

## Cool Waterfronts and Coastal Cities: How Qatar's Peninsula Develops a Resilient Future?

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### Abstract

The coast is one of the most complex systems on earth as it is the result of the continuous interaction between people, land and water. These physical processes shape the geomorphology of the coast, which sustains specific ecosystems that provide crucial services to human societies to flourish. This paper aims at expanding the understanding on the functioning of the waterfronts, which are crucial factor to increase the awareness regarding the challenges of developing and governing coastal areas and waterfronts. Evidently, climate change represents the major human-induced source of natural risks. Understanding the risks associated to the coast is crucial to provide safe and resilient human environment. Planners must address the challenges of waterfronts and coastal areas' planning approaches. Coastal cities are facing the challenge not only by providing high quality services for its inhabitants but also to integrate specific coastal and waterfront uses that demand a large quantity of space and requires highly specialized services. Ports, dwellings, beaches, promenades, protectorates, industry, logistics, resorts, restaurants, are just few of the uses that characterized most coastal cities and waterfronts and need to be integrated into the urban fabric and smartly diminish the consequences of climate change. This paper provides an analytical narrative of Doha, the capital city of Qatar as a typical city-state in addition to significant coastal cities in Qatar like Al-Khor and Al-Wakra. The Gulf always played a major role in Qatar's economical, social, cultural and political life. Inhabitants of old Doha being fishermen and pearl divers perceived the Gulf not only as source of their prosperity but also considered as a sacred entity.

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### 1. Introduction

Some cities have long-treasured waterfront promenades, many cities have recently built ones, and others have plans to create them as opportunities arise. Beyond connecting people with urban water bodies, waterfront promenades offer many social and ecological benefits. They are places for social gathering, for physical activity, for relief from the stresses of urban life, and where the unique transition from water to land eco-systems can be nurtured and celebrated (Macdonald, 2017).

*"The waterfront isn't just something unto itself. It's connected to everything else."* Jane Jacobs.

The Gulf waterbody and the extended coastline are of a great social and cultural significance to the community of Qatar. With more than 600km of continuous waterfront, Qatar is blessed with a great potential which can be vital for its urban and economic future. This natural

potential can be also perceived as a great plight if the impacts of climate change particularly the sea level rise are not considered. This paper illustrates a major shift in contemporary urban development in Qatar. The shift stems from a deeper understanding of the vulnerability of Qatar as a peninsula facing the consequences of climate change in an inevitable manner. Evidently, the first cycle of globalizing the waterfronts urbanity in Qatar and particularly Doha the capital city, was characterized with an emphasis on the image of the city on the expenses of being concerned and prepared for the consequences of climate change and global warming. Plenty of skyscrapers were built along the waterfront to generate a global city image for Doha. Additionally, a number of mega real-estate projects resorted to gulf reclamation to gain more land and create fantasy housing and recreational projects.

The paper sheds light on new planning approaches, coastal management strategies, global warming impact assessment, climate change readiness and urban development guidelines which characterize the new waterfronts development paradigm in Qatar. The related outcomes of Qatar Vision 2030 specifically the Integrated Coastal Zone management Plan for Qatar will be assessed to scrutinize its policy making, planning and implementation. More significantly, the paper traces the impact of the declaration of Qatar National Development framework and Qatar National Master plan, as calls for a better planning for the local waterfronts. The paper concludes with a holistic planning matrix which advises the development logic of coastal cities in Qatar to create a balanced relation between Gulf, city and society. It also suggests planning principles, policies, guidelines and regulations for future waterfronts and coastal areas' development in Qatar.

## 2. Qatari Cities and Water: A Unique Relation, the Past, the Present and the Future.

The relation between Qatari cities and water is historical and influential. The Urban history of Qatari cities was substantially affected by the proximity of the Gulf and the economic dependence on fishing and pearl diving. Studying the urban evolution of Qatar and other Gulf States would reveal two forms of settlements allocated in an adjacency with water. The first form is fishermen villages which were distributed along the waterline in the preferred sites for starting the fishing trips and its proximity to the community Souq. This form or pattern of waterfront development was not limited to Qatar but was repeated in all Gulf States as fishing and pearl diving were the main economic pillars for all pre-oil traditional settlements in the Gulf. The second pattern of waterfront development is the portal cities. These cities grow gradually and organically around a simple port which was used to facilitate trade activities within the Gulf and with neighboring countries particularly Iran, India and other surrounding countries.

