The Socio-Environmental Impacts Of The Urbanization Of Sousse City

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Abstract

The commune of Sousse, benefiting from a strategic position on the Mediterranean coast. It is characterized by a spatial and demographic dynamic. The effect of its urban extension is reflected in the passage from a compact Medina surrounded by orchards and olive trees to an almost continuous urban area, limited by an industrial zone in the South and a tourist zone in the North. Today, due to this "unequal" development of its territory, the city of Sousse faces certain threats: The socio-spatial, territorial and ecological disparities between the North and the South constitute a real threat at the level of social cohesion inside the municipality of Sousse. Spontaneous housing and the increased phenomenon of internal migration may increase insecurity in the city. In particular, the aesthetic degradation of the urban landscape and various forms of pollution (atmospheric, sound, visual) also contribute to widening the gap between the citizens of the South and those of the North of the commune. In addition, the municipality of Sousse presents many challenges, in terms of governance and urban planning. We adopt a multidisciplinary approach to place the reflection on urban planning and the living environment of the municipality of Sousse.

Keywords: urban landscape, urban planning, quality of life, sustainable development, governance, the municipality of Sousse.

1. Introduction

The municipality of Sousse, a port city, benefits from a strategic position on the Mediterranean coast. Its economy is based on two main sectors, namely industry and tourism. It is characterized by a spatial and demographic dynamic. But its urban space is characterized by an increase in rates of artificialization in the face of the relativity of the natural character. Thus, a questioning is needed: What is the impact of its urbanization on its quality of life and its urban landscape?

We have tried to shed light on the reality of the dynamic urbanization of Sousse and its environmental and social impacts.

2. Methodology framework

Our field of study concerns the municipal perimeter of Sousse. This research is based on cartographic sources, iconographic sources (The views, photos and old postcards of the city of Sousse.) And on the documentary study. Then, the fieldwork and landscape observations are necessary to identify the socio-economic and environmental problems and constraints of the municipality of Sousse. Thus, in our approach of study, we based ourselves on the observation and the inventory of the various sites of the commune of Sousse. The course and taking photographs and notes serve as a relevant means of reading, recognition of the landscape reality of the town of Sousse.

3. Result and Discussion

3.1. Site Presentation

3.1.1. Geographic Situation

The town of Sousse, port city, enjoys a strategic position on the Mediterranean coast, halfway between the first two major cities of the country: Tunis and Sfax. (Figure N° 1: the geographical location of the municipality of Sousse).

3.1.2. Characterization of the natural environment
The city of Sousse is located at the southern end of Hammamet Golf, in central and coastal Tunisia, at 35° North latitude and 10° East longitude. It is part of Tunisian Sahel.

Its ecosystem, under the direct influence of the sea, accumulated over the centuries a rich ecological heritage and diversified by its natural plant resources, its wetlands, its coastal and coastal morphology, its marine resources, etc. In this sense Jatlaoui (2010) reports: "Sousse, like most Sahelian cities, has significant natural potential thanks to its favorable geographical location for the diversification of landscapes and the establishment of a remarkable biodiversity." Indeed, it presents a low and sandy coast where beautiful beaches are abundant and a mild climate, which explains its high traffic. Inland, the landscape of the great Sousse is formed on the one hand by agriculture (olive groves) and on the other hand the vast plains and high hills with their natural corridors (wadis, streams...) containing a wide biodiversity of plant and animal species" (Jatlaoui, 2010).

The commune of Sousse is characterized by a Mediterranean climate, a geomorphology that is marked by a diversity of morphological landscapes from the coast, the seaside, the sebkhas ... This diversity, although it offers a natural and ecological potential of value, it has not been spared the environmental problems that human activity has continued to cause during the past century. We are in a new context marked by climate change, rising sea level and the water problem (Optimal management of water resources is a key factor to meet the high agricultural and industrial needs as well as domestic and tourism).

3.1.3. Demographic characteristics

The commune of Sousse includes four districts, Sousse Jawhara, Sousse Riadh, Sousse Medina and Sousse Sidi Abdelhamid. It is the third demographic and economic pole of Tunisia. Table N° 1 shows the evolution of the number of inhabitants of the four arrondissements between 1984 and 2014. According to this graph, it can be seen that the urban core loses its attractiveness towards the extremities. Thus, that Sousse Jawhara and Sousse Riadh are the most popular with a continued attractiveness. On the other hand, a decline in the number of inhabitants of Sousse Medina and Sousse Sidi Abdelhamid is observed.

Table 1. Evolution of the number of inhabitants of the four districts from 1984 to 2014 (according to the National INS Institute).

