

The temporalities of the city-river interface through the case of Zahle and Berdawni

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Abstract

Rivers are a fundamental asset of urban geographical environments affecting the urban structure morphology, and a vital part in the emergence of societies. Once was the rest place of merchant travellers stopping by its banks to rest, the Berdawni River brought prosperity to the city of Zahle with the establishments of hotels and restaurants along with residential and commercial premises spread by its sides. Overtime and due to negligence, The Berdawni River semi-retired and brought forward dysfunctional environmental issues requiring urban restructure to restore its identity, landscape and heritage values.

Keywords

Architecture, urban planning, landscape, resources, Berdawni, Zahle, temporality, territory, town-river interface, usage conflicts, sustainable development, geopolitics

1. Introduction

Despite the complexity of this topic; the relations between city and river have become an essential element of urban planning within a trend of contemporary redevelopment policies.

For any city crossed by a river, it is a main element influencing its activities, the population and the urban forms, constituting at the same time a substantial asset, particularly in terms of economic activities, and a restraint which is consistently felt as the city grows. The relationship between a city and its river is tough and managing the presence of water in the city is a matter that resurfaces throughout the history of urban development. Today, this same matter stands out in the projects of restructure of city centers, bringing with it many issues of identity, tourism and economy.

Rivers, as an important asset of urban geographical environments affecting and limiting the urban structure morphology, have been a vital part in the emergence of societies. Rivers characterize not only a primary condition for growth and development of many settlements but they also affect the artistic quality of urban forms as well as the functionality and size of cities.

This paper develops on the morphology of urban space, as a ground of scientific debate on the built environment. The Paper intend to resolve the effects of the presence of rivers on the morphological configuration of cities. Thus rivers are thought to be as solid morphological phenomena with discerning borderlines from the surrounding areas.

While developed countries persist and succeed in implementing sustainable development strategies [with the aim of continuity and adaptation in a long-term perspective] for their cities and territories, Lebanon is pursuing a daily mode of evolution. The National Land Use Planning Scheme (SDATL) completed in 2004; from one aspect resolving the strategic orientations towards unity, the balance of the territory and the optimization of the management of its resources; and from another aspect; the directives guarantee of a coherent urban development has never been fully grasped. Thus, our resources are exhausted, our landscapes are disfiguring and our cities continue to grow in confusion.

2. Study Area

The case of Zahle and its ties to the Berdawni is particularly interesting because the place of the river, both physical and psychological, has frequently evolved in the history of the city. This example is a perfect fit in some theoretical developments on the topic, likewise in many other cities in the world. However, we must overlook some of the specificities that make locals attempt to achieve today to distinct their city through the remedy of its river in projects undergoing urban renewal.

The Berdawni River is a western feeder of the Litani River which starts under Sannine Mountain, flows through Zahleh and meets with the Litani downstream of the Damascus highway. Similar to other tributaries, the Berdawni presents a steep and narrow upstream riverbed which becomes wider and slower once it reaches the deep core of the valley. (Figure 1)

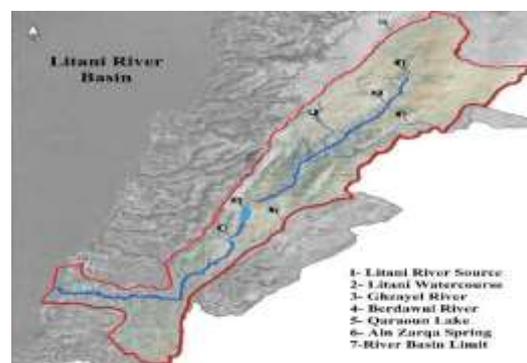


Figure 1- Litani River Basin Map. (Source: ESRI Data & Maps-GIS- Christelle Tohme)

Before going any further, it seems important to dwell on the fact that our study tends to determine our conceptual basis, namely the study of city/water relations through the landscape.

In this paper, we will present the results of a first exercise of putting into perspective the Berdawni society/ watercourse relations, highlight the impact of the river on the sustainable development of this area and its impact on the big landscape. By browsing the history of this river, we will highlight the milestones of the evolution of its urban and river landscape. In the end, it is the entire fluvial landscape that undergone changes that we will bring to light.

