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EDITORIAL

We are pleased to present the third issue of JTADP, which began its publication journey in 2023 and met its readers with the first two issues last year. As we celebrate the first anniversary of our journal, our goal is to contribute to the literature with research primarily related to the technological aspects of architecture, design, and planning. However, the articles we have published and will continue to publish are not limited to this focus, and we envisage including original publications across a broad spectrum of different fields. The notable interest JTADP has garnered from both authors and readers indicates its rapid rise among the distinguished journals in its field.

In 2023, the Faculty of Architecture at Istanbul University graduated its first students. With its principled stance in its educational program and the Faculty Journal, JTADP, which also began publication in the same year, has demonstrated its swift and determined progress toward becoming one of the leading educational institutions in our country. Our objective is for our journal to be indexed first nationally and then internationally, and our efforts are being conducted meticulously towards this goal.

We are delighted to present the latest issue of our journal, featuring a diverse array of articles that reflect the breadth and depth of current research on architecture, design, and planning. We extend our sincere gratitude to the authors for their valuable contributions. Their dedication and expertise have enriched this issue, and we are confident that their work will stimulate further discussion and research in these important areas.

Ravel Gauthier Nguema Edzang and Ayşe Dilek Darby explore "Urban Regeneration Practices in Developing Countries: The Case of Libreville, Gabon," providing a comprehensive analysis of urban regeneration in a developing country context. **Ali Ulaş** presents "Determination Of Urban Morphology In Historical Settlements Through Water Supply Lines: The Case Of Eğrikapı Neighborhood," offering a unique perspective on urban morphology by examining the historical water supply lines of a significant neighborhood. **Sema Karagüler** and **Bengi Korgavuş** highlight "The Importance of Habitable Areas in Urban Design," emphasizing the critical role of habitable spaces in creating urban environments. **S.M. Amin Mostafavi Mousavi** and **M. Ebru Erdönmez Dinçer** discuss "Revitalizing and Renovating the Visitor Experience in the Historic Piazza San Marco Based on the Installation Project Generated by Midjourney AI," showcasing innovative approaches to enhancing visitor experiences through technology and design. **N. Hülya Berkmen** and **Merve Biçer** explore the "Concept of 'Hierarchy' in Urban Planning Studies," highlighting its critical role in defining settlement roles and planning priorities and the need for updated criteria in urban planning studies in Turkey.

We also extend our heartfelt thanks to our reviewers, whose diligent and thoughtful evaluations have been instrumental in ensuring the quality and rigor of the articles published in this issue. We greatly appreciate their expertise and dedication.

As we continue advancing the discourse in architecture, design, and urban planning, we look forward to your continued support and engagement. We hope the articles in this issue inspire and inform your work, and we welcome your feedback and contributions to future issues.

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RESEARCH ARTICLE

Urban Regeneration Practices in Developing Countries: The Case of Libreville, Gabon

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ABSTRACT

Since the 1990s, urban regeneration projects have become important intervention mechanisms in European and American cities. They deal with improving urban areas which are decaying as a result of physical and social problems and disinvestment. In the past four decades, the consequences of these urban regeneration projects have been closely studied and their limitations have been made public by academics publishing their studies throughout the world. These studies have revealed that in order to initiate successful urban regeneration projects, rather than top-down implementations, more inclusive and participatory projects should be implemented. It is also acknowledged as an important fact that tourism-led urban regeneration projects should incorporate the themes of authenticity and local culture by including the local community and their actors in the process. While most of the documented research has focused on the developed countries' experiences, there are relatively few studies which examine the case studies in the developing countries of the African continent. In the case of Libreville in Gabon, urban regeneration which incorporates urban tourism and authenticity appears to be one of the solutions that will allow the local community to both manage finances and structurally improve urban spaces and structures. Therefore, the present study analyses the King's Bay waterfront regeneration project in Libreville, completed in August 2022, with reference to public participation and authenticity via online surveys which were conducted with the local community. A total of 1,009 surveys were answered by the locals, with the results revealing that despite the huge literature produced by scholars in other parts of the world, in the more singular King's Bay urban regeneration project authoritarian and top-down approaches of the local authorities were observed by ignoring the local community's views with reference to public participation. Accordingly, this article discusses the consequences of this approach by disclosing the survey results.

Keywords: Africa, heritage, urban regeneration, public participation

Introduction

Urban regeneration is defined as a vision of comprehensive actions that solve problems in urban areas while bringing about improvements in the economic, social, environmental, and physical fields (Thomas, 2003). It is a process by which the physical, social, environmental, and economic aspects of an urban area undergo momentous changes. The concept of urban regeneration has been widely studied by scholars within America and Europe since the 1980s. This is because the countries of these regions were the forerunners of early urban regeneration projects. The mistakes, failures and consequences of these projects have been extensively documented, with the lessons that should be learned being carefully listed by researchers, shedding light on the implementations of public authorities in other parts of the world (Leary and McCarthy, 2013). An important conclusion of these studies is that the public participation and inclusion of the local community is essential in fostering successful urban regeneration projects rather than the top-down approaches of public authorities. Another extensive worldwide consequence of urban regeneration policies is the lack of context-based approaches, which leads to copy-and-paste projects that produce the same 'clone cities' throughout the world. This has led to 'packaged landscapes' which ignore the heritage and authenticity of the localities and communities. In this article, a waterfront development, the King's Bay project in Libreville/Gabon, will be examined in order to reveal the approaches of local authorities to the problems of urban regeneration in an African context. An online survey was conducted which covered 1,009 respondents between June and August 2022. In addition to the survey, secondary information on the project has been collected from the printed media, online media, and social media (i.e., Facebook).

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The Definition and the Actors of the Urban Regeneration

'Urban regeneration means improving the quality of life and investing in the future' (Roberts & Sykes, 2000, p. 9). For Robert and Sykes (2000), such an urban regeneration process serves to solve problems in the area, finding sustainable economic, social, and environmental solutions. They agree that the most important principles of urban regeneration are the need to set clear and measurable goals, as well as the necessity of making the best use of the available economic, human, and natural resources (Roberts & Sykes, 2000, p. 10). Urban regeneration includes the overlapping processes of the rehabilitation and renovation of urban spaces, urban revitalization, redevelopment, and the renewal of urban spaces. All of these related processes are carried out with the aim of improving the quality of life within the identified urban area. It includes adapting the buildings and urban environment to the needs of the community, improving the image of the targeted urban space, and improving the networks of social relations and security (Alpopi & Manole, 2013). Tiyan Shen, Xinyi Yao, and Fenghna established the theoretical 'Urban Regeneration Engine,' which is an analytical framework built to shape local government and the urban regeneration operator to increase the social capital and promote the participation of the local government, businesses, local populations, non-governmental organizations (NGOs) or social organizations, and financial institutions in the process of urban regeneration (Shen, et al., 2021).

It should be noted that urban regeneration goes well beyond the physical aspect of the city. At its core, it should serve the physical, spiritual, emotional, cultural, social, environmental, and economic whole of the city to bring out the authentic values of the locale (Gao, et al., 2020). According to Abass and Küçükmehmetoğlu (2018), urban regeneration as a collective vision or a comprehensive and integrative action aims to solve urban problems by bringing a multi-dimensional approach to the area. This field of action can extend throughout the city and its various peripherals, including slums and anarchic installations (Abass & Küçükmehmetoğlu, 2018). Urban regeneration is seen as an opportunity to strengthen the structure of buildings, making them more resistant and durable, especially in areas where buildings are old or obsolete. Urban regeneration, therefore, provides an upgrade to the energy services and structural integrity, especially in areas where seismic risks are medium or high (Manganelli, et al., 2020).

