EXPLORING UTOPIAN CONCEPTS IN THE CONTEMPORARY WATER ARCHITECTURE

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Abstract
Water has since the beginning of civilizations been known to be the vital component of mankind's existence. The inseparable relation between architecture and water is well-established from the beginning of ages where humans first settlements arose; that inevitably led to the creation of long-lasting shelters. Despite their strong bond, the architectural relationship with water has been through an unfortunate downfall throughout the years. Some contemporary architects admire to achieve an innovative approach in their projects, but are still lacking the risk of incorporating water as a key component for it; where it can act as a symbol of grandeur, creating an image of perfection within the project. This research, therefore, aims to explore the various concepts in using water features in contemporary architecture, that contributes in expressing ones' visions for achieving utopia. Moreover, showcasing the importance of aquatic's significance within architecture. The research focuses on one case study: Regenerating 'Ras El-Sakher', Tripoli, which analyses an outside of the box strategy for reaching a utopian concept by escaping from normal views and directing it towards water. To prove this hypothesis, two different methodologies will be used, the research will conduct, one mental, which will be an inductive methodology that will define our main keywords, and analysis data from previous works and articles on the same topic wrote by different theorists, scientists or architects, and the second one will be a physical methodology that will use experimental and field methods that will be established through site visits, handing out survey questionnaires, analysing the urban policies, and holding interviews. Finally, developing a series of different conceptual aspects found in contemporary water architecture, that would create a design guideline for the further usage of water as a key component in reaching utopia.

Keywords
Water Architecture, Contemporary Design, Utopian Concept, Philosophy
1. INTRODUCTION

1.1 Research Approach

Water is not only essential for life in every form, but throughout history it has been a fundamental means of production for populations. As our world changes, so do our needs, and the concept of reaching the ideal vision has to contain the most efficient aspect of life, which is water. Architecture, in itself, promotes innovation, and creativity that should reflect the of change and provide not only for the present but prepare for the future. (McCarter, 2012)

“Empty your mind; be formless, shapeless, like water. If you put water into a cup, it becomes the cup. You put water into a bottle and it becomes the bottle. You put it in a teapot, it becomes the teapot. Now, water can flow or it can crash. Be water my friend.”

-Bruce Lee

In this well-known quote stated by the famous martial arts personality Bruce Lee, he explains how deep the philosophy of water can be. Water’s contribution to the field of architecture is never ending. Understanding the architecture of water is similar to studying the water of architecture, leading us to the learning of basic physical laws which govern the behavior of water, where utopia can be created by engaging our senses and how its presence relates us as human beings. Architects and designers hold responsibility in which ways to look in order to reach an ultimate utopian vision, where water needs to be a part of it, since it is known to be the driving force of nature. (Pfister, 2009)

Furthermore, utopias create an imagined world, where it is full of endless hopes and visions. As well as allowing the conception of impossibilities. New extremes can be reached when water meets architecture, in other words, known to be “liquid architecture”, where it becomes an essential material in constituting a fundamental element of our imagination. Moreover, it mainly holds its strongest relationship with architectural designing strategies, where it allows for the adoption of a more flexible frame of image and widen our scope from the aesthetic aspect, as the French priest Ernest Dimnet stated “Architecture, of all the arts, is the one which acts the most slowly, but the most surely, on the soul”. (Dimnet, 1932)

Finally, through architecture, understanding how the qualities of water will capture all our senses is crucial. Water has always been used as a symbol of life, where “there’s plenty of water in the universe without life, but nowhere is there life without water” as Sylvia A. Earle stated. Design in architecture can always enhance the view and guide users to the experience that they will remember. Contemporary architecture is often designed by architects, where they aim to use water in reaching utopia through re-directing the traditional views and turning imaginative contradictions to reality. “It is good to remember that Utopia is nothing but the reality of tomorrow and that today’s reality is yesterday’s utopia” (Guner, 2018) leading to the understanding that utopian concepts create a “perfect place” which defines a human aspiration towards a form of perfection that is always unreachable and, in some way, impossible.