The management and development of the river will make the landscape less degraded, and improve the framework of tourism and economic activities of the city of Zahle. The Berdawni River becomes then a catalyst for the development of the city on both sides.

The vision of the space expresses an identity and a local sphericity which will be imprinted in the minds of the inhabitants and translate the perception and therefore the positive judgment they have on the territory visited. In these circumstances, the inhabitants of these towns and villages and people passing through will see the landscape as a factor of well-being (one of the principles of the European Landscape Convention). Instead of just making natural places by the river, the smart idea would be to make urban places that protect the natural environment. It would be better not to make huge natural places without urban life respecting nature and the environment.

Finally, these two questions, the commune and the water, are harmoniously and intimately linked: to treat them together could help intelligently to improve the living environment of the citizens. Water must become a vector of urban identity, enhancement and improvement of the quality of life. This contemporary need renews the links between water and the development of the region.

Water must play a vital role as a factor of urban development, it must be both a structuring factor (morphology) and a symbolic factor (identity, well-being) of urbanization in the 21st century.

From this point of view, the reconquest of water, once again mastered, becomes a catalyst for urbanistic compositions carrying identity, landscape and heritage values and becomes a structuring element of places of life, an object of conviviality and sociability.

The Berd a wni River could redraw a collective history, as it has always been, in a multi-secular dynamic.

3. Methodology

As part of this study, we try to explain the practices of individuals, in relation to new representations related to rivers. In this part, I will explain the methods used, the logic of the constitution of my samples, as well as the actors I interviewed to study this dialectic throughout this period of research.

For that, I proceeded initially to draw up an assessment of the current context of the city / river relation at Berdawni. Second, I tried to identify the social representations related to this patrimonialization dynamic around the river. For this purpose, I proceeded to the analysis of written and oral speeches.

Sample: The constitution of my sample is heterogeneous; its formation is not random. It is composed of actors likely to answer the questions that I mainly asked myself about different aspects. I first targeted actors in the institutional environment, and the users of the watercourse that is to say the daily users of the river.

Tools used to build the interview grid: To carry out these interviews, I have drawn up an interview grid in relation to the hypothesis and key concepts developed in my problematic: representation, practices, heritage, division, development ... My subject being relatively broad, and having not been the object of any previous study, I had to adapt the speech of the people questioned and guide them towards my field of research.

Table 1- Interview Grid

| Concept, hypothesis | Thematic approach | Indicators Clarifications, reminders |
|---|---|---|
| Social representations around the watercourse | The importance of the watercourse Types of representations caused by water | The watercourse as a Resource The watercourse in the urban aesthetic The watercourse as a physical constraint The watercourse as division, rupture |
| Practices | Management Planning Interview Usage | Hierarchy of water governance Development projects Taking into account the watercourse |
| Heritage | UNESCO Classification Natural landscape Backup policies | Tourism Watercourse as a sector to back up Evolution of the landscapes |
| Referential | Laws Program Policies around the watercourse | Relationship with Patrimonialization |

Table1- Interview Grid (Source: Christelle Tohme)

This grid is also an interview analysis grid. It allows me to deconstruct the collected speech in order to find elements of answer to discuss and argue my hypotheses. This is the thematic analysis of my interviews. During each interview I noticed that there were systematically common points that came up in each answer. This naturally led to other avenues to be explored. The theme that came up most often is the following: “the ancient uses of the banks of the river”.

I therefore deemed it necessary:

- The ancient uses of the watercourse.
- Make a brief historical study of the uses of the watercourse and trace all the historical events around this watercourse.
- To make a comparison of the nature of the current uses and the previous uses, to see the evolution of the practices and to understand the mutations of the social representations and the nature of the practices around the river.

Direct observation

I then used another type of field data harvesting through observation. It allowed me to dissect the social practices related to the river: presence, absence, displacement, development, attractiveness... This was a way to identify the usual actions around this geographical element. The people interviewed on the Berdawni banks are: tourists, restaurant and shop managers, inhabitants, young people, Lebanese citizens and refugees.

4. Results and Discussions

4.1 Berdawni: a territorial development factor

The city of Zahle has developed a close relationship with its Berdawni river, for the different uses that were once associated with it and still are.