Urban regeneration can also be associated with sustainability in terms of decreasing a city's environmental footprint. This is related to the widespread preoccupation with global warming of the modern age. Everything leads to the reorientation of priority centres in cities, through the association of sustainability with urban regeneration, by considering the economic, social, and environmental aspects (Korkmaz & Balaban, 2020).

Partnerships are an important part of urban regeneration projects, as they provide the required financial support in the realization of the projects as well as various other requirements, such legal provisions and technical assistance. In urban regeneration projects, four types of partnerships can be observed: private sector-private sector, private sector-public sector, public sector-public sector, and public sector-Private sector-local community partnerships. Public-private partnerships relate to a partnership where the values are high, but the obligations to be overcome are also large. Although the public sector usually wants to implement the project at the initial stage, it is more likely that the private sector will become the main driving force in the implementation of the project (Özdemir, et al, 2004).

Social and Community Issues in Urban Regeneration

A community is defined as 'a specific group of people living in the same neighbourhood or sharing a common characteristic that is very specific to them' (Oxford-Dictionary, n.d.; Roberts, et al., 2017, p. 100). A community can be analysed through various characteristics: 'Personal attributes like gender, age, ethnicity, and kinship; the economic status; the skills like the education level; the location, which can be a particular neighbourhood, a village, a city, or a nation; and relationship to local service' (DETR, 1997).

The above understanding of community can easily describe the social and community issues present in urban regeneration. (Roberts & Sykes, 2000, p. 113). It is important to first understand that the community has primary needs which produce a healthy and sustainable living environment. Studies carried out by the World Bank in partnership with the UN (World-Resources-Institute, 1996) reveal that all communities generally encounter the same problems. The public authorities are confronted with the lack of financial means to be able to solve all the basic problems, such as access to affordable health services, social and educational benefits, and many more. The same studies indicate that in every nation, community involvement is essential for success in societal change and to ensure the success of any political program.

Community issues do not only relate to developing countries. All different communities have their challenges, even though the nature of the problem in developed countries is different from those in developing countries. All this is because in developed countries, the community organizes itself into local groups to improve people's quality of life (Geddes, 1995), by supporting the community, expanding social and economic opportunities for everyone, and promoting the development of local services (Roberts & Sykes, 2000, p. 111). As mentioned above, the community can be of the same race, people of the same age, people of different

sex, people connected by the same past, or the same culture. In this case, this community may experience gender, ethnic, or other types of discrimination because of their membership (Bennington, 1994). This form of discrimination is seen most often in countries where there is an ethnic mix or a diversity of races, especially for ethnic minorities or disadvantaged social groups. In this case, public authorities most often strive to promote a feeling of inclusion and belonging (Roberts & Sykes, 2000, p. 113).

While urban regeneration involves everyone, it is especially important to include disadvantaged groups because they have more problems in urban areas. As the process aims to solve problems in the urban environment and obtain lasting results, it must consider all the problems and suggestions of the affected parties to arrive at an image of the area to be revitalized and shared by all the groups. This kind of action must be supported by local political actors and civil servants, and, therefore, the public and the private sector, and therefore, business leaders and the general population (Roberts & Sykes, 2000, p. 114). For a successful project, the different stakeholders must share the same vision. For that, it needs solid foundations that connect everyone according to their interests and establish a common vision. The different community groups must therefore associate, cooperate, and establish a climate of trust (Taub, 1994).

It should be mentioned that partnerships are factors of empowerment in the urban regeneration community. Urban regeneration is a means of exploiting resources and talents with partners. In partnerships, public partnerships are present, as well as all that they encompass: government, local communities, government agencies, and many others. In private partnerships, we have private companies and financial institutions, in addition to non-profit organizations (such as NGOs) and voluntary associations. To avoid social or community problems, partnerships must respect specifications to be able to achieve the objectives set. On this basis, the partnerships must allow the representatives of the community to work with the local authorities, or the political authorities of the region, private partners, and NGOs; all of this to reach an agreement (Roberts & Sykes, 2000, p. 116).

The community might sometimes face a problem of representation. Different groups may find it difficult to choose someone to represent them because of different conflicts of interest. Sometimes a group of individuals who have gained notoriety can represent the population or local businesses because of their status — because such status is due to their ability to know the region or their skills. Although NGOs or voluntary groups provide services in the community, they are often poorly represented by influential individuals or groups that have gained notoriety. NGOs and voluntary organizations face obstacles in their work because of their representatives, which prevents the delivery of aid to the local population (Atkinson, 1999; Ware,1989).

There are various types of urban regeneration projects, including: property-led, culture-led, mixed-use-led, design-led, housing-led, office-led, and heritage-led. Among them, property-led urban regeneration projects take a prominent place as they have been implemented repeatedly all over the world.

Criticisms of Property-led Urban Regeneration Projects

After the 1980s, many of the property-led urban regeneration projects in Europe, designed to increase the competitiveness of urban economies and to attract capital (or investors, workforce, tourists, resources, etc.), were criticized not only for the disconnection and selectivity of the spatial environment they produced, but also for their implementation processes. The lack of participation in the public-private partnerships and the inability to make sufficient progress in terms of openness and accountability were the most important shortcomings. In these projects, only certain parts of the city (for example, the centre and waterfront areas) were redeveloped, and since they were carried out on a project basis, a piecemeal approach was adopted, rather than a holistic one. These projects were defined to respond to the spatial demands of the global economy rather than the local, with the needs of the poor and low-income groups, especially in the city centres, being neglected in this process (Harvey, 1989; Newman and Verpraet, 1999; Loftman and Nevin, 1995).

In the face of increasing competition, localities are constantly emerging with new, untested, and innovative projects. However, in this seemingly never-ending, every successful project is imitated and thus many ‘copy-and-paste’ projects were formed (Turok, 1991; Harvey, 1989). These types of projects were usually designed as eye-catching ‘packaged landscapes,’ with the themes chosen usually being architectural renovation projects, waterfront developments, or newly designed/renovated urban squares, all of which were implemented in every city almost repetitively (Hall, 1998, p.93). This situation also led to criticism of the proliferation of ‘cloned cities’ (Loftman and Nevin, 1995, p.308). Moreover, these projects mostly ended up promoting gentrification, and in this way, the concept of state-led gentrification has become a common outcome almost everywhere in the world (Leary and McCarthy, 2013).

Urban regeneration projects appear as one of the major solutions towards solving the multi-dimensional problems of cities that developed under the conditions of deindustrialization. Likewise, they mainly take place within the cities of developed countries rather than developing ones. That is why it becomes more important to examine the specific cases in developing countries. In this respect, analysing the urban regeneration project in Libreville, Gabon is important in revealing the implementation of these projects in developing countries.