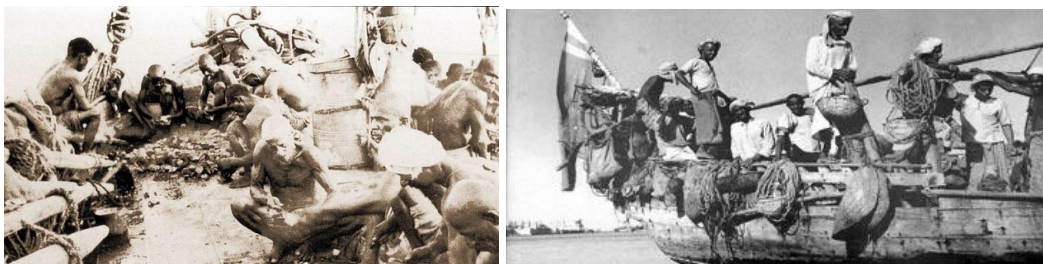


Figure 1: The economic base of the origin of Doha as a fishermen village

### 2.1. The Impact of the Gulf on Doha's Urban Evolution

The city of Doha is the capital of the State of Qatar and is located on the Persian Gulf. The primary industry in the city was pearl trading through the 1920s, and then collapsed due to the invention of pearl harvesting techniques in Japan. The population peaked at about 27,000 inhabitants in the 1920s (Alraouf, 2017) and consisted of traditional Islamic desert settlement patterns, as described by Hakim(1986). These patterns consisted of a vernacular

road networks of cul-de-sacs, which enhanced the privacy of neighborhoods, known as ferej, and the market, located close to the port and constituting the central public realm. After national independence, Doha entered a phase in the 1970s and 80s when the discovery of oil fueled a physical growth of the city's infrastructure. While the old city centers were replaced by commercial buildings and apartment blocks for foreign labor, low-rise housing areas rapidly extended the urban periphery (Al Hathloul 1996). Studying the urbanity of Qatar and particularly Doha, would reveal the significance influence of proximity of the Gulf on the city growth pattern over the past decades. The city of Doha is the largest city and capital of the state of Qatar, and is located on the Persian Gulf. It has one of the fastest growing populations in the Arabic world (World Bank 2014). While the population of Doha was below 500 thousand just 20 years ago, it is now over 1.2 million and expected to continue rising at unprecedented rates. Even if we trace how Doha transformed from a traditional settlement to a cosmopolitan and global city, we can clearly identify the impact of the Gulf on the city morphology, roads development patter and growth directions. In other words, the urban growth dynamics of Doha were substantially relaying on the strong connection between city and water. The overall morphology of the city can also be seen as a reflection of the Gulf waterline geometry. Changes in the composition and configuration of urbanizing Doha were found due to the gradual growth respecting the genesis of the city's development; the Gulf.



Figure 2: The whole process of urban evolution in Doha, the Capital city of Qatar was based on the strong connection with water

## 2.2. Why Waterfronts are Significant to Qatar's Urban Future?

The Gulf and coastline assets are of great spiritual and cultural significance to the people of Qatar. As all the main cities in Qatar are basically coastal cities, planning for their sustainable future is crucial. All these coastal cities were and still represent the main centers of urbanization in the whole State. The growth of Qatari coastal cities population and the preference for living in coastal areas has resulted in their ever-increasing development. Coastal cities and waterfront areas are the most common destination, which brings in economic growth but implies additional urban development and increases the need for resources, infrastructure and services. Qatar went through different phases of dealing with waterfronts in the last decades. Most of the coastal cities were transformed from humble fishermen settlements to modern cities.