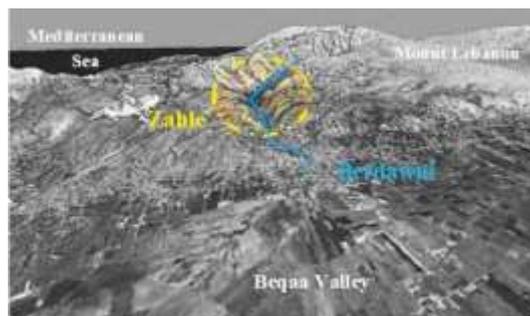


Figure 2- Location of Berdawni. (Source: ESRI Data & Maps-GIS- Christelle Tohme)

4.1.1 Overview of the situation of the spatial organization around Berdawnirivers

The origin of the name of the city of Zahle is Syriac and means “slide” or “move”, for the south-east side of its valley is composed of moving soil.

Geographically, Zahle is located on the eastern slope of Sannine Mountain and in the middle of the Bekaa plain. It is “the throbbing heart of Lebanon”. It has 130,000 inhabitants, and is located 45 kilometers from the capital Beirut. Its altitude varies between 900 and 1350 meters. Its area is 7000 hectares. It is distinguished by its beautiful climate and pleasant nights especially in summer. It is known for the hospitality, generosity and friendliness of its people, for its restaurants on the banks of its river Berdawni which crosses the city in the heart of its historic centre and constitutes the essential foundation of the Zahliote landscape. It is an axis, according to its longitudinal dimension. Its banks are more or less high and generally planted.

4.1.1 Territory mutations throughtime

Zahle was founded in the early 18th century and lies in the middle of an ancient environment that goes back to five millennia. It is built in a valley between two identical hills crossed by the Berdawni River that takes its source of the height of Kah-El-Rim traversing its neighbourhoods to divide it in two almost parallel zones.

In 1810, Zahle became part of the territory of the Druzes under the authority of Emir Bachir based in Deir el-Qamar. The locals lived from the cultivation of vineyards, and mulberry plantations and the commerce of sheep.

In 1860; during a conflict between Christians and Druzes, Zahle was set on fire; which devastated the city and left it in utter despair. Soon Afterwards; Zahle began to regain its prosperity with the establishment of the railroad line in 1885 (figure 3), which improved commerce and the town became the “port” of the Beqaa and Syria, extended as far as Iraq; and resumed its role as a regional agricultural centre.



Figure 3: A Railway passing through Zahle linking Beirut to Huran has been constructed to facilitate transportation and exchanges (Source: A. Najjar Portfolio 1885)

In the 18th century, the caravanserai was a roadside rest for travellers stopping by to pause and recover from long journeys. Caravanserais promoted the flow of commerce of traders along the Silk Road. Zahle was a main intersection whereby merchants would stop over, have a meal, and spend the night over and proceed with their journey the next day.

Traditionally, Zahle has always been a city where travellers would meet and socialize with locals while sharing food over travel stories, particularly around the banks of the Berdawni River. This phenomenon supported the foundations of hotels at the turn of the 19th century. In 1878, Hotel el-Soha was the first establishment to welcome tourists, followed by Hotel America, Hotel Akl and Hotel Kadri played a significant role in the lodging activity of the city.

In 1914, Jamal Pacha the Turk invaded Zahle and used Hotel Kadri as a hospital for its army. He then seized grain warehouses and sheep as a way of torture. In 1916, Sykes Picot convention appoints France as the mandate authority of the region. With the defeat of the Turks aftermath of World War I; General Gouraud declared Beqaa, Baalbek, Hasbaya and Rashaya officially lands of the Greater Lebanon.



Figure 4: Berdawni Entrance 1930 and Boulevard 1980

The Berdawni River area was traditionally a site for mills that would install by the river in order to ground their wheat and produce huge amounts of flour and grains. Today bakeries represent a large percentage of the local industry.

The riverbanks of the Berdawni have long been a meeting place where people of Zahle and other parts of Lebanon come to socialize, stretched 300 meters along the river with large outdoor restaurants, cafes and playrooms, and shaded by trees, specializing in traditional Lebanese meze. Visitors can hear the river rippling on both sides while dining in the courtyards framed by tall ancient trees during summer season and retire during late fall and winter, due to its dry cold weather.