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<tbody>
<tr>
<td>Sousse Medina</td>
<td>7225</td>
<td>5941</td>
<td>5281</td>
<td>35288</td>
</tr>
<tr>
<td>Sousse Riadh</td>
<td>31371</td>
<td>40330</td>
<td>56075</td>
<td>64532</td>
</tr>
<tr>
<td>Sousse Jawhara</td>
<td>/</td>
<td>19131</td>
<td>34447</td>
<td>86517</td>
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The city has a population density of 4894 inhabitants / Km², which is 20 times more than the average of the governorate.

3.1.4. Economic Characteristics

The city's economy is based on industry and tourism. The industries operate mainly in the field of textiles and clothing, agribusiness, mechanics and metallurgy. The geographical distribution of industrial plants in the city of Sousse reveals a concentration of industrial activity in Sidi Abdelhamid south of the city, home to almost 60% of industrial units.

With a mild and sunny climate and beautiful sandy beaches, very diverse and picturesque landscapes and a Medina written in the list of UNESCO World Heritage since 1988, the city is an attractive tourist pole which hosted according to the National Office of Tunisian Tourism (ONTT) 344,497 non-resident visitors during the year 2012.

3.2. The Historical Context of Urban Growth

From the point of view of the historical context, three great periods seem to characterize the urban growth of the city of Sousse. The first extends until 1881 and concerns the development of the medina. The second extends from 1881 until 1956 and concerns the development of the colonial city. The last one extends from 1956 until today and concerns the urbanizations of the post-independence.

3.2.1. The Arab-Islamic period

The constitution of the first urban core of the city of Sousse historically called Hadrumète dates back to the Phoenicians. Afterwards Hadrumete becomes one of the main cities of the Roman province of Africa. The arrival of the Arabs in the seventh century was at the origin of the development of a Medina. In the Middle Ages, under the Aghlabids, the city knows a boom thanks to its important commercial port. In the 10th century, under the Fatimids, the city of Sousse lost its economic and political importance to Mahdia. It was not until the 16th century with the Turks that the city regained its development. At the end of the 19th century, the urbanized space of the city is constituted by the current limits of the medina, which stretched on about 32 ha. In the North of the medina a large Muslim cemetery is placed. From the east, the old port of the city. To the south stands the Catholic cemetery. To the west of the ancient city dominated by the Qasbah, is an esplanade (quoted by, Leïla Ammar, 2016).

![Figure 2. The Medina is essentially mineral (FerdinandLop.1921.P31)](image)

The city of Sousse, whose wealth of animal and plant biodiversity is described with enthusiasm by Charles Lallemand who wrote: *The city of Sousse can be considered as the capital of the Tunisian Sahel, covered with magnificent trees, olive trees, figs, carob trees, almond and apricot trees; it is a colossal garden, which extends inland at a distance of 12 or 15 kilometers, and covers the coast from north to south over a distance of more than 100 kilometers. From March to July, they are loaded with flowers, fruits and populated with birds. Even in December and January, it is, under the dark foliage of magnificent olive trees, a perpetual chirping, where the songs and the chirping of the finches, the goldfinches, the verdiers, the larks, the buntings, the siskins, the linots and whites can scarcely be distinguished from each other, as they intermingle and merge. And at every step there are flights of birds in front of the amazed traveler. But the life of the birds is not the only one that animates the Tunisian Sahel. This piece of land is one of the most populated in the world. If you could ride a
captive balloon in Sousse, you would see around you a dark carpet of olive trees lying on the ground, stitched with white spots very close to each other. These are the towns and villages sown in the immense forest (Charles Lallemand, 1892, pp. 20-21).

3.2.2. The Colonial Period

With the installation of the protectorate in 1881, the medina is split by a European city. The commune Sousse was created by the decree of July 16, 1884. According to Leïla Ammar, (2016), between 1884 to 1904, Sousse developed on the agricultural grounds and the tracks, the olive groves, the maritime dunes and the ancient Muslim, Christian and Jewish cemeteries in and around its main roads leading to different towns and cities. In 1896, the city was connected to the capital by rail and in 1898, there was the inauguration of the new port capable of ensuring modern exports and navigation. Leïla Ammar, (2016), points out that the change of status of the urban space of the region is strongly linked on the one hand to that of a city of military servitude occupied by the agents of the protectorate, on the other hand to the stakes of a port and commercial city. She adds that the presence of a population of various origins (Tunisian Muslims and Jews, French, European, Italian, Maltese) has also played a major role in the history of the formation of the city’s neighborhoods. Figure N° 3 gives us a general view of Sousse at the beginning of the 20th century.