## 3. State of the Doha's Waterfronts in the Post-Oil Era

Historically a pearl-trading center, Doha has reinvented itself in just two decades into one of the world's busiest business, cultural and tourism centers. The Evolution of Doha's Waterfront if critically analyzed reveals profound conclusions about phases of development. The capital city Doha has witnessed a number of transformations after the discovery of oil. As per the waterfront, specific changes can be concluded as follows:

### 3.1. From a source of livelihood to a view.

One of the main transformations that can be observed in the post-oil era is the fact that the Gulf was not perceived any more as a source of livelihood. Fishing and pearl diving are no



longer the back bone of the State's economic base. Hence, the Gulf's new value, particularly for hotels and real estate developers lies in its ability to provide stunning views for hotels' guests and residential towers dwellers.

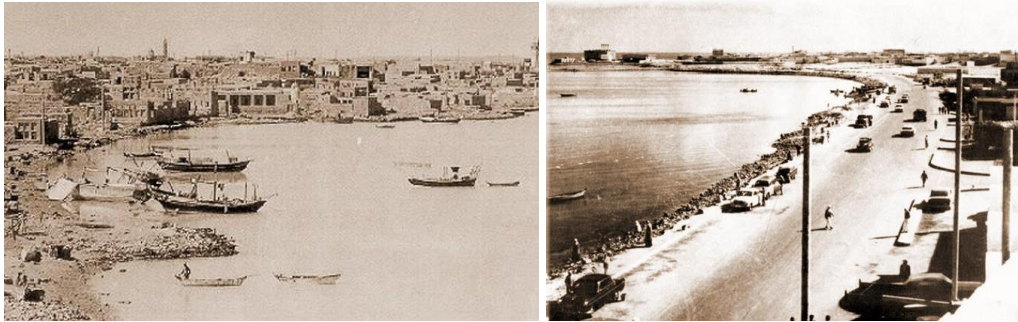


Figure 3: Doha's waterfront in the 1940s and 1960s.



Figure 4: 1990s

### 3.2. The Port and the Market vs. the Glittery Towers

The post-oil era is also related to the domination of changing the image of the city so it can be easily related to global cities around the world. The waterfront which was historically distinguished with its vibrant port and lively market transformed into a setting for iconic development which constructs the new image of the city as a global urbanity. The result of such process resulted in the lining up of towers overlooking Doha Bay. Parallel to such aggressive development another form of urbanity can be observed. Considerable portions of the waterfront were designated to private entities primarily hotels, restaurants, resorts turning the enjoyment of the Gulf waterfront to private places. This privatization of the waterfront was accompanied with lack of interest in creating spaces for people and reestablishing the strong connection between the city, the community and the waterfront in Doha.



Figure 5: Doha's accelerating waterfront development in the last decade

## 4. Contextualizing the Waterfronts of Qatari Cities

In addition to Doha, the Capital city, Qatar's cities are all adjacent to water. The main reason can be understood once the urban history of each city is analyzed. All these cities are originally based on fishing or trade small ports. So every Qatari city overlooking the Gulf has its history but also acquired some architecture, urban, cultural and functional roles through the last few decades. Therefore, for planning the future development of Qatari cities' waterfronts, being informed about its history and current status is significant. The idea is using the personality, historical narrative, urban character and assets of every Qatari city to articulate its unique approach to waterfront development. For example if we compare between the other two cities following Doha in the ladder of Qatar's most important and populated cities, interesting conclusions would be revealed. In the case of Al Khor City/Municipality, the fishing port is the origin of the city. Al Khor city is located specifically on the East coast of Qatar, about fifty kilometers from Doha and come third in terms of population with its 200,000 inhabitants. The personality of the city now is weaved around a recreational role which needs to be elaborated and further explored. The future development of the city and particularly its waterfront should consider the city character, function and personality. Hence, invest more in developing the City and its waterfront as a holistic recreational development serving the community, the city and the whole country. The second important case is Al Wakrah City/Municipality. Al Wakrah, a city in Qatar is located south of Doha. The Eastern shore of Al Wakrah faces the Gulf. Originally fishing and pearling village, Al Wakrah has now evolved into a small city with a population of more than 300,000 inhabitants making it one of the largest cities in Qatar. The city has a strong history and evidences of the traditional architecture and urbanism of Qatar. It is also the location of the famous fort and traditional market. Hence, a focus on the historical heritage as a potential for developing the city's waterfront can be a key to its uniqueness within the Qatari context.