Urban Regeneration in Africa: The Case of Libreville, Gabon

Urban regeneration is a way out of the social, economic, and environmental problems that a city may be going through, using two different or opposite perspectives. One perspective can be governmental, in a more holistic sense of the process, and the other can be private, or community, in the sense that initiatives are taken by NGOs, the local community, or private individuals (Abouaiana, 2020). In Africa, according to Miguel Amado and Evelina Rodriguez, urban regeneration should also tell the story and highlight the historical heritage, lest it is extinguished. In this way, urban regeneration can be seen as a major asset for reviving or preserving the pre-colonial cultural heritage, or even the African colonial heritage, the memory of the place, or the identity of the place (Amado and Rodrigues, 2019).

Urban regeneration has different facades in each country. In Luanda, the challenges include preserving the identity, memory, and history of the urban areas. In developing countries, more specifically those of sub-Saharan Africa, the role of cultural heritage is very important when it comes to urban regeneration. All the transformations in the field of urbanization that have taken place in recent years refer to this urban cultural heritage. In this region of Africa, the urban cultural heritage is divided into two parts: the pre-colonial urban cultural heritage, which exists but is very rare because of the massive destruction of all historical traces of black civilization by the colonists, and the urban colonial cultural heritage, which is much more visible in hundreds of former colonial cities. The latter has a similar architecture; one could even call it colonial architecture in another context (Amado and Rodrigues, 2019).

African cultural heritage is enriched with diversity, which combines African, European, and American styles of culture at the same time. All this does not only concern the cities, the urban landscape, and the buildings; it extends to the places of memory, such as the places where the Africans fought on the side of their colonizers during the Second World War, or the quays of no-return, where thousands of slaves left the African coast for various places between America and Europe, or even archaeological sites (Killingray and Rathbone 1986; Solow 1991). Some case studies have shown that community involvement in cultural heritage increases a sense of place and shows an understanding of the potential of a place. In this case, residents have the right to make decisions and monitor the progress of the project. This fosters trust, patriotism, and cohesion among residents while generating an authentic, secure, and honest space (Tolkach 2013).

Urban Cultural Heritage and Authenticity in African Cities: Same Continent, Different Conceptualizations

Talking about urban cultural heritage means discussing the concept of authenticity in urbanization. Authenticity is defined by several scholars, such as Ahmed M. Salah Ouf, who said that authenticity is a concept consecrated by time or history, involving the conservation of streets, buildings, social practices, and community cultural beliefs spread over a large urban area (Salah Ouf, 2001). Yujie Zhu said that authenticity is '*the set of original and subsequent characteristics of a cultural heritage*' (Zhu, 2016). UNESCO also defines the concept as:

> *'In paragraph 82 of the Operational Guidelines for the Implementations of the World Heritage Convention, UNESCO WH Center (2005), a property is said to be authentic if its cultural value is truly credible through a variety of attributes, such as form and design, materials and substance, use and function, technical traditions and management systems, locations and settings, language and other forms of intangible cultural heritage'* (Unesco, World Heritage Convention 2005).

In discussions on urban regeneration cases of African cities, the history of colonization cannot be avoided, because Africa's sense of urban heritage is divided into three eras: pre-colonial, colonial, and postcolonial. For some, decolonization remains a myth because of all the practices of colonial inequalities that still exist in postcolonial times, from which we observe postcolonial populations by law and history but neo-colonial practices and exploitations (Sarmento, 2023). Art, culture, and the African urban environment have been crossed by different periods in history, starting from indigenization, Islamization, and westernization, which have influenced the expression of craftsmen. Therefore, African cultural heritage is seen as eclectic (Teye, 2009). For many Europeans, like Hegel (1975), Africa has no history. For them, Africa is divided into three parts: one which must be attached to Europe; we speak of the Maghreb; the other, which must be attached to Asia; we speak of the part connected along the Nile; and the last part that lies south of the Sahara, the one most affected by colonization, must be cut off from the world and deleted from the history of culture according to Hegel (1975). African scholars such as Cheikh Anta Diop and many others have dedicated their lives to researching the history and origins of black Africans. According to them, ancient Egypt is for all of Africa, including black Africa, what Greece is for Europe (Diop and Cook 2012).

Africa before colonization had a well-established system where the elders, chiefs, and other custodians were the guarantors of the cultural heritage, and the whole community was engaged in cultural, spiritual, and material conservation, up to the point where masons had their way of building and maintaining buildings, and also their way of protecting buildings spiritually. Despite all the cultural, urban, archaeological, and natural sites and the remains of the various great African empires, sub-Saharan Africa is

under-represented in the world's cultural properties, with only 6% of sites to its credit. Yet Africa is unambiguous, for all humanity, the cradle of humanity, given the two human fossils dating back millions of years, found in two different places on the continent and both telling a different story from that of all of humanity, both being poles of tourist attraction (Sarmento, 2023). Through the craftsmanship of its people and ancestral cultures, Africa has a valuable heritage. Africa can therefore stand out and establish its own urban identity through the regeneration of urban space. This has been studied in several African cities, such as Libreville in Gabon, where the government has chosen to reinvent an urban area based on its cultural heritage to attract tourists.

Urban Development of Libreville, Gabon

Libreville comes from its English translation 'Freetown,' which is a city in Sierra Leone in West Africa. The French wanted to have a city synonymous with freedom for the peoples of French colonial Africa. The name Libreville had been attributed to the village founded to accommodate the Vilis slaves, freed from the Brazilian slave ship named the Elizia, on the 17th October 1849. Lieutenant Parant built 38 huts to accommodate freed slaves. It should be noted that all the neighbourhoods of Libreville were formerly villages and were transformed slowly over the course of time. In 1939, the first urban plan for the city was produced. The urban division of Libreville separated the white city from the African villages (Nziengui, 1981). There were streets, rivers, and villages a little further away. The city plan was drawn up by the colonists in all the cities over which they had control. In the 1950s, Libreville consisted of five groups of districts: Nombakélé, Louis, Mont-Bouet, Montagne Sainte, and Glass (Le Pratique 2022). This organization with the mixed communes were on one side, the neighbourhoods of the government, the administration, and on the other side, the African neighbourhoods.

After the country's independence in 1960, all urban racial divisions disappeared, and instead administrative neighbourhoods, residential neighbourhoods were adopted. The government of the time had initiated two plans for the urbanization of the city, one by the French architect Henri Pottier in 1962, and the other by the Italian group of Olivo Prass in 1965 (Nziengui 1981, Nziengui 1985) (Figures 1 and 2). The objective of the French architect's plan was to put an end to the anarchic settlements of the colonial era. It proposed inter-district connection roads and the grouping of urban activities. This plan was executed partially but could not be completed because of the introduction of the Port of Owendo project which was deemed too costly for the authorities (Allogho-Nkoghe, 2006). The second plan by the Italian group, therefore, took over. This required the rallying of the northern suburbs (Cap Esterias) to Libreville, the establishment of port industrial zones south of Libreville, and the partitioning of new districts which should accommodate 5,000 to 10,000 inhabitants. This plan also became too expensive to maintain and thus could not be fully executed.

Figure 1. Pottier's plan for Libreville, 1962 (Engo , Voirie et structure urbaine à Libreville. 2007).

