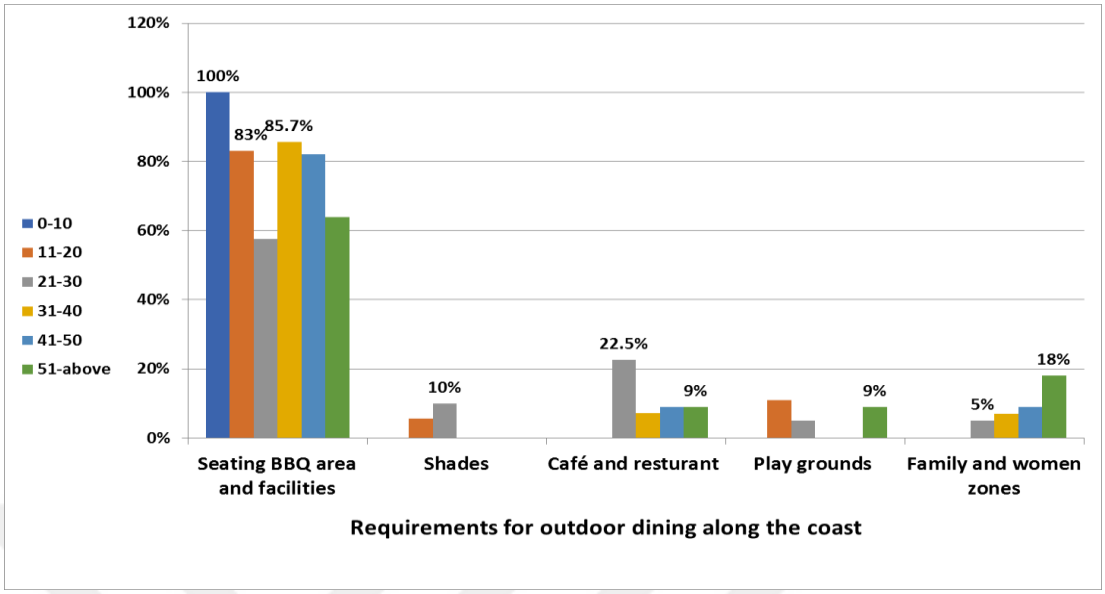


Figure 5.9Requirements for outdoor dining along the coast according to age category.

Regarding **outdoor dining along the coast**, we find that the largest percentage of requirements are for (seating BBQ area) and facilities, followed by cafes and restaurants .

- **Requirements for gym and biking along the coast according to age category.**

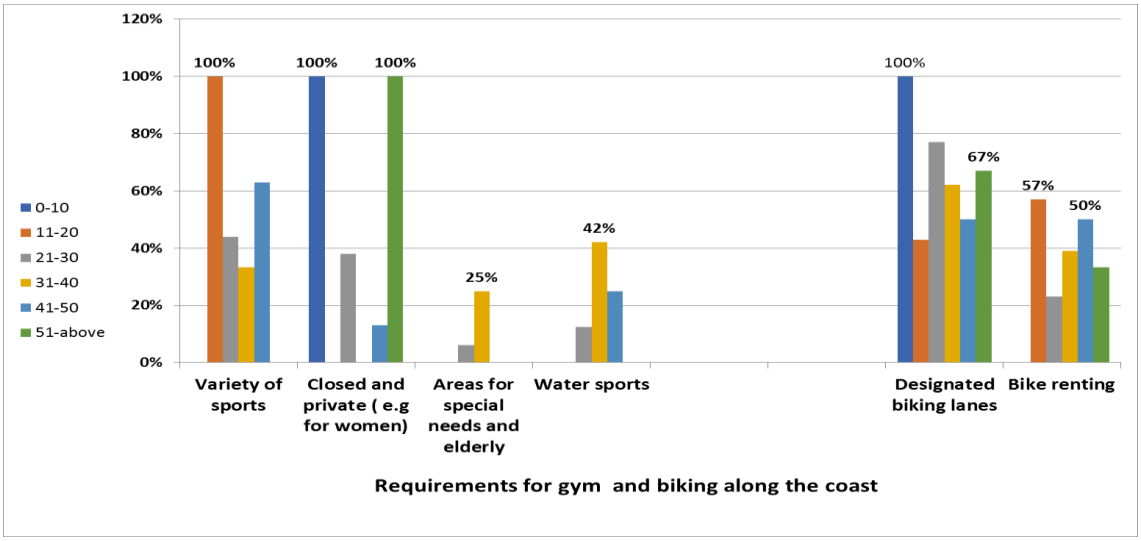


Figure 5.10Requirements for gym and biking along the coast according to age category.

With regard to the **gym and cycling along the coast**, we find that the largest proportion of the requirements are for the variety of sports, then closed and private gym for women.

As for **biking** we find that the largest percentage for designated biking lanes for age category 0-10 then age category 21-30 .

- **Requirements for swimming and boats strolling along the coast according to age category.**

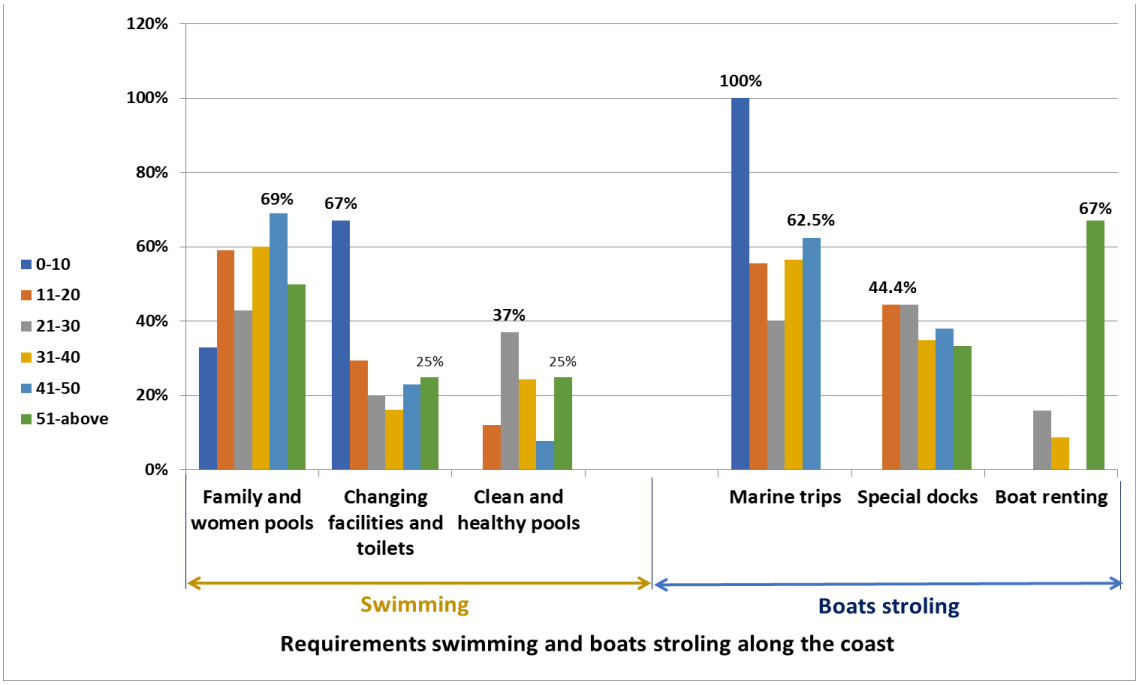


Figure 5.11Requirements for swimming and boats strolling along the coast according to age category.

Participants indicate the most preferred activities for **swimming**. The largest percentage was for family and women pools for all age category , especially the to age category from 41-50 . then changing facilities and toilets .

With regard to the **boats strolling** we find that the largest percentage of marine trips.

- **Requirements for urban parks according to age category.**

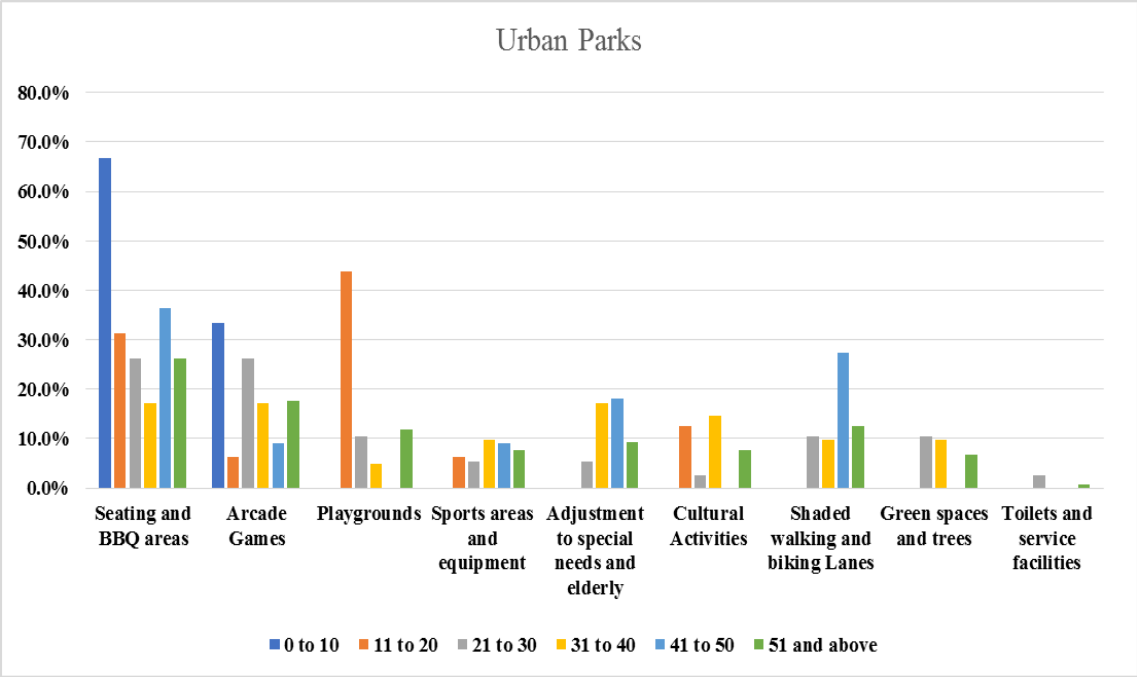


Figure 5.12 Requirements for urban parks according to age category.

Through the cross-tabulation analysis to highlight the requirements of the population based on the age category around the urban parks the results indicate the following:

The largest percentage is for seating and BBQ area for the 0-10 age category , then the 41-50 age category .

5.2. DISCUSSION

Throughout the current study, comprehensive research was performed to understand several aspects of the future development of the waterfront of Derna. The Research addressed the needs of the city residents from different perspectives, which the feasibility of waterfront development as an urban planning solution for the challenges faced in Derna. The feasibility of waterfront emerges from its ability to enrich the environment in urban settings, where the interaction empowers the wellbeing of their inhabitants .

Accessibility is another aspect of feasibility that is empowered by the adoption of waterfront development as an urban planning solution, which is part of utilizing the

coast as an advantage to strengthen urban relationships. For coastal cities like Derna, the coast is the main driver of economic and social activities .

Any feasibility research for waterfront development should take into consideration the risks that accompany it. Moreover, tackling the challenge of insufficient green surfaces in the city was a priority that is apparent in the investigation, analysis, and proposed solution.

Urban planning for waterfront development in Derna is faced with several challenges that are interconnected through the lack of proper attendance to human and environmental needs for a long time. The site selection process considered several aspects that ease solving other urban planning issues, The sites that are selected in the proposed solution have an acceptable level of proximity to urban infrastructure, merge into the natural morphology of the city, and consider the socio-economic status of the developed locations. The plan empowers the sociability, accessibility, comfort, and usage of the selected sites to serve the needs of the city residents .

In addition to providing urban facilities for Derna and its residents to suite their social and cultural aspects, two key factors were considered to present a comprehensive solution: the environment and the economy. a waterfront development is considered incomplete without these factors. The proposed waterfront design aims to provide opportunities for economic development in the city through the several commercial outlets, in addition to accessing the coast through docks and marine facilities. The environmental aspect is addressed by minimizing the interference of the proposed plan with the ecological system at the coast of Derna, as well as providing urban elements that supports its sustainability. it is essential to consider several environmental factors during the development of the waterfront in Derna, which includes ecology, water sources and consumptions, waste management, resources and materials, and energy The inclusion of these factors should ensure the creation of sustainable waterfronts in Derna that can empower the social, cultural, and economic needs of the city, in addition to supporting the environmental system in it for the wellbeing of current and future generations.

The potential of the waterfront was addressed in many studies. The case study of Schenectady and Scotia showed the use of the river waterfronts to drive economic and social aspects in the two cities. Moreover, the waterfronts were used to connect the two cities and increase the size of their economies and society through positive interactions. The Janzour case study illustrated a way for waterfront developments to empower the aesthetic, economic, and social potential of cities in North Africa. Seda and Nevnihal (2016) highlighted the potential of land filled waterfronts in increasing effective urban areas and provide facilities that were missing from previous urban planning. In the current proposed solution for the waterfront in Derna, the suggested locations achieve most of these objectives through providing urban facilities for the city residents and connect the waterfront locations to form a complete solution for the city needs.

Furthermore, the proposed design is a product of using techniques for a successful waterfront development, addressing the needs of the residents using a questionnaire and architectural analysis methods, while merging these aspects with the lacks that were found during the field study. The proposed locations provide a fair distribution for urban facilities for residents from the depth of the city. They use the waterfront as an ultimate solution to increase the quality of life for current and future generations. Additionally, they increase the potential of Derna to become an attraction and an marine economic hub for the Eastern Libyan coast.

5.3. CONCLUSION

The aim of the research was to study urban green spaces/ urban parks in the waterfront the city of Derna, Libya in alignment with sustainability requirements and supporting the historical, social, and cultural needs of its population. The requirement for a sustainable waterfront development was addressed through reviewing the aspects of sustainability for waterfronts from different studies and case studies. The urban development status of Derna was assessed with an architectural analysis that covered the current land use, accessibility infrastructure, public facilities, as well as the demographic development of the city. The comprehensive methodology of the research used the architectural analysis to extract urban shortages in Derna, incorporated these shortages in a questionnaire to the city residents, and developed a waterfront

development design that address the social, cultural, economic, and environmental needs of the city. The guidelines provided within the proposed design pave the way for specific design direction for a successful waterfront development for Derna and its residents.

It is essential to conclude this study to answer the research questions that were presented at the planning stage of the research:

Q1: What are the current utilizations for the waterfront of Derna?

It was found through the preliminary assessment, the architectural analysis, and the statistical analysis of the needs of Derna residents that the waterfront utilization is minimal with high dependency on the seaport for conventional economic activities. Moreover, the remaining sections of the waterfront are not utilized for a specific purpose rather than ignored and at best used by the population without interference from the specialized authorities. The existing seaport provide a limited access to sea transport, marine activities, and economic activities, such as fishing. Residential and commercial developments are spread along random sections of the waterfront without consideration for the needs of the city as a whole.

Q2: What are the needs and interests of the city residents that can be fulfilled through the development of the waterfront?

The potential of the waterfront in Derna is unlimited with the morphological spread of the city along the coast rather than the depth that is limited by mountainous structures. The interests of the residents were evaluated through the questionnaire performed on 160 households in the city of different locations. The majority of interests were towards urban parks and district parks that can provide picnic areas, children's playgrounds, comfortable seating and shading, sports courts for different activities, water sports' facilities that include swimming pools with consideration for women and family privacies, and marine activity zones for fishing, sailing, and socializing.

Q3: How can the development of the waterfront affect the social, cultural, economic, and environmental status of the waterfront, city, and the residents.

The lack of basic urban development in Derna provides a great potential for waterfront development as a solution. The waterfront can cover the needs indicated by the residents

by developing the coast to provide a quality urban development beside the sea, as well as use sections of the waterfront to create marine clubs that address the need for marine activities. Waterfronts as solutions give the opportunity for a multifunctional urban development that fulfil the social and cultural needs of the residents. Moreover, economic activities are increased through commercial outlets of different types, including restaurants, cafes, sport clubs, marine activities, and service businesses. The environmental status of the waterfront is enhanced with regulating the use of the coastal facilities with planned and implemented guidelines to ensure the preserving the ecological aspects.

Based on the presented findings of the research, the main research question stating:

How can the waterfront of the city of Derna be developed in a way that considers the urban, economic, social, and cultural needs of its inhabitants?

The proposed utilization for the waterfront of Derna to enhance the urban plan of the city is suggested through the development of key locations along it with the most needed facilities in the city, including parks, walkways, commercial locations, marine activity clubs, and sports clubs. The urban needs are addressed by covering the shortages suffered by the city with these developments and facilities, which can provide ways for the inhabitants to fulfil their needs. Furthermore, the development of the waterfront in the city provides connectivity and accessibility along the city through its coastal resources, which enhances movement and resource utilization. The social and cultural needs are satisfied with the variety and sufficiency of facilities that can serve the variety of demographics (gender, age, interests, etc.), as well as taking into consideration values that are important to the residents, such as family and privacy. The economic needs are enriched with the waterfront development with increased economic activities with commercial facilities, in addition to increasing connectivity within the city and with the seaport, which is considered a main accessibility point for Derna.

The hypothesis of the research states: “The development of the waterfront in Derna is able to enrich and fulfil the needs of the residents in the social, cultural, economic, and environmental aspects”. Based on the findings of the research, it is evident that a waterfront development as proposed has the ability to fulfil the needs of the city and its

residents from different aspects. It is concluded from the architectural analysis that the current urban plan of the city lacks public facilities that satisfy these needs. However, a development of one of the most important assets in the city, i.e., its waterfront, can individually and collectively address these needs. The social needs are fulfilled providing the various and sufficient facilities and activities, as proposed by the presented design. Moreover, the cultural needs are fulfilled with the consideration of important values for the residents, especially privacy. The economic needs of the city is fulfilled with the development of further commercial facilities that are suitable for the waterfront. Finally, the environmental needs are fulfilled with the planned development of the waterfront with the protection of the ecological system with necessary regulations and protecting it from random activities that are currently carried out at the coast. Furthermore, the questionnaire results confirm that these needs are not nearly fulfilled with the current urban development of the city. Therefore, the hypothesis of the city is accepted with the implementation of waterfront development in Derna and with the proposed design that covers those aspects for a comprehensive urban planning and development solution for the city.

5.3. RECOMMENDATIONS AND FUTURE RESEARCH

There are several considerations with the proposed waterfront development design that is presented in the current study that need to be addressed to ensure an effective and successful planning and implementation. These considerations are required to be addressed all the possible aspects of the waterfront development to increase its fulfilment for the needs of Derna and its residents. Thus, the researcher provides the following recommendations:

- The proposed plan is recommended to be implemented in conjunction of an overall urban plan for the city that accounts for the environmental impact for the development. It is suggested that an international sustainability certification system is used, e.g., LEED, to ensure that urban planning in the city satisfies the requirements of international sustainability standards.

- The accessibility to and from the waterfront of the city shall be accompanied with an urban plan for the transportation network of the city. The vast majority of the city residents use private cars as their main transportation mean, which increase the pressure on the existing road network towards the city centre and across the city districts. Therefore, the road network of the city needs to be revised to increase it capacity according to the growth of the population, especially that this network has not been revised since its construction in the 70s and 80s of the past century. Moreover, a plan for public transportation is required to reduce the dependency on private cars, which also causes environmental adverse effects.
- An arrival plaza is suggested to connect the proposed waterfront developments with the rest of the city. This facility is constructed opposite of the developments with parking spaces, bike lanes, walkways, and elevators, which allow the transportation of waterfront users through bridges or tunnels to the waterfront facilities on the other bank of the main coastal road. This element should relief waterfront developments from similar facilities that need to be constructed to ease access to them.
- While developing the proposed waterfront locations, it is recommended to create a rehabilitation plan for the urban districts that surround them. The development should include arrival plazas, public transportation facilities, mass transit projects, and re-evaluation of the current road networks.
- When detailing the designs for the proposed waterfront locations, it is recommended that items chosen for the facilities be suitable for the nature and location of Derna to consider humid and hot weather conditions. The furniture used in the facilities should be suitable for the urban development and the different types of users. This should include designs that are suitable for people with special needs and the elderly, besides the essential needs of families, children, and women.
- It is suggested that some of the currently traffic designated roads around the proposed waterfront developments be redesigned to accommodate the needs of pedestrians, bike riders, and users of wheelchairs. It can be achieved also using

pedestrian-only roads that connect the city to the waterfront developments to reduce traffic pressures on the coastal side.