1.2 Problem Definition

These days, there is an absence of collaboration in contemporary architectural trends between the building and an important natural element, which is water (Macro), where architects see water as a threat and not as an opportunity in order to reach a level of innovation and utopia. As the late President John F. Kennedy said that “Anyone who can solve the problems of water will be worthy of two Nobel Prizes –one for peace and one for science.”

It has now been visible that architecture is an instrument which is used to express both the physical characteristics and the true beauty of water, where architects should consider designing in a way in order to let water in rather than keeping it out of their projects (Micro). There are many qualities in which water can enhance the project such as its reflective nature, transparency, softness, and interaction with nature. Water is not being consciously used to its full potential, and thus the vision of reaching the “perfect
image” is lacking due to the absence of these aquatic features where they are not being consciously integrated within the project.

![Diagram of Water Elements and Architectural Design](image)

**Fig. 1:** Relation between Water Elements and Architectural Design  
*Source: Author*

### 1.3 Aim of the Study

The main aim of this research is:

- Exploring the various concepts in using water features in contemporary architecture that contributes in expressing one’s visions for achieving utopia
- Shows the lasting hyperlinks among water and architecture, and to illustrate the utopian concepts that will be discovered within.
- Find out if water elements may be used or not in architectural standards, as a key component.
- Focus on the outcomes of utopian concepts that occurred from contemporary water architecture. Illustrate the different degrees of interplay between flow of water and architecture inside the practical field. In addition, this thesis shows a case study that water existence will be a part of layout concepts, elevations, drawings or planning.

### 1.4 Research Hypothesis

This paper assumes that water, when used as a key component, in contemporary architecture, can be used as a way to achieve utopia which is known to be the ideal image of a project.

Santiago Calatrava once said: “The architect is not only the director, but he is the composer. And, as a composer, the architect brings a sense of creativity to each building”, therefore, it presumes that a utopian vision can be achieved by escaping from normal views, and directing the view towards water.

### 2. LITERATURE REVIEW

Architecture and water are prominently two contradicting entities, that when brought together can have an extraordinary design potential. Architecture on one hand is known to be rigid and fixed, while water is more dynamic and takes the shape of any form. This belief that lies between architecture and water is the reason for limited growth in the field of aqua architecture (Allan, 2016). There were many well-known publications that manifested in the field of ‘water architecture’ written by architects such as: Ray Allen Cho, Michael R. Norton, David Rifkind, and Laura Daglio, where their books created several guidelines and proposals for the integrations of water with architecture.

[https://digitalcommons.bau.edu.lb/apj/vol27/iss1/7](https://digitalcommons.bau.edu.lb/apj/vol27/iss1/7)  
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It is of great important to acknowledge the definition of the main keyword, which is ‘water architecture’. According to Charles Moore’s definition, water architecture- also referred to as aqua architecture- is the design of architectural and engineering structures which support coastal design, near-shore and off-shore or deep-water planning for many projects. After stating the principles of these readings and importance of water in the previous readings, water still continues to be a source of life and mystery in the architectural phenomenon. Moreover, humans have separated themselves from nature, where water can act as an element that plays a sensual role in reconnecting us to the environment, hence explained that:

"Another way to describe this intersection is to state that water is a ubiquitous element. It is an intermediary agent flowing between every human and non-human act of inhabiting a particular urban landscape. Simultaneously, its turbulent currents and backflow loops unsettle the best-laid plans of our federal government all the way down to municipal maintenance, which constitutes our political-urban landscapes."

Steve Cimino for AIA Architect

2.1 Role of Water Features in Contemporary Architecture

Many architects are trying to incorporate water as a main component in the construction of contemporary buildings, some of which are: Lars Spuybroek, Snøhetta, and Roland Bogatzky. These architects created a new line of innovation techniques by allowing human nature to act as water, where it takes the shape of its container. (Schwartz,2017) Some water features include:

- Ponds
- Aquariums
- Waterfalls

The work of two contemporary architecture that showcase how water compliments the space it lies within, “Svart” in Norway, which proves the idea to make the first positive powerhouse hotel, that incorporates water environment within the project (Muller,2018), and the “Radisson Blu Hotel” in Berlin that incorporates a huge aquarium in the middle of the lobby, prioritizing the water ambiance in the building, as shown clearly in figures 2(a) and 2(b).