Due to its unique topography, Zahle outskirts spread vertically on steep hill slopes, and the town features an elevation difference of more than 200 meters in a narrow geographical area. The Berdawni was at a time the town's source of drinking water and its most prized natural character.

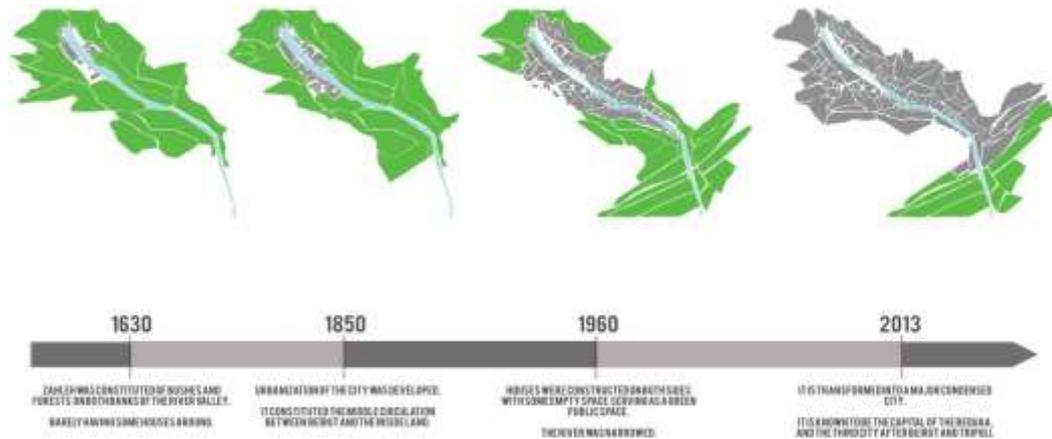


Figure 5: The evolution of urbanization of Zahle through time (T.Bitars, 2016)



Wadi el Arayech postcard before 1920
(Source: Book "It was Zahle"
2008)



World War 1
(Internet)



Berdawni 1900-1920



Wadi el Arayech 1937 Old photo of the banks of the Berdawni at Zahle, (Source: Book ‘‘It was Zahle’’ 2008)



Zahle Berdawni 1956



Berdawni 1960



Zahle Casino De Wadi with La Cascade 1967



Wadi el Arayech 2014



Polluted and unsafe Berdawni 2016

1.1 The Berdawni in landscape entities

The banks of Berdawni form a linear and structuring landscape entity. The differences in relief and the presence or absence of vegetal procession make it possible to characterize them. The riverbanks cross the city from side to side, connecting its eastern part to its western part. The edge areas constitute near the center an important green space. Indeed, the Berdawni is not an isolated landscape component. It is the recognition of all these spaces and the ability to network that will contribute to make Zahlé a city with a landscape strongly marked by its watercourse.

River State: Evolving History

River Evolution 1950- 1990: For many years, Berdawni river was the main drinking water source used for domestic and agricultural supply as well as the most important natural touristic symbol of in the city. After the flood in 1955, the river corridor was transformed into a 12 meter wide concrete open canal with six meter high retaining walls.

This flood mitigation infrastructural approach converted the Berdawni River from a perennial river to a concrete canal and eventually it mutated into an open sewer, besides the public parking built over its riverfront land that damaged the ecological function of the river and its landscape structure.

What had major impacts on the river's edge are mainly the infrastructural projects applied in the early twentieth century. Pedestrian connections have been replaced by through traffic roads and the river corridor has been transformed from a natural corridor in to an infrastructural corridor.

The banks and cliffs of Berdawni

The banks are the outer limits of the minor bed. In Zahlé access to the banks is difficult because of the omnipresence of vegetation in some places, and high amenities and this is due to better management and channelling of water by the town.