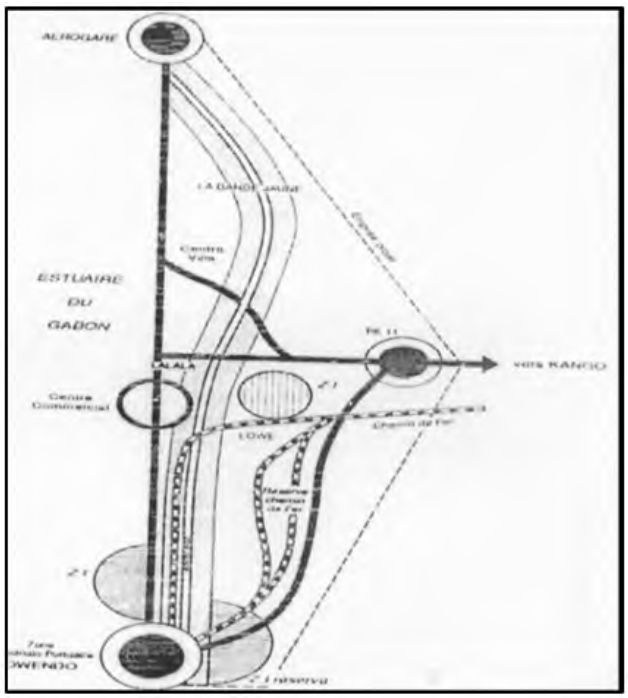

Figure 2. Plan of Olivo-Prass for Libreville, 1965 (Engo, Voirie et structure urbaine à Libreville. 2007).

Libreville was a large block with different structures, with the plans of the architects contracted at the end of independence still in partial execution, when on 4 October 1993, the ordinance N 10/93/PR of 15 February 1994, gave rise to the establishment of an urban commune in the Gabonese Republic (Nguema 2005). The port industrial zone, as proposed by the Italian group, was already in service with a few estates and some 25,000 inhabitants in 1995, when the government established the municipality of Owendo (Nguema 2014). Libreville already had two municipalities with 117 neighbourhoods, six districts for Grand Libreville, and 13 neighbourhoods for the municipality of Owendo at the end of 1997. Thus in 2013, the third municipality in the city of Libreville was founded. This last municipality brings together all the neighbourhoods in the north of Libreville. There are now three communes in the city of Libreville: Grand Libreville, Owendo, and Akanda (Figure 3).

Figure 3. Map of the urbanized territory of Libreville, 2013 (Lydie 2020).

The City of Libreville

Libreville, the political capital of Gabon and the capital of the province of Estuaire, is located on the northwest coast of the country, along the coast of the estuary of Gabon. To the north, it extends to Akanda National Park. To the northwest, it is bounded by the Atlantic Ocean, to the southwest by the Gabon Estuary, and the east by the equatorial forest (Sandbox, 2022). This location delimits Libreville the city, which is different from Libreville the municipality. Libreville is made up of three municipalities: Akanda, Le Grand Libreville, and Owendo (Figure 4).

Figure 4. Libreville map location in Estuaire, Gabon, 2020 (Albert 2009).

The municipality of Libreville is located between the municipalities of Akanda, to the north, and Owendo, to the south. It constitutes the beginning of any urban installation in the city. Libreville municipality currently comprises six districts and 117 neighbourhoods in total, the majority of which (around 70%) are precarious neighbourhoods. They are then followed by modern neighbourhoods, which make up around 10% of the area. Then there are mixed-income neighbourhoods. The rest includes administrative zones, industrial zones, etc (Armel 2000-2020). Today, the demographic weight of Libreville makes the city the largest metropolis in Gabon (Table 1).

Table 1. Libreville - Historical Population Data since 1950. *(macrotrends 2022)*

Year	Population	Growth Rate
1950	15.000	0.00%
1960	29.000	93.33%
1970	77.000	165.51%
1980	234.000	203.89%
1990	366.000	56.41%
2000	496.000	35.51%
2010	649.000	30.84%
2020	834.000	28.50%
2022	857.000	2.75%

Implementation strategies in urban management were launched in Gabon in 2010, with constitutional reforms being put in place to enable good urban management. However, these efforts paved the way for even more ambiguous urban management than existed previously. The urban management of the city of Libreville is executed according to the electoral constituencies. Each locally-elected official becomes a site manager and gives start to urban projects on his account, sometimes with very little development, with no consultation from the National Institute of Urbanization, the town hall, or urbanization professionals in his electoral district, to be able to attract the votes of the voters. This unconstitutional way of proceeding has replaced the accepted notion that public institutions should be the primary providers of urban management (Armel 2006).

Moreover, following the anarchy and lack of respect for the Constitution, the urban development program of the city of Libreville was to be constantly interrupted by people and locally-elected officials. This can justify the very limited road network and the lack of services by the municipality or public entities, in the electoral districts of certain elected officials and in the neighbourhoods where all the inhabitants are kings of their piece of land. Officials who are responsible for urban development then move on to the different special zones, like administrative, industrial, and port areas. They also move on to major streets (Engo, 2018). Outside the main roads, apart from the planned districts, most of the secondary or inter-district roads are organically developed according to the pedestrian paths or traces of tracks. From an authentic point of view, the city of Libreville is adorned with pieces of art, local and artisanal, in roundabouts, crossroads, along the seaside road, around public buildings, and in other places. Craftsmanship occupies an important place for the current Gabonese government, as does ecology. The current president was elected in 2009 for his project, 'Green Gabon, Industrial Gabon, and Gabon of Services.' 'Green Gabon' brings together all the national parks, such as the north of Libreville and the national park of Akanda. These are protected zones and preserved in their natural state, with no human interference, with wild animals roaming free in their natural state. The forests are also free of human disruption and are naturally well-maintained. These parks occupy 11% of the territory, or 30,000 km^2 (Caroline and Rémy, 2017). To demonstrate the authorities' interest in ecology, there are 18 national parks spread across the country. This brings us to the most ambitious project of the current Gabonese government, 'LA BAIE DES ROIS,' or, in English, 'Kings' Bay' (Figure 5).

Figure 5. Part of downtown Libreville seen from above, 2019 (Delrick 2019).

The Kings' Bay Project in Libreville

This project relates to the extension of the old Port Mole, which is in the administrative and port area of Libreville, on the way to the seaside, opposite the triumphal boulevard and the famous Catholic church, 'the Cathedral of Sainte Marie,' built-in 1958. This urban regeneration project includes businesses, and it seeks to promote economic development. The site of Port Mole was constructed in 1952 and served as a departure point for boats to Port-Gentil (the second city of Gabon, and the economic capital of the country) (petitfute 2022) and as a commercial area. Fresh fish and seafood shops, supermarkets, restaurants, and some public entities, such as the Merchant Navy, could be found there.

The site has many stories behind it. It thus constitutes the beginning of the history of colonization in Gabon. It is at this precise place that, in the 16th century, the first settlers in Gabon (the Portuguese) landed. They used it for several purposes, such as trade,

mainly that of slaves. They also used it to help their military establish their domination in the region and for religious purposes, in welcoming Catholic and Protestant missionaries. Accordingly, the bay served as a commercial port, a military post, and a religious centre. Before the settlers, as with most of the territories on this side of the Gabon estuary, the Mpongwé people (a sub-group that derives from the Myènè in Gabon) lived there and called the land 'Thé Yi Mpongwé' (the country of the Mpongwé), hence the name 'The Bay of Kings' (alluding to the Mpongwé kings). This site, used for the **Kings' Bay** project, was reserved for the Mpongwé for fishing. They had built a fishing village there, with fishermen passing on ancestral fishing techniques from generation to generation (Fmct-Gabon 2021) (Figure 6).