![Fig.2 (a) Left: Svart Powerhouse submerged in sea -Source: Inger Marie Grini](image)

![Fig.2 (b) Right: Radisson Blue Hotel’s aquadom – Source: Getty Images](image)

2.2 Historical background of ‘Water Architecture’ in Early Civilizations

As was discussed earlier, water bodies like rivers, lake, and coastal regions played an important role in formation of the first mankind presence, throughout history it has been known to be a fundamental means of production for populations, used for trade, defense, transportation, industry and recreation, hence determining the topographical character of urban areas. Water as an architectural element in design was almost forgotten after the Western Empire collapse, it revived almost 1000 years after during the Italian Renaissance. (Mill,2014)
2.2.1 Ancient Mediterranean
The earliest known civilization that used the water as a tool in their architecture, was that of ancient Greek, known as the Minoan civilization, dating back to 18th century BC. They were the first to use underground clay pipes especially for sanitation and water supply. (Williamson, 2013)

2.3 Water Initiative towards Utopia
In this research paper, various concepts have to be suggested in using the water features in contemporary architecture, in order to reach a utopian vision. Utopia is not a static state that consists a well-known definition, it instead relies on the person’s own imagination and thoughts. Some of the many concepts that architects use in contemporary water architecture are:

- To make the city a major commercial and service center with worldwide-class facilities
- To project the region with attractive venture opportunities, in order to increase the economic development and stability.
- To launch the city as one of the main touristic hubs of the country
- Leisure and entertainment

2.3.1 Reaching Utopia through a Sustainable Approach
Other architects aim to achieve their utopia by embracing the environment as a whole and empower it, promoting green infrastructure, water sensitive design and sustainability, for the creation of healthy spaces. Some sustainable concepts include:

- Economic Sustainability- where it boosts the economy, where the cost investments and efficiency of water recycling and productive grounds become a benefit.
- Environmental Sustainability- where ponds and other water figures passively lessen the risk of overflows, provide temporary water storage and progress water quality
- Social Sustainability- where it bonds societies together and also inspire engagement in water supervision and increase social accountability (Garcia, 2007)

2.4 Representation of Water Contemporary Architecture
Water has been the element that can surely enhance structures, as well as the visual aspects in a project. The diversity of approaches in “architecture associated with the water element, either in the utilitarian, symbolic, therapeutic, leisure or visual context” varies greatly. (Meyer, 2011) Water sources can be put into two categories: artificial and natural resources. Therefore, water features can be explored given the influence they have at different scale (from a macro to a micro level). There are many recent innovations in aqua architecture that proposes water as the key element in the project, hence, elevating the visual aspects to new boundaries (Dong, 2004) such as:

2.4.1 Floating Architecture
Floating architecture not only proposes a visual utopian ambiance, but also “given the impact of climate change, we can begin to think a lot more about the opportunity for living with water as opposed to fighting it”. (Hou, 2003). A similar example will be discussed that is “Under Restaurant” in Norway by Snohetta, which proves the idea to make a tube like shape, that would bring people from above sea level down under the sea (Thorson, 2019). Providing a tribute to the wild
fauna of the sea and the rocky coastline of Norway’s southern tip. Utopian through the architect’s thought is:

- Changing the user’s experience from normal view to a Utopian vision which is under the water – to become one with the liquid forms around you

This thirty-four-meter-long building is half sunken in the sea, where it breaks the surface of water five meters below. In Norwegian “under” has a dual meaning of “below” and “wonder” which represents the ideal view of the sea not only as a surface, but the ability to experience it from within.

2.4.2 Waterfront Architecture

The word waterfront means “the urban area in direct contact with water” (Kostopoulou, 2013), which is generally the area of interaction between the project and water. Waterfront is basically an area which is located in the vicinity of water bodies where events and activities take place. Utopians concepts can be seen from the:

- Historical context
- Circulation/Motion
- Sustainable Site

A similar example that further explains this concept is the “Dune Landscape” in Belgium by ZJA. This design was to reinterpret the historic relationship of coastal town with the sea, reaching utopia through historical context. As well as this project works on flood risk management and make the seawall car-free to connect Epernay square to the sea.