“The geographical landscape seen by the representation of the Google Earth of the city of Zahle, distinguishes the natural elements from the cultural ones. It is the characteristic physiognomies of this region, we can distinguish the relief, the vegetation, the colour of the earth, the river, the location of the village, the density... (Figure 10)



Figure 6: Urban Fabric and main street map around the Berdawni in Zahle, (Source: Christelle Tohme)

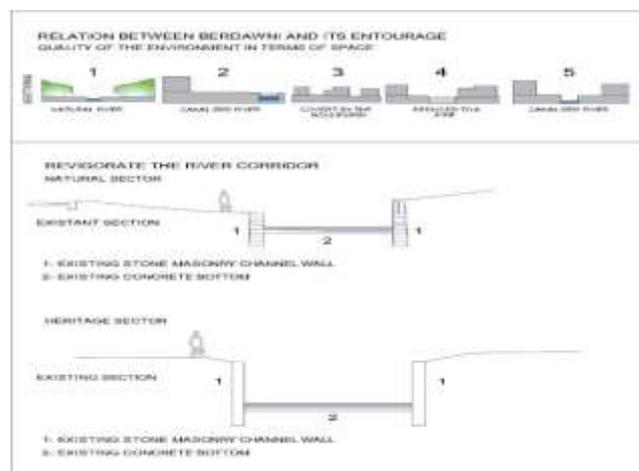


Figure 7: Different typologies of the Berdawni Banks

The highest banks in Zahle are several meters high in certain areas (see figure), and are therefore subject to erosion and soil instability related to the steep slope. The landslide is important. They are usually covered with afforestation, or artificially concreted.



Figure 8: Typology of banks in Zahle on the Berdawni River.
(Source: GICOM-January 2002)

4.2 Architecture characteristics of the region

The Berdawni Valley is characterized by authentic Lebanese architecture, in its simplicity it reflects the spirit of Zahliote inclined to live in happiness and peace of mind.

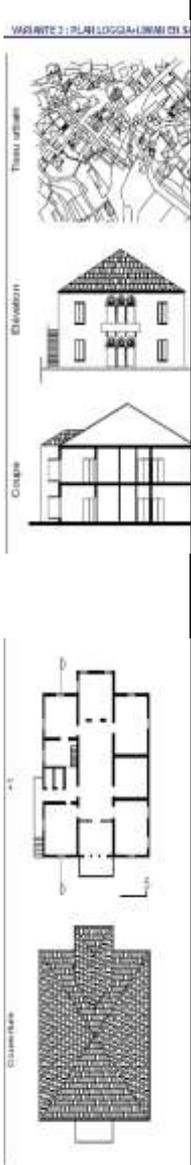
A city with red tile roofs, Zahle town centre stretches on both banks of the Al Berdawni River with the city located on the river rises and commercial areas occupy the eastern shore. The northern end of the city is called Wadi al Arayesh, famous for its outdoor restaurants and its waterfront.

The house with three arches appeared in Lebanon during the second half of the nineteenth century and is found all around Zahle. It is the bourgeois house par excellence.

FORMS OF TYPOLOGY TYPICAL PLAN

| Architecture Typology Form | |
|--|--|
|  | <p>Houses with three arches in Zahle</p> |
| <p>Implantation</p> | <p>This typology is generally located in a private garden. In the historical hearts of the towns or villages of the mountain, one finds it in even the souk, sometimes surmounting an older structure and contiguous to other dwellings.</p> |
| <p>Usage / associated activity</p> | <p>The use is only residential.</p> |
| <p>Dating</p> | <p>This type was born in Beirut around 1860 and lived, in his Ottoman version, until about 1930.</p> |
| <p>Altitude</p> | <p>This house is spread from the coast to an altitude of about 1,700 m.</p> |
| <p>Orientation</p> | <p>The preferred orientation is the north. Otherwise, the house looks at the valley or the sea.</p> |
| <p>Floor area</p> | <p>This dwelling usually occupies 1/5 of the plot area. In the dense cities, it occupies up to 100% of the surface.</p> |
| <p>Surface of housing</p> | <p>100 to 250 m².</p> |

| | |
|--------------------------------------|---|
| Number of floors | From 1 to 3 at most. |
| Number of housings | From 1 to 3 at most. |
| Number of families | From 1 to 3 at most. |
| Average number of members per family | 4 to 8 people in the late nineteenth century. |