- The intensive use of private cars creates another problem for parking spaces. Therefore, it is recommended that special parking facilities are constructed around the proposed waterfront developments. This can include on-ground parking spaces, underground parking spaces, super-ground parking spaces, and multilevel parking facilities.
- A road network is recommended between the four suggested waterfront developments. Such a network is expected to increase efficiency of the designs with providing different types of facilities in different developments, which allows city residents to mobilize through them according to their needs without the hinderance of traffic congestions.
- It is imperative for any detailed designs to take into considerations international standards for facilities designated for individuals with special needs and the elderly. These facilities shall include but not be limited to access elements (roads, parking spaces, walkways, etc.), sanitary facilities (restrooms), sport facilities, and seating areas.
- While the current research focused on the social, cultural, and economic needs of individuals of different demographic and social characteristics, it is important to ensure their inclusion in the detailed designs of the waterfront developments. These needs should not compromised through the design nor the value engineering processes.
- Renewable energy sources should be an important part of the waterfront development design and implementation process. There are different proposals within the waterfront development to use solar and wind energy in different parts of the development to reduce the dependency of the proposed facilities on grid power and the achievement of sustainability.
- The finishes used in the proposed waterfront development should be suitable for the functions they serve, as well as the climate conditions of Derna. These finishes should be selected according to building code recommendations with the inclusion of health and safety standards.

Future research opportunities are identified for the continuation of the current research and to serve as development or complementary fields of study for its findings. The subsequent research can focus on studying the sufficiency of green spaces, urban parks, and public facilities for the population of Derna. Such a study is a necessity on a periodic basis after the implementation of the proposed waterfront development. Moreover, a study on the quality of life for the residents of Derna is beneficial to support the findings of the current research and adds to its argument through a different viewpoint of the problem. It is also recommended to conduct an architectural study of the open public spaces in Derna to find ways to connect them to the proposed waterfront developments and reduce the pressure on the coastal region. Finally, a social study can empower the results of the current study by investigating the activities performed in open public spaces and their relations with human behaviour in Derna.

REFERENCES

Abu Luqma, A. M. (1985). *The Bechi Brothers and the Libyan Coast (1821-1822).* Benghazi: Garyounis University Publications.

AL Trapolci, M. (1999). *History of Derna* . Derna: Derna`s university editions.

Al-Qaziri, S. (1995). Urbanization. In A. M. Bulqameh, & S. Al-Qaziri (Eds.), *The Jamahiriya: A Study in Geograph* (pp. 395-482). Sirte: Jamahiriya House for Publishing, Distribution and Advertising.

Al-Qaziri, S. K. (2005). *Protection of Darna Beach, Final Report.* Al-Amarah Engineering Consulting Office.

Al-Qaziri, S. K. (2021). *Darna, my city, a study in town planning.* Derna: Dar Al-Fadil for Publishing and Distribution.

Al-Sulbi, A. O. (2018). Exploration of Ecological Footprint in the Kingdom of Saudi Arabian Developed Waterfronts: The Case of King Abdullah Seafront Park (KASP) – Dammam. *The Open Environmental Research Journal, 11*, 75-85.

Angradi, T. R., Williams, K. C., Hoffman, J. C., & Bolgrien, D. W. (2019). Goals, beneficiaries, and indicators of waterfront revitalization in Great Lakes Areas of Concern and coastal communities. *Journal of Great Lakes Research, 45*(5), 851-863.

Avni, N., & Teschner, N. (2019). Urban Waterfronts: Contemporary Streams of Planning Conflicts. *Journal of Planning Literature, 34*(4), 408-420.

Bays, B. (2020, March 02). *Reclaiming waterfront as an economic growth strategy*. Retrieved from Public Square - A CNU Journal: https://www.cnu.org/publicsquare/2020/03/02/reclaiming-waterfront-economic-growth-strategy-0

Buckman, S. (2016). Canal oriented development as waterfront placemaking: an analysis of the built form. *Journal of Urban Design, 21*(6), 785-801.

Bulukma, A. M., & Alkzeizi, S. K. (1997). *The Libyan Coast.* Benghazi: Qaryounes University.

Buscardo, E., Forkour, G., Rubino, A., & Storozum, M. (2021). Land and people. *Nature: Communications Earth & Environment, 2*.

Callaghan, A., McCombe, G., Harrold, A., McMeel, C., Mills, G., Moore-Cherry, N., & Cullen, W. (2021). The impact of green spaces on mental health in urban settings: a scoping review. *Journal of Mental Health, 30*(2), 179-193.

Chen, C. H. (2015). The Analysis of Sustainable Waterfront Development Strategy - The Case of Keelung Port City. *International Journal of Environmental Protection and Policy, 3*(3).

CIESIN. (2007). *Percentage of total population living in coastal areas.* New York: The United Nations.

Colding, J., Giusti, M., Haga, A., Walhagen, M., & Barthel, S. (2020). Enabling relationships with nature in cities. *Sustainability, 12*.

Colding, J., Gren, A., & Barthel, S. (2020). The incremental demise of urban green spaces. *Land, 9*.

Creel, L. (2003, September 25). *Ripplt Effects: Population and Coastal Regions*. Retrieved from PRB: https://www.prb.org/resources/ripple-effects-population-and-coastal-regions/

Di Nardo, F., Saulle, R., & La Torre, G. (2010). Green areas and health outcomes: A systematic review of the scientific literature. *Italian Journal of Public Health, 7*(4), 402-413.

Doxiades Foundation . (1964). *Housing in Libya, (Part One) Present Cases.* Athens - Greece: Doxiades Foundation.

Dumm, R. E., Sirmans, G. S., & Smersh, G. T. (2016). Price Variation in Waterfront Properties Over the Economic Cycle. *The Journal of Real Estate Research, 38*(1), 1-26.

El Deeb, S., AbelGalil, R., & Sarhan, A. (2015). A Sustainability Assessment Framework For Waterfront Communities - Increasing the Resilience of the Abu Qir Waterfront Community in Alexandria. *Journal of Renewable Energy and Sustainable Development, 1*(1), 167-183.

Giannico, V., Spano, G., Elia, M., D'Este, M., Sanesi, G., & Lafortezza, R. (2021). Green spaces, quality of life, and citizen perception in European cities. *Environmental Research, 196*.

Girard, L. F., Kourtit, K., & Nijkamp, P. (2014). Waterfront Areas as Hotspots of Sustainable and Creative Development of Cities. *Sustainability, 6*(7), 4580-4586.

Gordon, D. L. (1996). Planning, design and manageing change in urban waterfront redevelopment. *The Town Planning Review, 67*(3), 261-290.

Gostini, A. (1923). *La popolazione della Cirenaica.* Benghazim: Governo della Cirenaica.

Graells-Garrido, E., Serra-Vurriel, F., Rowe, F., Cucchietti, F. M., & Reyes, P. (2021). A city of cities: Measuring how 15-minutes urban accessibility shapes human mobility in Barcelona. *PLOS ONE*.

Hegazy, I. R. (2021). Towards sustainable urbanization of coastal cities: The case of Al-Arish City, Egypt. *Ain Shams Engineering Journal, 12*(2), 2275-2284.

Hinds, J., & Sparks, P. (2011). The Affective Quality of Human-Natural Environment Relationships. *Evolutionary Psychology, 9*(3).

Hussain, M. A., Yunos, M. Y., Utaberta, N., Ismail, N. A., & Ismail, S. (2015). The role of human activities setting in cultural and heritage waterfront: the case of Venice waterfront, Amesterdam waterfront and Marsaxlokk waterfront. *International Journal of Current Research, 7*(9), 20784-20791.

Ilhamdaniah, I. (2018). GIS-based Suitability Analysis for Siting Waterfront Park in the City of Buffalo, New York. *IOP Conference Series Earth and Environmental Science, 145*(1).

Kates, R. W. (2001). Sustainability Transition: Human-Environment Relationship. In N. J. Smelser, & P. B. Baltes (Eds.), *International Encyclopedia of the Social and Behavioral Sciences* (pp. 15325-15329). Oxford, UK: Pergamon Press.

Keyvanfar, A., Shafaghat, A., Mohamad, S., Abdullahi, M. M., Ahmad, H., Derus, N. H., & Khorami, M. (2018). A sustainable historic waterfront revitalization decision support tool for attracting tourists. *Sustainability, 10*.

Libya Herald. (2018, June 05). *Deteriorating humanitarian situation in Derna*. Retrieved from https://www.libyaherald.com/2018/06/05/deteriorating-humanitarian-situation-in-derna-report/).

McCash Jr, J. M. (1976). *The Relationship Between Urban Structure and Human Behaviour: An Exploratory Investigation.* Waterloo: Wilfrid Laurier University.

McGovern, S. J. (2008). Mobilization on the Waterfront: The Ideological/Cultural Roots of Potential Regime Change in Philadelphia. *Urban Affairs Review, 44*(5), 663-694.

Mohamed, B., & Salim, N. (2018). Preserving sense of place at historic waterfronts in malaysia. *SHS Web of Conferences, 45*(2).

Muhamadan, N. H., & Anuar, A. N. (2017). The Demand of Recreational Facilities in Neighborhood Parks. *Postgraduate Seminar in technology and Built Environment.*

Othman, A., Al-Hagla, K., & Hasan, A. E. (2021). The impact of attributes of waterfront accessibility on human well-being: Alexandria Governorate as a case study. *Ain Shams Engineering Journal, 12*(1), 1033-1047.

Permana, A. S., Astuti, W., & Erianto. (2017). Waterfront Development Concepts in Indonesia from the Perspective of Urban Planning and Environmental Sustainability. *International Journal of Built Environment and Sustainability, 4*(3), 146-155.

Pinto, P. J., & Kondolf, G. M. (2020). The fit of urban waterfront interventions: Matters of size, money, and function. *Sustainability, 12*(10).

RW Armstrong. (2013, June 15). *The Waterfront Development, Tripoli, Libya*. Retrieved from RW Armstrong: https://www.rwa.com/rwa/project-detail.php?ids=131

Schlapfer, M., Bettencourt, L. M., Grauwin, S., Raschke, M., Claxton, R., Smoreda, Z., . . . Ratti, C. (2014). The scaling of human interactions with city size. *Journal of The Royal Society Interface, 11*(98).

Seda, K. C., & Nevnihal, E. (2016). The evaluation of waterfront as a public space in terms of the quality concept, Case of Maltepe Fill area. *13th International Conference "Standardization, Protypes and Quality: A Means of Balkan Countries' Collaboration"* (pp. 329-336). Brasov, Romania: Transilvania University of Brasov.

Seymour, V. (2016). The Human–Nature Relationship and Its Impact on Health: A Critical Review. *Frontiers in Public Health, 4*.

Shaker, R., Tolba, O., & Fahmy, A. (2019). Socio-cultural divisions and urban waterfront activities: The case of El-Minya city, Egypt. *Journal of Engineering and Applied Science, 66*(5), 563-585.

Shetawy, A. A. (2017). The Nile River: River Tourism, Waterfront Development and Cultural Ecosystems. *Journal of Urban Research, 24*(1), 104-119.

Stevens, Q. (2021). *Activating Urban Waterfronts - Planning and Design for Inclusive, Engaging and Adaptive Public Spaces.* New York: Routledge.

Synthesis. (2005). *Waterfront Market and Feasibility Study.* Schenectady, NY: Synthesis LLP.

Taghvaee, A. A., Kamyar, M., & Moradi, A. (2017). Human, Nature, City: From Oblivion to Review. *Open Journal of Ecology, 7*(7), 433-447.

Thorning, D., Balch, C., & Essex, S. (2019). The delivery of mixed communities in the regeneration of urban waterfronts: An investigation of the comparative experience of Plymouth and Bristol. *Land Use Policy, 84*, 238-251.

Timur, U. P. (2013). Urban Waterfront Regenerations. In M. Ozyavuz (Ed.), *Advances in Landscape Architecture* (pp. 169-206). INTECH.

Toomy, A. H., Campbell, L. K., Johnson, M., Strehlau-Howay, L., Manzolillo, B., Thomas, C., . . . Palta, M. (2021). Place-making, place-disruption, and place protection of urban blue spaces: perceptions of waterfront planning of a polluted urban waterbody. *Local Environment, 26*(8), 1008-1025.

Turkoglu, H., & Secmen, S. (2019). The role of urban waterfront parks on quality of life in Istanbul. *ITU A|Z, 16*(1), 53-66.

Wah, W. S., & Omran, A. (2012). Factors Contributing To The Implementation Of Waterfront Projects In Penang Island. *Journal of Academic Research in Economics, 4*, 102-114.

Wood, E., Harsant, A., Dallimer, M., de Chavez, A. C., McEachan, R. R., & Hassall, C. (2018). Not All Green Space Is Created Equal: Biodiversity Predicts Psychological Restorative Benefits From Urban Green Space. *Frontiers in Psychology*.

Yildiz, R., Senlier, N., & Guzel, B. I. (2015). Sustainable urban design guidelines for waterfront developments. *2nd Intrnational Sustainable Buildings Symposium* (pp. 487-494). Ankara: Gazi University.

Yilmaz, M., & Terzi, F. (2019). The Effects of Urban Spatial Development on Coastal Ecosystems: The Case of Mersin, Turkey. *IOP Conference Series: Materials Science and Engineering, 471*(10).

APPENDIX A : QUESTIONNAIRE TEMPLATE

Dear participant,

This questionnaire is performed as part of master's research that aims to the development of sustainable waterfront public parks in Derna, Libya. Thus, we would like to request your kind effort and time to provide us with the best evaluation of the questions according to your opinion.

Best Regards

The Researcher

PART (A): SOCIO DEMOGRAPHICS ANALYSIS :

1. THE HEAD OF HOUSEHOLD		AGE
FATHER		
MOTHER		
CHILD		
GRANDFATHER		
GRANDMOTHER		
BROTHER		
SİSTER		
OTHER		

2. NUMBER OF PEOPLE İN FAMILY	NUMBER
FATHER	
MOTHER	
CHILD	
GRANDFATHER	
GRANDMOTHER	
BROTHER	
SİSTER	
OTHER	
TOTAL	

3. EDUCATIONAL LEVEL	ANALPHABET	PRIMARY SCHOOL	SECONDARY SCHOOL	HIGH SCHOOL	VOCATIONAL SCHOOL	UNIVERSITY	OTHER
FATHER							
MOTHER							
CHILD							
GRANDFATHER							
GRANDMOTHER							
BROTHER							
SİSTER							
OTHER							
TOTAL							

4. Number of children	Gender		Age	Education level	Occupation	THE MONTHLY INCOME
	Male	Femal				
TOTAL						

5. NUMBER OF EMPLOYED PERSONS IN THE FAMILY	THE NAME OF THE JOB	FORMAL REGULAR			İNFORMAL İRREGULAR			THE MONTHLY INCOME		
		PRIVATE SECTOR	PUBLIC SECTOR	PERSONAL	DAILY	WEEKLY	SESONAL	1000 LYD and less	1000 to 2000 LYD	2000 LYD and more
FATHER										
MOTHER										
CHILD										
GRANDFATHER										
GRANDMOTHER										
BROTHER										
SISTER										
OTHER										
TOTAL										

5. What would you do before you come to Derna ? .....

6. Where do you work ? .....

7. After you come to Derna , where did you work first ?.....

8. How many jobs did you change after you come to Derna?.....

6. WHO WAS THE FİRST TO COME TODerna?			
FATHER		THE HEAD OF THE FAMILY	ALL OF THE FAMILY
MOTHER			
CHILD			
GRANDFATHER			
GRANDMOTHER			
BROTHER			
SİSTER			
OTHER			
THE ARRIVAL DATE			

10. From where do you come to Derna ? .....

11. Date of arrival to Derna? .....

12. Which neighbourhood (Mehalleh) do you live in? .....

13. How many times did you change neighbourhood after coming to Derna ?

.....

PART (B) : CURRENT SITUATION

B1 . How many times do you frequency to visit or use the activities listed in the city of Derna in your daily life ?

Activities	Every day	Once a week	Once a month	once a year	Never	Code number
Urban park						
District park						
Playground areas						
Sport areas						
Walking along the coast						
Outdoor dining along the coast						
Outdoor gym along the coast						
Swimming						
Biking along the coast						
Visiting plants along the coast (landscape view terraces)						
Resting areas along the coast						
Event areas along the coast						
Fishing						
Boats strolling						
Cofe - Restaurant						

In the event that the reason for your visit is for more than one activity it can be selected from the following table and listed according to the code number ,For example, if the reason for your visit to the urban park is sporting activities, walking and leisure, the code number is a, c, h and so on.

Activities	Code number
Sport activity	a
Outdoor dining (picnic)	b
Walking	c
Biking	d
Playground	e
Reading	f
Socialising	g
Leisure	h
Rehabilitation	i

B2. How do you access the activity areas in Derna city according to question B1 ?

a) Walking b) Biking) Public transportation d) Privet car

e) Other .....

B3. What kind of requirement do you have from the perspective of public open spaces in Derna city ?In this question the family should ask also the children what they want for future , Maybe the children requirement related with technological preferences .

Activities	Type of requirements
Urban park	
District park	
Playground areas	
Sport areas	
Walking along the coast	
Outdoor dining along the coast	
Outdoor gym along the coast	
Swimmi Swimming ng	
Biking along the coast	
Visiting plants along the coast (landscape view terraces)	
Resting areas along the coast	
Event areas along the coast	
Fishing	
Boats strolling	
Cofe - Restaurant	
Others	

B4. Which season is the best for you to go to listed activity areas in the matrix ?

Activities	Spring	Summer	Autumn	Winter.
Urban park				
District park				
Playground areas				
Sport areas				
Walking along the coast				
Outdoor dining along the coast				
Outdoor gym along the coast				
Swimming				
Biking along the coast				
Visiting plants along the coast (landscape view terraces)				
Resting areas along the coast				
Event areas along the coast				
Fishing				
Boats strolling				
Cofe - Restaurant				

B5. Do you want a specific activity to be held in the winter ? What are those activities?

Activities	Winter.
Urban park	
District park	
Playground areas	
Sport areas	
Walking along the coast	
Outdoor dining along the coast	
Outdoor gym along the coast	
Swimming	
Biking along the coast	
Visiting plants along the coast (landscape view terraces)	
Resting areas along the coast	
Event areas along the coast	
Fishing	
Boats strolling	
Cofe - Restaurant	

B6.When do you feel more safe in the listed activity areas in the matrix?

Activities	Time
Urban park	
District park	
Playground areas	
Sport areas	
Walking along the coast	
Outdoor dining along the coast	
Outdoor gym along the coast	
Swimming	
Biking along the coast	
Visiting plants along the coast (landscape view terraces)	
Resting areas along the coast	
Event areas along the coast	
Fishing	
Boats strolling	
Cofe - Restaurant	

B7.What elements could be added to the public open spaces in Derna city to increase accessibility ?

a) Good lighting b) Tree plantation c) Security-guard d) Sitting equipments

e) Boundary elements

PART (C) : COAST USAGE

C1. According to you, does the waterfront in Derna need to be developed? What are the problems experienced by the waterfront in Derna?

☐**Yes**☐**No**

Problems	
Neglecting	
Deterioration	
Pollution	
lack of equipment	
Lack of green spaces	
Lack of suitable paths for walking	
Absence of children's play areas	
Other	

C2. Does the sea negatively affect the waterfront of the city of Derna? And how is this effect?

☐Yes☐No

a) high humidity b) dirt c) nothing

C3. Do residents wish to establish projects on the waterfront of the city of Derna? And what is the nature of these projects?

☐Yes☐No

a) Entertainment projects b) cultural projects

C4. . Which frequency does people visit the waterfront of Derna city ?

Frequency on the waterfront	
At weekend	
monthly	
annually	
In summer only	

C5. Please select one option about physical quality of waterfront of Derna city?

	Yes	No
Are there enough places to sit ?		
Are seats conveniently located ?		
Do people have is have a choice of places to sit , either in the sun or shade ?		
Are there suitable paths for walking?		
Are there places for children to play?		
Are there places suitable for swimming?		
Is the waterfront suitable for people with disabilities ?		

C6. What are the activities that you would like to continue throughout the year on the waterfront of Derna?

.....**C7**.

Do you want a specific activity to be held in the summer? What are those activities?

