

# Karun's Lips<sup>1</sup>

## Etiology of an urban edge

### Evaluation of urban approaches and actions on relationship of Ahvaz city and Karun River

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**Abstract** | Prior to Islam, Karun River in south of Iran was a base for emerging many civilizations. The city of Ahvaz which its history goes back to pre-Sasanid era has formed along this river. Karun River's urban edge of Ahvaz has always been influenced by the interaction between the city and the river. Throughout history, the significance of the Karun for the inhabitants of this region has gone beyond a supplier element for water and provided as the main infrastructure for prospering of the economy of the city. Economy-based relation of the city and the river over the years had caused the formation of the river's urban edge with commercial use in this region. However, in recent decades, due to the different approaches being taken to deal with Karun, gradually the river has lost its economic role in urban system and subsequently the edge of the city and the river has been disturbed. Therefore, with these approaches it seems that the city has separated its economic life from the river and its development haven't been formed based on the river. This has damaged the identity of the Ahvaz's urban edge that has been shaped based on the river over the centuries and subsequently the city faced multiple challenges. This study aimed to investigate the relationship between the city of Ahvaz and Karun River throughout the history and to analyze and pathology of the Karun's urban edge. For this purpose, in two parts, this article addresses firstly the relation between the city and the river in the past and then analysis the approaches and measures have been taken during the last decades towards it.

**Keywords** | Urban edge, Relationship between city and river, Urban identity, Karun river, City of Ahvaz.

**Introduction** | Karun River is the only Iran's navigable river and the only river connected to international waters. From one side, through its deltas in Khorramshahr, Karun joins Arvand River which Tigris and Euphrates rivers from Iraq also shed to and on its other side, Bahmanshir River connects to Persian Gulf and through which to Indian Ocean. This feature traditionally has made Karun River to be taken into consideration as a basis for water transportation and trading which is the cheapest form of commodity transport, so that, until the beginning of the current century due to its large width and relatively deep headstock, the river was considered as a part of the waterway transport and commercial commodities through the river was transferred to Ahvaz and then to Shushtar.

But today, across the Ahvaz city boundaries, because of the lack of dredging of the river headstock and construction of multiple bridges, navigability is not as before. In recent years, the lack of navigability across the river and the ensuing loss of commercial productivity has caused to deterioration and transformation of a variety of urban spaces with commercial use which had been created formerly at the river's edge. This article intends to pathology of the Karun River's urban edge by evaluating the relationship, both in the past and present, between the city and the river. Given that this study is attempting to assess and draw conclusions from qualitative data, content analysis was chosen. So far, there have been many researches on the relation between city and river. One of the most comprehensive researches have been conducted in recent years as a book titled "Rivers Lost, Rivers Regained: Rethinking City-River Relations" (Knoll & Partners, 2017), which introduces the evolution of the relation between cities and rivers and addresses the necessity for reforming and revision of this relation. Earlier in queries with the overall theme of designing edge by Konstantinos Ionnidis as well as case studies such as Tigris River, Yamuna and Red River also this issue has been addressed. Even so, previously no research has focused on the relation between Karun River and Ahvaz city. In this research, about the significance of economy on the Ahvaz urban identity, a research titled as: "economy: the fundamental element of Ahvaz urban identity" (Namavar & Mojtahedzadeh, 2015) was used. The research firstly addresses the effect of the economy on the formation of building frameworks during the first and the second Pahlavi periods and subsequently investigates the urban morphology, but does not mention the urban edge and the economic role of the river.

### **History of the urban edge formation between Ahvaz and Karun River**

Cities that have been formed along rivers and for their continuity in terms of social, economic and cultural issues

require rivers, are called "River-City". The structure of these settlements has been formed on the basis that man could benefit the power of the nature to facilitate his life. Ahvaz city was built prior to Islam alongside Karun River. During the Sassanid era, by establishing dams and hydraulic structures the city residents managed the Karun River floods and this gave them the freedom to control the water flow in order to facilitate trade through shipping. Directly related correct productivity of the river to the people's livelihood had caused the urban edge of the river to be created at the closest distance to the water and with commercial use.

