



Urban Landscape Design for Riverfronts in Iraqi Cities a Comparative Study Between Local and Regional Legislation

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ABSTRACT

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Iraq has multiple water resources, so it urgently needs legislation to develop its river bank and benefit from its water resources. The purpose of this study is to investigate the shortcomings in the lack of development of the urban landscape of riverfronts in Iraqi cities by reviewing the legislative aspect of the laws regulating them, which are supposed to improve the quality of life for its citizens and achieve better environmental, social, economic and urban exploitation. This research was carried out using a qualitative approach, by analyzing the content of legislation and guidelines for urban landscapes for waterfronts in regional countries, finding urban design principles in them, and comparing them with the current Iraqi laws through the checklist. The results show that there are shortcomings in the Iraqi legislation for riverfronts and that it does not keep pace with the changes taking place in the world. The results were used to present proposals for the development of urban landscape legislation for the riverfront in Iraqi cities, in line with their social, economic and environmental conditions.

1. INTRODUCTION

The Mesopotamia civilization was distinguished as the first civilization to set urban legislations in human history, and development. Urban legislations and laws became necessary and of great importance to preserving cities, their heritage and resources from wrong exploitation. Countries have realized the importance of legislations in the success of environmental, economic and social sustainability processes and empower them in society. The legislations work to define their sustainable goals and to achieve their requirements by regulating the individual's relationship with their spatial environment and how to deal with their surroundings in a way that serves them and improves thier environment. Many developed countries seek to achieve sustainability by including their objectives in legislation and laws [1]. Law is often seen as a necessity to bring about a change in the actions of various actors so that they become more sustainable [2]. The landscape overlooking the river in the urban area is in a great need for legislations to regulate and improve its exploitation. Iraq owns the Tigris River (1,418 km), and the Euphrates River (1,200 km) - the two rivers and their tributaries pass through or near the eighteen governorates of Iraq - before uniting to form the Shatt al-Arab River (110 km) that flows into the Gulf (58 km), in addition to the presence of a good number of lakes and swamps [3]. Table 1 reviews the main water resources and the governorates located on them, based on the Water Resources Report for the year 2020 [4].

These water resources constitute wide waterfronts (marine and river); On the other hand, these areas suffer from neglect and pollution because of the weakness of its legislative representation in Iraqi laws. The need to study urban laws and legislations related to the urban landscape of riverfronts in Iraq

has increased after the political and economic developments it experienced after 2003, and the multiple social and environmental problems that led to it. The significance of this study stems from the lack of previous literature on the issue of the legislation of urban landscape for riverfronts in Iraqi cities and the benefit of regional legislation. Although the large area of the urban landscape of the riverfronts in Iraqi cities, as almost no Iraqi city, is devoid of them.

The waterfront is a zone of interaction between urban development and water and is a unique and irreplaceable resource where land, water, air, sun and natural vegetation are intertwined; hence the needs of the city and its population [5, 6]. The riverfront represents the magical point where the city meets as a purely human product with the element of water as a purely natural component [7]. Indeed, a magical area if it is dealt with wisely and intelligently, and taken advantage of by all its properties. The riverfront consists of landscapes and buildings which both need a study to develop appropriate legislations and guidelines for them. This study is concerned with the urban landscape of the riverfront in Iraqi cities, and the waterfront development, because riverfront development is an extension of waterfront development [8]. The urban landscape of riverfronts includes the urban landscape in the Water Level or Flood Plane, which are areas in which the probability of flooding is high in a particular year. The corniche or terraces landscape is raised at a higher level than the flood plains. It is an area located on the fringes of the regulatory flood stream [9]. Waterfront development achieves sustainable urban development for the city and enhances the quality of urban life [10]. Neglected and vacant urban landscapes are transformed into vital spaces [11]. The seashore and river banks are the most attractive areas for human settlement. In most countries, the waterfront is developed before the development within the cities [11, 12]. Any

development in front of water bodies in all its forms is considered a development of the waterfront [13]. The scale and purpose of waterfront development vary in each city due to the original style of the city [11]. However, most waterfront re-developments around the world have similar goals, which are to reconnect the waterfront to the urban context of the city [14]. The re-development of the waterfront is also seen globally as a means of economic, cultural and social growth, with commerce and leisure dominating it to create a prosperous and renewable world [15]. Water can transform cities into cultural, heritage, civilizational and commercial centres [16]. Waterfront development has become a global phenomenon [17]. All cities of the world experienced similar processes in different periods [13]. Most development processes start due to community demands to improve the waterfront [14].