Figure 6. Port Mole of Libreville seen from above, 2013 (Kennedy8kp 2012).

This new project is aimed at redeveloping the seaside and introducing a marina, a botanical cornice, and a living space. It is placed on a site that was previously nine hectares and then extended to the sea, with sand, stones, and earth, to obtain an area of 40 hectares. This project aims to be the living heart of the city, becoming the image of Gabon. The government supported Agence Nationale des Grands Travaux (ANGT), with the French urban and ecological landscape firm, LAND ART, wanting to highlight the accessibility of this site, given all the roads that converge at this place, such as the Triumphal Boulevard, the RN1, and the Independence Boulevard (Figure 7). They also wanted to highlight the tradition and ecology of the plant self-purification technique of the waters of the watersheds that surround the central part of the project by promoting aquatic fauna (LAND'ACT, et al., 2014-2019). This project is supposed to accommodate residences, offices, hotels, and shops (d'information 2021). The project is currently under the supervision of FMCT-Gabon (Facade Maritime du Champ Triomphal), which is a subsidiary of the Gabonese Strategic Investments Fund, specializing in urban planning and development and equipment (Figures 8, 9, 10, and 11).

Figure 7. Independence Boulevard, seen from above 2013 (Bulongu 2022).

Figure 8. Port Mole of Libreville map, 2011, Google Earth Pro.

Figure 9. Port Mole of Libreville map, 2018, Google Earth Pro.

Figure 10. Port Mole of Libreville map, 2021, Google Earth Pro.

Figure 11. Port Mole Project; King's bay, site plan (fmct-gabon 2021).

The Evaluation of the Survey Results of King's Bay Urban Regeneration Project

Research Methodology

In order to understand the King's Bay project from the perspective of the public authorities, an internet search was first carried out, before conducting an online survey between June and August 2022. Before sharing the survey results, the reflections on the project offered by the media will be discussed briefly.

The project began in 2013 (fmct-gabon 2021), four years after the 2009 presidential elections in Gabon. Since then, various pieces of information have circulated in the media to inform the population about the progress of the project. The Gabonese government initiated the project with the primary goal of changing the urban landscape of the city of Libreville. This was done to respect the campaign promise of the current president, Ali Bongo Ondimba, which was 'Emerging Gabon by 2025' (jeuneafrique 2010). The FMCT, the agency in charge of the project, and the government have made multiple media appearances on this subject to reassure public opinion on the progress of the project (Table 2).

Table 2. Table of the different media releases on the KINGS' BAY project

News agencies names	Media Release Dates	Article titles	Web References
Gabonactu	May 17, 2016	Libreville Marina is dead, long live the Bay of Kings	La Marina de Libreville est morte vive la Baie des rois - (gabonactu.com)
L'union	May 18, 2016	Resumption of Works at Bay of Kings (Ex-Marina): A Business District, A Place of History	Reprise des travaux de la Baie-des-Rois (ex-marina) : Un quartier d'affaires, un lieu d'histoire | Gabon économie (sonapresse.com)
Gabon Review	May 19, 2016	From 'Triumphal Field' to 'Bay of Kings': The Libreville Marina is changing its concept	De «Champ triomphal» à «Baie des Rois» : La marina de Libreville change de concept | Gabonreview.com | Actualité du Gabon |
L'union	September 21, 2017	The Bay of Kings: The First Marketable Plots	La Baie des Rois : Les premières parcelles commercialisable | Gabon économie (sonapresse.com)
Le Nouveau Gabon	July 15, 2021	Bay of Kings: Gabon is looking for operators to build an office and retail building	Baie des rois : le Gabon recherche des opérateurs pour construire un immeuble de bureaux et de commerce - Le Nouveau Gabon
Gabon Review	January 11, 2022	The Bay of Kings: Ali Bongo did not give up!	La Baie des Rois : Ali Bongo n'a pas laissé tomber ! | Gabonreview.com | Actualité du Gabon |
Agence Ecofin	March 19, 2022	Gabon: FMCT raised FCFA 20 billion in bond loans on the financial market for the Bay of Kings construction site.	Gabon : FMCT a levé 20 milliards FCFA d'emprunts obligataires sur le marché financier pour le chantier de la Baie des rois (agenceecofin.com)
Medias241	August 2, 2022	The Bay of Kings is Connected to the Libreville Water Network.	Société: la baie des rois raccordée au réseau d'eau de libreville (medias241.com)
Medias241	August 9, 2022	The North Promenade of The Bay of Kings Has Its Grand Opening.	Grand opening pour la promenade nord de la baie des rois (medias241.com)
Gabon Review	August 19, 2022	The Bay of Kings: A controlled evolution	La Baie des rois : Une évolution maitrisée | Gabonreview.com | Actualité du Gabon |
Gabonactu	August 22, 2022	The North Promenade of 'The Bay of Kings' is open to the public and investors.	La Promenade nord de la Baie des Rois ouverte au public et aux investisseurs - (gabonactu.com)

According to the FMCT's official brochure, the 'Kings' Bay' project, which began in 2013, meets the specifications (Figure 12). On 18 May 2016, L'UNION, a pro-government public newspaper, published an article in which it was stated that the construction

and redevelopment of the Port Mole in Libreville suddenly stopped in 2014 due to budgetary restrictions (L'union 2016). In 2015, the government handed over the management of the project to the FMCT, a subsidiary of the Gabonese Strategic Investment Fund, because their budget is estimated as 1,050 billion CFA francs (1.6 billion euros) per year, or 78% of the Gabonese State's annual budget (Fgis 2021). When the new general manager in charge of this public entity (FMCT) met with the press after taking office in 2016, he stated that the northern phase of the project would take a decade, and work started immediately, according to Gabonactu, a pro-government online media outlet (Gabonactu, 2016). In September 2017, the newspaper union announced the completion of earthworks in the northern area of the project, which covers 12 hectares, or 30% of the project (L'union 2017). On the same day, the same daily newspaper reported the start of the project's central zone regeneration and fragmentation works.

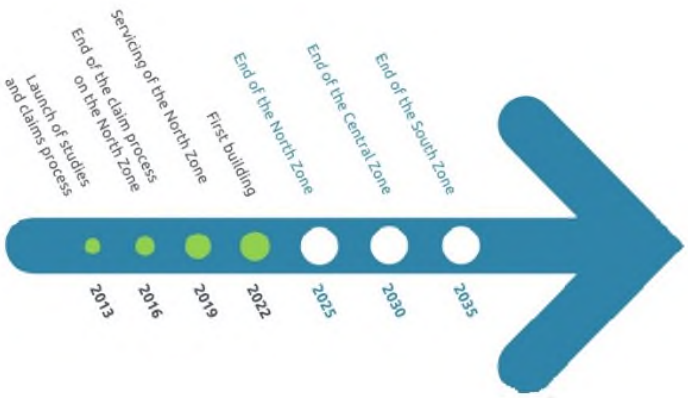

Figure 12. Different stages of the construction of the project over time (fmct-gabon 2021).

On 21 September 2017, the company in charge of the works announced that their service in the area would take 10 months longer (L'union 2017). In July 2021, after the fragmentation of the land in the northern and central areas of the project, the operators in charge of the construction of the project made calls for applications to anyone interested in building or buying a portion of land in the newly cleaned up area. The construction criteria have been made public for any potential candidate, as have the available areas (Lenouveaugabon 2021). In 2022, after agreements between private partners (the candidates who came forward) and public partners, the project managers announced the launch of construction work on several buildings on the site (Gabonreview 2022) (Figure 13).