After the Industrial Revolution and the ensuing modernity, human, thanks to the advances in technology and industry, decided to create new economic cores that resulted in the creation of industrial estates and machinery factories across the residential borders (Knoll & Partners, 2017). Expansion of this high-performance newfound cores prompted the cities that practically relied on the river nature to survive, send out the river from their urban development priorities. The arrival of profitable industries such as oil and steel lowered the Ahvaz's needs for traditional river economy. This is important because a city that has developed throughout its history in the maze of Karun River, with the fading of river's contribution, have lost a large part of its concepts and essences that were formed due to the existence of this relations. So that, the city has faced gradual deterioration and changing of the nature of the river's historic edge and whereby its urban structure essence.

### **First Section: Connected city to the river-prosperity of the Karun's edge Prosperity through waterway**

Although, prior to the Sassanid era, Ahvaz has backgrounds as the capital of the Parthian Artabanus IV and has been called Auxin, Agynys and Taryana during the Seleucid and Elamite eras, but the strong arriving of the city into the history could be considered at the Sassanid era and by the construction of hydraulic structures including bridges and dams. These constructions are along with the extensive renovations and reconstruction which had been begun by Sassanids in Khuzestan (Mojtahedzadeh & Namavar, 2006: 228-229). Probably the most important emprise that Sassanids did was changing the course of the Karun River that provided the grounds for further actions in Khuzestan. We know that Karun had long been the wateriest river of Iran.

During Sassanid era in order to better benefiting of the water and expansion of the river's basin, new facilities were built and new routes were created on the river. For this purpose, a handmade channel by digging from the upstream Karun River in Khuzestan - north of the



current Shushtar - divided Karun into two branches which after Islam have been called Dojail and Masroqan as in historical texts (Kasrawī, 2005: 195). Dojail, the main branch of Karun and Masroqan, the handmade branch had been dug during the Sassanid and the historical documents show that this branch rising from the top of Shushtar had flowed directly into the Persian Gulf, watering many villages on its way. These two branches are connected at a place where was called Askar Mukarram (now called Bandeghir) through a creek in order to commute small ships from one branch to another. In addition to these proceedings, at the Ahvaz current place, Sassanids (at the time of Ardashir or his son Shapour) attempted to people the city by creating Ahvaz dam on the Dojail branch and by raising the water level by this dam, created a creek called Shahjerd (or Shahgord) (Mojtahedzadeh & Namavar, 2006: 228-229). This form of river water sharing that one-third of water enters the city of Ahvaz and two-third of which redirect water outside the city through Masroqan, enabled predecessors to construct the urban edge, without fear from the Karun outbursts, closer to the river than current limits (pics. 1&2).

#### Hujistan Vajar: Connected Bazar to the river

According to Tabari, during the Sassanid era, the city consisted of two parts: in one part nobles and dignitaries and in the other merchants lived. Nobles part was

called Hormshir and merchants part Hujistan vajar means the Khuzestan bazar (Afshari Sistani, 1985: 65-68). Archaeological excavations as well as the historical texts that have referred to the remains of Moloukolajam buildings, indicate that Hormshir or the noble's town was located in the eastern highlands of Ahvaz and the people town or Hujistan vajar was located in the western plains of that highlands and along the Karun's edge. In those days, Ahvaz was one of the centers of Khuzestan textile and also due to locating along the Karun River, which was navigable, the city was considered as the perfect place to gathering and exchange merchandise. In this period, gradual merchants commuting led to the prosperity of Hujistan Vajar and this town became a center for trading of silk and sugar cane (Mujtahidzadeh and Namavar, 2006: 228-230).