Table 1. The main water resources and governorates located on them

Water resources	Tributaries	Governorates
Tigris		Dohuk, Nineveh, Salah al-Din, Baghdad, Wasit, Maysan, Basra
Tributaries of the Tigris	Khabur	Dohuk
	Upper Zab	Dohuk, Erbil
	Lower Zab	Sulaymaniyah, Kirkuk, Salah al-Din
The Euphrates	Al-Udaym	Kirkuk, Diyala, Salah al-Din
	Diyala	Sulaymaniyah, Diyala
		Anbar, Babylon, Karbala, Najaf, Qadisiyah, Muthanna, Dhi Qar,
Shatt Al Arab		Basra
The Gulf Coast		Basra

2. METHODOLOGY

The qualitative method was used to reach the desired goal of the study by analyzing the content of legislation and guidelines for urban landscapes for waterfronts in three regional countries (Turkey, Saudi Arabia and Abu Dhabi Emirate), to find the principles and elements of urban design, which were used in these countries and to make a comparison with Current Iraqi laws through the checklist. These regional legislation and guidelines may not be ideal in themselves or the level of their application and adherence in the countries that adopt them, but are chosen because their environmental, social, economic, urban and political conditions are close to those of Iraq.

3. REGIONAL LAWS AND GUIDELINES

Three regional countries were selected: Turkey (which borders Iraq to the north), Saudi Arabia (which borders Iraq to the south and southwest), and the Emirate of Abu Dhabi (one of the Gulf states). They all have waterfronts with large areas of water, and they have had successful experiences in developing their waterfronts. These countries enjoy geographical, climatic, social, economic, urban, cultural and religious characteristics similar to those of Iraq. Which makes Iraq more focused when drawing on these laws and benefits from them.

3.1 Turkish legislation

Turkey has a long coastline surrounded by the Mediterranean, Aegean and Black Seas with a length of approximately 8,333 km. There are 28 cities and about 220 municipalities in the coastal areas of Turkey. 20% of the Turkish population lives in coastal areas [18]. There are many laws and regulations regarding coastal areas in Turkey. The principles of protection and public use of the coasts appeared in the Civil Low (1926) very early in the life of the Turkish Republic, even before the adoption of the Ad Hoc Coastal Law in 1990. The Coastal Law of 1990 [19], is the backbone of coastal legislation in Turkey [20] in addition to other legislations and laws, such as the Environmental Law [21] and the Protection of Cultural and Natural Wealth law [22]. The principles of the urban landscape dealt with in general by Turkish laws are:

(1) 100 meters as a minimum setback from the coastline; the first 50 meters are owned by the public sector and designated only for the public benefit. As for the second 50 meters, it is allowed to construct roads, provided that it does not affect accessibility.

(2) Emphasizing the importance of maintaining accessibility along the coast, through:

- Remove obstacles that prevent access to the coast, such as fences, open ditches and waterways.

- Not constructing new highways in the first part of (50) meters of the coastal strip.

- Responsibility for ensuring accessibility along the coast rests with the municipalities within municipal and county boundaries in rural areas.

(3) Determining the permitted uses in the coastal strip by ruling that:

- The coasts are public property, so it is preferable to engage them in uses of public interest, such as parks, pedestrian paths and open recreational facilities.

- Services and facilities that facilitate public use or coastal protection. These include berths, ports and supports.

- Transport infrastructure, breakwaters and beach facilities (subject to maximum floor area and distance between them).