Figure 13. Different development zones of the project (fmct-gabon 2021).

In March 2022, the project developers decided to base the project more towards ecology. They decided that all the buildings in the project will have a certified ecological footprint. They, therefore, set the objective for themselves to reduce the environmental footprint, in terms of the consumption of water and energy, and also in the use of the construction materials used (agenceecofin 2022). To this end, the authorities announced in a public press conference the delivery of part of the construction site of this vast urban area in August 2022 (Alix-Ida 2022). This section will constitute a one-kilometre-long promenade and modern commercial kiosks made of local wood and worked with the expertise of the best craftsmen in the country while emphasising its culture. Gabon has renowned cutting-edge expertise in its African sub-region in terms of wood treatment. For the Gabonese, wood is sacred; it is

what they hold most dear, and it is also how they communicate with their ancestors. To this end, an economic zone solely reserved for wood (Nkok Special Economic Zone) is located 22 km from the project area. This area is dedicated to the wood industry and contains over 85 wood-related businesses, all of which specialize in different aspects of wood processing.

At the beginning of August 2022, the water and energy company of Gabon (SEEG) announced the start of work to connect the northern side of the project to the water network of the municipality of Libreville (Medias241 2022), to allow the site to be served by running water. Shortly thereafter, in the same month, the FMCT announced the opening of the one-kilometre-long boardwalk in the northern project area. To commemorate this event, cultural, artistic, and artisanal know-how exhibitions were held, followed by a concert where several Gabonese artists performed, and finally, a fireworks display for the inauguration of the promenade (Figures 14 and 15). Many Libreville residents, therefore, came to discover the mystery hidden behind this barrier, which dates back nine years. The FMCT did not hesitate to make a press release to state that the evolution is under control and that the project is undoubtedly following its specifications (Gabonactu 2022). The opinion of the FMCT was mainly drawn from media reviews, pro-government daily newspapers, and press conferences of the project developers, because access to the site was banned, and any attempt to communicate with the developers resulted in a single response: 'We cannot tell you more, we have said everything in the media and on our online sites" (Société d'Aménagement Urbain (Fmct-Gabon.com).

Figure 14. The northern promenade. The pictures were taken on 20 August 2022, during the opening ceremony.

Figure 15. The northern promenade, with some stands for exhibitions. The pictures were taken on 20 August 2022, during the opening day.

Online Survey and Interpretation of the Survey Results

Gabon is a very introverted country in terms of information on public investments and the management of public heritage. In our research, online surveys were used, with respondents remaining anonymous. A Google survey form was sent through all available social network accounts, mainly to Gabonese living in Libreville, then Gabonese influencers took over for the publications of the form on their different statuses, to encourage the population of Libreville to participate en masse. The number of responses after three months (between June and August 2022) of the form being published increased to 1,009 respondents. The aim of conducting this survey was to identify the opinions of Gabonese living in Libreville, without fear of legal retaliations, on what they sincerely think of the 'Kings' Bay' project.

The Socio-Economic Structure of the Survey Respondents

The socio-economic questions in this survey serve to establish the age, gender, and social position of the participants. The community of Libreville is diverse and varied; there are men, women, and children, of all ages, with different occupations. This survey contains this mix of gender, individuals, or occupations to be able to have approximate answers on what different types of people think about the '"Kings' Bay' project.

The results of the Google survey on the 'Kings' Bay' project were very interesting. Out of 1,009 responses, 48.8% were men and 51.2% were women. According to the results, the age group most interested in this discussion is young people aged 25 to 35 (24.3%), followed by those aged 55 and above (20.3%) and respondents aged between 35 and 45 years (20%) (Figure 16).

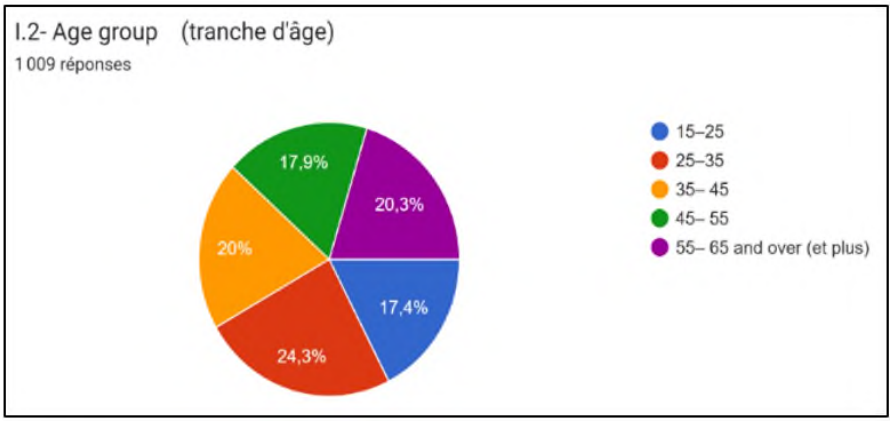

Figure 16. Age Distribution

The largest grouping of survey participants are unemployed (19.6 %), followed by those working in the public sector (19%), then by those working in the private sector (16.1%), students (15.1%,) and self-employed (13%) (Figure 17).

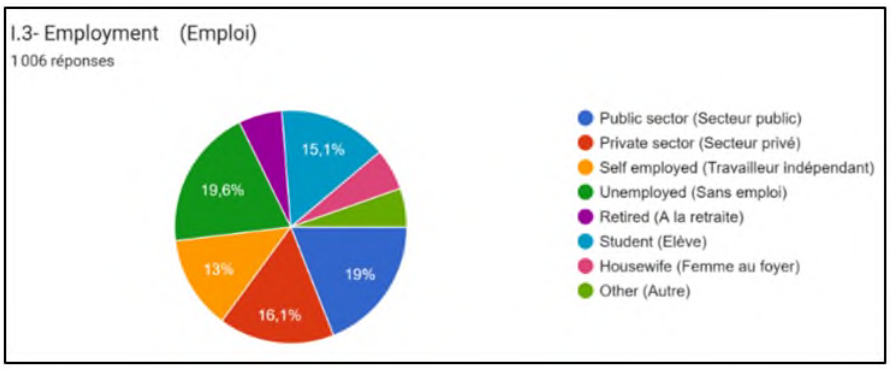

Figure 17. Employment

The Duration of Residence and Attachment

The population of Libreville consists of several types of residents. It is important to signify the duration of residence and attachment to the city. Many of the respondents have lived in the city more than 21 years (58.3%), followed by 16-20 years of residency (19.6%), and 11-15 years (9.2%). In total, 87.1% of the respondents lived in the city for more than a decade (Figure 18). This data is also necessary to assess the consideration that everyone has for the urban development of the city. Some may be concerned about it, others may be less concerned, and some may even ignore the various city development projects, simply because they are not interested in them. In recent urban regeneration projects, community participation is very important. It plays one of the major roles in terms of authenticity. It is important to know to what extent the community of Libreville is involved.