After the Arab invasion of Iran, one of the first cities been invaded was Ahvaz. After the Arab invasion of Iraq, they invaded Khuzestan in late 630s AD. At the raid of commander Ben Ataba Gazvan, that part of the city where houses of the Sassanid's nobles located were totally destroyed, but the bazar part of the city remained due to its commercial significance. Later they changed its name to Sugh-ol- Ahvaz Which means Bazar of Ahvaz (Kasrawī, 2005: 230). Ibn Manshad said: "Ahvaz is a big city, the people are Muslim and Zoroastrian and this city is the storage of goods and products of Khuzestan, sugar, woolen weaving, beautiful garments, hemp fabrics



Pic 1: Shushtar's Hydraulic Structures, a part of the water engineering of Sassanid era in Khuzestan. By reviewing the Khuzestan's history, the importance of these structures for people's livelihood becomes evident, so that, their existence had made hectares of farming lands irrigated and Karun River was navigable and their disappearance (Hydraulic Structures) had been as ascending poverty and misery in Khuzestan. Source: [www.fa.wikipedia.org](http://www.fa.wikipedia.org).



Pic 2: Mizan Dam: this dam divides the Karun water by ratios of 2:1 between Gorgor and Shatit rivers respectively. Gorgor River is called Dodangeh or Masroqan (the handmade river) as well as Shatit River is called Chohardangeh. This dam is in such a way that, if the water discharge of Gorgor is more than one third, transfers the excess water to Shatit branch. Source: [www.fa.wikipedia.org](http://www.fa.wikipedia.org).



and other products from all Iranian cities are brought to this city, and from this city transfers by ship through the Persian Gulf to India and China and through Basra, Iraq, and Isfahan to the rest of the world. Merchants and foreigners profit a lot in this city". The name of Ahvaz was famous due to its sugar and textile goods and that is why the Arabs called the city Sugh-ol-Ahvaz (Hamdani, 2008: 183-184); (pics. 3- 5).

### Waterway destruction and Ahvaz depression

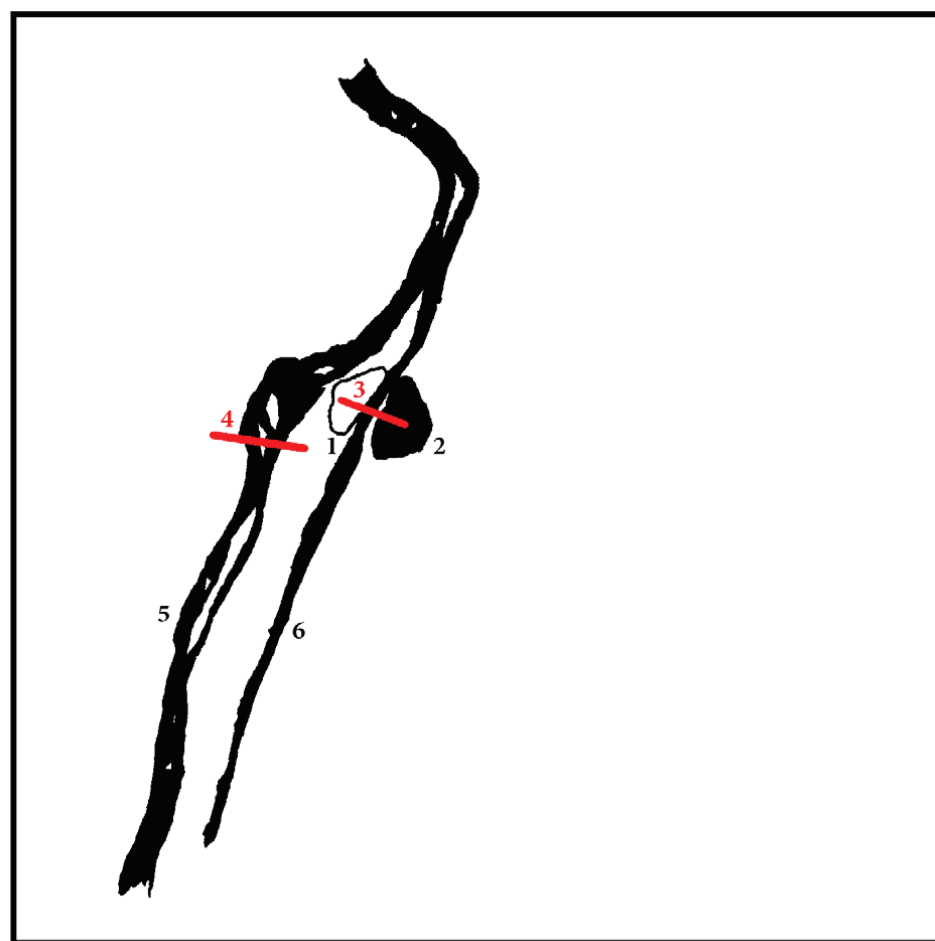
During the early Islamic centuries, due to a constructed dam on the Karun River, Ahvaz was considered as one of the largest and most prosperous cities in Khuzestan. But despite the growth and development over the early centuries of Islam, during the second half of the fourth century AD, the city begun to destruction and the people dispersed. In the early sixth century, the city was completely destroyed. Abdul Karim ben Mohammed Semaani who has lived in the second half of the sixth century described Ahvaz as follows: "Ahvaz was one of the renowned cities where scientists, clergymen, merchants and wealthy people as well as non- Ahvazi lived in.