Figure 5. General view of Sousse at the beginning of the 20th century

The main extensions of the built-up area were to the north through the districts of Cappace Grande and Trocadero, to the west with the barracks and to the south by industrial establishments (La Commune de Sousse, 2007, p 26) . "During the 1950s, the city had 48,172 inhabitants. The built-up area covered 504.8 ha "(Darouich, 2012, p.9). So, between 1881 and 1950 the urban space multiplied more than 15 times.
3.2.3. From independence to the contemporary period

Since independence in 1956, development in Tunisia has been based on the economic and social spheres for the benefit of the environment. Such development cannot be sustainable. Brodhag et al. (2001) emphasize that sustainable development is a policy and strategy to ensure the continuity of economic and social development over time, while respecting the environment, and is sustainable for the ecosystems in which we live. Thus, the Tunisian territorial planning was part of a sectoral approach of the action of the State and a rather vertical economic planning "(Dhaher, 2010)

From the 1960s, north of the city of Sousse, there were hotel units on the coastal fringe which was occupied by vegetable crops (Figure N ° 5).

The hotel facilities are located on the north coast of the city, starting at Boujaâfar beach and then throughout the current tourist area between Khézama and Hammam-Sousse. The hotel infrastructure is located on productive farmland. This waste of fertile farmland marks a vision of short-term economic development. (BELHEDI, 1996) stated that the evolution of independent Tunisia has further reinforced coastal development¹, particularly with the extroversion of the economy since 1970, split between mass tourism and industrialization.

During the years 1960-1970, the development of tourism in the north (Figure N ° 6) and industries south of the city of Sousse (Figure N ° 7) oriented the extension of urban fabrics. Thus, industrial establishments were accompanied by the proliferation of spontaneous neighborhoods. That can be explained by a desynchronization between the economic planning of the spatial planning on the

¹ Increasing concentration of population, public services, capital and jobs on the coast
one hand and by a lack of control and law enforcement on the other hand. (Savy1982) defines urban planning as "the set of rules, institutions, legal procedures to control the use and occupation of space in accordance with the requirements of the public interest". Merlin and Choay (2005) differentiate economic planning from spatial planning. Urban planning is both economic and spatial. Spatial planning is now associated with a strategic vision of territorial development. This conception of strategic planning gives back an essential place to the territory, guaranteeing both the quality of the living environment and the urban identity.

3.3. Typology of residential districts of the municipality of Sousse

The residential areas of the city of Sousse fall into two categories: anarchic neighborhoods and regulatory neighborhoods.

3.3.1. Anarchic neighborhoods

The first nuclei of the spontaneous neighborhoods are located south of the medina at Bir Chobbek. Then, during the 1960s, other neighborhoods developed at Aouinet near the major industrial establishments. Then, in the 1980s, El Ghodrane and El Matar neighborhoods (Figure N° 8) developed around Oued El Hallouf.

According to the Livre blanc of Grand Sousse (1990), during the 1990s the largest concentration of spontaneous housing in the city of Sousse extends south to the road belt. It is located in Ksibet Echatt, Ettathir, El Ghodrane (Figure 10), El Aouinet, and Boukhzar. Other settlements are located in Sidi Abdelhamid and Oued El Kharroub.

The economic development of the city of Sousse has led to a strong internal immigration of a poor population, who moved south of the city; since, on the one hand, it is land of low monetary value (areas flooded or intended for industrial activities) and, on the other hand, it is close to the pools of employment offered by industrial activities. The Agency for Urban Rehabilitation and Renovation (ARRU) intervened through the national program to promote neighborhoods for the rehabilitation of certain neighborhoods such as Bouhsina, Boukhzar, Kazmet, Aouinet, the El Matar district and the Medina of Sousse especially.

3.3.2. Regulatory neighborhoods

Gaudin and Barraque (1980) point out that urban planning is a medium or long-term forecasting approach, which leads to procedures for the allocation of land uses and the programming of public land interventions. In the city of Sousse, the action of public operators has mainly resulted in the intervention of the Agence Foncière d'Habitation (AFH). The regulatory districts of Riadh and Sahloul are the perfect illustration.
Houimli (2008) reports that, from a socio-spatial point of view, the residential areas of the city of Sousse can be divided into three categories: To the south, there are the working-class neighborhoods: Souisse, Koudiet Malek, BirChebak à forte density. To the west, there are the middle classes: Bouhsina, Ezzahra, and more popular El-Taamir, El Aouina, Souafa, Oued El Kharroub. To the north, there are wealthy neighborhoods: Khezama East and West, beach area ”(Houimli, 2008. p.169).

3.4. The social impacts of the urbanization of the municipality of Sousse

The centralized location of services and shops in the center and the development of tourist activity, mainly seaside, in the north-east of the city, have made its areas attractive centers for wealthy families and the liberal professions. However, the disadvantaged social categories are installed towards the southern periphery of the city near the large industrial establishments and where the price of the land remains affordable.