Figure 6: Partial attempts to develop parts of Al Wakrah waterfront as a manifestation of local heritage to attract tourism and serve the local community alike.

## 5. The Main Challenges of Waterfront Development in Qatar

For Qatar to develop its waterfronts and coastal cities in a sustainable manner, a number of challenges need to be confronted. As explained earlier, all the waterfronts and coastal cities in Qatar are part of the country's environmental assets and also contain the most significant urban and architectural heritage due to the fact that all traditional cities in Qatar were historically portal cities connecting Qatar with the rest of the world via trade and other economic activities. Here are the main challenges as prioritized to be confronted in any strategic planning aiming at developing waterfronts and coastal cities in Qatar.



### **5.1. Waterfronts as a Catalyst for Urban and Economic Development**

To mitigate these problems it is necessary to consider coastal cities as dynamic complex systems which need energy, water, food and other resources in order to work and generate diverse activities, with the aim of offering a better socio-economic climate and quality of life. As a consequence, the integrated management and sustainable development of coastal cities is essential, with science, technology, architecture, socio-economics and planning, all contributing to provide support to decision makers. As stated in Qatar National Development Framework: "Although Qatar is a coastal nation, there is a significant under provision of recreational and leisure facilities in coastal locations for the community to enjoy". Qatar National Development Framework (QNDF).

### **5.2. Environmental Conservation.**

The activities common to coastal cities and waterfronts areas require the development of well-planned and managed urban environments, not only for reasons of efficiency and economics, but also to avoid inflicting environmental degradation that causes the deterioration of natural resources, quality of life and human health. Preserving the environmental assets allocated along the extended Qatari coastline including mangrove trees. Qatar should learn from the negative consequences of water reclamation as it negatively affected marine ecosystems. Extensive coastal development in Dubai's artificial islands is a very illustrative example of such negative impact. Another important aspect in planning contemporary waterfronts is dealing with the future consequences of climate change.



*Figure 7: The view over a few mangrove trees that grow on the shores of Qatar*

### **5.3. Heritage Conservation.**

The second main challenge in developing waterfronts and coastal cities in Qatar is heritage conservation. All the portal cities in Qatar from Doha to Al-Khor or Al-Shamal in the north or Al-Wakra in the south are sites for a valuable architectural and urban heritage. From the fabric of the traditional center of these cities to the unique vocabulary of architectural elements used in houses, mosques and majlises, conservation and preservation of such valuable and irreplaceable heritage should be a priority. Hence, the role of urban planning authorities in Qatar should be articulated around a more sensitive approach to waterfront development. An approach that will allow development and growth but more significantly acknowledge the importance of conserving the nation's heritage and preserve such valuable chapters of Qatar's history.

### **5.4. Waterfronts in Qatar as Places for All**

Many scholars in the field of urbanism, through their research, have highlighted the importance of the human dimension in urbanism (Jacobs, 1961; Gehl, 2013) and offered insights into systematically studying environmental behavior (Zeisel 2006) through international studies in public life (Whyte, 1980; Gehl, 2013). Studying public life offers immense insights to urban environment professionals by bringing users back into focus when they may be overlooked in design (Gehl, 2013). The expected outcomes could play an essential role in achieving the needs of the whole social spectrum that are considered as community members dwelling within Doha and other cities. People in Qatar could belong to

any of the more than 150 nationalities that make Doha and other Qatari cities one of the world's most diverse places. Hence, waterfronts development in Qatar should speak to this diversified human mosaic and take their needs and aspiration into consideration.

## 6. The Role of the Urban Planning Department in Qatar: Towards an Integrated Coastal Zones Development

### The Inevitability of Coastal Protection

Qatar coastline has come under increasing pressure as it continues to attract many new residents and visitors seeking the lifestyle and environment of coastal living. Planning for coastal communities must balance the need to provide jobs, housing, facilities and transport for a growing population while maintaining the coast's unique qualities. It was evident in Qatar National Development Framework (QNDF) that Qatar as a coastal nation is not utilizing such a potential to the maximum level desired<sup>1</sup>. Qatar National Development Framework (QNDF) and the generated Qatar national Master plan acknowledged the lack of clear strategy to deal with the waterfront development and coastal growth. Hence, Interim Coastal Development Guidelines (ICDG) was developed with the determination to use it temporarily till the finalization of a comprehensive and integrated study dealing with Coastal Zones Management. The main value of ICDG is to guide the assessment and approval of recreational, leisure, tourism and other forms of development and facilities proposed in coastal locations. Additionally, it directs public and private sector development to follow a clear set of development objectives, definitions and regulations to prevent the risk of environmental degradation in the Coastal Zones.