- Installations that must be by nature on the coast, such as shipyards, marinas and fishing ports.

- Additional uses include structures for exhibitions, markets, picnics and entertainment, but they must be temporary and may no more than 5.5 meters in height.

- Tourist facilities are allowed for day use. The maximum floor area is (20%) and the maximum height (is 4.5m for single-storey buildings and 5.5m for double-storey buildings).

- It is also preferable to build coastal security facilities and accommodations for security personnel.

- Providing wastewater management facilities.

- Providing sports facilities and accommodation related to sports activities.

(4) Paying attention to the environmental aspect and dealing with issues such as air pollution, noise, water quality, solid waste management and environmental impact assessment, and prohibiting the discharge of oils and other sewage into water bodies before treatment.

(5) Paying attention to the historical areas overlooking the waterfront, which are subject to the Protection of Cultural and Natural Assets Law.

(6) Facilitating public participation and a balanced distribution of political powers throughout society, such as the "right to listen" and "the right to object to plans" as the

provision of information from various relevant institutions.

3.2 Saudi arabia guidelines

These technical and environmental requirements for the management and operation of coastal areas in the Kingdom of Saudi Arabia were prepared in 2007 by Zuhair Fayeze and Associates - Consultants according to the contract signed between the Ministry of Municipal and Rural Affairs and the company. The requirements included all coastal areas in the Kingdom on the coasts of the Red Sea and the Arabian Gulf, which fall within the scope of the secretariats and municipalities. The first phase included the objective of this report and assessment of the current status of coastal zone management and operation and proposed solutions to prepare an integrated system for managing and operating coastal zones in the Kingdom of Saudi Arabia. The second phase included seven parts that included many constructions and executive issues related to the coastal areas in a comprehensive way [23]. It also included some urban design principles and the way to accomplish them.

(1) Providing paths for pedestrians, people with special needs and users of bicycles.

(2) Providing the necessary furniture such as benches, fountains, plants, waste containers, barriers and fences for protection, trees and lighting poles, which all help to shape the urban landscape.

(3) Paying special attention to the design of the barriers overlooking the sea, as they are one of the elements of attraction in the piers of the beaches and part of the natural landscape.

(4) Paying attention to the criteria for choosing aesthetic models (public art elements) to be compatible with the heritage and teachings of the Islamic religion.

(5) Paying attention to the design of billboards, advertising and guidance, and determining their specifications and conditions.

(6) Taking into account the safety and security considerations for pedestrians by separating the movement of pedestrians from the cars and providing traffic signs.

(7) Providing services such as potable water and garages, allotting 5% for people with special needs, with no less than two parking spots, public toilets, children's playgrounds, and kiosks, taking into account the movement of people with special needs in all facilities and services.

(8) Taking into account the environmental aspects of protecting the coastline, water, air and soil from pollution, protecting from pollution, disposing of waste, draining rainwater and sewage water, and noise.

(9) Observe security and protection from natural hazards such as earthquakes, floods, pollution by oil, chemical and toxic substances, and fires.

3.3 Abu dhabi emirate guidelines

These conditions and standards were prepared by the Department of Urban Planning and Municipalities, which was formed by No. (5) in 2018 Law. The aim is to support urban growth and development in the Emirate of Abu Dhabi. The guidelines covered all areas in the emirate, including the waterfront area [24]. Some of the waterfront guidelines included the following:

(1) Objectives of the regulations for the waterfront area:

- Improving access to the waterfront corniche.

- Increasing appropriate setbacks for waterfront shores in response to the specific characteristics and constraints of the area.

- Facilitating physical and visual access to water in a manner compatible with urban networks.

- Providing a variety of recreational services that meet the basic needs of the public.

- Taking into account the existing environmental conditions.

- Preserving and maintaining the marine heritage.

- Studying any development project in terms of its relationship with water and its compatibility with the surrounding environment.

(2) Land Use Guidelines:

- Providing water uses to increase its vitality.

- Banning commercial uses, such as car sales and services, banking and restaurant services, and others.