Activities	**Winter.**
Urban park	
Playground areas	
Sport areas	
Walking along the coast	
Outdoor dining along the coast	
Outdoor gym along the coast	
Swimming	
Biking along the coast	
Visiting plants along the coast (landscape view terraces)	
Resting areas along the coast	
Event areas along the coast	
Fishing	
Boats strolling	
Cofe - Restaurant	

END OF SURVEY

THANK YOU FOR YOUR TIME AND EFFORT

APPENDIX B : ADDITIONAL STATISTICAL OUTPUT

APPENDIX B.1 : SOCIO DEMOGRAPHICS

Count of household members

Mean	N	Std. Deviation
4,80	167	2,413

Count of household members

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	2	1,2	1,2	1,2
	1	5	3,0	3,0	4,2
	2	17	10,2	10,2	14,4
	3	26	15,6	15,6	29,9
	4	26	15,6	15,6	45,5
	5	38	22,8	22,8	68,3
	6	24	14,4	14,4	82,6
	7	12	7,2	7,2	89,8
	8	9	5,4	5,4	95,2
	9	4	2,4	2,4	97,6
	10	1	,6	,6	98,2
	12	1	,6	,6	98,8
	15	1	,6	,6	99,4
	18	1	,6	,6	100,0
	Total	167	100,0	100,0	

Father Count

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	141	84,4	100,0	100,0
Missing	System	26	15,6		
Total		167	100,0		

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age of father	139	27	80	48,71	12,530
Valid N (listwise)	139				

Education level (Father)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Illiterate	1	,6	,8	,8
	Primary School	1	,6	,8	1,6
	Middle School	10	6,0	7,9	9,4
	High School	11	6,6	8,7	18,1
	Vocational School	31	18,6	24,4	42,5
	University	57	34,1	44,9	87,4
	Graduate Degree	16	9,6	12,6	100,0

	Total	127	76,0	100,0	
Missing	System	40	24,0		
Total		167	100,0		

Occupation (Father)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	5	3,0	4,1	4,1
	Private Sector	10	6,0	8,2	12,3
	Public/ Government Sector	66	39,5	54,1	66,4
	Self-Employed (Permanent)	36	21,6	29,5	95,9
	Self-Employed (Seasonal)	5	3,0	4,1	100,0
	Total	122	73,1	100,0	
Missing	System	45	26,9		
Total		167	100,0		

Job title Father

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Architect	4	2,4	3,4	3,4
	City planner	1	,6	,8	4,2
	Engineer	7	4,2	5,9	10,1
	Doctor	4	2,4	3,4	13,4
	Teacher	18	10,8	15,1	28,6
	Merchant	10	6,0	8,4	37,0
	Business Owner	10	6,0	8,4	45,4
	Lawyer	5	3,0	4,2	49,6
	Retired	9	5,4	7,6	57,1
	Unemployed	2	1,2	1,7	58,8
	Other job	49	29,3	41,2	100,0
	Total	119	71,3	100,0	
Missing	System	48	28,7		
Total		167	100,0		

Monthly Income (Father)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1000 LYD	25	15,0	21,0	21,0
	1000 to 2000 LYD	56	33,5	47,1	68,1
	More than 2000 LYD	38	22,8	31,9	100,0
	Total	119	71,3	100,0	
Missing	System	48	28,7		
Total		167	100,0		

Mother Count

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	150	89,8	100,0	100,0
Missing	System	17	10,2		
Total		167	100,0		

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age of Mother	150	24	75	43,35	11,623
Valid N (listwise)	150				

Education Level (Mother)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	2	1,2	1,4	1,4
	Middle School	15	9,0	10,8	12,2
	High School	22	13,2	15,8	28,1
	Vocational School	18	10,8	12,9	41,0
	University	72	43,1	51,8	92,8
	Graduate Degree	10	6,0	7,2	100,0
	Total	139	83,2	100,0	
Missing	System	28	16,8		
Total		167	100,0		

Occupation (Mother)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	40	24,0	30,1	30,1
	Private Sector	5	3,0	3,8	33,8
	Public/ Government Sector	78	46,7	58,6	92,5
	Self-Employed (Permanent)	5	3,0	3,8	96,2
	Self-Employed (Seasonal)	5	3,0	3,8	100,0
	Total	133	79,6	100,0	
Missing	System	34	20,4		
Total		167	100,0		

Job title Mother

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Architect	2	1,2	1,6	1,6
	City planner	2	1,2	1,6	3,1
	Engineer	3	1,8	2,4	5,5
	Doctor	6	3,6	4,7	10,2
	Teacher	51	30,5	40,2	50,4
	Business Owner	4	2,4	3,1	53,5
	Lawyer	3	1,8	2,4	55,9
	House Wife	33	19,8	26,0	81,9
	Retired	5	3,0	3,9	85,8

	Unemployed	1	,6	,8	86,6
	Other job	17	10,2	13,4	100,0
	Total	127	76,0	100,0	
Missing	System	40	24,0		
Total		167	100,0		

Monthly Income (Mother)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No Income	32	19,2	25,2	25,2
	Less than 1000 LYD	18	10,8	14,2	39,4
	1000 to 2000 LYD	66	39,5	52,0	91,3
	More than 2000 LYD	11	6,6	8,7	100,0
	Total	127	76,0	100,0	
Missing	System	40	24,0		
Total		167	100,0		

Are you originally from Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	108	64,7	64,7	64,7
	No	59	35,3	35,3	100,0
	Total	167	100,0	100,0	

Q6

From where did you come to Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Benghazi	12	7,2	20,3	20,3
	Tobruk	3	1,8	5,1	25,4
	Albayda	3	1,8	5,1	30,5
	Om Alruzam	5	3,0	8,5	39,0
	Misrata	4	2,4	6,8	45,8
	Other	13	7,8	22,0	67,8
	Martuba	4	2,4	6,8	74,6
	Alqubba	4	2,4	6,8	81,4
	Tripoli	7	4,2	11,9	93,2
	Zlitin	4	2,4	6,8	100,0
	Total	59	35,3	100,0	
Missing	System	108	64,7		
Total		167	100,0		

Q7

Where did you work before coming to Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nothing	5	3,0	9,1	9,1
	Construction/ City planning	1	,6	1,8	10,9
	Court/ Lawyer	3	1,8	5,5	16,4
	Healthcare	4	2,4	7,3	23,6
	Government	6	3,6	10,9	34,5
	Own business	21	12,6	38,2	72,7
	Student	4	2,4	7,3	80,0
	Education	11	6,6	20,0	100,0
	Total	55	32,9	100,0	
Missing	System	112	67,1		
Total		167	100,0		

Q8

What was your first work after coming to Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Nothing	6	3,6	10,5	10,5
	Construction/ City planning	1	,6	1,8	12,3
	Court/ Lawyer	3	1,8	5,3	17,5
	Healthcare	2	1,2	3,5	21,1
	Government	8	4,8	14,0	35,1
	Own business	19	11,4	33,3	68,4
	Student	4	2,4	7,0	75,4
	Education	11	6,6	19,3	94,7
	Worker	3	1,8	5,3	100,0
	Total	57	34,1	100,0	
Missing	System	110	65,9		
Total		167	100,0		

Q9

How many times did you change jobs since coming to Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	35	21,0	63,6	63,6
	Once	5	3,0	9,1	72,7
	Twice	15	9,0	27,3	100,0
	Total	55	32,9	100,0	
Missing	System	112	67,1		
Total		167	100,0		

Q10

Who from the family came first to Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Father	16	9,6	28,1	28,1
	Mother	2	1,2	3,5	31,6
	Child	12	7,2	21,1	52,6
	Sister	1	,6	1,8	54,4
	Other	9	5,4	15,8	70,2
	All Family	17	10,2	29,8	100,0
	Total	57	34,1	100,0	
Missing	System	110	65,9		
Total		167	100,0		

Q11

When was the first movement of the family to Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1999 and before	33	19,8	55,9	55,9
	2000 - 2005	8	4,8	13,6	69,5
	2006 - 2010	7	4,2	11,9	81,4
	2011 - 2015	4	2,4	6,8	88,1
	2016 and after	7	4,2	11,9	100,0
	Total	59	35,3	100,0	
Missing	System	108	64,7		
Total		167	100,0		

Q12

In which neighbourhood do you live?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Alblad	24	14,4	14,4	14,4
	Aljbaila	22	13,2	13,2	27,5
	Almghar	20	12,0	12,0	39,5
	Almghar (Mbakh)	20	12,0	12,0	51,5
	Bu Mansour	20	12,0	12,0	63,5
	Alsahil	20	12,0	12,0	75,4
	Alsahil 400	20	12,0	12,0	87,4
	Sayda Khadija	21	12,6	12,6	100,0
	Total	167	100,0	100,0	

Q13

When did you come to current neighbourhood?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1970-1974	4	2,4	2,4	2,4
	1975-1979	3	1,8	1,8	4,2
	1980-1984	17	10,2	10,2	14,4
	1985-1989	7	4,2	4,2	18,6
	1990-1994	17	10,2	10,2	28,7
	1995-1999	13	7,8	7,8	36,5
	2000-2004	17	10,2	10,2	46,7
	2005-2009	21	12,6	12,6	59,3
	2010-2014	30	18,0	18,0	77,2
	2015 and After	38	22,8	22,8	100,0
	Total	167	100,0	100,0	

Q14

How many times did you change neighbourhood after coming to Derna ?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	50	29,9	29,9	29,9
	Once	70	41,9	41,9	71,9
	Twice	36	21,6	21,6	93,4
	Three times	11	6,6	6,6	100,0
	Total	167	100,0	100,0	

APPENDIX B.2 : CURRENT SITUATION

B1 (Part 1 – frequency)

B1 . How many times do you frequency to visit or use the activities listed in the city of Derna in your daily life ?

Frequency (Urban Park)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	50	29,9	59,5	59,5
	Once a year	6	3,6	7,1	66,7
	Once a month	12	7,2	14,3	81,0
	Once a week	15	9,0	17,9	98,8
	Daily	1	,6	1,2	100,0
	Total	84	50,3	100,0	
Missing	System	83	49,7		
Total		167	100,0		

Frequency (District park)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	36	21,6	38,3	38,3
	Once a year	2	1,2	2,1	40,4
	Once a month	24	14,4	25,5	66,0
	Once a week	23	13,8	24,5	90,4
	Daily	9	5,4	9,6	100,0
	Total	94	56,3	100,0	
Missing	System	73	43,7		
Total		167	100,0		

Frequency (Playground areas)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	42	25,1	38,2	38,2
	Once a year	11	6,6	10,0	48,2
	Once a month	37	22,2	33,6	81,8
	Once a week	17	10,2	15,5	97,3
	Daily	3	1,8	2,7	100,0
	Total	110	65,9	100,0	
Missing	System	57	34,1		
Total		167	100,0		

Frequency (Sport areas)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	46	27,5	34,3	34,3
	Once a year	8	4,8	6,0	40,3
	Once a month	16	9,6	11,9	52,2
	Once a week	60	35,9	44,8	97,0
	Daily	4	2,4	3,0	100,0
	Total	134	80,2	100,0	
Missing	System	33	19,8		
Total		167	100,0		

Frequency (Walking along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	17	10,2	10,6	10,6
	Once a year	63	37,7	39,4	50,0
	Once a month	26	15,6	16,3	66,3
	Once a week	39	23,4	24,4	90,6
	Daily	15	9,0	9,4	100,0
	Total	160	95,8	100,0	
Missing	System	7	4,2		
Total		167	100,0		

Frequency (Outdoor dining along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	8	4,8	4,9	4,9
	Once a year	70	41,9	42,9	47,9
	Once a month	58	34,7	35,6	83,4
	Once a week	25	15,0	15,3	98,8
	Daily	2	1,2	1,2	100,0
	Total	163	97,6	100,0	
Missing	System	4	2,4		
Total		167	100,0		

Frequency (Outdoor gym along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	65	38,9	78,3	78,3
	Once a year	3	1,8	3,6	81,9
	Once a month	7	4,2	8,4	90,4
	Once a week	4	2,4	4,8	95,2
	Daily	4	2,4	4,8	100,0
	Total	83	49,7	100,0	
Missing	System	84	50,3		
Total		167	100,0		

Frequency (Swimming)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	17	10,2	10,8	10,8
	Once a year	112	67,1	71,3	82,2
	Once a month	13	7,8	8,3	90,4
	Once a week	13	7,8	8,3	98,7
	Daily	2	1,2	1,3	100,0
	Total	157	94,0	100,0	
Missing	System	10	6,0		
Total		167	100,0		

Frequency (Biking along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	70	41,9	83,3	83,3
	Once a year	4	2,4	4,8	88,1
	Once a month	5	3,0	6,0	94,0
	Once a week	4	2,4	4,8	98,8
	Daily	1	,6	1,2	100,0
	Total	84	50,3	100,0	
Missing	System	83	49,7		
Total		167	100,0		

Frequency (Visiting plants along the coast - landscape view terraces)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	58	34,7	72,5	72,5
	Once a year	5	3,0	6,3	78,8
	Once a month	7	4,2	8,8	87,5
	Once a week	4	2,4	5,0	92,5
	Daily	6	3,6	7,5	100,0
	Total	80	47,9	100,0	
Missing	System	87	52,1		
Total		167	100,0		

Frequency (Resting areas along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	30	18,0	35,3	35,3
	Once a year	18	10,8	21,2	56,5
	Once a month	23	13,8	27,1	83,5
	Once a week	13	7,8	15,3	98,8
	Daily	1	,6	1,2	100,0
	Total	85	50,9	100,0	
Missing	System	82	49,1		
Total		167	100,0		

Frequency (Event areas along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	57	34,1	68,7	68,7
	Once a year	9	5,4	10,8	79,5
	Once a month	11	6,6	13,3	92,8
	Once a week	5	3,0	6,0	98,8
	Daily	1	,6	1,2	100,0
	Total	83	49,7	100,0	
Missing	System	84	50,3		
Total		167	100,0		

Frequency (Fishing)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	66	39,5	75,9	75,9
	Once a year	11	6,6	12,6	88,5
	Once a month	4	2,4	4,6	93,1
	Once a week	5	3,0	5,7	98,9
	Daily	1	,6	1,1	100,0
	Total	87	52,1	100,0	
Missing	System	80	47,9		
Total		167	100,0		

Frequency (Boats strolling)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	73	43,7	83,9	83,9
	Once a year	9	5,4	10,3	94,3
	Once a month	3	1,8	3,4	97,7
	Once a week	1	,6	1,1	98,9
	Daily	1	,6	1,1	100,0
	Total	87	52,1	100,0	
Missing	System	80	47,9		
Total		167	100,0		

Frequency (Cafe/ Restaurant)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Never	9	5,4	6,7	6,7
	Once a year	23	13,8	17,2	23,9
	Once a month	52	31,1	38,8	62,7
	Once a week	37	22,2	27,6	90,3
	Daily	13	7,8	9,7	100,0
	Total	134	80,2	100,0	
Missing	System	33	19,8		
Total		167	100,0		

B1 (Part 2 – Activities)

In the event that the reason for your visit to (Urban park) is for more than one activityaccording to question B1 ?

(Urban park)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	4	2,4	10,8	10,8
	Outdoor dining (picnic)	5	3,0	13,5	24,3
	Walking	11	6,6	29,7	54,1
	Biking	1	,6	2,7	56,8
	Reading	4	2,4	10,8	67,6
	socialising	3	1,8	8,1	75,7
	leisure	5	3,0	13,5	89,2
	h Rehabilitation	4	2,4	10,8	100,0
	Total	37	22,2	100,0	
Missing	System	130	77,8		
Total		167	100,0		

In the event that the reason for your visit to (District park)is for more than one activityaccording to question B1 ?

(District park)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	2	1,2	3,1	3,1
	Outdoor dining (picnic)	11	6,6	17,2	20,3
	Walking	15	9,0	23,4	43,8
	Playground	18	10,8	28,1	71,9
	Reading	4	2,4	6,3	78,1
	socialising	3	1,8	4,7	82,8
	leisure	9	5,4	14,1	96,9
	h Rehabilitation	2	1,2	3,1	100,0
	Total	64	38,3	100,0	
Missing	System	103	61,7		
Total		167	100,0		

In the event that the reason for your visit to (Playground areas)is for more than one activityaccording to question B1 ?

(Playground areas)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	13	7,8	17,8	17,8
	Outdoor dining (picnic)	2	1,2	2,7	20,5
	Walking	10	6,0	13,7	34,2
	Biking	3	1,8	4,1	38,4
	Playground	38	22,8	52,1	90,4
	socialising	3	1,8	4,1	94,5
	leisure	1	,6	1,4	95,9
	h Rehabilitation	3	1,8	4,1	100,0
	Total	73	43,7	100,0	
Missing	System	94	56,3		
Total		167	100,0		

In the event that the reason for your visit to (Sport areas)is for more than one activityaccording to question B1 ?

(Sport areas)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	66	39,5	75,0	75,0
	Outdoor dining (picnic)	2	1,2	2,3	77,3
	Walking	7	4,2	8,0	85,2
	Biking	4	2,4	4,5	89,8
	Playground	3	1,8	3,4	93,2

	Reading	1	,6	1,1	94,3
	socialising	1	,6	1,1	95,5
	h Rehabilitation	4	2,4	4,5	100,0
	Total	88	52,7	100,0	
Missing	System	79	47,3		
	Total	167	100,0		

In the event that the reason for your visit to (Walking along the coast)is for more than one activityaccording to question B1 ?

(Walking along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Sport activity	10	6,0	7,5	7,5
	Outdoor dining (picnic)	3	1,8	2,3	9,8
	Walking	110	65,9	82,7	92,5
Valid	Biking	4	2,4	3,0	95,5
	Reading	1	,6	,8	96,2
	leisure	5	3,0	3,8	100,0
	Total	133	79,6	100,0	
Missing	System	34	20,4		
	Total	167	100,0		

In the event that the reason for your visit to (Outdoor dining along the coast)is for more than one activityaccording to question B1 ?

(Outdoor dining along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Outdoor dining (picnic)	111	66,5	82,2	82,2
	Walking	2	1,2	1,5	83,7
	Playground	2	1,2	1,5	85,2
Valid	socialising	9	5,4	6,7	91,9
	leisure	9	5,4	6,7	98,5
	h Rehabilitation	2	1,2	1,5	100,0
	Total	135	80,8	100,0	
Missing	System	32	19,2		
	Total	167	100,0		

In the event that the reason for your visit to (Outdoor gym along the coast)is for more than one activityaccording to question B1 ?

(Outdoor gym along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Sport activity	6	3,6	28,6	28,6
	Outdoor dining (picnic)	3	1,8	14,3	42,9
Valid	Walking	3	1,8	14,3	57,1
	Playground	2	1,2	9,5	66,7
	leisure	3	1,8	14,3	81,0

	h Rehabilitation	4	2,4	19,0	100,0
	Total	21	12,6	100,0	
Missing	System	146	87,4		
	Total	167	100,0		

In the event that the reason for your visit to (Swimming)is for more than one activityaccording to question B1 ?

(Swimming)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	55	32,9	70,5	70,5
	Outdoor dining (picnic)	4	2,4	5,1	75,6
	Walking	1	,6	1,3	76,9
	Biking	1	,6	1,3	78,2
	Reading	1	,6	1,3	79,5
	socialising	5	3,0	6,4	85,9
	leisure	6	3,6	7,7	93,6
	h Rehabilitation	5	3,0	6,4	100,0
	Total	78	46,7	100,0	
Missing	System	89	53,3		
	Total	167	100,0		

In the event that the reason for your visit (Biking along the coast)is for more than one activityaccording to question B1 ?

(Biking along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	6	3,6	26,1	26,1
	Outdoor dining (picnic)	1	,6	4,3	30,4
	Biking	6	3,6	26,1	56,5
	Playground	1	,6	4,3	60,9
	Reading	1	,6	4,3	65,2
	socialising	1	,6	4,3	69,6
	leisure	3	1,8	13,0	82,6
	h Rehabilitation	4	2,4	17,4	100,0
	Total	23	13,8	100,0	
Missing	System	144	86,2		
	Total	167	100,0		

In the event that the reason for your visit (Visiting plants along the coast - landscape view terraces)is for more than one activityaccording to question B1 ?

(Visiting plants along the coast - landscape view terraces)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	1	,6	3,7	3,7
	Outdoor dining (picnic)	3	1,8	11,1	14,8

	Reading	3	1,8	11,1	25,9
	socialising	6	3,6	22,2	48,1
	leisure	9	5,4	33,3	81,5
	h Rehabilitation	5	3,0	18,5	100,0
	Total	27	16,2	100,0	
Missing	System	140	83,8		
	Total	167	100,0		

In the event that the reason for your visit (Resting areas along the coast)is for more than one activityaccording to question B1 ?