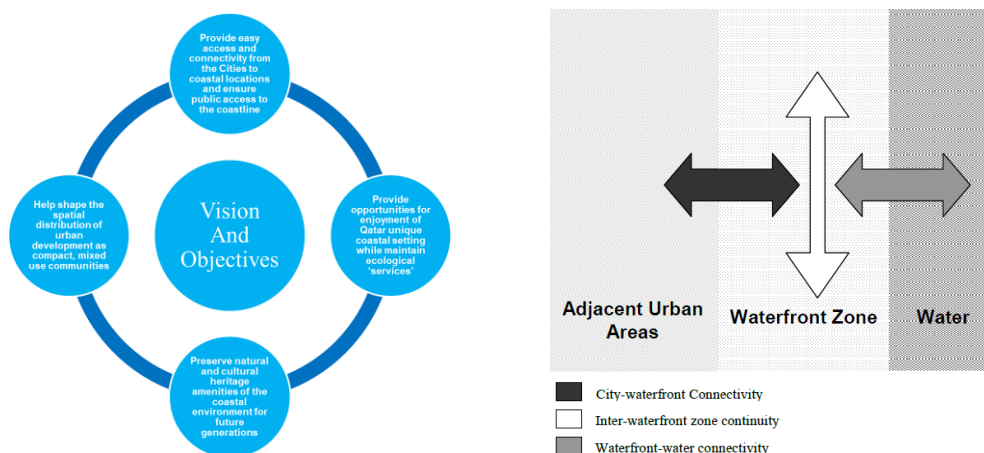


Figure 8: (Source: QNMP, ICZD)

Based on the coastal form of Qatar and the land use sensitivity analysis that has been undertaken and mapped, appropriate forms of land use and occupancy in the four major coastal zones have been identified. The Four Coastal Zone Types are Protected Areas and Aquifer Protection Zone, Developed Areas, Future Development Zone, and QP Jurisdiction Zone boundary and areas that have not been designated in the first the first three types. The third type or zone which is related to future development was also divided into three zones depending on the sensitivity of the development context. Hence, Classification of Future Development Zone was categorized as such The Future development zone with less environmental sensitivity, The Future development zone with medium environmental sensitivity and The Future development zone with high environmental sensitivity.

<sup>1</sup> QNDF has proposed the preparation of a comprehensive Integrated Coastal Zone Management Planning (ICZMP) to help manage and sustain the nation's valuable coastal assets.



Figure 9: The main promenade of Doha and the connected green public spaces.



Figure 10: The interaction between people and the waterfront along the city's active promenade.

## 7. Global Lessons: The Urban Value of Costal Development

The meaning of a city vibrant waterfront is centered on creating places for all people. Cities seek a waterfront that is a place of public enjoyment. They want a waterfront where there is ample visual and physical public access – all day, all year - to both the water and the land. Cities also want a waterfront that serves more than one purpose: they want it to be a place to work and to live, as well as a place to play. In other words, they want a place that contributes to the quality of life in all of its aspects – economic, social, and cultural”. Remaking the Urban Waterfront, the Urban Land Institute (Seattle Department of Planning and Design, 2012). In this section of the paper, a number of global case studies were analyzed in order to draw conclusions regarding the main features of positive and vibrant waterfronts. The selected case studies range from mega city like the Shanghai Bund Waterfront Redevelopment, the Northern Hong Kong Waterfront and Melbourne Waterfront Revitalization. The cases also include examples of small and medium scale interventions like the case of Aker Brygge Wharf, Oslo, Norway and the Cheonggyecheon River in Seoul, South Korea.