The majority of the city was destroyed and only some ruins remained where a few people live" (Kasravi, 2005: 243). Kasravi considers the breaking of Ahvaz dam and the ensuing drying of the Shahjerd Creek as the main cause of Ahvaz destruction. A fact which is a result of water returning from Masroqan to Dujail and rising water in this branch of the river. From the sixth century, onwards due to the Ahvaz broken dam and lowered thriving water, the city

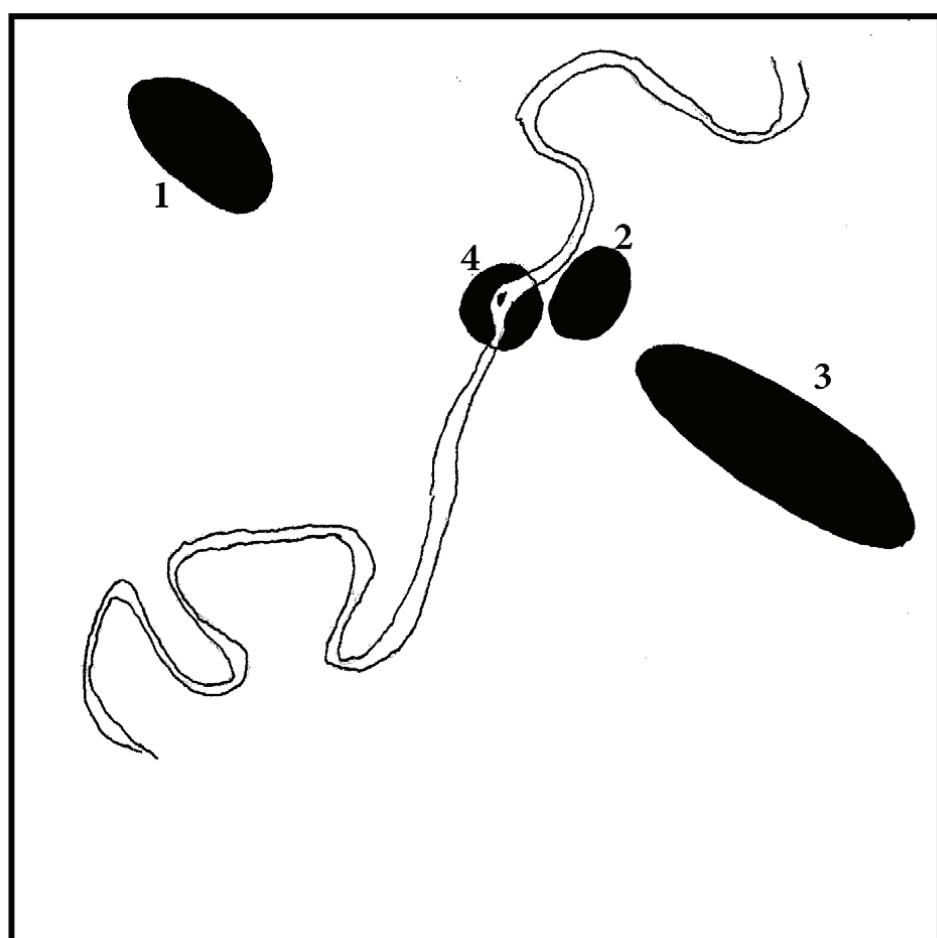
affected destructions.