(Resting areas along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Sport activity	2	1,2	5,0	5,0
	Outdoor dining (picnic)	14	8,4	35,0	40,0
	Walking	2	1,2	5,0	45,0
	Playground	1	,6	2,5	47,5
Valid	Reading	1	,6	2,5	50,0
	socialising	9	5,4	22,5	72,5
	leisure	8	4,8	20,0	92,5
	h Rehabilitation	3	1,8	7,5	100,0
	Total	40	24,0	100,0	
Missing	System	127	76,0		
	Total	167	100,0		

In the event that the reason for your visit (Event areas along the coast)is for more than one activityaccording to question B1 ?

(Event areas along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
	Sport activity	2	1,2	8,0	8,0
	Outdoor dining (picnic)	1	,6	4,0	12,0
	Walking	3	1,8	12,0	24,0
	Biking	3	1,8	12,0	36,0
Valid	Playground	2	1,2	8,0	44,0
	socialising	8	4,8	32,0	76,0
	leisure	2	1,2	8,0	84,0
	h Rehabilitation	4	2,4	16,0	100,0
	Total	25	15,0	100,0	
Missing	System	142	85,0		
	Total	167	100,0		

In the event that the reason for your visit (Fishing)is for more than one activityaccording to question B1 ?

(Fishing)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	4	2,4	19,0	19,0
	Outdoor dining (picnic)	1	,6	4,8	23,8
	Walking	2	1,2	9,5	33,3
	socialising	5	3,0	23,8	57,1
	leisure	4	2,4	19,0	76,2
	h Rehabilitation	5	3,0	23,8	100,0
	Total	21	12,6	100,0	
Missing	System	146	87,4		
Total		167	100,0		

In the event that the reason for your visit (Boats strolling)is for more than one activityaccording to question B1 ?

(Boats strolling)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Sport activity	2	1,2	10,0	10,0
	Outdoor dining (picnic)	2	1,2	10,0	20,0
	Walking	2	1,2	10,0	30,0
	Playground	1	,6	5,0	35,0
	socialising	4	2,4	20,0	55,0
	leisure	3	1,8	15,0	70,0
	h Rehabilitation	6	3,6	30,0	100,0
	Total	20	12,0	100,0	
Missing	System	147	88,0		
Total		167	100,0		

In the event that the reason for your visit (Cafe/ Restaurant)is for more than one activityaccording to question B1 ?

(Cafe/ Restaurant)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Outdoor dining (picnic)	66	39,5	67,3	67,3
	Walking	1	,6	1,0	68,4
	Reading	3	1,8	3,1	71,4
	socialising	20	12,0	20,4	91,8
	leisure	7	4,2	7,1	99,0
	h Rehabilitation	1	,6	1,0	100,0
	Total	98	58,7	100,0	
Missing	System	69	41,3		
Total		167	100,0		

B2. How do you access the activity areas in Derna city according to question B1 ?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Walking	9	5,4	5,4	5,4
	Private car	146	87,4	88,0	93,4
	Taxi	11	6,6	6,6	100,0
	Total	166	99,4	100,0	
Missing	System	1	,6		
Total		167	100,0		

B3

B3. What kind of requirement do you have from the perspective of public open spaces in Derna city ?

Requirements - Urban park

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seating and BBQ areas	31	18,6	25,6	25,6
	Arcade Games	21	12,6	17,4	43,0
	Playgrounds	14	8,4	11,6	54,5
	Sports areas and equipment	10	6,0	8,3	62,8
	Adjustment to special needs and elderly	11	6,6	9,1	71,9
	Cultural Activities	9	5,4	7,4	79,3
	Shaded walking and biking Lanes	15	9,0	12,4	91,7
	Green spaces and trees	9	5,4	7,4	99,2
	Toilets and service facilities	1	,6	,8	100,0
	Total	121	72,5	100,0	
Missing	System	46	27,5		
Total		167	100,0		

Requirements - District park

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Seating and BBQ areas	35	21,0	26,9	26,9
	Arcade Games	7	4,2	5,4	32,3
	Playgrounds	41	24,6	31,5	63,8
	Sports areas and equipment	20	12,0	15,4	79,2
	Adjustment to special needs and elderly	5	3,0	3,8	83,1
	Cultural Activities	2	1,2	1,5	84,6
	Shaded walking and biking Lanes	7	4,2	5,4	90,0
	Green spaces and trees	6	3,6	4,6	94,6
	Toilets and service facilities	7	4,2	5,4	100,0
	Total	130	77,8	100,0	
Missing	System	37	22,2		
Total		167	100,0		

Requirements - Playground areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Biking areas	3	1,8	4,6	4,6
	Attention to Quality	4	2,4	6,2	10,8
	Football courts	4	2,4	6,2	16,9
	All games areas	21	12,6	32,3	49,2
	Tennis courts	3	1,8	4,6	53,8
	Women sports areas	8	4,8	12,3	66,2
	Children activities	19	11,4	29,2	95,4
	Basketball courts	3	1,8	4,6	100,0
	Total	65	38,9	100,0	
Missing	System	102	61,1		
Total		167	100,0		

Requirements - Sport areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Inclusive sports club with pool	44	26,3	40,7	40,7
	Women's club	38	22,8	35,2	75,9
	Quality Infrastructure for sports	10	6,0	9,3	85,2
	Special needs club	10	6,0	9,3	94,4
	Horseback riding/ Water sports	6	3,6	5,6	100,0
	Total	108	64,7	100,0	
Missing	System	59	35,3		
Total		167	100,0		

Requirements - Walking along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Walking lanes	41	24,6	31,8	31,8
	Shades/ Trees	44	26,3	34,1	65,9
	Food canteens	19	11,4	14,7	80,6
	Seating areas	10	6,0	7,8	88,4
	Special needs and elderly lanes	10	6,0	7,8	96,1
	Play areas for children	5	3,0	3,9	100,0
	Total	129	77,2	100,0	
Missing	System	38	22,8		
Total		167	100,0		

Requirements - Outdoor gym along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Variety of sports	19	11,4	45,2	45,2
	Closed and private (e.g. for women)	9	5,4	21,4	66,7
	Areas for special needs and elderly	4	2,4	9,5	76,2
	Water sports	10	6,0	23,8	100,0
	Total	42	25,1	100,0	
Missing	System	125	74,9		
Total		167	100,0		

Requirements - Swimming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Family and women pools	61	36,5	53,5	53,5
	Changing facilities and toilets	25	15,0	21,9	75,4
	Clean and healthy pools	28	16,8	24,6	100,0
	Total	114	68,3	100,0	
Missing	System	53	31,7		
Total		167	100,0		

Requirements - Biking along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Designated biking lanes	35	21,0	66,0	66,0
	Bike renting	18	10,8	34,0	100,0
	Total	53	31,7	100,0	
Missing	System	114	68,3		
Total		167	100,0		

Requirements - Visiting plants along the coast/ landscape view terraces

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Trees and seating areas	10	6,0	23,8	23,8
	Green spaces/ grass	12	7,2	28,6	52,4
	Water features	12	7,2	28,6	81,0
	Ornamental plants and flowers	8	4,8	19,0	100,0
	Total	42	25,1	100,0	
Missing	System	125	74,9		
Total		167	100,0		

Requirements - Resting areas along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Parking spaces	15	9,0	26,8	26,8
	Seatings and canteens	23	13,8	41,1	67,9
	Shades	11	6,6	19,6	87,5
	Toilets and facilities	7	4,2	12,5	100,0
	Total	56	33,5	100,0	
Missing	System	111	66,5		
Total		167	100,0		

Requirements - Event areas along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Children events	8	4,8	13,3	13,3
	Sport events	11	6,6	18,3	31,7
	Variety of events	11	6,6	18,3	50,0
	Theatres and stages	24	14,4	40,0	90,0
	Service facilities (toilets/pray rooms)	6	3,6	10,0	100,0
	Total	60	35,9	100,0	
Missing	System	107	64,1		
Total		167	100,0		

Requirements - Fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fishing training and Tools sales	6	3,6	17,1	17,1
	Designated fishing zones	14	8,4	40,0	57,1
	Fishing docks	15	9,0	42,9	100,0
	Total	35	21,0	100,0	
Missing	System	132	79,0		
Total		167	100,0		

Requirements - Boats strolling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Marine trips	36	21,6	50,7	50,7
	Special docks	27	16,2	38,0	88,7
	Boat renting	8	4,8	11,3	100,0
	Total	71	42,5	100,0	
Missing	System	96	57,5		
Total		167	100,0		

Requirements - Cafe/ Restaurant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Family areas	59	35,3	50,9	50,9
	Marine views	41	24,6	35,3	86,2
	Quality and cleanness	16	9,6	13,8	100,0
	Total	116	69,5	100,0	
Missing	System	51	30,5		
Total		167	100,0		

B4

B4. Which season is the best for you to go to listed activity areas in the matrix ?

Best season for urban parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	86	51,5	56,6	56,6
	Summer	35	21,0	23,0	79,6
	Fall	3	1,8	2,0	81,6
	Winter	28	16,8	18,4	100,0
	Total	152	91,0	100,0	
Missing	System	15	9,0		
Total		167	100,0		

Best season for district parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	35	21,0	22,9	22,9
	Summer	111	66,5	72,5	95,4
	Fall	2	1,2	1,3	96,7
	Winter	5	3,0	3,3	100,0
	Total	153	91,6	100,0	
Missing	System	14	8,4		
Total		167	100,0		

Best season for playground areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	19	11,4	16,8	16,8
	Summer	85	50,9	75,2	92,0
	Fall	5	3,0	4,4	96,5
	Winter	4	2,4	3,5	100,0
	Total	113	67,7	100,0	
Missing	System	54	32,3		
Total		167	100,0		

Best season for sport areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	29	17,4	20,6	20,6
	Summer	43	25,7	30,5	51,1
	Fall	2	1,2	1,4	52,5
	Winter	67	40,1	47,5	100,0
	Total	141	84,4	100,0	
Missing	System	26	15,6		
Total		167	100,0		

Best season for walking along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	38	22,8	23,9	23,9
	Summer	116	69,5	73,0	96,9
	Fall	1	,6	,6	97,5
	Winter	4	2,4	2,5	100,0
	Total	159	95,2	100,0	
Missing	System	8	4,8		
Total		167	100,0		

Best season for outdoor dining along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	37	22,2	23,1	23,1
	Summer	118	70,7	73,8	96,9
	Fall	4	2,4	2,5	99,4
	Winter	1	,6	,6	100,0
	Total	160	95,8	100,0	
Missing	System	7	4,2		
Total		167	100,0		

Best season for outdoor gym along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	51	30,5	49,5	49,5
	Summer	39	23,4	37,9	87,4
	Fall	5	3,0	4,9	92,2
	Winter	8	4,8	7,8	100,0
	Total	103	61,7	100,0	
Missing	System	64	38,3		
Total		167	100,0		

Best season for swimming

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	1	,6	,7	,7
	Summer	149	89,2	98,0	98,7
	Fall	1	,6	,7	99,3
	Winter	1	,6	,7	100,0
	Total	152	91,0	100,0	
Missing	System	15	9,0		
Total		167	100,0		

Best season for biking along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	54	32,3	55,1	55,1
	Summer	29	17,4	29,6	84,7
	Fall	11	6,6	11,2	95,9
	Winter	4	2,4	4,1	100,0
	Total	98	58,7	100,0	
Missing	System	69	41,3		
Total		167	100,0		

Best season for visiting plants along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	110	65,9	93,2	93,2
	Summer	5	3,0	4,2	97,5
	Winter	3	1,8	2,5	100,0
	Total	118	70,7	100,0	
Missing	System	49	29,3		
Total		167	100,0		

Best season for resting areas along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	27	16,2	20,0	20,0
	Summer	96	57,5	71,1	91,1
	Fall	4	2,4	3,0	94,1
	Winter	8	4,8	5,9	100,0
	Total	135	80,8	100,0	
Missing	System	32	19,2		
Total		167	100,0		

Best season for event areas along the coast

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	71	42,5	55,9	55,9
	Summer	48	28,7	37,8	93,7
	Fall	1	,6	,8	94,5
	Winter	7	4,2	5,5	100,0
	Total	127	76,0	100,0	
Missing	System	40	24,0		
Total		167	100,0		

Best season for fishing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	5	3,0	6,8	6,8
	Summer	54	32,3	74,0	80,8
	Fall	7	4,2	9,6	90,4
	Winter	7	4,2	9,6	100,0
	Total	73	43,7	100,0	
Missing	System	94	56,3		
Total		167	100,0		

Best season for boats strolling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	3	1,8	2,5	2,5
	Summer	114	68,3	96,6	99,2
	Fall	1	,6	,8	100,0
	Total	118	70,7	100,0	
Missing	System	49	29,3		
Total		167	100,0		

Best season for cafes and restaurants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Spring	12	7,2	8,1	8,1
	Summer	66	39,5	44,3	52,3
	Fall	3	1,8	2,0	54,4
	Winter	68	40,7	45,6	100,0
	Total	149	89,2	100,0	
Missing	System	18	10,8		
Total		167	100,0		

B5. Do you want a specific activity to be held in the winter ? What are those activities?

Preferred activities in winter for urban parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ Children activities	26	15,6	18,4	18,4
	Walking/ running	54	32,3	38,3	56,7
	Playing sports	14	8,4	9,9	66,7
	Recreational activities/ Resting	20	12,0	14,2	80,9
	Educational activities/ Reading	26	15,6	18,4	99,3
	Water activities	1	,6	,7	100,0
	Total	141	84,4	100,0	
Missing	System	26	15,6		
Total		167	100,0		

Preferred activities in winter for district parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ children activities	58	34,7	49,6	49,6
	Walking/ running	33	19,8	28,2	77,8
	Playing sports	11	6,6	9,4	87,2
	Recreational activities/ Resting	9	5,4	7,7	94,9
	Educational activities/ Reading	6	3,6	5,1	100,0
	Total	117	70,1	100,0	
Missing	System	50	29,9		
Total		167	100,0		

Preferred activities in winter for playground areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ Children activities	20	12,0	30,3	30,3
	Walking/ running	18	10,8	27,3	57,6
	Playing sports	25	15,0	37,9	95,5
	Recreational activities	3	1,8	4,5	100,0
	Total	66	39,5	100,0	
Missing	System	101	60,5		
Total		167	100,0		

Preferred activities in winter for sports areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ Children activities	9	5,4	8,9	8,9
	Walking/ running	9	5,4	8,9	17,8
	Ball sports	70	41,9	69,3	87,1
	Water (closed and private spaces)	13	7,8	12,9	100,0
	Total	101	60,5	100,0	
Missing	System	66	39,5		

Total		167	100,0		

Preferred activities in winter for event areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social and children activities	17	10,2	45,9	45,9
	Cultural activities	13	7,8	35,1	81,1
	Educational activities	7	4,2	18,9	100,0
	Total	37	22,2	100,0	
Missing	System	130	77,8		
Total		167	100,0		

Preferred activities in winter for cafes and restaurants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing	39	23,4	34,5	34,5
	Dining experiences	55	32,9	48,7	83,2
	Entertainment	19	11,4	16,8	100,0
	Total	113	67,7	100,0	
Missing	System	54	32,3		
Total		167	100,0		

B6

B6. When do you feel more safe in this activities ?

Preferred Time (Urban parks)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	5	3,0	3,6	3,6
	Morning (8-11am)	51	30,5	37,0	40,6
	Noon (12-2pm)	5	3,0	3,6	44,2
	Afternoon (3-5pm)	55	32,9	39,9	84,1
	Evening (6-10pm)	22	13,2	15,9	100,0
	Total	138	82,6	100,0	
Missing	System	29	17,4		
Total		167	100,0		

Preferred Time (District park)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	3	1,8	2,2	2,2
	Morning (8-11am)	16	9,6	11,9	14,1
	Noon (12-2pm)	4	2,4	3,0	17,0
	Afternoon (3-5pm)	31	18,6	23,0	40,0
	Evening (6-10pm)	78	46,7	57,8	97,8
	Night (11pm-4am)	3	1,8	2,2	100,0
	Total	135	80,8	100,0	
Missing	System	32	19,2		
Total		167	100,0		

Preferred Time (Playground areas)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	4	2,4	4,2	4,2
	Morning (8-11am)	19	11,4	19,8	24,0
	Noon (12-2pm)	3	1,8	3,1	27,1
	Afternoon (3-5pm)	31	18,6	32,3	59,4
	Evening (6-10pm)	39	23,4	40,6	100,0
	Total	96	57,5	100,0	
Missing	System	71	42,5		
Total		167	100,0		

Preferred Time (Sport areas)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	9	5,4	7,3	7,3
	Morning (8-11am)	59	35,3	47,6	54,8
	Noon (12-2pm)	2	1,2	1,6	56,5
	Afternoon (3-5pm)	20	12,0	16,1	72,6
	Evening (6-10pm)	33	19,8	26,6	99,2
	Night (11pm-4am)	1	,6	,8	100,0
	Total	124	74,3	100,0	
Missing	System	43	25,7		
Total		167	100,0		

Preferred Time (Walking along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	17	10,2	11,7	11,7
	Morning (8-11am)	25	15,0	17,2	29,0
	Noon (12-2pm)	3	1,8	2,1	31,0
	Afternoon (3-5pm)	12	7,2	8,3	39,3
	Evening (6-10pm)	87	52,1	60,0	99,3
	Night (11pm-4am)	1	,6	,7	100,0
	Total	145	86,8	100,0	
Missing	System	22	13,2		
Total		167	100,0		

Preferred Time (Outdoor dining along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Morning (8-11am)	4	2,4	2,7	2,7
	Noon (12-2pm)	18	10,8	12,2	15,0
	Afternoon (3-5pm)	26	15,6	17,7	32,7
	Evening (6-10pm)	95	56,9	64,6	97,3
	Night (11pm-4am)	4	2,4	2,7	100,0
	Total	147	88,0	100,0	
Missing	System	20	12,0		
Total		167	100,0		

Preferred Time (Outdoor gym along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	5	3,0	6,2	6,2
	Morning (8-11am)	36	21,6	44,4	50,6
	Noon (12-2pm)	2	1,2	2,5	53,1
	Afternoon (3-5pm)	17	10,2	21,0	74,1
	Evening (6-10pm)	21	12,6	25,9	100,0
	Total	81	48,5	100,0	
Missing	System	86	51,5		
Total		167	100,0		

Preferred Time (Swimming)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	2	1,2	1,5	1,5
	Morning (8-11am)	23	13,8	17,7	19,2
	Noon (12-2pm)	14	8,4	10,8	30,0
	Afternoon (3-5pm)	74	44,3	56,9	86,9
	Evening (6-10pm)	17	10,2	13,1	100,0
	Total	130	77,8	100,0	
Missing	System	37	22,2		
Total		167	100,0		

Preferred Time (Biking along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	4	2,4	5,0	5,0
	Morning (8-11am)	22	13,2	27,5	32,5
	Noon (12-2pm)	2	1,2	2,5	35,0
	Afternoon (3-5pm)	15	9,0	18,8	53,8
	Evening (6-10pm)	36	21,6	45,0	98,8
	Night (11pm-4am)	1	,6	1,3	100,0
	Total	80	47,9	100,0	
Missing	System	87	52,1		
Total		167	100,0		

Preferred Time (Visiting plants along the coast/ landscape view terraces)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	2	1,2	2,2	2,2
	Morning (8-11am)	53	31,7	59,6	61,8
	Noon (12-2pm)	5	3,0	5,6	67,4
	Afternoon (3-5pm)	19	11,4	21,3	88,8
	Evening (6-10pm)	10	6,0	11,2	100,0
	Total	89	53,3	100,0	
Missing	System	78	46,7		
Total		167	100,0		

Preferred Time (Resting areas along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	1	,6	1,0	1,0
	Morning (8-11am)	10	6,0	10,2	11,2
	Noon (12-2pm)	4	2,4	4,1	15,3
	Afternoon (3-5pm)	19	11,4	19,4	34,7
	Evening (6-10pm)	60	35,9	61,2	95,9
	Night (11pm-4am)	4	2,4	4,1	100,0
	Total	98	58,7	100,0	
Missing	System	69	41,3		
Total		167	100,0		

Preferred Time (Event areas along the coast)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	2	1,2	2,3	2,3
	Morning (8-11am)	7	4,2	8,1	10,5
	Noon (12-2pm)	4	2,4	4,7	15,1
	Afternoon (3-5pm)	33	19,8	38,4	53,5
	Evening (6-10pm)	38	22,8	44,2	97,7
	Night (11pm-4am)	2	1,2	2,3	100,0
	Total	86	51,5	100,0	
Missing	System	81	48,5		
Total		167	100,0		