Figure 11: The best practice cases of the Shanghai Bund Waterfront Redevelopment and Melbourne Waterfront Revitalization respectively

The cases of Aker Brygge Wharf, Oslo and the Cheonggyecheon River, Seoul illustrated the value of small and medium scale interventions which aim to transform the city water potentials into a source of distinction and force to create new spatial experiences. In the two cases, the waterfronts were planned as social public spaces within the fabric of busy cities.



Particularly, the the Cheonggyecheon River development illustrated the importance of small act and big Impact approach. How the Cheonggyecheon River urban design restored the green heart of Seoul. The project is intended to create a green oasis in a concrete jungle. The large scale cases like The Northern Hong Kong and Waterfront Melbourne Waterfront Revitalization deal with the waterfront not only as a social and recreational edge to the city but rather as a center of holistic development which been infused through the whole waterfront and more significantly penetrated the depth of the city. These projects have been planned in light of a development framework which sees the waterfront as a catalyst for the whole city development. In the case of The Northern Hong Kong Waterfront, the refined urban design framework provides a coherent and legible structure of uses, building forms, open space and connectivity. It is built upon the waterfront promenade and four principal design corridors to create a sense of place.



Figure 12: Aker Brygge Wharf, Oslo, Norway



Figure 13: the Cheonggyecheon River Urban Design Restored the Green Heart of Seoul



Figure 14: The Northern Hong Kong Waterfront

## 8. Creating a Great waterfront: The Suggested Strategies Planning Principles, Guidelines and Recommended Actions for Vibrant Waterfronts

This study involves an initial review of the literature on waterfront developments and urban sustainability to extract a comprehensive set of criteria that can be used to develop a vibrant, sustainable and successful waterfront (Macdonald, 2017; Andersson, 2018). Therefore, in

this section, the lessons learned from the selected case studies in addition to the analysis of published literature on the new trends of planning waterfronts would construct the base for suggesting strategies, planning and design concepts which can guarantee the creation of create waterfronts. First of all, the importance of providing a diversity of attractions to create an all-time and all-season waterfront. Also, to provide a continuous waterfront promenade with an extensive greenery. The promenade as an extended spatial experience supported by green spaces would encourage social interactivity and sense of belonging to the waterfront. Such frequent usability can't be attained without allowing for public access and providing for environmentally friendly transport including green buses, bicycles, safe pedestrian routs and even effective water transportation. It was also documented that in all successful waterfronts, the main landmarks were integrated with the waterfront promenade to increase connectivity and vibrancy.

A social approach to urban waterfront regeneration is an important condition too as it will guarantee that the regeneration of the waterfront is actually speaking to all people without any form of rejection, discrimination or neglect. Such an inclusive approach would create bonds between people and place. The social approach to waterfront development would affect the decision making in the planning processes. The role of planners in public space planning is crucial but integrating the views of the community members is equally important. Hence, citizen participation in the planning and design process of any waterfront is not an option as waterfronts are one of the most social places and should be planned and designed by people and for people. Another crucial principle in planning waterfronts is to diversify uses and activities along the waterfront and within the coastal cities to include residential, commercial, cultural, institutional, and mixed uses connected with open and public spaces.

For a waterfront to succeed and attract people and enhance its city, a focus on quality and successful place making is highly recommended. Design-based waterfront developments should attain a number of qualities to accomplish positive planning process which would lead to vibrant and attractive waterfronts. More integrated spatial and planning patterns to guarantee the success of waterfronts can be crystalized as such:

### **8.1. Waterfront as a Sequence of Public Spaces**

Begin by envisioning a network of well-connected, multi-use public spaces that fit with the community's shared goals. Waterfronts should be designed as a sequence of active and vibrant public spaces speaking to the whole city dwellers.



*Figure 15: Waterfronts should be designed and planned as a number of connected positive public spaces*

### **8.2. Public Goals are the Primary Objective**

Waterfronts everywhere are too valuable to simply allow developers to dictate what happens there. . This is not to say that private development is unwelcome and should be discouraged – on the contrary, it is often necessary to the future of a healthy waterfront. But the best solutions for revamping waterfronts put public goals first, not private short-term financial objective. The viability of a waterfront development is also about how to balance public and private invest to be economically sustainable.





Figure 16: the needs of the different sectors and groups of the community are the primary objectives of a successful waterfront.