2.5 Parameters of Analysis

Based on preceding, there are five parameters of exploring utopian concepts in contemporary water architecture: Visibility and Connectivity, Flexibility and Adaptability, Plan, Accessibility and Inclusion, Circulation Routes.

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3. METHODOLOGY:

The paper uses various types of research methodology, which can be summarized as four types: First, the inductive method is primarily used through gathering data around the chosen case study; ‘Tripoli Ras El-Sakher’, recognizing its social and cultural aesthetics. Second, the field method, the author visited several sites within the coastline of ‘Tripoli Ras El-Sakher’, taking live photographs, distributing questionnaires, and undertaking interviews with a sample of people that are living or working near the coastline. Moreover, a written questionnaire was distributed on 100 samples to recognize their point of views on the waterfront’s missing aspects and the possible ways to develop it. Third, the analytical method will be used to analyze the results of the interviews and questionnaire. Finally, the deductive method, where the paper deducts a strategy of certain solutions to create a utopian vision by re-imagining the waterfront facilities through water architecture. The four research methodologies are presented through the research as follows:

3.1 Introducing the case study of ‘Regenerating Tripoli Ras El-Sakher’

Tripoli, as an introduction, is known to be the capital of the North and is the second largest city in Lebanon. Located 85km north of the capital Beirut, this city’s first settlements dates back as early as 14th century BCE with Phoenicians establishing the very first trading facilities. Although Tripoli contains the second largest seaport in Lebanon, with a 13km coastline incorporated within, and an increasing population of 229,398, it suffers from the lack of using water as a key component in reaching utopian visions in all its forms (economically, socially, and environmentally). Which makes Tripoli forgotten for its sea values, where it can act as a powerful opportunity to increase tourism and economic force. Nevertheless, Tripoli’s utopian features lies within the visual context overlooking the Mediterranean Sea, as shown in Fig.5

![Map showing Tripoli Ras El-Sakher Waterfront Region and other waterfront areas.](https://digitalcommons.bau.edu.lb/apj/vol27/iss1/7)

Fig.5: A map showing Tripoli Ras El-Sakher Waterfront Region and other waterfront areas. Source: UN Habitat Organization, 2017

3.1.1 Criteria of Selection

Choosing Ras El-Sakher in particular over other waterfronts refers to several reasons:
- A neglected waterfront area with high economic and social opportunities
- Acts as an entrance gate to the city, which upgrade the visual and connective features
- 73% empty land that can be regenerated to reach a utopian goal
Where designing in this area would not only connect the waterfront to achieve public and social services, but also include the incorporation of water elements within the design project and not against it, which according to the Italian architect Morena that: “the urban waterfront development is widely regarded as a frontier on contemporary urban development, attracting investment and publicity.”. Where it will show the various water concepts that can be incorporated within the project. Thus, improving the relation to the sea, leading to the creations of contemporary entertainment and commercial facilities. (Mak, 2010)

Fig. 6: Showcasing the chosen site Ras El-Sakher overlooking the Mediterranean Sea
Source: Author

3.1.2 Historical background of ‘Ras El-Sakher’
Ras El-Sakher in Tripoli, as shown in Fig.6, is a site that holds great historical background where many periods passed on it dated back to around 3000 years - from 332 B.C. till 1943 A.D. - and utilized the use of water as a source of reaching their vision of utopia, such as through creating fishing bays (environmental), industrial regions (economical), a dockside quay leading to an island and along the edge from north to south (social), and island extensions (leisure). (Cohen, 2018)

3.1.3 Population of ‘Ras El-Sakher- Tripoli’
In this given area, the population occupies almost 85 registered residential units, which occupies several nationalities that is shown in Fig.7. Some of which also reside in informal settlements along the coastal region, leading to the downgrade of the waterfront’s accessibility and inclusion (UN, 2017).