Preferred Time (Fishing)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	14	8,4	25,9	25,9
	Morning (8-11am)	12	7,2	22,2	48,1
	Noon (12-2pm)	5	3,0	9,3	57,4
	Afternoon (3-5pm)	16	9,6	29,6	87,0
	Evening (6-10pm)	3	1,8	5,6	92,6
	Night (11pm-4am)	4	2,4	7,4	100,0
	Total	54	32,3	100,0	
Missing	System	113	67,7		
Total		167	100,0		

Preferred Time (Boats strolling)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	3	1,8	3,0	3,0
	Morning (8-11am)	20	12,0	20,2	23,2
	Noon (12-2pm)	4	2,4	4,0	27,3
	Afternoon (3-5pm)	70	41,9	70,7	98,0
	Evening (6-10pm)	2	1,2	2,0	100,0
	Total	99	59,3	100,0	
Missing	System	68	40,7		
Total		167	100,0		

Preferred Time (Cafes / Restaurants)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Early morning (5-7am)	1	,6	,7	,7
	Morning (8-11am)	3	1,8	2,2	2,9
	Noon (12-2pm)	17	10,2	12,4	15,3
	Afternoon (3-5pm)	47	28,1	34,3	49,6
	Evening (6-10pm)	59	35,3	43,1	92,7
	Night (11pm-4am)	10	6,0	7,3	100,0
	Total	137	82,0	100,0	
Missing	System	30	18,0		
Total		167	100,0		

C7

Preferred activities in summer for urban parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ Children activities	23	13,8	20,0	20,0
	Walking/ running	29	17,4	25,2	45,2
	Playing sports	7	4,2	6,1	51,3
	Recreational activities/ Resting	28	16,8	24,3	75,7
	Educational activities/ Reading	11	6,6	9,6	85,2
	Water activities	17	10,2	14,8	100,0
	Total	115	68,9	100,0	
Missing	System	52	31,1		
Total		167	100,0		

Preferred activities in summer for district parks

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ children activities	59	35,3	48,8	48,8
	Walking/ running	19	11,4	15,7	64,5
	Playing sports	8	4,8	6,6	71,1
	Recreational activities/ Resting	29	17,4	24,0	95,0
	Educational activities/ Reading	4	2,4	3,3	98,3
	Water activities	2	1,2	1,7	100,0
	Total	121	72,5	100,0	
Missing	System	46	27,5		
Total		167	100,0		

Preferred activities in summer for playground areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ Children activities	24	14,4	35,8	35,8
	Walking/ running	6	3,6	9,0	44,8
	Playing sports	28	16,8	41,8	86,6
	Recreational activities	9	5,4	13,4	100,0
	Total	67	40,1	100,0	
Missing	System	100	59,9		
Total		167	100,0		

Preferred activities in summer for sports areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing/ Children activities	19	11,4	18,4	18,4
	Walking/ running	35	21,0	34,0	52,4
	Ball sports	40	24,0	38,8	91,3
	Water (closed and private spaces)	9	5,4	8,7	100,0
	Total	103	61,7	100,0	
Missing	System	64	38,3		
Total		167	100,0		

Preferred activities in summer for event areas

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Social and children activities	15	9,0	41,7	41,7
	Cultural activities	15	9,0	41,7	83,3
	Educational activities	6	3,6	16,7	100,0
	Total	36	21,6	100,0	
Missing	System	131	78,4		
Total		167	100,0		

Preferred activities in summer for cafes and restaurants

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Socializing	40	24,0	37,4	37,4
	Dining experiences	46	27,5	43,0	80,4
	Entertainment	21	12,6	19,6	100,0
	Total	107	64,1	100,0	
Missing	System	60	35,9		
Total		167	100,0		

B7

B7.What elements could be added to the public open spaces in Derna city to increase accessibility ?

$Q7_Accessibility Frequencies

		Responses		Percent of Cases
		N	Percent	
Q7_Accessibility[a]	Accessibility - Good lighting	77	14,0%	48,1%
	Accessibility - Tree and plantation	150	27,3%	93,8%
	Accessibility - Security/ Guard	112	20,4%	70,0%
	Accessibility - Sitting equipment	149	27,1%	93,1%
	Accessibility - Boundary elements	62	11,3%	38,8%
	Total	550	100,0%	343,8%

a. Dichotomy group tabulated at value 1.

APPENDIX B.3 : COAST USAGE

C1

C1 . According to you, does the waterfront in Derna need to be developed? What are the problems experienced by the waterfront in Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	167	100,0	100,0	100,0

C2

C2 . Does the sea negatively affect the waterfront of the city of Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	108	64,7	64,7	64,7
	No	59	35,3	35,3	100,0
	Total	167	100,0	100,0	

How does the sea negatively affect the waterfront of the city of Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No negative effect	49	29,3	29,5	29,5
	High humidity	102	61,1	61,4	91,0
	Dirt	1	,6	,6	91,6
	Wind	14	8,4	8,4	100,0
	Total	166	99,4	100,0	
Missing	System	1	,6		
Total		167	100,0		

C3

C3 . Do residents wish to establish projects on the waterfront of the city of Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	163	97,6	98,8	98,8
	No	2	1,2	1,2	100,0
	Total	165	98,8	100,0	
Missing	System	2	1,2		
Total		167	100,0		

what is the nature of desired waterfront projects?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Entertainment projects	159	95,2	96,4	96,4
	Cultural projects	6	3,6	3,6	100,0
	Total	165	98,8	100,0	
Missing	System	2	1,2		
Total		167	100,0		

C4

C4 . Which frequency does people visit the waterfront of Derna city?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	At weekend	99	59,3	59,6	59,6
	Monthly	23	13,8	13,9	73,5
	Annually	4	2,4	2,4	75,9
	In summer only	40	24,0	24,1	100,0
	Total	166	99,4	100,0	
Missing	System	1	,6		
Total		167	100,0		

C5

C5 . Are there enough places to sit?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	4	2,4	2,4	2,4
	No	160	95,8	97,6	100,0
	Total	164	98,2	100,0	
Missing	System	3	1,8		
Total		167	100,0		

Are seats conveniently located?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	7,8	7,9	7,9
	No	152	91,0	92,1	100,0
	Total	165	98,8	100,0	
Missing	System	2	1,2		
Total		167	100,0		

Do people have is have a choice of places to sit , either in the sun or shade?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	21	12,6	12,8	12,8
	No	143	85,6	87,2	100,0
	Total	164	98,2	100,0	
Missing	System	3	1,8		
Total		167	100,0		

Are there suitable paths for walking?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	7,2	7,3	7,3
	No	153	91,6	92,7	100,0
	Total	165	98,8	100,0	
Missing	System	2	1,2		
Total		167	100,0		

Are there places for children to play?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	5	3,0	3,0	3,0
	No	159	95,2	97,0	100,0
	Total	164	98,2	100,0	
Missing	System	3	1,8		
Total		167	100,0		

Are there places suitable for swimming?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	26,3	26,7	26,7
	No	121	72,5	73,3	100,0
	Total	165	98,8	100,0	
Missing	System	2	1,2		
Total		167	100,0		

Is the waterfront suitable for people with disabilities?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	3	1,8	1,8	1,8
	No	162	97,0	98,2	100,0
	Total	165	98,8	100,0	
Missing	System	2	1,2		
Total		167	100,0		

C6

C6. What are the activities that you would like to continue throughout the year on the waterfront of Derna?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Entertainment	40	24,0	24,5	24,5
	Cultural	21	12,6	12,9	37,4
	Social	9	5,4	5,5	42,9
	Sports	93	55,7	57,1	100,0
	Total	163	97,6	100,0	
Missing	System	4	2,4		
Total		167	100,0		

APPENDIX C : Cross-tabulation

Cross-tabulation for frequency of public facility usage by age .

			Age Category.						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Never	**Count**	**1**	**6**	**18**	**11**	**6**	**7**	**49**
		%	**100,0%**	**66,7%**	**60,0%**	**47,8%**	**85,7%**	**63,6%**	**60,5%**
Frequency (Urban Park)	Once a year	Count	0	0	3	1	0	2	6
		%	0,0%	0,0%	10,0%	4,3%	0,0%	18,2%	7,4%
	Once a month	Count	0	0	3	6	0	2	11
		%	0,0%	0,0%	10,0%	26,1%	0,0%	18,2%	13,6%
	Once a week	Count	0	2	6	5	1	0	14
		%	0,0%	22,2%	20,0%	21,7%	14,3%	0,0%	17,3%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	11,1%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	9	30	23	7	11	81
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Never	**Count**	**1**	**4**	**14**	**10**	**2**	**4**	**35**
		%	**100,0%**	**36,4%**	**41,2%**	**35,7%**	**28,6%**	**36,4%**	**38,0%**
Frequency (District park)	Once a year	Count	0	0	0	1	0	1	2
		%	0,0%	0,0%	0,0%	3,6%	0,0%	9,1%	2,2%
	Once a month	Count	0	2	9	8	3	1	23
		%	0,0%	18,2%	26,5%	28,6%	42,9%	9,1%	25,0%
	Once a week	Count	0	3	7	7	2	4	23
		%	0,0%	27,3%	20,6%	25,0%	28,6%	36,4%	25,0%
	Daily	Count	0	2	4	2	0	1	9
		%	0,0%	18,2%	11,8%	7,1%	0,0%	9,1%	9,8%
Total		Count	1	11	34	28	7	11	92
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Never	Count	0	5	17	9	4	7	42
		%	0,0%	27,8%	44,7%	28,1%	57,1%	63,6%	38,9%
	Once a year	Count	1	1	1	3	1	2	9
		%	50,0%	5,6%	2,6%	9,4%	14,3%	18,2%	8,3%
Frequency (Playground areas)	Once a month	Count	1	9	12	13	2	0	37
		%	50,0%	50,0%	31,6%	40,6%	28,6%	0,0%	34,3%
	Once a week	Count	0	2	8	5	0	2	17
		%	0,0%	11,1%	21,1%	15,6%	0,0%	18,2%	15,7%
	Daily	Count	0	1	0	2	0	0	3
		%	0,0%	5,6%	0,0%	6,2%	0,0%	0,0%	2,8%
Total		Count	2	18	38	32	7	11	108
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
	Never	Count	0	5	19	10	4	7	45
		%	0,0%	25,0%	43,2%	23,8%	30,8%	58,3%	34,1%
Frequency (Sport areas)	Once a year	Count	1	1	1	4	0	1	8
		%	100,0%	5,0%	2,3%	9,5%	0,0%	8,3%	6,1%
	Once a month	Count	0	2	5	6	1	1	15
		%	0,0%	10,0%	11,4%	14,3%	7,7%	8,3%	11,4%
	Once a week	**Count**	**0**	**11**	**19**	**20**	**7**	**3**	**60**
		%	**0,0%**	**55,0%**	**43,2%**	**47,6%**	**53,8%**	**25,0%**	**45,5%**
	Daily	Count	0	1	0	2	1	0	4

			Age Category.						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Total		%	0,0%	5,0%	0,0%	4,8%	7,7%	0,0%	3,0%
		Count	1	20	44	42	13	12	132
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Walking along the coast)	Never	Count	0	1	8	4	1	3	17
		%	0,0%	4,5%	16,0%	7,7%	6,7%	18,8%	10,8%
	Once a year	Count	3	11	18	20	5	6	63
		%	100,0%	50,0%	36,0%	38,5%	33,3%	37,5%	39,9%
	Once a month	Count	0	3	9	11	3	0	26
		%	0,0%	13,6%	18,0%	21,2%	20,0%	0,0%	16,5%
	Once a week	Count	0	4	12	13	4	4	37
		%	0,0%	18,2%	24,0%	25,0%	26,7%	25,0%	23,4%
	Daily	Count	0	3	3	4	2	3	15
		%	0,0%	13,6%	6,0%	7,7%	13,3%	18,8%	9,5%
Total		Count	3	22	50	52	15	16	158
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Outdoor dining along the coast)	Never	Count	1	0	1	1	2	3	8
		%	33,3%	0,0%	2,0%	1,9%	13,3%	18,8%	5,0%
	Once a year	Count	2	12	23	22	5	6	70
		%	66,7%	52,2%	46,0%	40,7%	33,3%	37,5%	43,5%
	Once a month	Count	0	7	18	22	8	2	57
		%	0,0%	30,4%	36,0%	40,7%	53,3%	12,5%	35,4%
	Once a week	Count	0	3	8	8	0	5	24
		%	0,0%	13,0%	16,0%	14,8%	0,0%	31,2%	14,9%
	Daily	Count	0	1	0	1	0	0	2
		%	0,0%	4,3%	0,0%	1,9%	0,0%	0,0%	1,2%
Total		Count	3	23	50	54	15	16	161
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Outdoor gym along the coast)	Never	Count	1	8	26	17	6	7	65
		%	100,0%	80,0%	86,7%	77,3%	85,7%	63,6%	80,2%
	Once a year	Count	0	0	0	1	0	2	3
		%	0,0%	0,0%	0,0%	4,5%	0,0%	18,2%	3,7%
	Once a month	Count	0	1	1	2	1	0	5
		%	0,0%	10,0%	3,3%	9,1%	14,3%	0,0%	6,2%
	Once a week	Count	0	0	2	1	0	1	4
		%	0,0%	0,0%	6,7%	4,5%	0,0%	9,1%	4,9%
	Daily	Count	0	1	1	1	0	1	4
		%	0,0%	10,0%	3,3%	4,5%	0,0%	9,1%	4,9%
Total		Count	1	10	30	22	7	11	81
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Swimming)	Never	Count	1	0	7	3	2	4	17
		%	50,0%	0,0%	14,6%	5,7%	13,3%	26,7%	11,0%
	Once a year	Count	1	17	33	40	12	8	111
		%	50,0%	77,3%	68,8%	75,5%	80,0%	53,3%	71,6%
	Once a month	Count	0	2	5	4	1	1	13
		%	0,0%	9,1%	10,4%	7,5%	6,7%	6,7%	8,4%
	Once a week	Count	0	1	3	6	0	2	12
		%	0,0%	4,5%	6,2%	11,3%	0,0%	13,3%	7,7%
	Daily	Count	0	2	0	0	0	0	2
		%	0,0%	9,1%	0,0%	0,0%	0,0%	0,0%	1,3%
Total		Count	2	22	48	53	15	15	155

			Age Category.						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Biking along the coast)	Never	Count	1	9	28	18	6	7	69
		%	100,0%	90,0%	93,3%	78,3%	85,7%	63,6%	84,1%
	Once a year	Count	0	0	0	3	0	1	4
		%	0,0%	0,0%	0,0%	13,0%	0,0%	9,1%	4,9%
	Once a month	Count	0	0	2	2	0	1	5
		%	0,0%	0,0%	6,7%	8,7%	0,0%	9,1%	6,1%
	Once a week	Count	0	0	0	0	1	2	3
		%	0,0%	0,0%	0,0%	0,0%	14,3%	18,2%	3,7%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	10,0%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	10	30	23	7	11	82
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Visiting plants along the coast - landscape view terraces)	Never	Count	1	7	23	13	6	7	57
		%	100,0%	77,8%	79,3%	61,9%	85,7%	63,6%	73,1%
	Once a year	Count	0	0	1	3	0	1	5
		%	0,0%	0,0%	3,4%	14,3%	0,0%	9,1%	6,4%
	Once a month	Count	0	1	2	1	1	1	6
		%	0,0%	11,1%	6,9%	4,8%	14,3%	9,1%	7,7%
	Once a week	Count	0	0	2	2	0	0	4
		%	0,0%	0,0%	6,9%	9,5%	0,0%	0,0%	5,1%
	Daily	Count	0	1	1	2	0	2	6
		%	0,0%	11,1%	3,4%	9,5%	0,0%	18,2%	7,7%
Total		Count	1	9	29	21	7	11	78
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Resting areas along the coast)	Never	Count	1	6	12	2	4	5	30
		%	100,0%	66,7%	37,5%	8,7%	57,1%	45,5%	36,1%
	Once a year	Count	0	1	9	7	1	0	18
		%	0,0%	11,1%	28,1%	30,4%	14,3%	0,0%	21,7%
	Once a month	Count	0	0	8	8	2	3	21
		%	0,0%	0,0%	25,0%	34,8%	28,6%	27,3%	25,3%
	Once a week	Count	0	1	3	6	0	3	13
		%	0,0%	11,1%	9,4%	26,1%	0,0%	27,3%	15,7%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	11,1%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	9	32	23	7	11	83
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Event areas along the coast)	Never	Count	1	8	25	9	6	8	57
		%	100,0%	80,0%	83,3%	40,9%	85,7%	72,7%	70,4%
	Once a year	Count	0	0	2	6	0	0	8
		%	0,0%	0,0%	6,7%	27,3%	0,0%	0,0%	9,9%
	Once a month	Count	0	1	2	5	1	1	10
		%	0,0%	10,0%	6,7%	22,7%	14,3%	9,1%	12,3%
	Once a week	Count	0	0	1	2	0	2	5
		%	0,0%	0,0%	3,3%	9,1%	0,0%	18,2%	6,2%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	10,0%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	10	30	22	7	11	81
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Fishing)	Never	Count	1	6	26	18	5	9	65
		%	100,0%	54,5%	86,7%	75,0%	62,5%	81,8%	76,5%

			Age Category.						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Once a year	Count	0	2	3	3	1	2	11
		%	0,0%	18,2%	10,0%	12,5%	12,5%	18,2%	12,9%
	Once a month	Count	0	0	1	1	2	0	4
		%	0,0%	0,0%	3,3%	4,2%	25,0%	0,0%	4,7%
	Once a week	Count	0	2	0	2	0	0	4
		%	0,0%	18,2%	0,0%	8,3%	0,0%	0,0%	4,7%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	9,1%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	11	30	24	8	11	85
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Boats strolling)	Never	Count	1	8	29	20	5	9	72
		%	100,0%	66,7%	96,7%	87,0%	62,5%	81,8%	84,7%
	Once a year	Count	0	2	1	2	1	2	8
		%	0,0%	16,7%	3,3%	8,7%	12,5%	18,2%	9,4%
	Once a month	Count	0	0	0	1	2	0	3
		%	0,0%	0,0%	0,0%	4,3%	25,0%	0,0%	3,5%
	Once a week	Count	0	1	0	0	0	0	1
		%	0,0%	8,3%	0,0%	0,0%	0,0%	0,0%	1,2%
	Daily	Count	0	1	0	0	0	0	1
		%	0,0%	8,3%	0,0%	0,0%	0,0%	0,0%	1,2%
Total		Count	1	12	30	23	8	11	85
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Frequency (Cafe/ Restaurant)	Never	Count	0	0	3	1	2	3	9
		%	0,0%	0,0%	7,3%	2,4%	13,3%	23,1%	6,8%
	Once a year	Count	1	2	11	4	2	3	23
		%	100,0%	9,5%	26,8%	9,8%	13,3%	23,1%	17,4%
	Once a month	Count	0	8	14	18	8	3	51
		%	0,0%	38,1%	34,1%	43,9%	53,3%	23,1%	38,6%
	Once a week	Count	0	8	10	12	3	3	36
		%	0,0%	38,1%	24,4%	29,3%	20,0%	23,1%	27,3%
	Daily	Count	0	3	3	6	0	1	13
		%	0,0%	14,3%	7,3%	14,6%	0,0%	7,7%	9,8%
Total		Count	1	21	41	41	15	13	132
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Table below show the primary activities performed by each age category in each of the public facilities.