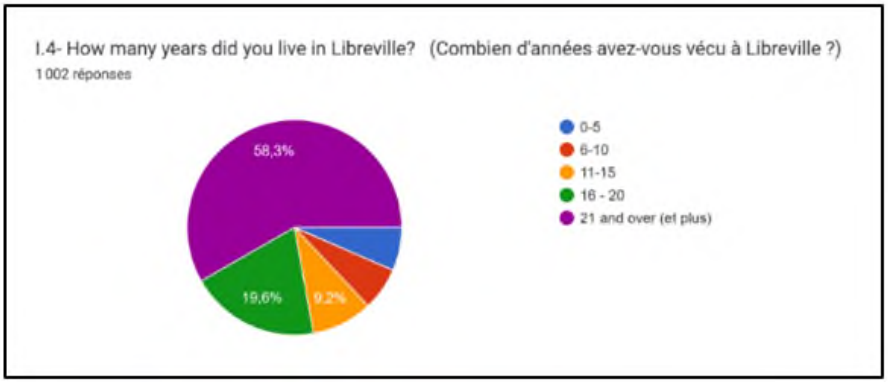

Figure 18. Duration of Residence

Parallel to the duration of residence, the percentage of people who are concerned about the urban development in the city is also high (82.1%). Only a small percentage of people (13.2%) reveal that they are not interested in the developments in the city (Figure 19).

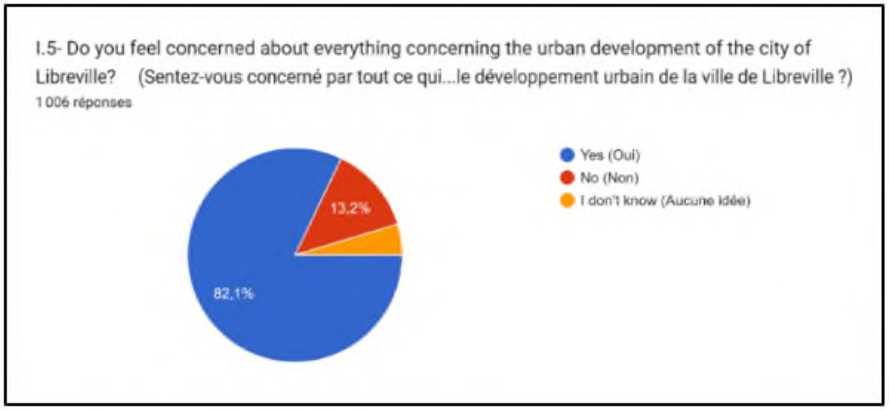

Figure 19. People concerned about the urban developments in the city

Seventy-five percent of the respondents said that they have heard about the project, whereas 70% of them also said they were not consulted about the project. Accordingly, the fact that 58.3% of the participants have spent more than 21 years in Libreville and 82.1% feel concerned about everything concerning the urban development of the city of Libreville is very interesting. According to responses of the online survey, most participants know the 'Kings' Bay' project very well. Some pass by the project area every day on their way to work or on their way home. For the minority (25.2%) who were unaware of the existence of this project, they believe that there is no public access to the project, or they do not live in this part of the city and all their daily activities do not correspond to this area of the city (Figure 20).

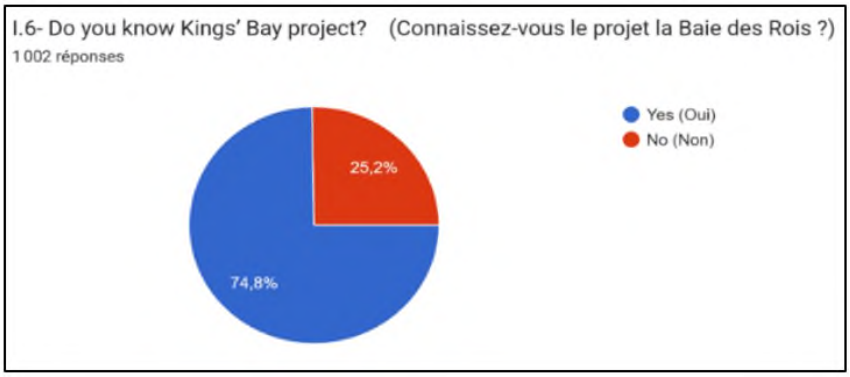

Figure 20. Familiarity with the project

This project was a surprise for the population. Almost 69.8% of the participants state they were not informed or consulted before the start of the work. It should be mentioned that Port Môle, where the project is undergoing development, was a very commercially lively place before the process began. There were many fish and seafood businesses. Accordingly, many of the participants wonder if they will they be able to find fish or seafood at Port Môle after the project is finished, or if the prices will remain the same.

The respondents added this concern while answering the question of whether they had been consulted about the project. In this momentum, more than 65.3% of participants revealed that they would like to attend meetings about the future of Libreville to share their expertise and knowledge. Only a very small majority say they do not want to be part of this kind of activity (about 15.5%), because they believe they have lost all faith in the state and want to get away from anything that has to do with the state or the current government (Figures 21 and 22).

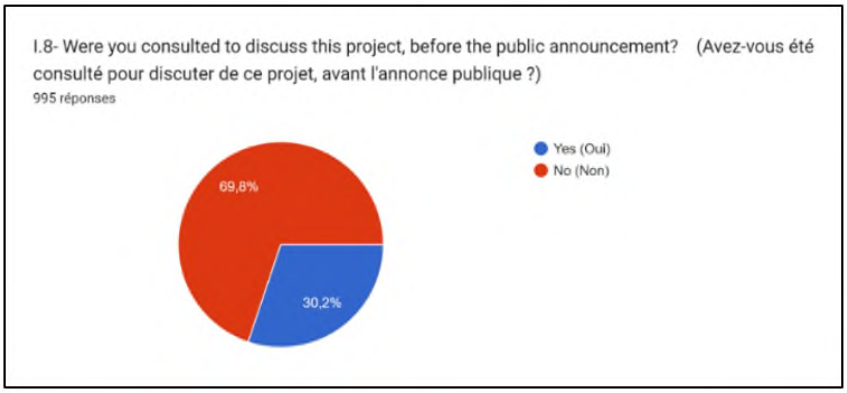

Figure 21. Consultation with the public before the project

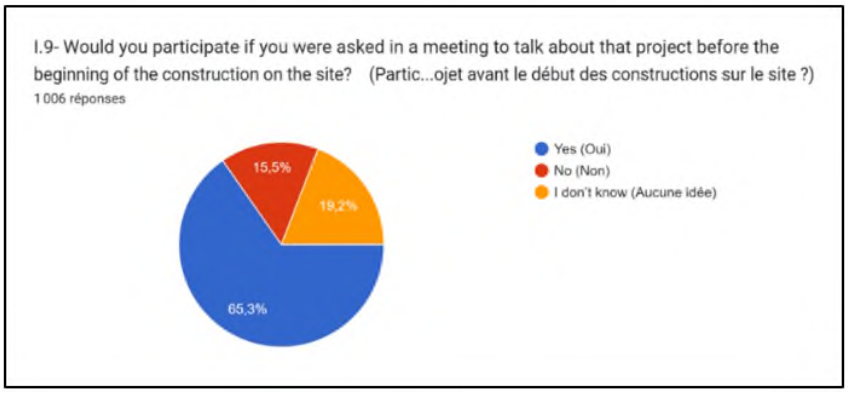

Figure 22. Willingness to participate in decision in the design phase

Environmental Concerns

In this project, another important issue to be discussed is the ecological and environmental consequences. The plan itself is very popular with the participants, and for them, the project area is in the heart of the city, connected to everything. On the other hand, the ideas are divided on how the project interacts with the environment. In fact, only a small portion of the respondents (9.1%) is aware of the environmental destruction caused by the project; according to their view, the project could suffice on the initial nine hectares of the site. Some claimed that to add the additional 36 hectares, the project developers had to destroy a lot of marine ecosystems because they removed the sand that was used for remediation (about 500 meters from the project area at sea) on the coast of Libreville (Figure 23).