Fig. 7: Nationalities Perc.
Source: UN Habitat, 2017

3.2 Urban Analysis of ‘Ras El-Sakher’
Accordingly, Ras El-Sakher has great potential in developing and exploring various methods in order to re-integrate water effectively in the field of architecture and planning. The site, consists of three main components, these factors are composed of: the waterfront zone, the agricultural zone, and the urban zone. First part of the urban analysis is mapping the and photographing the surrounding contextual physical movement to record the behavior of the people in different time zones of the day. Ten different zones have

Fig. 8: Map and photos showing road network and site accessibility - Source: Author and site accessibility - Source: Author
been placed on the map (shown in Fig.8) according to roads intersection with the corniche edge and agricultural fields.

3.2.1 First zone: The Waterfront Zone

The waterfront zone that concludes the most important part of Ras El-Sakher area where the water architecture would act as a factor for utopian concepts. The coastline existing in Ras El-Sakher is about 2.27km of a corniche road overlooking the open sea as shown in Fig. 9, (UNICEF,2018). Moreover, this waterfront is employed by various features where urban users take advantages from, such as: a fishing port, a beach, which are contaminated due to the nearby coastal slum area which is the main source of water pollution, that are caused by wastewater untreated emissions, and unrecycled materials thrown directly to the water surface (Partha,2015). Coastal slums are located north of the site, taking about 130 meters squared. The site in this region is about 100 meters above sea level, with a 1% slope.

Fig. 9: Waterfront analysis: street/road analysis, empty spaces, building height, and land use

3.2.2 Second zone: The Agricultural Zone

The agricultural land in Ras El-Sakher site compose about 70% of the land with an area of 765 thousand squared meters, where it mostly contains wild plants which cannot be taken advantage of for farming uses. Mainly create open empty spaces, as shown in Fig. 10 with no possibility for social gathering due to the tall neglected plants which are approximately 2 meters high. Furthermore, they act as a buffering zone for the highway located adjacent to these empty lands, which are located west of the site.

Fig. 10: Agricultural urban analysis: street/road analysis, empty spaces, building height, and land use with urban fabric axis
3.2.3 Third zone: The Urban Zone

The urban zone that the site beholds consists of various building types as seen in Fig. 11, on the coastal side, two educational facilities are found which are Beirut Arab University and AUL University. Further north, slum areas can be found 100 meters far from the water side. Denser residential areas are present further from the water side, with minimal green areas and more street road networks.

![Image 1](image1.png)

**Fig.11:** Section in site showcasing different urban facilities ends, BAU in south of site, coastal slums on the north of the site – Source: Author

3.3 Identifying problems of ‘Tripoli Ras El-Sakher’

Furthermore, the diagram shown in Fig.12 represents the problems that exist in this area, which should be taken into consideration throughout the design concept and planning. Moreover, these problems have been piling up over the past 47 years, after the civil war occurrence, which led to the downfall of Tripoli as a whole city and the ignorance of the coastal side specifically.

![Image 2](image2.png)

**Fig.12:** The four existing problems found in ‘Ras El-Sakher Tripoli’

Source: Author

3.3.1 Economical problem

First, the economic problem is an issue that this area suffers from the most. Due to the lack of commercial facilities and job availability, it is leading to an enormous level of livelihood instability. This series of events led to an estimated 26% of Tripoli’s residents to live in extreme poverty, while 77% are facing economic difficulties. (UNICEF, 2018) More than 72% of the community level lies between the range from poor to fair quality, as seen in Fig. 13.

![Image 3](image3.png)

**Fig.13:** Community Level in Site- Source: Author

3.3.2 Social deficiency

Unfortunately, due to the absence of green and open public spaces, people lack social exchange facilities. Urban residents do not have adequate opportunities for exposure to nature, nor a welcoming place for users of all ages to enjoy. This deficiency in social facilities is shown in Fig. 15, where young Lebanese boys do not have a formal safe place to play and are playing on dirt and informal playground. Nevertheless, the ratio of green space per inhabitant is way less the the WHO recommendation, reaching as low as 0.2 squared meter shown in Fig. 14.
3.3.3 Lack of Wastewater treatment

One of the most important aspects of the site is the located of it, which is on the waterfront. Despite that fact, a major issue arises, and that is Tripoli’s stormwater and wastewater networks are combined in Ras El-Sakher. This process of shared pipes, inevitably leads the wastewater directly to the open sea without prior treatment, which causes high levels of pollution and contaminates that sea, where an estimated 96% is directly poured into the sea, and only 8% is treated through special sewage networks (Lefevre, 2014). Moreover, 55% of inhabitants live in buildings with extremely defective sewage networks and 11% of residents have no access to the wastewater network, as well as 43% of the wastewater network is malfunctioning, showing serious flaws especially in terms of pipe obstruction and insufficient capacity relative to load. This issue would not only cause pollution in the water bodies, but also to the human health (UN, 2017).