- Banning industrial, transport and communication uses for a distance of up to 300 meters from the beach boundary.

(3) Implemented Project Development Guidelines:

- Providing paths of vision that is compatible with the existing physical scale, and do not go beyond the limits of the basic corridors of vision.

- Protection of mangroves and natural wildlife places that grow on the edges of the water.

- The maximum height of the surrounding walls is (1m.). It is allowed to add a semi-transparent cosmetic structure above the wall, made of high-quality materials and compatible with the visual perspective, with a height of (1.5) meters.

- Banning any manipulation of the coastal boundary, such as excavation, land reclamation, or changing the facilities along the coastal boundary, except within the limits of existing plans.

(4) New Project Design Guidelines:

- Environmental Assessment: Designs of new development projects must take into consideration the environmental assessment of habitats, mangroves, sewage solutions, hydrological impacts of water, water quality and potential impact of the proposed development.

- Artistic, Expressive, and Public Art Elements: Providing appropriate expressive art and public art elements that add attractiveness and character to the coastline, define historical and cultural features, add visual pleasure and enrich the waterfront setting.

- Providing educational exhibits and items that highlight unique natural features and practices.

- Providing vision corridors for the waterfront from streets, gardens and open public squares.

(5) Waterfront Accessibility Guidelines:

- Providing many paths for pedestrians and other treatments commensurate with the site and the urban situation.

- Providing seats, booths, bicycle facilities, and other means for the public's convenience.

- Providing pedestrian movement paths with a width of 6 meters, free of obstacles.

- The walkways are linked together and connected to the street networks.

- The distance should not be more than 200 meters between pedestrian crossing points.

- Streets ending no more than 300 meters from the coastline must provide a connected road sanctuary allowing public access and viewing of the walkways and the waterfront.

- It may be necessary to restrict access to areas with sensitive water uses.

- Designs should include controlling floods and storm waves, improving the environment and increasing recreational

facilities.

4. IRAQI LEGISLATIONS

Since the establishment of the Iraqi state in 1920 until now, the Iraqi legislation has included only a few laws that define the exploitation of rivers and their beaches which will be reviewed chronologically as follows:

4.1 Shores exploitation law No. 59 of 1987

This legislation contains 12 articles. The first article includes a definition of the terms contained in the law. The second article includes the objectives of the law to regulate “the exploitation of the shores of the Tigris and Euphrates, the main rivers and their tributaries, lakes, reservoirs and adjacent lands, ensuring the flow of flood waters and preventing pollution”. The third article is to prevent cultivation on these lands except after the approval of the “Ministry of Irrigation and the Ministry of Agriculture”. Article 4 prohibits the exploitation of lands behind the regular embankment or the cliff in the construction of orchards and housing construction at a distance of no less than 100 meters, and prohibits the establishment of poultry and industrial projects at a distance of no less than 500 meters. As for area in front of the embankment or the cliff, it is forbidden to construct tourist buildings if the width of the beach is less than (150 meters). It is prohibited to establish fixed installations for a distance of 100 meters from the upper submersion line of lakes or reservoirs. As for the rest of the articles, they include penalties, removal of abuses, and the decision to publish in the Official Gazette to give the law enforcement [25].

4.2 Facilitating the implementation of the shore exploitation law No. 59 of 1987, amended No. 7 of 1990

This legislation includes eight articles. The first article includes an increase in the types of water resources compared to the previous law which was limited to the tributaries of the Tigris River and its natural branches, dam lakes, Tharthar lake, Al-Habbaniyah, Al-Razzaza, and other water bodies to the Tigris and the Euphrates Rivers. The second article sets the line of discipline based on the highest flood discharge recorded in 1988 and a 15-meter boundary in which construction and farming are prohibited. Other articles include identifying the bodies responsible for monitoring and implementing the law [26].