### Rebirth of the city through new water trading

Captain Hunt, one of the British army officers in 1853, during the war between Iran and Britain at Mohammareh, in his travelogue has seen Ahvaz as such: "Ahvaz like most eastern countries has paltry mud houses which



Pic 4: Ahvaz between one and six centuries. Source: Mujtahidzade & Namavar (2006): (Restoration based on written documents) 1. Al Jazeera 2. Al-Madina 3. Grand Mosque 4. Hendovan bridge 5. Probable location of the Sassanid dam 6. Dojail 7. Shahjerd



Pic 3: Pre-Islamic residential areas of Ahvaz. Source: Mujtahidzade & Namavar (2006): 1. Potential possibility of settlement before Sassanid 2. People town 3. Governmental town area 4. Possible area of ancient Sassanid dam



Pic 5: Ahvaz in the early Qajar period after the destructions. Source: Mujtahidzade & Namavar (2006): 1, 2 and 3. The remains of three of the five dams that Cherikov refers. 1- Ahvaz Arab castle (current Ameri) 2- Dojail 3- the rout of the dry creek (Shahjerd)



Pics 6 & 7: Shipping in Ahvaz. source: www.khuznews.ir

have been made irregularly without observance of the correct principles, and has a population of 1500-2000 people". New Ahvaz, in 1869 AD. founded concurrent with the digging of the Suez Canal which led to shortened path for European maritime trade and their attention to the region (Afshari Sistani, 1985: 212-214). By inauguration of the Suez Canal, southern Iran became accessible for European who aimed at economic and political influence in the area. Naser al-Din Shah also favored this opportunity to expand trade and shipping on Karun River and in 1887 AD. he declared free shipping on the river for foreigners and therefore provided grounds for reviving Ahvaz. Across Khuzestan, shipping was made on Karun River and divided into two parts: upstream and downstream due the nature of the river at the site of Ahvaz which there are several rocky streaks on its headstock. Also, the remaining ruins of the ancient Ahvaz dam which had been built on the rocky grounds, was another obstacle for shipping. Upstream branch or northern Karun encompassed Shushtar to Ahvaz and downstream or southern branch from Ahvaz to the Persian Gulf. Therefore, ships that navigated from Shushtar when arriving at the site of Ahvaz had to give their cargo to another ship located at the southern side of the cliff. This handing over led to the emergence of several warehouses and caravanserais in Ahvaz which was one of the reasons for the prosperity of trade and consequently the city (Mujtahidzade & Namavar, 2006: 232-233). Construction of the Naseri Port in the area by Nasser al-Din Shah's order, led to the prosperity of trade around the waterfront, and to creation of trading houses

such as the House of Moeen al-Tojar and the House of Ajam, roofed bazar of Imam Khomeini (RA), Kaveh bazar, Naderi bazar, and etc. Therefor this place became the main trading center of the city (Pics. 6 & 7).

### **Part two- Detached city from the river: Karun's vanishing edge**

#### **Formation of new economic cores**

Ahvaz's identity is shaped by economic factors over the years (Mojtahedzadeh & Namavar, 2015). In the past, Karun River as the most important infrastructure of the city's economy, activated related applications across the city. In the last century, with the formation of new industrial and economic cores in Ahvaz, a new direction for the urban development was defined. As the new technologies such as related industries to oil, steel and others developed, the city which required a coherent interaction with the river to meet its economic needs, was already able to survive without it. So that, with gradually lessening importance of the river in the city system -Unlike the time that as a result of the Masroqan destruction and lowering level of the thriving water, the city's life became disrupted- changes in the river's water level did not disrupt the urban development and the city was developed in new ways (Pics. 8 & 9).