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
(Urban park)	Sport activity	Count	0	0	1	1	0	1	3
		%	0,0%	0,0%	6,2%	11,1%	0,0%	20,0%	8,6%
	Outdoor dining (picnic)	Count	0	1	2	1	0	1	5
		%	0,0%	50,0%	12,5%	11,1%	0,0%	20,0%	14,3%
	Walking	Count	0	0	6	1	1	2	10
		%	0,0%	0,0%	37,5%	11,1%	50,0%	40,0%	28,6%
	Biking	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	6,2%	0,0%	0,0%	0,0%	2,9%
	Reading	Count	0	0	1	3	0	0	4
		%	0,0%	0,0%	6,2%	33,3%	0,0%	0,0%	11,4%
	socialising	Count	1	0	1	1	0	0	3
		%	100,0%	0,0%	6,2%	11,1%	0,0%	0,0%	8,6%
	leisure	Count	0	0	2	2	0	1	5
		%	0,0%	0,0%	12,5%	22,2%	0,0%	20,0%	14,3%
	Rehabilitation	Count	0	1	2	0	1	0	4
		%	0,0%	50,0%	12,5%	0,0%	50,0%	0,0%	11,4%
	Total	Count	1	2	16	9	2	5	35
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(District park)	Sport activity	Count	0	1	0	0	0	1	2
		%	0,0%	16,7%	0,0%	0,0%	0,0%	16,7%	3,2%
	Outdoor dining (picnic)	Count	0	0	3	5	0	3	11
		%	0,0%	0,0%	12,5%	23,8%	0,0%	50,0%	17,7%
	Walking	Count	0	1	6	4	3	0	14
		%	0,0%	16,7%	25,0%	19,0%	60,0%	0,0%	22,6%
	Playground	Count	0	2	10	6	0	0	18
		%	0,0%	33,3%	41,7%	28,6%	0,0%	0,0%	29,0%
	Reading	Count	0	0	1	1	1	1	4
		%	0,0%	0,0%	4,2%	4,8%	20,0%	16,7%	6,5%
	socialising	Count	0	0	0	2	0	0	2
		%	0,0%	0,0%	0,0%	9,5%	0,0%	0,0%	3,2%
	leisure	Count	0	2	3	2	1	1	9
		%	0,0%	33,3%	12,5%	9,5%	20,0%	16,7%	14,5%
	Rehabilitation	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	4,2%	4,8%	0,0%	0,0%	3,2%
	Total	Count	0	6	24	21	5	6	62
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Playground areas)	Sport activity	Count	0	0	4	8	0	0	12
		%	0,0%	0,0%	14,8%	36,4%	0,0%	0,0%	17,1%
	Outdoor dining (picnic)	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	3,7%	4,5%	0,0%	0,0%	2,9%
	Walking	Count	0	2	3	1	0	2	8
		%	0,0%	15,4%	11,1%	4,5%	0,0%	50,0%	11,4%
	Biking	Count	0	0	1	1	0	1	3
		%	0,0%	0,0%	3,7%	4,5%	0,0%	25,0%	4,3%
	Playground	Count	1	10	17	8	1	1	38
		%	100,0%	76,9%	63,0%	36,4%	33,3%	25,0%	54,3%
	socialising	Count	0	0	0	3	0	0	3
		%	0,0%	0,0%	0,0%	13,6%	0,0%	0,0%	4,3%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	leisure	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	33,3%	0,0%	1,4%
	Rehabilitation	Count	0	1	1	0	1	0	3
		%	0,0%	7,7%	3,7%	0,0%	33,3%	0,0%	4,3%
	Total	Count	1	13	27	22	3	4	70
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Sport areas)	Sport activity	Count	0	12	19	26	7	2	66
		%	0,0%	85,7%	65,5%	83,9%	77,8%	50,0%	75,9%
	Outdoor dining (picnic)	Count	0	0	2	0	0	0	2
		%	0,0%	0,0%	6,9%	0,0%	0,0%	0,0%	2,3%
	Walking	Count	0	0	3	3	0	1	7
		%	0,0%	0,0%	10,3%	9,7%	0,0%	25,0%	8,0%
	Biking	Count	0	1	1	0	1	1	4
		%	0,0%	7,1%	3,4%	0,0%	11,1%	25,0%	4,6%
	Playground	Count	0	0	2	0	0	0	2
		%	0,0%	0,0%	6,9%	0,0%	0,0%	0,0%	2,3%
	Reading	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	3,4%	0,0%	0,0%	0,0%	1,1%
	socialising	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	3,2%	0,0%	0,0%	1,1%
	Rehabilitation	Count	0	1	1	1	1	0	4
		%	0,0%	7,1%	3,4%	3,2%	11,1%	0,0%	4,6%
	Total	Count	0	29	14	31	9	4	87
		%	0,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Walking along the coast)	Sport activity	Count	0	2	1	4	2	1	10
		%	0,0%	10,5%	2,4%	9,3%	14,3%	8,3%	7,6%
	Outdoor dining (picnic)	Count	0	0	3	0	0	0	3
		%	0,0%	0,0%	7,3%	0,0%	0,0%	0,0%	2,3%
	Walking	Count	2	16	32	36	12	10	108
		%	100,0%	84,2%	78,0%	83,7%	85,7%	83,3%	82,4%
	Biking	Count	0	0	2	1	0	1	4
		%	0,0%	0,0%	4,9%	2,3%	0,0%	8,3%	3,1%
	Reading	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,4%	0,0%	0,0%	0,0%	0,8%
	leisure	Count	0	1	2	2	0	0	5
		%	0,0%	5,3%	4,9%	4,7%	0,0%	0,0%	3,8%
	Total	Count	2	19	41	43	14	12	131
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Outdoor dining along the coast)	Outdoor dining (picnic)	Count	3	15	34	37	9	11	109
		%	100,0%	83,3%	79,1%	84,1%	75,0%	84,6%	82,0%
	Walking	Count	0	0	0	1	0	1	2
		%	0,0%	0,0%	0,0%	2,3%	0,0%	7,7%	1,5%
	Playground	Count	0	0	1	0	1	0	2
		%	0,0%	0,0%	2,3%	0,0%	8,3%	0,0%	1,5%
	socialising	Count	0	2	3	2	1	1	9
		%	0,0%	11,1%	7,0%	4,5%	8,3%	7,7%	6,8%
	leisure	Count	0	0	4	4	1	0	9
		%	0,0%	0,0%	9,3%	9,1%	8,3%	0,0%	6,8%
	Rehabilitation	Count	0	1	1	0	0	0	2
		%	0,0%	5,6%	2,3%	0,0%	0,0%	0,0%	1,5%
	Total	Count	3	18	43	44	12	13	133
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
(Outdoor gym along the coast)	Sport activity	Count	1	0	3	1	0	1	6
		%	100,0%	0,0%	30,0%	50,0%	0,0%	50,0%	31,6%
	Outdoor dining (picnic)	Count	0	0	1	0	1	1	3
		%	0,0%	0,0%	10,0%	0,0%	50,0%	50,0%	15,8%
	Walking	Count	0	0	2	1	0	0	3
		%	0,0%	0,0%	20,0%	50,0%	0,0%	0,0%	15,8%
	Playground	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	10,0%	0,0%	0,0%	0,0%	5,3%
	leisure	Count	0	1	1	0	0	0	2
		%	0,0%	50,0%	10,0%	0,0%	0,0%	0,0%	10,5%
	Rehabilitation	Count	0	1	2	0	1	0	4
		%	0,0%	50,0%	20,0%	0,0%	50,0%	0,0%	21,1%
	Total	Count	1	2	10	2	2	2	19
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Swimming)	Sport activity	Count	1	4	15	22	8	4	54
		%	100,0%	57,1%	60,0%	78,6%	88,9%	66,7%	71,1%
	Outdoor dining (picnic)	Count	0	0	3	1	0	0	4
		%	0,0%	0,0%	12,0%	3,6%	0,0%	0,0%	5,3%
	Walking	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	3,6%	0,0%	0,0%	1,3%
	Biking	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	11,1%	0,0%	1,3%
	Reading	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	4,0%	0,0%	0,0%	0,0%	1,3%
	socialising	Count	0	0	3	1	0	1	5
		%	0,0%	0,0%	12,0%	3,6%	0,0%	16,7%	6,6%
	leisure	Count	0	1	2	1	0	1	5
		%	0,0%	14,3%	8,0%	3,6%	0,0%	16,7%	6,6%
	Rehabilitation	Count	0	2	1	2	0	0	5
		%	0,0%	28,6%	4,0%	7,1%	0,0%	0,0%	6,6%
	Total	Count	1	7	25	28	9	6	76
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Biking along the coast)	Sport activity	Count	0	0	2	3	0	0	5
		%	0,0%	0,0%	18,2%	60,0%	0,0%	0,0%	22,7%
	Outdoor dining (picnic)	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	9,1%	0,0%	0,0%	0,0%	4,5%
	Biking	Count	0	1	3	1	0	1	6
		%	0,0%	33,3%	27,3%	20,0%	0,0%	100,0%	27,3%
	Playground	Count	0	1	0	0	0	0	1
		%	0,0%	33,3%	0,0%	0,0%	0,0%	0,0%	4,5%
	Reading	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	9,1%	0,0%	0,0%	0,0%	4,5%
	socialising	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	9,1%	0,0%	0,0%	0,0%	4,5%
	leisure	Count	0	0	1	1	1	0	3
		%	0,0%	0,0%	9,1%	20,0%	50,0%	0,0%	13,6%
	Rehabilitation	Count	0	1	2	0	1	0	4
		%	0,0%	33,3%	18,2%	0,0%	50,0%	0,0%	18,2%
	Total	Count	0	3	3	5	2	1	22
		%	0,0%	0,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Visiting	Sport activity	Count	0	0	0	0	0	1	1
		%	0,0%	0,0%	0,0%	0,0%	0,0%	25,0%	4,0%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
plants along the coast - landscape view terraces)	Outdoor dining (picnic)	Count	0	0	1	1	0	1	3
		%	0,0%	0,0%	9,1%	16,7%	0,0%	25,0%	12,0%
	Reading	Count	0	0	3	0	0	0	3
		%	0,0%	0,0%	27,3%	0,0%	0,0%	0,0%	12,0%
	socialising	Count	0	1	2	2	1	0	6
		%	0,0%	50,0%	18,2%	33,3%	50,0%	0,0%	24,0%
	leisure	Count	0	0	3	2	0	2	7
		%	0,0%	0,0%	27,3%	33,3%	0,0%	50,0%	28,0%
	Rehabilitation	Count	0	1	2	1	1	0	5
		%	0,0%	50,0%	18,2%	16,7%	50,0%	0,0%	20,0%
	Total	Count	0	11	2	6	2	4	25
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Resting areas along the coast)	Sport activity	Count	0	0	1	0	1	0	2
		%	0,0%	0,0%	6,2%	0,0%	25,0%	0,0%	5,3%
	Outdoor dining (picnic)	Count	0	0	5	4	1	2	12
		%	0,0%	0,0%	31,2%	36,4%	25,0%	66,7%	31,6%
	Walking	Count	0	1	1	0	0	0	2
		%	0,0%	33,3%	6,2%	0,0%	0,0%	0,0%	5,3%
	Playground	Count	0	1	0	0	0	0	1
		%	0,0%	33,3%	0,0%	0,0%	0,0%	0,0%	2,6%
	Reading	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	9,1%	0,0%	0,0%	2,6%
	socialising	Count	1	0	2	4	1	1	9
		%	100,0%	0,0%	12,5%	36,4%	25,0%	33,3%	23,7%
	leisure	Count	0	0	5	2	1	0	8
		%	0,0%	0,0%	31,2%	18,2%	25,0%	0,0%	21,1%
	Rehabilitation	Count	0	1	2	0	0	0	3
		%	0,0%	33,3%	12,5%	0,0%	0,0%	0,0%	7,9%
	Total	Count	1	3	16	11	4	3	38
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Event areas along the coast)	Sport activity	Count	0	0	0	0	0	1	1
		%	0,0%	0,0%	0,0%	0,0%	0,0%	33,3%	4,3%
	Outdoor dining (picnic)	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	10,0%	0,0%	0,0%	0,0%	4,3%
	Walking	Count	0	0	3	0	0	0	3
		%	0,0%	0,0%	30,0%	0,0%	0,0%	0,0%	13,0%
	Biking	Count	0	0	0	1	1	0	2
		%	0,0%	0,0%	0,0%	20,0%	50,0%	0,0%	8,7%
	Playground	Count	0	1	0	0	0	1	2
		%	0,0%	50,0%	0,0%	0,0%	0,0%	33,3%	8,7%
	socialising	Count	1	0	3	3	0	1	8
		%	100,0%	0,0%	30,0%	60,0%	0,0%	33,3%	34,8%
	leisure	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	10,0%	20,0%	0,0%	0,0%	8,7%
	Rehabilitation	Count	0	1	2	0	1	0	4
		%	0,0%	50,0%	20,0%	0,0%	50,0%	0,0%	17,4%
	Total	Count	1	2	10	5	2	3	23
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Fishing)	Sport activity	Count	0	1	3	0	0	0	4
		%	0,0%	50,0%	33,3%	0,0%	0,0%	0,0%	21,1%
	Outdoor dining (picnic)	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	33,3%	0,0%	5,3%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Walking	Count	0	0	2	0	0	0	2
		%	0,0%	0,0%	22,2%	0,0%	0,0%	0,0%	10,5%
	socialising	Count	0	1	1	1	1	0	4
		%	0,0%	50,0%	11,1%	33,3%	33,3%	0,0%	21,1%
	leisure	Count	0	0	1	0	0	2	3
		%	0,0%	0,0%	11,1%	0,0%	0,0%	100,0%	15,8%
	Rehabilitation	Count	0	0	2	2	1	0	5
		%	0,0%	0,0%	22,2%	66,7%	33,3%	0,0%	26,3%
	Total	Count	0	9	2	3	3	2	19
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Boats strolling)	Sport activity	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	12,5%	33,3%	0,0%	0,0%	11,1%
	Outdoor dining (picnic)	Count	0	0	1	0	0	1	2
		%	0,0%	0,0%	12,5%	0,0%	0,0%	50,0%	11,1%
	Walking	Count	0	1	0	0	1	0	2
		%	0,0%	50,0%	0,0%	0,0%	33,3%	0,0%	11,1%
	Playground	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	12,5%	0,0%	0,0%	0,0%	5,6%
	socialising	Count	0	0	2	0	1	0	3
		%	0,0%	0,0%	25,0%	0,0%	33,3%	0,0%	16,7%
	leisure	Count	0	0	1	0	0	1	2
		%	0,0%	0,0%	12,5%	0,0%	0,0%	50,0%	11,1%
	Rehabilitation	Count	0	1	2	2	1	0	6
		%	0,0%	50,0%	25,0%	66,7%	33,3%	0,0%	33,3%
	Total	Count	0	8	2	3	3	2	18
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
(Cafe/ Restaurant)	Outdoor dining (picnic)	Count	0	13	17	21	8	6	65
		%	0,0%	81,2%	60,7%	65,6%	66,7%	75,0%	67,7%
	Walking	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	3,6%	0,0%	0,0%	0,0%	1,0%
	Reading	Count	0	0	1	0	1	1	3
		%	0,0%	0,0%	3,6%	0,0%	8,3%	12,5%	3,1%
	socialising	Count	0	3	5	8	3	1	20
		%	0,0%	18,8%	17,9%	25,0%	25,0%	12,5%	20,8%
	leisure	Count	0	0	4	2	0	0	6
		%	0,0%	0,0%	14,3%	6,2%	0,0%	0,0%	6,2%
	Rehabilitation	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	3,1%	0,0%	0,0%	1,0%
	Total	Count	0	28	16	32	12	8	96
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Cross-tabulation forthe different requirementsof public facility usage by age .

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Urban park	**Seating and BBQ areas**	**Count**	**2**	**5**	**10**	**7**	**4**	**3**	**31**
		%	**66,7%**	**31,2%**	**26,3%**	**17,1%**	**36,4%**	**30,0%**	**26,1%**
	Arcade Games	Count	1	1	10	7	1	1	21
		%	33,3%	6,2%	26,3%	17,1%	9,1%	10,0%	17,6%
	Playgrounds	**Count**	**0**	**7**	**4**	**2**	**0**	**1**	**14**
		%	**0,0%**	**43,8%**	**10,5%**	**4,9%**	**0,0%**	**10,0%**	**11,8%**
	Sports areas and equipment	Count	0	1	2	4	1	1	9
		%	0,0%	6,2%	5,3%	9,8%	9,1%	10,0%	7,6%
	Adjustment to special needs and elderly	Count	0	0	2	7	2	0	11
		%	0,0%	0,0%	5,3%	17,1%	18,2%	0,0%	9,2%
	Cultural Activities	Count	0	2	1	6	0	0	9
		%	0,0%	12,5%	2,6%	14,6%	0,0%	0,0%	7,6%
	Shaded walking and biking Lanes	Count	0	0	4	4	3	4	15
		%	0,0%	0,0%	10,5%	9,8%	27,3%	40,0%	12,6%
	Green spaces and trees	Count	0	0	4	4	0	0	8
		%	0,0%	0,0%	10,5%	9,8%	0,0%	0,0%	6,7%
	Toilets and service facilities	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,6%	0,0%	0,0%	0,0%	0,8%
	Total	Count	3	16	38	41	11	10	119
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
District park	Seating and BBQ areas	Count	1	2	10	13	4	5	35
		%	33,3%	10,5%	24,4%	31,0%	33,3%	41,7%	27,1%
	Arcade Games	Count	0	0	3	4	0	0	7
		%	0,0%	0,0%	7,3%	9,5%	0,0%	0,0%	5,4%
	Playgrounds	Count	1	12	14	11	0	3	41
		%	33,3%	63,2%	34,1%	26,2%	0,0%	25,0%	31,8%
	Sports areas and equipment	Count	0	3	3	10	3	1	20
		%	0,0%	15,8%	7,3%	23,8%	25,0%	8,3%	15,5%
	Adjustment to special needs and elderly	Count	0	1	0	1	2	1	5
		%	0,0%	5,3%	0,0%	2,4%	16,7%	8,3%	3,9%
	Cultural Activities	Count	0	0	1	0	0	1	2
		%	0,0%	0,0%	2,4%	0,0%	0,0%	8,3%	1,6%
	Shaded walking and biking Lanes	Count	0	0	3	1	2	1	7
		%	0,0%	0,0%	7,3%	2,4%	16,7%	8,3%	5,4%
	Green spaces and trees	Count	0	0	4	0	1	0	5
		%	0,0%	0,0%	9,8%	0,0%	8,3%	0,0%	3,9%
	Toilets and service facilities	Count	1	1	3	2	0	0	7
		%	33,3%	5,3%	7,3%	4,8%	0,0%	0,0%	5,4%
	Total	Count	3	19	41	42	12	12	129
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Playground areas	Biking areas	Count	0	0	2	1	0	0	3
		%	0,0%	0,0%	7,1%	5,6%	0,0%	0,0%	4,7%
	Attention to Quality	Count	0	0	4	0	0	0	4
		%	0,0%	0,0%	14,3%	0,0%	0,0%	0,0%	6,2%
	Football	Count	0	0	2	0	0	1	3

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	courts	%	0,0%	0,0%	7,1%	0,0%	0,0%	25,0%	4,7%
	All games areas	Count	2	3	4	8	2	2	21
		%	100,0%	37,5%	14,3%	44,4%	50,0%	50,0%	32,8%
	Tennis courts	Count	0	1	1	1	0	0	3
		%	0,0%	12,5%	3,6%	5,6%	0,0%	0,0%	4,7%
	Women sports areas	Count	0	1	3	2	2	0	8
		%	0,0%	12,5%	10,7%	11,1%	50,0%	0,0%	12,5%
	Children activities	Count	0	3	11	5	0	0	19
		%	0,0%	37,5%	39,3%	27,8%	0,0%	0,0%	29,7%
	Basketball courts	Count	0	0	1	1	0	1	3
		%	0,0%	0,0%	3,6%	5,6%	0,0%	25,0%	4,7%
	Total	Count	2	8	28	18	4	4	64
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Sport areas	Inclusive sports club with pool	Count	1	10	12	16	2	2	43
		%	33,3%	66,7%	37,5%	40,0%	18,2%	33,3%	40,2%
	Women's club	Count	2	2	12	12	6	4	38
		%	66,7%	13,3%	37,5%	30,0%	54,5%	66,7%	35,5%
	Quality Infrastructure for sports	Count	0	1	5	3	1	0	10
		%	0,0%	6,7%	15,6%	7,5%	9,1%	0,0%	9,3%
	Special needs club	Count	0	0	2	7	1	0	10
		%	0,0%	0,0%	6,2%	17,5%	9,1%	0,0%	9,3%
	Horseback riding/ Water sports	Count	0	2	1	2	1	0	6
		%	0,0%	13,3%	3,1%	5,0%	9,1%	0,0%	5,6%
	Total	Count	3	15	32	40	11	6	107
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Walking along the coast	**Walking lanes**	**Count**	**0**	**7**	**15**	**13**	**2**	**4**	**41**
		%	**0,0%**	**38,9%**	**37,5%**	**30,2%**	**16,7%**	**33,3%**	**32,0%**
	Shades/ Trees	**Count**	**2**	**9**	**12**	**15**	**2**	**4**	**44**
		%	**66,7%**	**50,0%**	**30,0%**	**34,9%**	**16,7%**	**33,3%**	**34,4%**
	Food canteens	Count	0	1	6	6	3	3	19
		%	0,0%	5,6%	15,0%	14,0%	25,0%	25,0%	14,8%
	Seating areas	Count	1	1	4	2	2	0	10
		%	33,3%	5,6%	10,0%	4,7%	16,7%	0,0%	7,8%
	Special needs and elderly lanes	Count	0	0	2	6	2	0	10
		%	0,0%	0,0%	5,0%	14,0%	16,7%	0,0%	7,8%
	Play areas for children	Count	0	0	1	1	1	1	4
		%	0,0%	0,0%	2,5%	2,3%	8,3%	8,3%	3,1%
	Total	Count	3	18	40	43	12	12	128
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Outdoor dining along the coast	**Seating, BBQ areas and facilities**	**Count**	**3**	**15**	**23**	**36**	**9**	**7**	**93**
		%	**100,0%**	**83,3%**	**57,5%**	**85,7%**	**81,8%**	**63,6%**	**74,4%**
	Shades	Count	0	1	4	0	0	0	5
		%	0,0%	5,6%	10,0%	0,0%	0,0%	0,0%	4,0%
	Cafes and restaurants	Count	0	0	9	3	1	1	14
		%	0,0%	0,0%	22,5%	7,1%	9,1%	9,1%	11,2%
	Walkways,	Count	0	2	2	0	0	1	5