3.3.4 High unemployment rate

For Tripoli, job shortages were quoted as a key cause of separation and tension between host communities and Syrian refugees. Most poor Lebanese in Ras El-Sakher, Tripoli work in services, handcrafts, small commerce and public organizational services. Thus, all these factors incorporated in the high levels of unemployed rate which reaches about 60%. (Lefevre, 2014)
3.4 Selection of a specific area in ‘Ras El-Sakher’

For a deeper analysis of the study, the research selects a specific area on the waterfront. It is located on the outmost section nearest to the water view, where it embraces the concept of integrating aqua architecture for creating a vision of ideality, as shown in Fig. 18.

![Fig. 18: The Selected Area on the outer waterfront region (Source: Author)](image1)

![Fig. 19: Waterfront Region (Source: Google Maps)](image2)

3.5 Different perspective of public on ‘Ras El-Sakher’

In order to achieve a more solid credibility and understand the needs of people, this research preferred to meet a sample of the inhabitants who are influence and affected the most by the selected area of Ras El-Sakher. This sample will be understood by undergoing two field methods, which are holding interviews and a giving out a questionnaire.

3.5.1 Holding interviews

Face to face interviews were undertaken, from 16 to 20 November 2020, with eighteen young adults who either work or lived their life near the area. It is only logical to target this age group in order to understand the different facilities, through the regeneration of the waterfront in an attempt of reaching utopia. Three important interview questions were asked:

a. How do you associate with the water view on Ras El-Sakher?
b. What aspects does this area need to have, in order to reach your ideal image? (commercial, educational, entertainment)
c. How do you consider yourself accepting a new developed image in this area that enhances the water features that it’s overlooking?

Generally similar answers were conducted, samples of the answers include:

Mustapha Mawas, 24 years old:

“I pass by near this area every day to reach my job, I work as a mechanic. Sometimes when I’m under a lot of pressure and stress, I like to come here and just enjoy the peaceful and calm view of the water with the quite surrounding neighborhood. I feel calm and have a sense of ease, but I never stay more than 20 minutes, because there is nothing else to do, and I believe that we are not taking enough advantage of the valid water bodies here.”
Lara El-Ali, 26 years old:

“I have always seen water as an element that would purify the soul. I only wish that there were more things to do here. all you see is a region with lost potential. I graduated 7 years ago and I still can’t find a steady job. A new project in this area, in my opinion, might attract a lot of tourists and can actually boost our poor economic status, and might create the opportunity we, as young adults, have been waiting for. Since people love places that are located very near to the sea. They find it innovative and everyone would want to come.”

3.5.2 Questionnaire

A closed questionnaire was designed and handed out to 100 people. Mainly targeting young adults, both educated and illiterate, between the ages of 20 and 35, since they are affecting the economical sustainability form which utopia can be generated. The questionnaire was submitted in order to confirm several opinions. Five questions were directed to the sample:

a. What is your opinion in the current Ras El-Sakher waterfront area?
b. What possible vision might you have for enhancing the quality of life in this region?
c. What are, in your opinion, the strong factors in this site? (Given its unique placement)
d. What are the main challenges in your opinion, for working in this site?

4. FINDINGS

The research follows an analytical methodology, to analyze the answers mentioned in the questionnaire forms. The following pie charts are based on the sample group’s answers.