Today, due to this "unequal" development of its territory, the city of Sousse faces certain threats: The socio-spatial, territorial and ecological disparities between the North and the South constitute a real threat at the level of social cohesion inside the municipality of Sousse. Spontaneous housing and the increased phenomenon of migration may increase insecurity in the city. In particular, the absence of entertainment and recreation areas, places of conviviality and social mix, and the aesthetic degradation of the urban landscape also contribute to widening the gap between the citizens of the South and those of the North. Sousse, 2014).

3.5. The environmental impacts of the urbanization of the municipality of Sousse

In 2016, the World Health Organization (WHO) has just published a report listing the most polluted cities in the world. Thus, the city of Sousse is part of this list. WHO has relied on data from national and international official reports to establish its own global record. These reports highlight the average annual concentrations of particulate matter. Too microscopic, they are able to cause chronic health problems. The sources of pollutants in the city of Sousse arise mainly from the transport sector and certain polluting industrial activities located in the city or in the peri-urban area. However, some seasonal practices can also degrade air quality, including the burning of garbage in the open air.

In another context, the Plan of urban displacements (P.D.U) of the city of Sousse underlined the importance of the motorized exchanges between the north and the south of the city. More than half of the North-South transit flows pass through the center (Place Farhat Hached), thus saturating the main roads of the city center and the enlarged center. This situation worsens further in summer with the peak of the tourist season. The morning and evening rush hours record successive increases of about 18% and 5% over the entire network, which is more explicit in the city center recognized by its tourist, administrative and service vocations. As a result, the environmental impact is very important, due to greenhouse gas emissions, a direct consequence of changes in the car fleet, longer distances traveled and reduced speeds. Thus, the spread city is dependent on the motorization and the service by public transport.
3.6. Changes in the urban area of Sousse

Since the 1950s, urbanization has considerably changed the landscape of the town of Sousse. Construction booms in the 1960s caused growing challenges in urban management. In fact, during the second half of the twentieth century, urban sprawl was both accelerated and increasingly dispersed at the expense of their agricultural envelope (Houimli, 2008). In sum, we can summarize the changes in the urban area of Sousse by the following points: The passage from a compact Medina surrounded by orchards and olive groves to an almost continuous urban area.

We can quote the consequences of the littoralization of Sousse as follows:
- A nibbling of fertile agricultural spaces and artificialisation of landscapes

- About twenty years ago, the system of organization of cities in the Sahel regions along the coastline was characterized by the existence of the city of Sousse "the regional metropolis" around which gravitated a dozen municipalities. Spatial spread and peri-urbanization have brought about the coalescence and spatial welding of these satellite towns with the regional metropolis. Indeed, in the region of Sousse, where the cities of Sousse-Hammam Sousse-M'saken-Messsadine and Zaouia, by their development, over the years, have evolved towards a conurbation (Figure N° 14). Morched Chabbi draws attention to the imperative of not reducing urbanization to a spatial phenomenon, but to consider that "it is now the foundation of socio-economic development and territorial management" (CHABBI, 2005).

The increase in car traffic. The spread city is dependent on the motorization and the service by public transport.

Figure 13. Sousse-Hammam Sousse-M'saken-Messsadine and Zaouia Conurbation Source: Livre Blanc Grand Sousse (1990)

- From a social point of view, the increased phenomenon of internal migration in the commune of Sousse, generates conflicts of cohabitation of the space and risks increasing the insecurity in the city.
- The phenomenon of the clandestine housing: Indeed, the investigation of identification carried out by the ARRU, in 1985 on the districts of spontaneous housing in the commune of Sousse, brings out the
existence of 10 districts\(^2\) (Livre Blanc of the Grand Sousse (1990), p16). The concentration of these neighborhoods occurs in the southern area of the city of Sousse, originally planned to accommodate industrial sites.

- Various forms of atmospheric and noise pollution and under-equipment of the city in public services are other manifestations of this crisis.

Given the challenges of development and sustainability facing the city of Sousse, planners and decision makers must intervene to adopt a new territorial policy to think otherwise the quality and living conditions in the town of Sousse. In this sense, Leloup et al. (2005) emphasize that participatory democracy allows new avenues of consultation, participation and legitimacy to emerge in order to bring out not only opinions, but also processes and decisions (Leloupet al., 2005). However, as we have already pointed out, the planning of the development in the commune of Sousse was very sectorized. It is therefore necessary to adopt a new method of urban planning based on effective governance between the different actors in order to harmonize the interests.

Acknowledgements

The city is a dynamic geographical and human space. Its urban extension since the end of the 19th century has been accompanied by socio-spatial, territorial and ecological disparities between North and South. Given the challenges of development and sustainability facing the city of Sousse, planners and decision-makers must intervene to adopt a new territorial policy to think otherwise about the quality and living conditions in the town of Sousse, in order to make the city more competitive and more equitable. Thus, the challenges of territorial governance renew the usual forms of public action and provide an instrument for helping change.

References

[10] Ferdinand Lop .1921 la Tunisie et ses richesses.P31