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	green spaces, and playgrounds	%	0,0%	11,1%	5,0%	0,0%	0,0%	9,1%	4,0%
	Family and women zones	Count	0	0	2	3	1	2	8
		%	0,0%	0,0%	5,0%	7,1%	9,1%	18,2%	6,4%
	Total	Count	3	18	40	42	11	11	125
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Outdoor gym along the coast	**Variety of sports**	**Count**	**0**	**2**	**7**	**4**	**5**	**0**	**18**
		%	**0,0%**	**100,0%**	**43,8%**	**33,3%**	**62,5%**	**0,0%**	**45,0%**
	Closed and private (e.g. for women)	**Count**	**1**	**0**	**6**	**0**	**1**	**1**	**9**
		%	**100,0%**	**0,0%**	**37,5%**	**0,0%**	**12,5%**	**100,0%**	**22,5%**
	Areas for special needs and elderly	Count	0	0	1	3	0	0	4
		%	0,0%	0,0%	6,2%	25,0%	0,0%	0,0%	10,0%
	Water sports	Count	0	0	2	5	2	0	9
		%	0,0%	0,0%	12,5%	41,7%	25,0%	0,0%	22,5%
	Total	Count	1	2	16	12	8	1	40
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Swimming	**Family and women pools**	**Count**	**1**	**10**	**15**	**22**	**9**	**4**	**61**
		%	**33,3%**	**58,8%**	**42,9%**	**59,5%**	**69,2%**	**50,0%**	**54,0%**
	Changing facilities and toilets	Count	2	5	7	6	3	2	25
		%	66,7%	29,4%	20,0%	16,2%	23,1%	25,0%	22,1%
	Clean and healthy pools	Count	0	2	13	9	1	2	27
		%	0,0%	11,8%	37,1%	24,3%	7,7%	25,0%	23,9%
	Total	Count	3	17	35	37	13	8	113
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Biking along the coast	**Designated biking lanes**	**Count**	**1**	**3**	**17**	**8**	**3**	**2**	**34**
		%	**100,0%**	**42,9%**	**77,3%**	**61,5%**	**50,0%**	**66,7%**	**65,4%**
	Bike renting	**Count**	**0**	**4**	**5**	**5**	**3**	**1**	**18**
		%	**0,0%**	**57,1%**	**22,7%**	**38,5%**	**50,0%**	**33,3%**	**34,6%**
	Total	Count	1	7	22	13	6	3	52
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Visiting plants along the coast/ landscape view terraces	Trees and seating areas	Count	0	2	5	2	1	0	10
		%	0,0%	40,0%	35,7%	18,2%	16,7%	0,0%	24,4%
	Green spaces/ grass	Count	0	1	4	5	1	1	12
		%	0,0%	20,0%	28,6%	45,5%	16,7%	25,0%	29,3%
	Water features	Count	1	0	5	1	3	1	11
		%	100,0%	0,0%	35,7%	9,1%	50,0%	25,0%	26,8%
	Ornamental plants and flowers	Count	0	2	0	3	1	2	8
		%	0,0%	40,0%	0,0%	27,3%	16,7%	50,0%	19,5%
	Total	Count	1	5	14	11	6	4	41
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Resting areas along the coast	Parking spaces	Count	1	0	6	7	1	0	15
		%	50,0%	0,0%	31,6%	36,8%	14,3%	0,0%	27,3%
	Seating and canteens	Count	0	3	4	6	5	4	22
		%	0,0%	100,0%	21,1%	31,6%	71,4%	80,0%	40,0%
	Shades	Count	1	0	4	5	1	0	11
		%	50,0%	0,0%	21,1%	26,3%	14,3%	0,0%	20,0%
	Toilets and	Count	0	0	5	1	0	1	7

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	facilities	%	0,0%	0,0%	26,3%	5,3%	0,0%	20,0%	12,7%
Total		Count	2	3	19	19	7	5	55
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Event areas along the coast	Children events	Count	0	1	4	0	0	2	7
		%	0,0%	25,0%	19,0%	0,0%	0,0%	66,7%	11,9%
	Sport events	Count	0	0	3	5	2	1	11
		%	0,0%	0,0%	14,3%	26,3%	20,0%	33,3%	18,6%
	Variety of events	Count	0	1	2	5	3	0	11
		%	0,0%	25,0%	9,5%	26,3%	30,0%	0,0%	18,6%
	Theatres and stages	Count	2	1	9	8	4	0	24
		%	100,0%	25,0%	42,9%	42,1%	40,0%	0,0%	40,7%
	Service facilities (toilets/pray rooms)	Count	0	1	3	1	1	0	6
		%	0,0%	25,0%	14,3%	5,3%	10,0%	0,0%	10,2%
Total		Count	2	4	21	19	10	3	59
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Fishing	Fishing training and Tools sales	Count	0	2	2	0	1	1	6
		%	0,0%	50,0%	14,3%	0,0%	16,7%	50,0%	17,6%
	Designated fishing zones	Count	1	1	7	2	2	0	13
		%	100,0%	25,0%	50,0%	28,6%	33,3%	0,0%	38,2%
	Fishing docks	Count	0	1	5	5	3	1	15
		%	0,0%	25,0%	35,7%	71,4%	50,0%	50,0%	44,1%
Total		Count	1	4	14	7	6	2	34
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Boats strolling	**Marine trips**	**Count**	**2**	**5**	**10**	**13**	**5**	**0**	**35**
		%	**100,0%**	**55,6%**	**40,0%**	**56,5%**	**62,5%**	**0,0%**	**50,0%**
	Special docks	Count	0	4	11	8	3	1	27
		%	0,0%	44,4%	44,0%	34,8%	37,5%	33,3%	38,6%
	Boat renting	Count	0	0	4	2	0	2	8
		%	0,0%	0,0%	16,0%	8,7%	0,0%	**66,7%**	11,4%
Total		Count	2	9	25	23	8	3	70
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Cafe/ Restaurant	Family areas	Count	3	7	19	18	4	7	58
		%	100,0%	46,7%	50,0%	46,2%	40,0%	70,0%	50,4%
	Marine views	Count	0	7	10	16	5	3	41
		%	0,0%	46,7%	26,3%	41,0%	50,0%	30,0%	35,7%
	Quality and cleanness	Count	0	1	9	5	1	0	16
		%	0,0%	6,7%	23,7%	12,8%	10,0%	0,0%	13,9%
Total		Count	3	15	38	39	10	10	115
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Cross-tabulation forBest season for public facility usage by age .

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Best season for urban parks	Spring	Count	2	10	29	27	7	9	84
		%	66,7%	47,6%	61,7%	52,9%	50,0%	64,3%	56,0%
	Summer	Count	1	7	12	10	2	3	35
		%	33,3%	33,3%	25,5%	19,6%	14,3%	21,4%	23,3%
	Fall	Count	0	0	1	1	1	0	3
		%	0,0%	0,0%	2,1%	2,0%	7,1%	0,0%	2,0%
	Winter	Count	0	4	5	13	4	2	28
		%	0,0%	19,0%	10,6%	25,5%	28,6%	14,3%	18,7%
Total		Count	3	21	47	51	14	14	150
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for district parks	Spring	Count	1	2	15	9	3	5	35
		%	33,3%	10,0%	31,2%	18,0%	20,0%	33,3%	23,2%
	Summer	Count	2	17	32	39	11	9	110
		%	66,7%	85,0%	66,7%	78,0%	73,3%	60,0%	72,8%
	Fall	Count	0	0	1	0	0	1	2
		%	0,0%	0,0%	2,1%	0,0%	0,0%	6,7%	1,3%
	Winter	Count	0	1	0	2	1	0	4
		%	0,0%	5,0%	0,0%	4,0%	6,7%	0,0%	2,6%
Total		Count	3	20	48	50	15	15	151
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for playground areas	Spring	Count	0	1	11	5	0	1	18
		%	0,0%	5,9%	27,5%	13,5%	0,0%	12,5%	16,2%
	Summer	Count	3	14	25	30	6	6	84
		%	100,0%	82,4%	62,5%	81,1%	100,0%	75,0%	75,7%
	Fall	Count	0	1	3	1	0	0	5
		%	0,0%	5,9%	7,5%	2,7%	0,0%	0,0%	4,5%
	Winter	Count	0	1	1	1	0	1	4
		%	0,0%	5,9%	2,5%	2,7%	0,0%	12,5%	3,6%
Total		Count	3	17	40	37	6	8	111
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for sport areas	Spring	Count	1	3	10	8	2	4	28
		%	50,0%	15,8%	22,2%	16,0%	14,3%	44,4%	20,1%
	Summer	Count	0	4	17	16	4	2	43
		%	0,0%	21,1%	37,8%	32,0%	28,6%	22,2%	30,9%
	Fall	Count	0	1	1	0	0	0	2
		%	0,0%	5,3%	2,2%	0,0%	0,0%	0,0%	1,4%
	Winter	Count	1	11	17	26	8	3	66
		%	50,0%	57,9%	37,8%	52,0%	57,1%	33,3%	47,5%
Total		Count	2	19	45	50	14	9	139
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for walking along the coast	Spring	Count	0	3	17	11	3	3	37
		%	0,0%	14,3%	34,7%	20,8%	20,0%	18,8%	23,6%
	Summer	Count	2	17	31	41	12	12	115
		%	66,7%	81,0%	63,3%	77,4%	80,0%	75,0%	73,2%
	Fall	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,0%	0,0%	0,0%	0,0%	0,6%
	Winter	Count	1	1	0	1	0	1	4
		%	33,3%	4,8%	0,0%	1,9%	0,0%	6,2%	2,5%
Total		Count	3	21	49	53	15	16	157
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Best season for outdoor dining along the coast	Spring	Count	1	3	17	11	2	3	37
		%	33,3%	13,6%	34,0%	20,8%	13,3%	20,0%	23,4%
	Summer	Count	2	18	32	41	11	12	116
		%	66,7%	81,8%	64,0%	77,4%	73,3%	80,0%	73,4%
	Fall	Count	0	1	1	1	1	0	4
		%	0,0%	4,5%	2,0%	1,9%	6,7%	0,0%	2,5%
	Winter	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	6,7%	0,0%	0,6%
Total		Count	3	22	50	53	15	15	158
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for outdoor gym along the coast	Spring	Count	0	7	18	17	7	2	51
		%	0,0%	58,3%	50,0%	51,5%	53,8%	33,3%	50,5%
	Summer	Count	0	4	13	12	5	3	37
		%	0,0%	33,3%	36,1%	36,4%	38,5%	50,0%	36,6%
	Fall	Count	0	0	3	1	0	1	5
		%	0,0%	0,0%	8,3%	3,0%	0,0%	16,7%	5,0%
	Winter	Count	1	1	2	3	1	0	8
		%	100,0%	8,3%	5,6%	9,1%	7,7%	0,0%	7,9%
Total		Count	1	12	36	33	13	6	101
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for swimming	Spring	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,2%	0,0%	0,0%	0,0%	0,7%
	Summer	Count	3	20	45	53	13	13	147
		%	100,0%	95,2%	97,8%	100,0%	92,9%	100,0%	98,0%
	Fall	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	7,1%	0,0%	0,7%
	Winter	Count	0	1	0	0	0	0	1
		%	0,0%	4,8%	0,0%	0,0%	0,0%	0,0%	0,7%
Total		Count	3	21	46	53	14	13	150
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for biking along the coast	Spring	Count	1	5	20	15	8	3	52
		%	100,0%	41,7%	52,6%	48,4%	88,9%	60,0%	54,2%
	Summer	Count	0	6	13	9	0	1	29
		%	0,0%	50,0%	34,2%	29,0%	0,0%	20,0%	30,2%
	Fall	Count	0	1	5	4	0	1	11
		%	0,0%	8,3%	13,2%	12,9%	0,0%	20,0%	11,5%
	Winter	Count	0	0	0	3	1	0	4
		%	0,0%	0,0%	0,0%	9,7%	11,1%	0,0%	4,2%
Total		Count	1	12	38	31	9	5	96
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for visiting plants along the coast	Spring	Count	3	13	37	35	12	9	109
		%	100,0%	100,0%	92,5%	92,1%	92,3%	100,0%	94,0%
	Summer	Count	0	0	2	2	1	0	5
		%	0,0%	0,0%	5,0%	5,3%	7,7%	0,0%	4,3%
	Winter	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	2,5%	2,6%	0,0%	0,0%	1,7%
Total		Count	3	13	40	38	13	9	116
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for resting areas along	Spring	Count	1	3	14	7	1	0	26
		%	33,3%	18,8%	31,8%	15,2%	7,7%	0,0%	19,5%
	Summer	Count	2	11	27	35	10	10	95
		%	66,7%	68,8%	61,4%	76,1%	76,9%	90,9%	71,4%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
the coast	Fall	Count	0	0	2	2	0	0	4
		%	0,0%	0,0%	4,5%	4,3%	0,0%	0,0%	3,0%
	Winter	Count	0	2	1	2	2	1	8
		%	0,0%	12,5%	2,3%	4,3%	15,4%	9,1%	6,0%
Total		Count	3	16	44	46	13	11	133
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for event areas along the coast	Spring	Count	3	11	26	21	7	3	71
		%	100,0%	84,6%	59,1%	48,8%	58,3%	30,0%	56,8%
	Summer	Count	0	1	14	20	4	7	46
		%	0,0%	7,7%	31,8%	46,5%	33,3%	70,0%	36,8%
	Fall	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,3%	0,0%	0,0%	0,0%	0,8%
	Winter	Count	0	1	3	2	1	0	7
		%	0,0%	7,7%	6,8%	4,7%	8,3%	0,0%	5,6%
Total		Count	3	13	44	43	12	10	125
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for fishing	Spring	Count	0	0	3	1	0	1	5
		%	0,0%	0,0%	11,1%	4,2%	0,0%	16,7%	7,0%
	Summer	Count	1	6	20	18	5	3	53
		%	100,0%	100,0%	74,1%	75,0%	71,4%	50,0%	74,6%
	Fall	Count	0	0	1	2	2	2	7
		%	0,0%	0,0%	3,7%	8,3%	28,6%	33,3%	9,9%
	Winter	Count	0	0	3	3	0	0	6
		%	0,0%	0,0%	11,1%	12,5%	0,0%	0,0%	8,5%
Total		Count	1	6	27	24	7	6	71
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for boats strolling	Spring	Count	0	0	2	1	0	0	3
		%	0,0%	0,0%	5,0%	2,6%	0,0%	0,0%	2,6%
	Summer	Count	2	14	38	36	12	10	112
		%	100,0%	100,0%	95,0%	94,7%	100,0%	100,0%	96,6%
	Fall	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	2,6%	0,0%	0,0%	0,9%
Total		Count	2	14	40	38	12	10	116
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Best season for cafes and restaurants	Spring	Count	0	1	7	1	3	0	12
		%	0,0%	5,3%	14,6%	2,0%	21,4%	0,0%	8,2%
	Summer	Count	1	10	18	25	5	6	65
		%	33,3%	52,6%	37,5%	50,0%	35,7%	46,2%	44,2%
	Fall	Count	0	1	1	1	0	0	3
		%	0,0%	5,3%	2,1%	2,0%	0,0%	0,0%	2,0%
	Winter	Count	2	7	22	23	6	7	67
		%	66,7%	36,8%	45,8%	46,0%	42,9%	53,8%	45,6%
Total		Count	3	19	48	50	14	13	147
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

The participants were also asked to indicate the most preferred activities during the winter season. A cross-tabulation was carried out to illustrate the data according to age categories.

Cross-tabulation for Preferred activities usage by age in winter ..

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Preferred activities in winter for urban parks	Socializing/ Children activities	Count	0	3	8	11	3	1	26
		%	0,0%	15,8%	18,2%	22,9%	21,4%	9,1%	18,7%
	Walking/ running	Count	2	6	16	18	7	3	52
		%	66,7%	31,6%	36,4%	37,5%	50,0%	27,3%	37,4%
	Playing sports	Count	0	1	1	7	2	3	14
		%	0,0%	5,3%	2,3%	14,6%	14,3%	27,3%	10,1%
	Recreational activities/ Resting	Count	0	4	10	3	0	3	20
		%	0,0%	21,1%	22,7%	6,2%	0,0%	27,3%	14,4%
	Educational activities/ Reading	Count	1	4	9	9	2	1	26
		%	33,3%	21,1%	20,5%	18,8%	14,3%	9,1%	18,7%
	Water activities	Count	0	1	0	0	0	0	1
		%	0,0%	5,3%	0,0%	0,0%	0,0%	0,0%	0,7%
Total		Count	3	19	44	48	14	11	139
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in winter for district parks	Socializing/ children activities	Count	2	8	23	15	6	4	58
		%	66,7%	50,0%	63,9%	38,5%	42,9%	50,0%	50,0%
	Walking/ running	Count	1	3	7	13	6	2	32
		%	33,3%	18,8%	19,4%	33,3%	42,9%	25,0%	27,6%
	Playing sports	Count	0	4	1	5	0	1	11
		%	0,0%	25,0%	2,8%	12,8%	0,0%	12,5%	9,5%
	Recreational activities/ Resting	Count	0	1	3	4	0	1	9
		%	0,0%	6,2%	8,3%	10,3%	0,0%	12,5%	7,8%
	Educational activities/ Reading	Count	0	0	2	2	2	0	6
		%	0,0%	0,0%	5,6%	5,1%	14,3%	0,0%	5,2%
Total		Count	3	16	36	39	14	8	116
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in winter for playground areas	Socializing/ Children activities	Count	0	3	4	11	2	0	20
		%	0,0%	37,5%	16,0%	52,4%	28,6%	0,0%	31,2%
	Walking/ running	Count	0	3	6	4	2	1	16
		%	0,0%	37,5%	24,0%	19,0%	28,6%	100,0%	25,0%
	Playing sports	Count	2	2	14	4	3	0	25
		%	100,0%	25,0%	56,0%	19,0%	42,9%	0,0%	39,1%
	Recreational activities	Count	0	0	1	2	0	0	3
		%	0,0%	0,0%	4,0%	9,5%	0,0%	0,0%	4,7%
Total		Count	2	8	25	21	7	1	64
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in winter for sports	Socializing/ Children activities	Count	0	4	3	2	0	0	9
		%	0,0%	23,5%	9,7%	5,9%	0,0%	0,0%	9,0%
	Walking/	Count	1	1	2	3	2	0	9

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
areas	running	%	33,3%	5,9%	6,5%	8,8%	18,2%	0,0%	9,0%
	Ball sports	Count	2	12	22	25	6	3	70
		%	66,7%	70,6%	71,0%	73,5%	54,5%	75,0%	70,0%
	Water (closed and private spaces)	Count	0	0	4	4	3	1	12
		%	0,0%	0,0%	12,9%	11,8%	27,3%	25,0%	12,0%
Total		Count	3	17	31	34	11	4	100
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in winter for event areas	Social and children's activities	Count	0	1	9	3	2	2	17
		%	0,0%	20,0%	69,2%	33,3%	40,0%	66,7%	47,2%
	Cultural activities	Count	0	3	3	4	2	0	12
		%	0,0%	60,0%	23,1%	44,4%	40,0%	0,0%	33,3%
	Educational activities	Count	1	1	1	2	1	1	7
		%	100,0%	20,0%	7,7%	22,2%	20,0%	33,3%	19,4%
Total		Count	1	5	13	9	5	3	36
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in winter for cafes and restaurants	Socializing	Count	1	2	15	14	3	3	38
		%	50,0%	15,4%	42,9%	31,8%	27,3%	42,9%	33,9%
	Dining experiences	Count	1	9	12	25	4	4	55
		%	50,0%	69,2%	34,3%	56,8%	36,4%	57,1%	49,1%
	Entertainment	Count	0	2	8	5	4	0	19
		%	0,0%	15,4%	22,9%	11,4%	36,4%	0,0%	17,0%
Total		Count	2	13	35	44	11	7	112
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Thereafter, the participants were asked to indicate the most preferred activities during the summer season. A cross-tabulation was carried out to illustrate the data according to age categories.