| Loggia Plan and Overhanging Liwan | |
|---|--|
|  <p style="font-size: small; margin-top: 10px;">VARIANTE 2: PLAN LOGGIA LIWAN 01 S</p> <p style="font-size: x-small; margin-top: 10px;">TERRAZZO</p> <p style="font-size: x-small; margin-top: 10px;">ELEVATION</p> <p style="font-size: x-small; margin-top: 10px;">CROQUIS</p> <p style="font-size: x-small; margin-top: 10px;">PLAN</p> <p style="font-size: x-small; margin-top: 10px;">SECTION</p> | <div style="display: flex; justify-content: space-around;">   </div> <p style="text-align: center; margin-top: 10px;">Loggia Houses in Zahle overlooking the Berdawni River</p> <p>Functional scheme</p> <p>The rooms are arranged on both lengths of the large room. These are the bedrooms. One of these rooms, near the entrance, serves to welcome foreigners. The large central hall is the place where the family meets.</p> <p>At the back, the liwan plays the role of a small winter lounge. The kitchen and toilets are still located to the east. This position is constrained by the prevailing south-westerly northwest winds that drain moisture and odours.</p> <p>All rooms have large windows to enjoy the panorama (mountain, river or valley views).</p> <p>Loggia is a sheltered terrace, or open space in the volume, where the family spends most of the day and receives visitors during the hot months of the year.</p> |
| U r b a n F a b | |

| | | |
|--|--|--|
| | r i c E l e v a t i o n S e c t i o n P l a | The protruding liwan is an extension of the winter lounge. |
|--|--|--|

| | | |
|--|---|--|
| | n R o o f P l a n | |
|--|---|--|

Table 4 – Loggia Plan and Overhanging Liwan

| Harat with an Overhanging balcony in Zanbe | | | |
|--|--|---|--|
| | |  |  |
| | |  | |
| | | Harat with an Overhanging balcony in Zahle | |

| | | |
|--|---|--|
| | o n S e c t i o n P l a n R o o f P l a n | |
|--|---|--|

Table 5 – Harat with an Overhanging balcony in Zahle

4.3 Cultural Characteristics

Zahle's cultural character is matched only by its commercial and administrative value and an important agricultural centre producing fruits and vegetables, particularly grapes.

It will be curious to mention in this brief overview, that historically speaking, The Berdawni River has always divided the city into two entities which strongly influenced the evolution of the latter. Indeed, the West Bank was considered the residential side of the city unlike the commercial East Bank; and to the north were the restaurants.

With the increase of the population, the Berdawni shoreline has declined, so the commune has decided on a redevelopment policy based on the east bank. The urban development undertaken on one side are reproduced identically on the other: gardens, floor coverings, street furniture

... All with the aim of creating a unity of city united by the river.

The Berdawni River has evolved a lot since the last 50 decades, it still has its traditional atmosphere but a lot of things has been renewed and renovated in it. The municipality of Zahle runs maintenance works every year before the summer season as well as the restaurants and cafes owners also renovate and maintain their restaurants on their own. (UNESCO)

4.4 Zahle-Berdawni Challenges Overtime and due to lack of awareness

And negligence, The Berdawni River turned into a landfill and a course for sewage of neighbouring towns.

In October 1997, over 100 samples of industrial effluent and solid waste were collected from industrialized coastal and inland sites in Lebanon, and this included the Berdawni River. The aims of this survey were as follows:

- 1- To identify the main polluting industries in Lebanon.
- 2- To discuss the range and environmental significance of heavy metal contaminants and organic pollutants discharged into the water.
- 3- To propose appropriate and effective means of waste management and treatment.

- 4- To present potential alternatives to any toxic processing chemicals used.

Eight samples were collected from the Beqaa Valley. Three samples associated with “Mimosa” paper factory containing highly toxic compounds. (Greenpeace)

In this context, the “Lebanese Association for Environment and Health” filed a complaint, with the public prosecution against “unknown” for the pollution and the bad smells emanating from the river, and threatened that it will take escalatory measures permitted by the law, to preserve the environment, the health and the future of the region’s residents. (LBCI Aug 23 2012)

Industrial wastes are also discharged without any treatment into various receiving water bodies. In the Beqaa area, major water sources such as the Qaraoun Lake, Litani and Berdawni rivers are heavily contaminated as they receive untreated industrial effluents from sugar-beet factories, paper factories, lead recovery plants, limestone crushers, agro-industries, poultry farms, tanneries and slaughterhouses. In the absence of a pollution control strategy with the necessary legal and regulatory instruments, industrial discharges remain an important pollution source. Finally, there is no major re-use of treated wastewater. However, the use of raw sewage for irrigation has been reported in several areas. According to the UNICEF report around ten percent of the wastewater is used for irrigation, therefore contaminating the crops.