#### **The lack of water system setting**

In terms of hydrological typology, Karun River is a dynamic river, that unlike fixed or frozen rivers, its final form is not defined. River's water level variations are to the extent that river's water level teeters 1.2 to 2 meters





Pic 8: Ahvaz Oil Town: As the new technologies such as related industries to oil, steel and others developed, the city which required a coherent interaction with the river to meet its economic needs, was already able to survive without it. Source: [www.naftnews.org](http://www.naftnews.org)



Pic 9: Ahvaz Khuzestan Steel: the steel industry despite the fact that for formation. Source: [www.khzco.ir](http://www.khzco.ir).

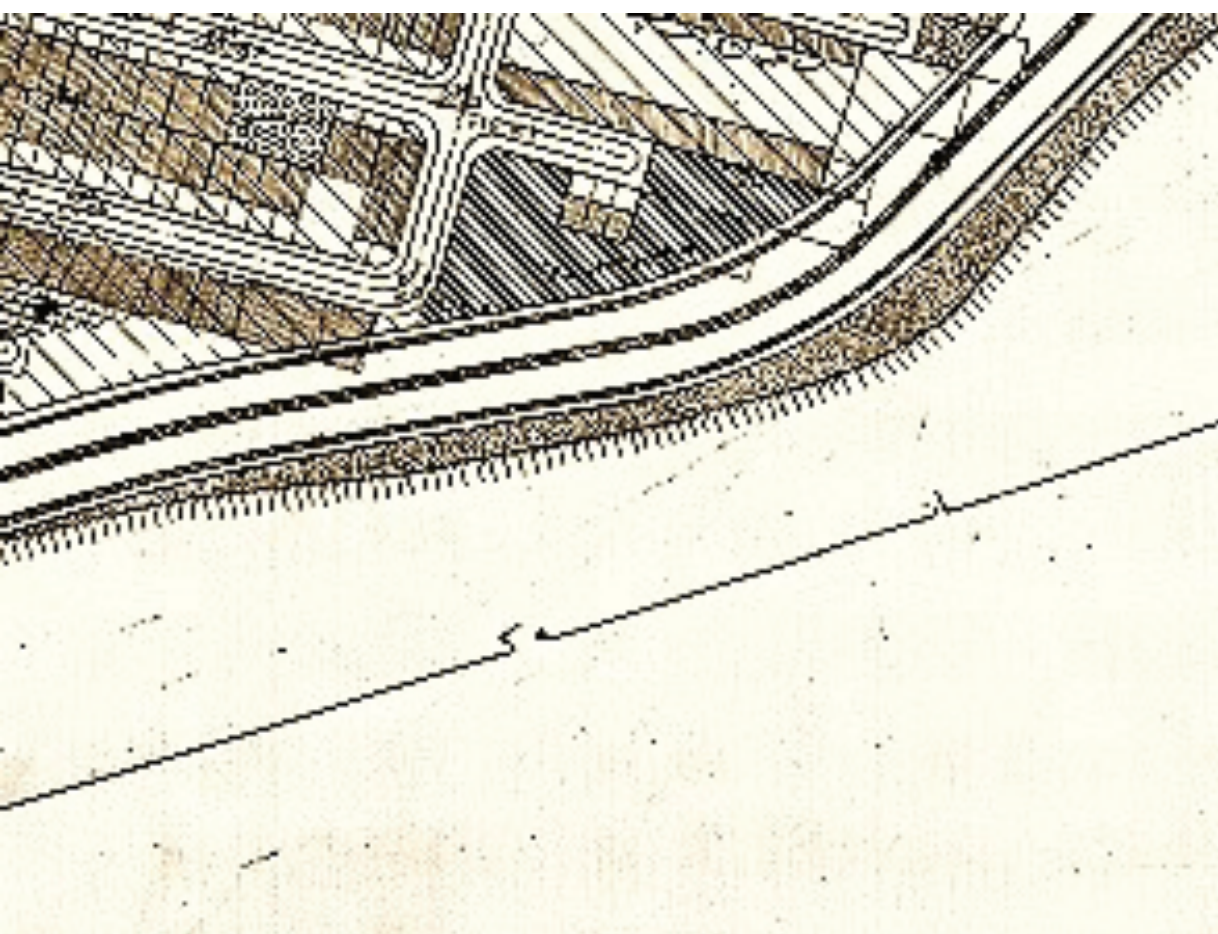
each year due to the tide and seasonal changes (Javid et al., 2010: 106-108). This range of water level variations requires the construction of accurate hydraulic structures that would lead to regulated amount of water entering the city. As during the Sassanid up to the Buyid era, structures such as Shadervan and Mizan dam regulated the amount of water entering the city and in their structure a channel for outflow of flood -river excess water- had been