4.3 Law No. 3 of 2000 “Instructions to prevent overtaking on the tigris river refinement line inside baghdad”

This Law is specific to the city of Baghdad comprising (10) articles. The first article prohibits the construction of any facility within 15 meters of the river. The second article determines the flow path of the Tigris River inside Baghdad, with the absorption of a maximum flood pass of 300 m³/s. The third confirms a distance of 15 meters as the river’s boundary. It is used for maintenance and control. The remaining articles include the removal of abuses in the river precincts, identification of the parties responsible for implementing and following up the decision and referring violators to the competent courts [27].

4.4 Law No. 121 of 2000 "Prohibiting Building or Granting Building Permits on the Banks of the Tigris River"

This law includes five articles, all of which prohibit construction within a distance of 15 meters, removing violations, fining violators, and specifying the parties responsible for implementing and following up the decision [28].

4.5 Environmental protection and improvement law No. (27) of 2009

This law tackles the problem of water pollution and measures to protect water sources too. Article 14, includes 7 points in which it is forbidden to throw liquid and solid waste into water bodies, any actions that lead to pollution of surface water resources as a result of exploiting its banks or any actions that lead to Pollution of the marine area [29].

4.6 Controls for the exploitation of the amended recreational and open green areas

This Writ is an official letter issued by the Ministry of Construction, Housing, Municipalities and Public Works / Directorate of Physical Planning, No. 1203 on 9/14/2017. Included:

- Recreational and tourist uses are allowed to be established within the open green and recreational areas specified in the master plan.
- It is possible to establish more than one activity on the same plot.
- The percentage of non-fixed constructions shall not exceed 15% of the total area.
- It is one floor and the rebound is not less than 5 meters in any case.
- The fences are of an open nature that is suitable for use.
- Entertainment activities includes casinos, restaurants, parks, amusement parks, open swimming pools only, all kinds of nurseries, five-sided playgrounds, and orchards. They can be established in the green belts specified for the basic designs [30].

5. DISCUSSION OF IRAQI LAWS

After reviewing some of the Iraqi urban laws and current guidelines valid, especially the parts that focus on how to exploit and develop rivers and their urban landscapes. We find that it still suffers from obvious defects and dispersal. It does not provide the minimum design principles necessary for development. The principles of urban landscape design that must be provided have not been taken into account in such statutes, and recent guidelines are not sufficient to chart the criteria for successful waterfront development.

6. COMPARISON OF IRAQI LEGISLATION WITH REGIONAL LEGISLATION

The principles of the urban landscape of waterfronts contained in regional laws and guidelines and their elements have been extracted and presented for comparison with what is contained in the current valid Iraqi legislation related to the urban landscape of rivers. Tables 2 and 3 show the urban

landscape principles and its elements contained in regional laws and guidelines, and indicates whether they are present in

Iraqi laws or not.

Table 2. The principles contained in regional legislation, and if they are present in Iraqi laws

Principles	Minor principles	Details of their realization	Iraqi laws
Accessibility and Connectivity	Boundaries and structures	Determination of the riparian zone and setbacks	✓
		Determine the ratio of structures to the ground and their heights	✓
		Determining the structures and their specifications	✓
	Physical accessibility	Provide walkways and connect them with each other	×
		Providing bicycle lanes	×
		Providing passages for people with special needs	×
		Determining the movement of cars and motorcycles	×
		Increase the visual pathways of vision	×
	Visual access	Reduce barriers to vision	×
		Promote water transport	×
	Connectivity	Improving the connection of the waterfront with the street network	×
		Providing and improving public transportation	×
		Providing recreational activities	✓
	The desired activities	Providing sports activities and playgrounds	✓
		Providing cultural and artistic activities and exhibitions	×
		Increase green open outdoor spaces	×
Activities and Uses	Unwanted activities	Providing multi-purpose activities	✓
		Exclusion of industrial and commercial activities	✓
		Ban polluting activities	✓
	Public services and utilities	Providing parking	×
		Providing kiosks and sales areas	×
		Providing drinking water areas	×
		Providing public restrooms	×
		Providing safe play areas for children	×
		Providing services for people with special needs	×
		Connecting the river with archaeological sites and valuable parks	×
Identity	Providing a comfort	Preservation of heritage areas	×
		Enhance the urban and heritage character of the area	×
		Provide visitors' needs	×
	Providing a safe and clear	Providing a safe and clear place	×
		Providing security points	×
Comfort and Safety	protection from dangers	Providing guiding signs for the place	×
		Flood risk protection	✓
		Protection from earthquake	×
		Fire Protection	×
		Protection from chemical pollutants	✓
Community participation		Participation in decision making	×
		Provide information from various relevant institutions	×
		Protect the beach boundary from erosion	×
		Preserving the unique environment of the beaches	×
Ecological aspects		Protect water, soil and air from pollution	✓
		Sewage water treatment	✓
		Reducing energy consumption and using local and natural materials	×
		Protect valuable natural trees and shrubs	×