**Chart 1:** answers of question a: What is your opinion in the current Ras El-Sakher waterfront area?

**Chart 2:** answers of question b: What possible vision might you have for enhancing the quality of life in this region?
5. DISCUSSION

The previous findings emphasized the importance of using water as a key element in design, where it does not only increase the quality of life, but also allows pleasing visual aspects that enhance leisure and economic sustainability. Given that the majority of the answers show that lack of job is the main concern in this region, and believe that commercial facilities as well as incorporating the aquatic features existing in the site would help achieve the ideal image. The paper explores various concepts in using water features in contemporary architecture, that inevitably contributes for achieving utopia, through:

- Implementing water channels between inside the project, where it can provide a cool breeze for the interior atmosphere, and acts as a passive approach in design, thus aesthetically improving the development.
- Creating floating prototypes on sea, that filters the ocean and absorbs plastic, where this kind of unit would allow the natural environment to be recovered, moreover for energy and food to be produced, leading to the creation of utopia through environmental sustainability.
- Waterfront development and planning are one of the main factors in incorporating water features into architecture, where it would improve connections to and between public

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**Chart 3:** answers of question c: What are, in your opinion, the strong factors in this site? (Given its unique placement)

![Chart 3: answers of question c](image)

**Chart 4:** answers of question d: What are the main challenges in your opinion, for working in this site?

![Chart 4: answers of question d](image)
access areas, as well as can have direct linkage to the sea by creating bridges underwater for the connectivity between projects, through the integration of nature. Therefore, increasing leisure and the social bonds.

- Water can as well be used at the entrance of any given project. Such as implementations of large aquariums, fountains, or lakes beside the unit, where the smell of fresh water and the sound of its movement can create a refreshing ambiance and enhance emotional human experience. Humans tend to remember and relate to the features that are not usually present in architecture, and that is why water, in this case, would engage with the sensory qualities.

Fig. 21: Sketches for various ways water can be implemented on the entrance and inside project
Source: Author

- Water harvesting façade panels, is one of the ways where water can be implemented in the design for not only creating a visually pleasing structure, but also for environmental and economic benefits which can lead to an increased overall satisfaction rate.

- Semi-submerged projects are the way for reaching utopia through redirecting the view of water as it is normally seen from the surface, to an innovative dimension. And thus, allowing the project to let the sea into architectural design rather than avoiding it, as seen in Fig. 22

Fig. 22: Semi-submerged project in sea, for a redirected view
Source: Author

- Building on water (floating architecture) incorporates the usage of water, where the main concept is, to be designed in order to survive not only in protected waters, but also in open waters if relocating is needed. Moreover, surviving harsh conditions, or flooding, where it is shown in Fig. 23, the rate of global sea level that has been accelerating in recent decade, and thus using water as a shield that would relocate the project to a safer space

Figure 23: Increasing sea level
Source: Author

- Given the elaborate findings that were previously stated in the paper, it is clear that Ras El-Sakher, being on the outmost waterfront region, can be benefited greatly by the interaction of architecture with water. Through enhancing the built environment overlooking the unique aquatic features. As well as, constructing various commercial, entertainment, and more social activities alongside the coast, leading to the region’s uplift in financial state, and boost the overall footprint in the site. Eventually creating more job opportunities and an upgrade in the quality of life where utopia can be established.
6. CONCLUSION

Finally, according to the issues raised in this study, it can be concluded that:

a) Water features utilization in the 21st century, requires a strict demand for the implementation of advanced technologies, in order for the purification of water and overall environmental enhancement.

b) Coastal regions with lower income can create a swift increase in the economic growth, as well as, the social interaction, by developing waterfront regions through connecting buildings with water (micro-level). Thus, increasing the satisfaction with the quality of life.

c) Floating architecture is a vision that showcases the futuristic solutions for exploring new eras of utopian concepts.

d) Providing leisure and visual aesthetics by merging aquatic features with buildings which requires a full comprehending of project’s ability in reaching utopia

e) Water is a versatile resource, in which it incorporates qualities like sound, taste, smell, movement, sense of touch, reflection and transparency.

f) People relate well with contemporary underwater, floating, and waterfront architecture, due to the innovation and ‘outside of the box’ decision given by architects and decision makers.

g) The water features should represent an iconic symbol within architecture, which demonstrates a great potential for becoming a central axis in a new and improved area.

h) Aquatic feature’s positioning in architecture is important for adopting new ways in connecting different facilities, buildings, and spaces to restructure the visual image and identity of the city.

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