predicted. Contemporary, due to the inability to create such structures and the consequent inability to manage water levels, a range of spaces for the river were defined that always placed the edge of the city away from the river. It should be noted that in recent years, changes which have been made in the river's ecosystem such as construction of dams and marginalization, as well as environmental changes such as drought have caused the river to become



Pics 10 & 11: Rising in the Karun's water level: In the contemporary era, Karun's water level variations has been one of the obstacles to approaching the city's edge to the river. [www.khuznews.ir](http://www.khuznews.ir)





Pic 12: Part of the detailed plan of Ahvaz in which relation between the river and the urban blocks have not been considered.  
Source: Detailed plan of Ahvaz in 1983.



Pic 13: An example of residential buildings on the west coast (Kianpars neighborhood) that their front side has no eyelet toward the river.  
Photo: Morteza Hemati, 2016.

gradually from a dynamic and fluid creature to a settled environment. This change has caused the lands that were considered as river's spaces to be already accessible for the urban construction (Pics. 10 & 11).

### Master Plan

In the master plan which was prepared for Ahvaz in 1985, despite the explanations provided on the importance of the relation with the river, no plan propounded on dealing of the city with the river. As such, across a significant



Pics 14 & 15: In 1929 coinciding with the construction of Trans-Iranian Railway, the first bridge of Ahvaz known as Black Bridge was built on the remaining ruins of Shadervan Bridge. Then, in 1936, the White Bridge was constructed near the Naseri Harbor away from the Black Bridge. This was a start to creation of further bridges along Karun that practically made it impossible for the cargo ships to cross the river.  
Source: [www.karnaval.ir](http://www.karnaval.ir) & [www.wikipedia.org](http://www.wikipedia.org).





Pics 16 & 17: Comparison of the Moein al-tojjar Caravansary in the early Pahlavi period and the contemporary period: as is evident in the older photo, this place had been the location of the main waterfront and cord known as Naseri Waterfront. To avoid rocky streaks within the Karun course, cargoes were unloaded at the cord here and transferred by train to the waterfront next to the rocky part to loading on ships again. This resulted in formation of the city's most significant caravansaries and bazars such as the Moein al-tojjar Caravansary and the Imam Khomeini (RA) Bazar around the cord. Nowadays the coastal highway has been constructed in front of this caravansary.

part of the city, the buildings backed to the river and the necessary physical and visual connection between the city and the river have not been considered. On the one hand, by reflecting on the functional blotting of urban blocks in the detailed plan, it can be realized that in some parts of

the city, some functions have been defined that have no congruency to the river. Functions that not only have no benefit of the river's potential, but are located between the city and the river like a barrier and decreased the ease of access to the river for residents (Pics.12 & 13).