### **8.3. Build on Existing Assets & Context**

After establishing the public spaces and public goals, begin the public visioning process with the existing assets and surrounding context. Therefore, it is wise to start small to make big changes. Placemaking is about doing more than planning. Many great plans get bogged down because they are too big, too expensive, and simply take too long to happen.

### **8.4. Create A Shared Community Vision**

Unlike a master plan, a community visioning process does not lock a project into a prescribed solution. It is a citizen-driven initiative that outlines a set of goals--ideals to strive for--that set the stage for people to think boldly, make breakthroughs, and achieve new possibilities for their waterfront.

### **8.5. Create Multiple-Use Connected Destinations**

Create a vibrant mixed-use community affordable and welcoming for all. The value of inserting popular destinations within the waterfront is to create a special place to draw people. The most effective way to propel a visioning process is to set a goal of creating a number of great destinations along a waterfront, an idea will guarantee extensive flow of people in different day times, seasons, weather and conditions. Such destinations along the waterfront should be connected to one another and incorporated into a vision for the waterfront as a whole. The connectivity between the selected and well planned destinations should be achieved via encouraging walkability and design the public realm which would encourage people to walk and reach the different destinations in safe and enjoyable manner. Link: Connect the city and the water. And provide multiple ways to get around and to reach the waterfront include transit, walking and cycling. Additional aspect in terms of suggesting uses for waterfront is to focus also on suggesting water uses. Activities like boating, sailing, fishing, swimming and other related activities add positively to the vibrancy and open up options for different users.

### **8.6. Open the site with accessible public spaces for all.**

A vital dimension in developing waterfronts which would speak to the whole community is maximizing opportunities for public access. It is essential that the waterfront be accessible for everyone to the greatest extent possible. Therefore, facilitating access and enhancing linkage would enhance the overall quality of the development. Waterfronts should be seen as a manifestation of the democratization not privatization of public spaces.

### **8.7. Create a green, sustainable, innovative model community.**

To balance environmental benefits with human needs, waterfront development should consider environmental assets and a healthy blend with it in order to produce a showcase of authentic sustainable development. While a wide variety of uses can flourish on a waterfront, many successful destinations embrace their natural surroundings by creating a close connection between human and natural needs.



### 8.8. Waterfront's Identity and Image.

*Despite all functional aspects of a waterfront but it is also a platform to represent the identity of the city or the state. A waterfront also collectively would construct an image that can be literally printed in the minds of the dwellers or visitors alike. Therefore, the visual qualities of the waterfront is significant as it can be a representation and manifestation of identity and responsible for the city image.*

## 9. Conclusions and Recommendations

Qatar should acknowledge that waterfronts, the unique places where land and water meet, are a finite resource, embodying the special history and character of each city. Qatar's approach towards developing its extended waterfronts should be holistic, comprehensive and sustainable. The suggested urban planning principles, patterns, guidelines and actions are tools to ensure that all coastal cities in Qatar exploit its relation with water in a way which would serve people, attract tourism and promote diversified economic routes. Doha and all Qatari cities should perceive the blessing of being developed along the waterfront as a great potential for a more sustainable and livable urbanism. Towards Looking at the urbanization of Doha and other Qatari cities, waterfronts can act as a medium to achieve City/Waterfront interaction. The urbanity of Qatar needs more effort towards connectivity and continuity. The connections, corridors and vibrant green streets towards the waterfront act as the city veins facilitating the coastal development to connect with the inner parts of the city. Hence, the successful waterfront acts as an interface to connect and link the city with its surrounding waterbody. It's possible that Qatar may end up getting a sparkling, successful new waterfront districts that draws in tourists from the world's four corners. In order to strengthen the waterfront's coherence and connection, this paper pays special attention to the design of waterfronts, ensuring that promenades are maintained as pedestrian and cyclists-friendly zones. But the suggested approach implies a different definition of target groups. A definition which gives priority for the local community and hence calls for a balanced urbanism, community participation and a public and private partnership. Developing waterfronts in Qatar can be seen as physical manifestation of the memory of place. Qatar architectural and urban heritage conservation within Qatari waterfronts commemorates history while creating a new legacy.

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