Cross-tabulation for Preferred activities usage by age in summer .

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Preferred activities in summer for urban parks	Socializing/ Children activities	Count	1	6	6	7	0	3	23
		%	33,3%	35,3%	18,2%	18,9%	0,0%	25,0%	20,2%
	Walking/ running	Count	0	3	13	8	3	2	29
		%	0,0%	17,6%	39,4%	21,6%	25,0%	16,7%	25,4%
	Playing sports	Count	0	2	1	2	2	0	7
		%	0,0%	11,8%	3,0%	5,4%	16,7%	0,0%	6,1%
	Recreational activities/ Resting	Count	2	3	5	9	4	4	27
		%	66,7%	17,6%	15,2%	24,3%	33,3%	33,3%	23,7%
	Educational	Count	0	1	4	3	2	1	11

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	activities/ Reading	%	0,0%	5,9%	12,1%	8,1%	16,7%	8,3%	9,6%
	Water activities	Count	0	2	4	8	1	2	17
		%	0,0%	11,8%	12,1%	21,6%	8,3%	16,7%	14,9%
Total		Count	3	17	33	37	12	12	114
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in summer for district parks	Socializing/ children activities	Count	2	10	20	19	3	5	59
		%	66,7%	62,5%	52,6%	48,7%	25,0%	41,7%	49,2%
	Walking/ running	Count	0	2	3	8	4	2	19
		%	0,0%	12,5%	7,9%	20,5%	33,3%	16,7%	15,8%
	Playing sports	Count	0	1	2	2	2	1	8
		%	0,0%	6,2%	5,3%	5,1%	16,7%	8,3%	6,7%
	Recreational activities/ Resting	Count	0	3	11	8	3	3	28
		%	0,0%	18,8%	28,9%	20,5%	25,0%	25,0%	23,3%
	Educational activities/ Reading	Count	1	0	1	1	0	1	4
		%	33,3%	0,0%	2,6%	2,6%	0,0%	8,3%	3,3%
	Water activities	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	2,6%	2,6%	0,0%	0,0%	1,7%
Total		Count	3	16	38	39	12	12	120
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in summer for playground areas	Socializing/ Children activities	Count	1	4	11	4	1	3	24
		%	50,0%	66,7%	42,3%	19,0%	20,0%	50,0%	36,4%
	Walking/ running	Count	1	0	4	0	1	0	6
		%	50,0%	0,0%	15,4%	0,0%	20,0%	0,0%	9,1%
	Playing sports	Count	0	2	10	12	2	1	27
		%	0,0%	33,3%	38,5%	57,1%	40,0%	16,7%	40,9%
	Recreational activities	Count	0	0	1	5	1	2	9
		%	0,0%	0,0%	3,8%	23,8%	20,0%	33,3%	13,6%
Total		Count	2	6	26	21	5	6	66
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in summer for sports areas	Socializing/ Children activities	Count	0	2	9	5	2	1	19
		%	0,0%	14,3%	26,5%	14,7%	20,0%	14,3%	18,6%
	Walking/ running	Count	1	3	9	11	6	4	34
		%	33,3%	21,4%	26,5%	32,4%	60,0%	57,1%	33,3%
	Ball sports	Count	2	4	14	17	2	1	40
		%	66,7%	28,6%	41,2%	50,0%	20,0%	14,3%	39,2%
	Water (closed and private spaces)	Count	0	5	2	1	0	1	9
		%	0,0%	35,7%	5,9%	2,9%	0,0%	14,3%	8,8%
Total		Count	3	14	34	34	10	7	102
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in summer for event areas	Social and children's activities	Count	0	1	7	4	2	0	14
		%	0,0%	50,0%	43,8%	44,4%	40,0%	0,0%	40,0%
	Cultural activities	Count	2	1	5	5	2	0	15
		%	100,0%	50,0%	31,2%	55,6%	40,0%	0,0%	42,9%
	Educational activities	Count	0	0	4	0	1	1	6
		%	0,0%	0,0%	25,0%	0,0%	20,0%	100,0%	17,1%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Total		Count	2	2	16	9	5	1	35
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred activities in summer for cafes and restaurants	Socializing	Count	0	5	14	17	2	2	40
		%	0,0%	35,7%	38,9%	51,5%	18,2%	22,2%	37,7%
	Dining experiences	Count	3	9	11	12	6	5	46
		%	100,0%	64,3%	30,6%	36,4%	54,5%	55,6%	43,4%
	Entertainment	Count	0	0	11	4	3	2	20
		%	0,0%	0,0%	30,6%	12,1%	27,3%	22,2%	18,9%
Total		Count	3	14	36	33	11	9	106
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

The participants were requested to choose the time of day or night that they prefer to carry out activities at each of the shown facilities in Table. A cross-tabulation analysis is performed to highlight differences based on age categories.

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Preferred Time (Urban parks)	Early morning (5-7am)	Count	0	0	1	1	2	1	5
		%	0,0%	0,0%	2,4%	2,2%	14,3%	8,3%	3,7%
	Morning (8-11am)	Count	1	7	12	19	7	5	51
		%	33,3%	36,8%	28,6%	41,3%	50,0%	41,7%	37,5%
	Noon (12-2pm)	Count	0	2	0	1	1	1	5
		%	0,0%	10,5%	0,0%	2,2%	7,1%	8,3%	3,7%
	Afternoon (3-5pm)	Count	2	9	21	17	2	3	54
		%	66,7%	47,4%	50,0%	37,0%	14,3%	25,0%	39,7%
	Evening (6-10pm)	Count	0	1	8	8	2	2	21
		%	0,0%	5,3%	19,0%	17,4%	14,3%	16,7%	15,4%
Total		Count	3	19	42	46	14	12	136
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (District park)	Early morning (5-7am)	Count	0	0	1	0	1	1	3
		%	0,0%	0,0%	2,3%	0,0%	7,1%	8,3%	2,3%
	Morning (8-11am)	Count	1	0	7	3	2	2	15
		%	33,3%	0,0%	16,3%	7,1%	14,3%	16,7%	11,3%
	Noon (12-2pm)	Count	0	0	2	1	0	1	4
		%	0,0%	0,0%	4,7%	2,4%	0,0%	8,3%	3,0%
	Afternoon (3-5pm)	Count	1	5	10	8	4	2	30
		%	33,3%	26,3%	23,3%	19,0%	28,6%	16,7%	22,6%
	Evening (6-10pm)	Count	1	14	23	27	7	6	78
		%	33,3%	73,7%	53,5%	64,3%	50,0%	50,0%	58,6%
	Night (11pm-4am)	Count	0	0	0	3	0	0	3
		%	0,0%	0,0%	0,0%	7,1%	0,0%	0,0%	2,3%
Total		Count	3	19	43	42	14	12	133
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Playground areas)	Early morning (5-7am)	Count	0	0	2	0	1	0	3
		%	0,0%	0,0%	5,3%	0,0%	16,7%	0,0%	3,2%
	Morning (8-11am)	Count	0	0	6	9	3	1	19
		%	0,0%	0,0%	15,8%	29,0%	50,0%	25,0%	20,2%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	Noon (12-2pm)	Count	0	0	1	0	1	1	3
		%	0,0%	0,0%	2,6%	0,0%	16,7%	25,0%	3,2%
	Afternoon (3-5pm)	Count	1	7	11	10	0	1	30
		%	100,0%	50,0%	28,9%	32,3%	0,0%	25,0%	31,9%
	Evening (6-10pm)	Count	0	7	18	12	1	1	39
		%	0,0%	50,0%	47,4%	38,7%	16,7%	25,0%	41,5%
Total		Count	1	14	38	31	6	4	94
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Sport areas)	Early morning (5-7am)	Count	0	0	5	1	2	1	9
		%	0,0%	0,0%	12,5%	2,4%	15,4%	12,5%	7,3%
	Morning (8-11am)	Count	2	6	18	22	7	3	58
		%	66,7%	33,3%	45,0%	53,7%	53,8%	37,5%	47,2%
	Noon (12-2pm)	Count	0	1	0	0	1	0	2
		%	0,0%	5,6%	0,0%	0,0%	7,7%	0,0%	1,6%
	Afternoon (3-5pm)	Count	1	1	8	6	1	3	20
		%	33,3%	5,6%	20,0%	14,6%	7,7%	37,5%	16,3%
	Evening (6-10pm)	Count	0	10	9	11	2	1	33
		%	0,0%	55,6%	22,5%	26,8%	15,4%	12,5%	26,8%
	Night (11pm-4am)	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	2,4%	0,0%	0,0%	0,8%
Total		Count	3	18	40	41	13	8	123
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Walking along the coast)	Early morning (5-7am)	Count	1	0	3	8	1	3	16
		%	33,3%	0,0%	6,8%	16,7%	6,7%	23,1%	11,2%
	Morning (8-11am)	Count	1	1	7	11	4	1	25
		%	33,3%	5,0%	15,9%	22,9%	26,7%	7,7%	17,5%
	Noon (12-2pm)	Count	0	0	1	0	1	0	2
		%	0,0%	0,0%	2,3%	0,0%	6,7%	0,0%	1,4%
	Afternoon (3-5pm)	Count	0	2	6	2	1	1	12
		%	0,0%	10,0%	13,6%	4,2%	6,7%	7,7%	8,4%
	Evening (6-10pm)	Count	1	17	26	27	8	8	87
		%	33,3%	85,0%	59,1%	56,2%	53,3%	61,5%	60,8%
	Night (11pm-4am)	Count	0	0	1	0	0	0	1
		%	0,0%	0,0%	2,3%	0,0%	0,0%	0,0%	0,7%
Total		Count	3	20	44	48	15	13	143
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Outdoor dining along the coast)	Morning (8-11am)	Count	1	0	1	2	0	0	4
		%	33,3%	0,0%	2,1%	4,2%	0,0%	0,0%	2,8%
	Noon (12-2pm)	Count	0	1	8	5	2	1	17
		%	0,0%	4,8%	17,0%	10,4%	13,3%	9,1%	11,7%
	Afternoon (3-5pm)	Count	0	6	7	6	2	4	25
		%	0,0%	28,6%	14,9%	12,5%	13,3%	36,4%	17,2%
	Evening (6-10pm)	Count	2	14	30	33	11	5	95
		%	66,7%	66,7%	63,8%	68,8%	73,3%	45,5%	65,5%
	Night (11pm-4am)	Count	0	0	1	2	0	1	4
		%	0,0%	0,0%	2,1%	4,2%	0,0%	9,1%	2,8%
Total		Count	3	21	47	48	15	11	145
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Preferred Time (Outdoor gym along the coast)	Early morning (5-7am)	Count	0	0	0	2	1	2	5
		%	0,0%	0,0%	0,0%	8,3%	9,1%	28,6%	6,3%
	Morning (8-11am)	Count	0	1	12	12	8	2	35
		%	0,0%	20,0%	38,7%	50,0%	72,7%	28,6%	44,3%
	Noon (12-2pm)	Count	0	0	0	0	1	0	1
		%	0,0%	0,0%	0,0%	0,0%	9,1%	0,0%	1,3%
	Afternoon (3-5pm)	Count	1	2	8	5	0	1	17
		%	100,0%	40,0%	25,8%	20,8%	0,0%	14,3%	21,5%
	Evening (6-10pm)	Count	0	2	11	5	1	2	21
		%	0,0%	40,0%	35,5%	20,8%	9,1%	28,6%	26,6%
Total		Count	1	5	31	24	11	7	79
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Swimming)	Early morning (5-7am)	Count	0	0	1	1	0	0	2
		%	0,0%	0,0%	2,3%	2,4%	0,0%	0,0%	1,6%
	Morning (8-11am)	Count	2	3	7	6	1	3	22
		%	66,7%	16,7%	16,3%	14,3%	8,3%	30,0%	17,2%
	Noon (12-2pm)	Count	0	2	6	3	2	1	14
		%	0,0%	11,1%	14,0%	7,1%	16,7%	10,0%	10,9%
	Afternoon (3-5pm)	Count	1	11	25	26	6	5	74
		%	33,3%	61,1%	58,1%	61,9%	50,0%	50,0%	57,8%
	Evening (6-10pm)	Count	0	2	4	6	3	1	16
		%	0,0%	11,1%	9,3%	14,3%	25,0%	10,0%	12,5%
Total		Count	3	18	43	42	12	10	128
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Biking along the coast)	Early morning (5-7am)	Count	0	1	1	1	0	1	4
		%	0,0%	14,3%	3,1%	4,8%	0,0%	14,3%	5,1%
	Morning (8-11am)	Count	0	1	10	7	3	1	22
		%	0,0%	14,3%	31,2%	33,3%	30,0%	14,3%	28,2%
	Noon (12-2pm)	Count	0	0	0	0	1	1	2
		%	0,0%	0,0%	0,0%	0,0%	10,0%	14,3%	2,6%
	Afternoon (3-5pm)	Count	0	0	10	1	2	1	14
		%	0,0%	0,0%	31,2%	4,8%	20,0%	14,3%	17,9%
	Evening (6-10pm)	Count	1	5	11	11	4	3	35
		%	100,0%	71,4%	34,4%	52,4%	40,0%	42,9%	44,9%
	Night (11pm-4am)	Count	0	0	0	1	0	0	1
		%	0,0%	0,0%	0,0%	4,8%	0,0%	0,0%	1,3%
Total		Count	1	7	32	21	10	7	78
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Visiting plants along the coast/ landscape view terraces)	Early morning (5-7am)	Count	0	0	0	0	2	0	2
		%	0,0%	0,0%	0,0%	0,0%	20,0%	0,0%	2,3%
	Morning (8-11am)	Count	1	6	17	18	6	5	53
		%	50,0%	85,7%	53,1%	64,3%	60,0%	62,5%	60,9%
	Noon (12-2pm)	Count	0	0	2	1	1	0	4
		%	0,0%	0,0%	6,2%	3,6%	10,0%	0,0%	4,6%
	Afternoon (3-5pm)	Count	1	1	7	7	0	2	18
		%	50,0%	14,3%	21,9%	25,0%	0,0%	25,0%	20,7%
	Evening (6-10pm)	Count	0	0	6	2	1	1	10
		%	0,0%	0,0%	18,8%	7,1%	10,0%	12,5%	11,5%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
Total		Count	2	7	32	28	10	8	87
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Resting areas along the coast)	Morning (8-11am)	Count	1	1	7	1	0	0	10
		%	33,3%	12,5%	20,0%	3,2%	0,0%	0,0%	10,4%
	Noon (12-2pm)	Count	0	1	2	0	1	0	4
		%	0,0%	12,5%	5,7%	0,0%	10,0%	0,0%	4,2%
	Afternoon (3-5pm)	Count	0	2	7	5	2	3	19
		%	0,0%	25,0%	20,0%	16,1%	20,0%	33,3%	19,8%
	Evening (6-10pm)	Count	2	4	19	23	6	5	59
		%	66,7%	50,0%	54,3%	74,2%	60,0%	55,6%	61,5%
	Night (11pm-4am)	Count	0	0	0	2	1	1	4
		%	0,0%	0,0%	0,0%	6,5%	10,0%	11,1%	4,2%
Total		Count	3	8	35	31	10	9	96
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Event areas along the coast)	Early morning (5-7am)	Count	0	1	0	0	1	0	2
		%	0,0%	12,5%	0,0%	0,0%	10,0%	0,0%	2,4%
	Morning (8-11am)	Count	0	0	2	0	0	4	6
		%	0,0%	0,0%	6,5%	0,0%	0,0%	50,0%	7,1%
	Noon (12-2pm)	Count	0	0	1	1	0	2	4
		%	0,0%	0,0%	3,2%	4,2%	0,0%	25,0%	4,8%
	Afternoon (3-5pm)	Count	1	4	14	11	3	0	33
		%	33,3%	50,0%	45,2%	45,8%	30,0%	0,0%	39,3%
	Evening (6-10pm)	Count	2	3	13	12	6	1	37
		%	66,7%	37,5%	41,9%	50,0%	60,0%	12,5%	44,0%
	Night (11pm-4am)	Count	0	0	1	0	0	1	2
		%	0,0%	0,0%	3,2%	0,0%	0,0%	12,5%	2,4%
Total		Count	3	8	31	24	10	8	84
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Fishing)	Early morning (5-7am)	Count	1	1	7	2	0	1	12
		%	100,0%	16,7%	33,3%	15,4%	0,0%	16,7%	23,1%
	Morning (8-11am)	Count	0	3	3	4	1	1	12
		%	0,0%	50,0%	14,3%	30,8%	20,0%	16,7%	23,1%
	Noon (12-2pm)	Count	0	0	1	1	2	1	5
		%	0,0%	0,0%	4,8%	7,7%	40,0%	16,7%	9,6%
	Afternoon (3-5pm)	Count	0	1	8	3	2	2	16
		%	0,0%	16,7%	38,1%	23,1%	40,0%	33,3%	30,8%
	Evening (6-10pm)	Count	0	1	1	1	0	0	3
		%	0,0%	16,7%	4,8%	7,7%	0,0%	0,0%	5,8%
	Night (11pm-4am)	Count	0	0	1	2	0	1	4
		%	0,0%	0,0%	4,8%	15,4%	0,0%	16,7%	7,7%
Total		Count	1	6	21	13	5	6	52
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Boats strolling)	Early morning (5-7am)	Count	0	0	0	3	0	0	3
		%	0,0%	0,0%	0,0%	9,4%	0,0%	0,0%	3,1%
	Morning (8-11am)	Count	1	1	7	6	3	2	20
		%	50,0%	10,0%	21,2%	18,8%	27,3%	20,0%	20,4%
	Noon (12-	Count	0	2	1	0	0	1	4

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
	2pm)	%	0,0%	20,0%	3,0%	0,0%	0,0%	10,0%	4,1%
	Afternoon	Count	0	7	25	23	8	6	69
	(3-5pm)	%	0,0%	70,0%	75,8%	71,9%	72,7%	60,0%	70,4%
	Evening	Count	1	0	0	0	0	1	2
	(6-10pm)	%	50,0%	0,0%	0,0%	0,0%	0,0%	10,0%	2,0%
Total		Count	2	10	33	32	11	10	98
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
Preferred Time (Cafes / Restaurants)	Early morning (5-7am)	Count	0	1	0	0	0	0	1
		%	0,0%	5,3%	0,0%	0,0%	0,0%	0,0%	0,7%
	Morning (8-11am)	Count	0	0	1	1	0	1	3
		%	0,0%	0,0%	2,2%	2,3%	0,0%	7,7%	2,2%
	Noon (12-2pm)	Count	0	1	7	5	2	1	16
		%	0,0%	5,3%	15,6%	11,6%	16,7%	7,7%	11,9%
	Afternoon (3-5pm)	Count	2	9	13	14	4	4	46
		%	66,7%	47,4%	28,9%	32,6%	33,3%	30,8%	34,1%
	Evening (6-10pm)	Count	1	6	22	21	6	3	59
		%	33,3%	31,6%	48,9%	48,8%	50,0%	23,1%	43,7%
	Night (11pm-4am)	Count	0	2	2	2	0	4	10
		%	0,0%	10,5%	4,4%	4,7%	0,0%	30,8%	7,4%
Total		Count	3	19	45	43	12	13	135
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

			Age Category						Total
			0 - 10	11 - 20	21 - 30	31 - 40	41 - 50	51 and above	
What are the activities that you would like to continue throughout the year on the waterfront of Derna?	Entertainment	Count	1	4	16	17	1	1	40
		%	33,3%	18,2%	33,3%	30,9%	6,2%	6,2%	25,0%
	Cultural	Count	0	4	5	8	2	1	20
		%	0,0%	18,2%	10,4%	14,5%	12,5%	6,2%	12,5%
	Social	Count	0	2	1	3	2	1	9
		%	0,0%	9,1%	2,1%	5,5%	12,5%	6,2%	5,6%
	Sports	Count	2	12	26	27	11	13	91
		%	66,7%	54,5%	54,2%	49,1%	68,8%	81,2%	56,9%
Total		Count	3	22	48	55	16	16	160
		%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%