Table 3. Design elements contained in regional legislation, and if they are present in Iraqi laws

Design elements	Iraqi laws
Sidewalks, walkways and floors	×
Roofs and awnings	×
Plant and aquatic elements	×
Seating and grandstands	×
Public art elements	×
Green urban landscape, trees and shrubs	×
Walls and barriers	×
lighting	×
Advertising banners, directions and traffic signs	×
Garbage containers	×
Toys	×

7. CONCLUSIONS

Legislation is of great importance in achieving sustainability by including its objectives and how to achieve them in legislation and guidelines, and obliging the relevant authorities to work in accordance with these legislations and guidelines. Thus, legislations can be considered as one of the tools for achieving sustainability and its desired goals. The waterfront area is of environmental, urban, social and economic importance, so it needs clear, uncomplicated and applicable legislations and guidelines to stop negative exploitation of waterfronts. Iraqi laws are insufficient and tainted by obvious deficiencies scattered across several laws. It suffers from a clear lack of urban design principles for the urban landscape of the waterfront, which must be available to achieve the intended objective of the legislation. Also, the Iraqi legislations contain only some instructions that without

details, strategies and plans to achieve them. The possibility of benefiting from the legislation and guidelines of the countries of the region for waterfronts. Especially those who have successful experiences in developing their waterfronts, and environmental, economic, social and cultural conditions similar to Iraq. Taking into account the difficulty of studying the legislative and guiding texts of each country and extracting the important principles of urban design and its elements from them. Table 2 helped to identify deficiencies in the Iraqi laws and guidelines. The interest of most countries in the region in their waterfronts and the development of legislations and guidelines reveal their importance and possibility of its application. Regional laws have focused on several principles, the most important of which are accessibility and connectivity, determination of land uses and their diversity, the environmental aspect, comfort and safety, and others along with explaining strategies and plans for their implementation. This study is the beginning of future research into Urban Legislations concerning buildings at riverfronts, and other Urban Legislations in Iraq. Finally, taking care for the waterfront in Iraq is a national duty because of its great importance in improving the economic, social and environmental life in Iraqi cities, being a unique touristic resource and a landmark.

8. RECOMMENDATIONS

(1) Reconsidering the current Iraqi urban laws and directives, updating them with the needs of society and its life developments, and paying attention to areas of waterfronts, especially riverfronts, because they occupy larger areas.

(2) Studying the reality of the waterfront to find out the current problems and their causes, finding appropriate solutions, and placing them in laws and regulations.

(3) A new legislative arrangement must be made to remove the contradictions related to the laws and legislations in Iraq.

(4) Focusing on the principles of urban design that must be available to design a successful urban landscape.

(5) Strict application of the laws to solve the problems of abuses that Iraq suffered due to the years of chaos after 2003.

(6) Dividing the riverfront into sections to facilitate its development and management.

(7) Taking into account the characteristics of the urban landscape near the archaeological and historical areas, and taking into account their heritage and environmental characteristics.

(8) Seeking the assistance of engineering expertise, whether it is affiliated with academic bodies or consulting offices.

(9) Laws should be flexible and not limit the creativity of architects and urban designers.

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