Pic 18: Roofed bazar of Imam Khomeini, the longest bazar of Ahvaz located along the former location of Naseri Waterfront. Source: [www.khuznews.ir](http://www.khuznews.ir)



Pic 19: Satellite image of the junction place of the roofed Imam bazar to the former location of the Naseri bazar. As is evident by the historical documents, the main cord of the city has located here in front of the bazar like a square. Today, Saderat bank and telecommunication buildings locate here. Source: [www.earth.google.com](http://www.earth.google.com)





Pics 20 & 21: Examples of water-tourism projects that are under construction on the sidelines of Karun at the site of Ahvaz. Existence of such projects can propound Karun again as an economic infrastructure and activate the edge of the city and the river. Source: www.manjanighnews.ir

### Construction of dams and bridges

Along with the Karun’s lowered priority and reduced water transportation on it, changes in the water system considered permissible. By construction of dams along the Karun, the booming water stream reduced which led to expedition of the stream sediments deposition. On the other hand, construction of bridges, that in their design, the navigation and crossing of the cargo ships had not been considered, made it impossible to navigate within the river (Pics. 14 & 15). This led to gradually disappearing of the structures associated with this system and a chain of interrelated concepts disrupted. Structures such as city’s waterfront and dock, houses and caravansaries that had located along the river and

formed the urban edge of Ahvaz, gradually begun to declining and disappeared (Pics.16 & 17).

### Construction of the coastal highway

One of the most extensive projects defined within the Ahvaz range was the all-round coastal highways located between the urban mass and the Eastern and Western coast of the Karun river path. Existence of this highway had been constructed to facilitate and accelerate the residents’ traffic, faded the relation between the city and the river more than ever. So that, residents aiming to access the river, have to cross a highway barrier that automobiles having maximum rate are passing on (Pics.18 & 19).

Table 1: Evolution of the relationship between Karun River and Ahvaz throughout history. Source: Authors.

Historical period	River water system	The role of the river	City distance from the river	River’s urban edge
Sassanid to Buyid	Establishing the water systems in Khuzestan (hydraulic structures from Shushtar to Ahwaz)	River as the economic infrastructure	By creating structures for regulating floods, approaching the city to the river	Urban edge having trade uses, the development of Houjistan Vajar beside the water
Buyid to Qajar	destruction of the water systems, lowering the level of the city’s booming water	The river as a natural side effect	Destruction of Ahvaz	-
Qajar to the First Pahlavi	Inauguration of the Suez Canal, selling the shipping concession to the UK, creating of new water systems (Port of Nasiriyeh)	River as the economic infrastructure	The lack of flood regulating structures and locating the city away from the river	Urban edge with commercial use, development of Houjistan Vajar beside the river
Second Pahlavi to date	Development of alternative economical systems, vanishing of water regulations (loss of the waterfront and the dock)	The river as a natural side effect	River’s water reduced and river spaces changed	The city backed to the river, development of intermediate spaces such as highway and coastal park between the city and the river



**Conclusion** | Ahvaz is such a city that is defined related to the Karun River. The relationship between the city and the river throughout the history had been to the extent that the river gone beyond as an initial water supplier to act as an economical infrastructure (table 1). As a result of the approaches adopted during the last century, the relation type between the city and the river and subsequently the river's urban edge has been transformed. Due to the marginalization has been done in the city, the river actually converted to a canal. On the other hand, with the urban development redirection, the urban structure of the city that has been founded based on the river, is not accordant

with the new structure. It seems that by evaluating the recent approaches and a reconsideration of the relation between the city and the river, new patterns towards the development of the city focused on the commercial identity of the city and the river could be achieved. Despite the lack of the economy based on the transportation of the cargo ships due to the low level of the river's water and constructed bridges, economy based on tourism, transportation of boats and small tourism ships is still possible and could thrive the Karun's edge again, so that, in recent years, examples of such measures are in progress activating some parts of the Karun's edge (Pics. 20 &21).

## Endnotes

1. "Karun's lips" is a popular Song of Jahanbakhs Mahmoudi which is generally known by performance of Nematolah Azmoudeh (Aghasi). The song describes the prosperity and pleasure of the junction place between the city and the river - the so-called Karun's lip (edge).
2. River City
3. George Henry Hunt

4. Ahvaz Master Plan in 1383 prepared by Pazhouhesh Omran Corporation which like the former pre-revolution one in 1346 has considered the river physically. In 2005, some efforts were made by the City Beautification Organization to add a supplement which focused on the river to the Master Plan. Given the obstacles arose, eventually it is decided to consider this issue in the new Master Plan published in 2016.

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