Interview with the Municipality of Zahle

Interview Grid

| Concept, hypothesis | Thematic approach | Indicators reminders | Clarifications, |
|--|---|--|-----------------|
| Social representations around the waterc | The importance of the watercourse Types of represent | Berdawni is the Primary resource for taming water in Zahle Berdawni is the urban aesthetic of the city of Zahle which has developed around. Berdawni is a link between the water edges and the banks | |

| | | |
|-------------|---|--|
| course | ations caused by water | forming a single landscape entity with the whole city Summer musical, flower and gastronomic festivals |
| Practices | Management Planning Interview Usage | <p>Cleaning the Berdawni River was an environmental priority. Many officials have called on relevant authorities to clean and preserve the river; which has seen years of neglect. The responsibility lies with the Ministry of Energy and Water.</p> <p>Villages above Zahle throw their sewers into the river. The problem arises when the river dries in summer.</p> <p>5000 Immigrant Syrian families have taken refuge in Zahle, and do not respect the environment, causing problems of pollution and degradation of the territory they occupy</p> |
| Heritage | UNESCO Classification Natural landscape Backup policies | <p>Tourism</p> <p>The designation of Zahle as a member of the network of creative cities allows to put it on the map of gastronomic cities of the world. The Lebanese cuisine has been classified in the UNESCO World Heritage.</p> |
| Referential | Laws Program Policies around the watercourse | <p>Relationship with patrimonialization</p> <p>The municipality needed to own land for some of the projects, such as in the Ksara and Hawsh al-Omara neighbourhoods, as well as to widen the Berdawni Riverpromenade.</p> |

Table 6 – Interview Grid (Source: Christelle Tohme)

4.5 Representations of the river with urban and rural practices and forms:

In general, for the inhabitants of the city of Zahle, the Berdawni River is perceived as a resource for leisure. According to a field survey shows that the majority of people in Zahlé have a very partial view of the river environment that is limited to water, these aquatic environments are perceived almost exclusively through their function for humans (Figure 16). This vision was confirmed during interviews with institutional stakeholders interviewed who, in addition to this aspect, consider the river according to the same logic as the structure or position they occupy.

In addition, according to the same study, 26% of the population believes that the UNESCO World Heritage Culinary List of the city of Zahleh can have an influence on the Berdawni River. These first remarks show a change of representations related to the Unesco classification of this city, which considers the river as a resource, a place of leisure and a heritage to preserve. This advocates a global footprint change that leads to the emergence of new development policies related to the protection of the river as World Heritage.

Figure 9: Main representations of the fluvial environments of the interviewees. The individuals had to propose two choices, from a list of proposals/, ranked in order of importance showing that the Berdawni represent in order: 1-Leisure, 2-Heritage, 3-Resource, 4-Landscape, 5-Ecosystem. (Source: Christelle Tohme, 2014 and 2017.)

5. Conclusion:

The city is indeed closely linked to water but for the uninitiated this observation is not obvious. Whether reading the map of Lebanon or visiting the city this relationship is not very visible. Various factors have helped to erase these links. At present, the Berdawni stream is the center of Zahle. A strong indicator, visible from all corners of the city would allow its indication.

In order to produce a more sustainable urbanization that respects our current requirements, an urbanization that integrates the symbolic and hydraulic aspects of water is a must. And to be able to provide the means to construct, imagine and create types of urbanization that respect and adapt as best as possible to social dynamics, historical heritage, and their evolution: concept of sustainability that develops, one must urbanize with a clear and sharp awareness of types of urbanization that respect their natural and built environment:

- Creating eye contact is important, creating a breakthrough from the city or roadways.
- Reintroducing the water in the city and put it on stage
- Change our collective vision of water
- Create new public spaces to bring well-being to the inhabitants
- Reconcile city dwellers with their natural aquatic resources: rivers, rain...

Sustain the supply of our aquifers and preserve our water resources of tomorrow.

At the level of a municipality, an inter-commune, a department or a region, pragmatic and beneficial water policies must take place, because they bring obvious advantage for the development and the attractiveness of territories and for economic development around water courses. Keeping into consideration that consultation, decentralization, public democracy and the government rulers' will to change are key factors in the sustainable development of these rivers.

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