Figure 23. View of the sand extraction area for the project in 2014, Google Earth Pro.

Authenticity in the Project

One of the objectives to be achieved in this project, as desired by the authorities, is authenticity. In this project, the designers relied on the 500-year-old history of the place. Hence, the name 'Kings' Bay' is inspired by the three Mpongwé kings who reigned in the area before the colonizers (fmct-gabon 2021). Apart from highlighting the Mpongwé culture, the government also wanted a project that mixed all Gabonese cultures. The population of Libreville nowadays, with all the displacements of the villages towards the cities of the Gabonese population, contains all the ethnic groups and all the cultures of the country (macrotrends 2022). Each, for his part, should therefore recognize themselves or recognize their culture in the project.

More than half of the participants (53.8%) believe that this project is authentic. This is especially true those who lived in Libreville for more than 21 years. They believe that the project is unique, perhaps because it is the first time that such a vast waterfront regeneration project was initiated in their country. For others, especially those who have been in the city for less than 15 years and have travelled a lot, the project has nothing authentic about it. For them, this kind of waterfront project can be seen anywhere in the world, in cities like Dubai, Istanbul, New York, London, and many more. Despite these two opposite opinions, 42.2% of the participants say that they do not culturally identify with the project, even a part of those who found the project authentic (Figures 24 and 25).

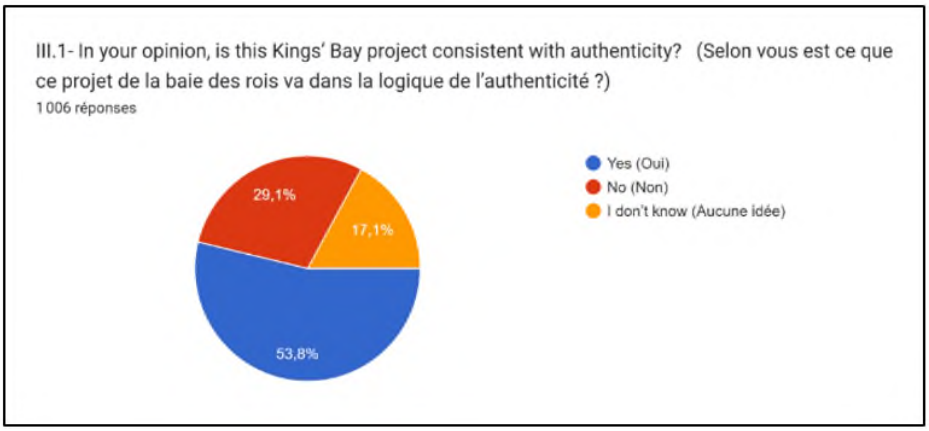

Figure 24. Authenticity of the project

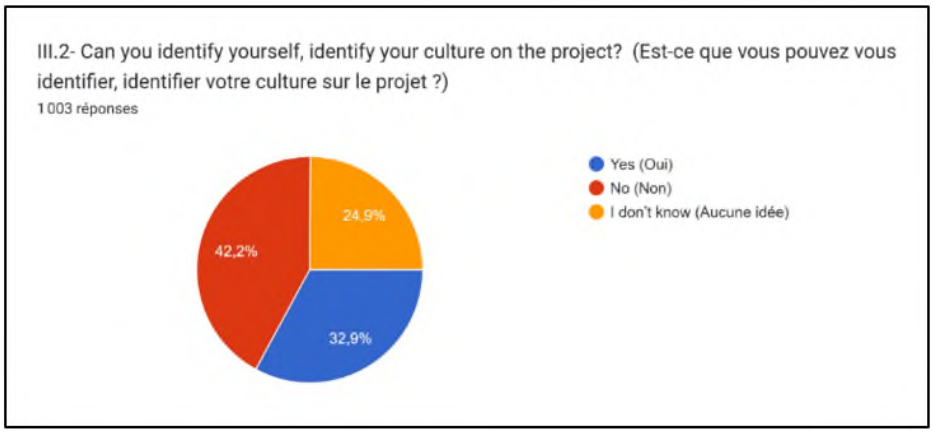

Figure 25. Feeling of identification of local community with the project

General Perspectives on The Project

This project, like all others in urban regeneration, introduces the risk of gentrification. It is important to know if the project will reject the population, the existing traders on the site, or even if the cost of ownership in the area will increase. The population is very divided in its opinions on public investments. Many people are frightened by what will come out of it, because, in any case, the results will either positively or negatively change people's lives. The multiple advertisements on the model of the project and the press conferences to sell the idea of the project to the population have aroused curiosity among the inhabitants of Libreville. Many have waited impatiently for the opening to see if the reality will approach the 3D models, which makes the opening of the project's North promenade on Saturday, 20 August 2022 a strong assistance in the advancement of the present research. The people of Libreville have expressed their feelings freely and anonymously in our online survey.

A strong majority of the participants (51.1%) declare that they will never admit that the project itself is a success if it is not finished (Figure 26). For this, the answers are diverse. Some (30.8%) also say that the project cannot be a success because it does not meet the needs of the population. They believe that the question should be: has the government taken the trouble to study what the population needs before embarking on such a project? Sixteen percent of the people do not identify with this project, and therefore, they do not identify it with their culture. According to them, this project cannot be a success in fulfilling the needs of the public. Twenty percent of the respondents indicated that the project could not be a success because they were not consulted (Figure 27).

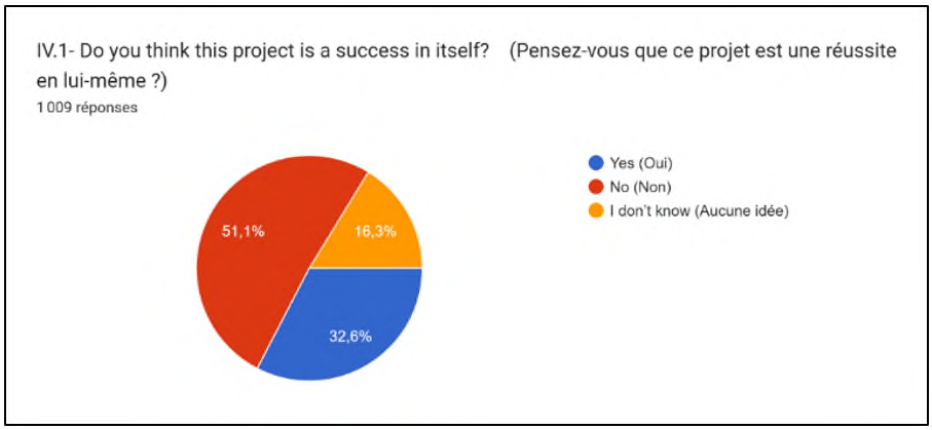

Figure 26. Evaluation of the success of the study

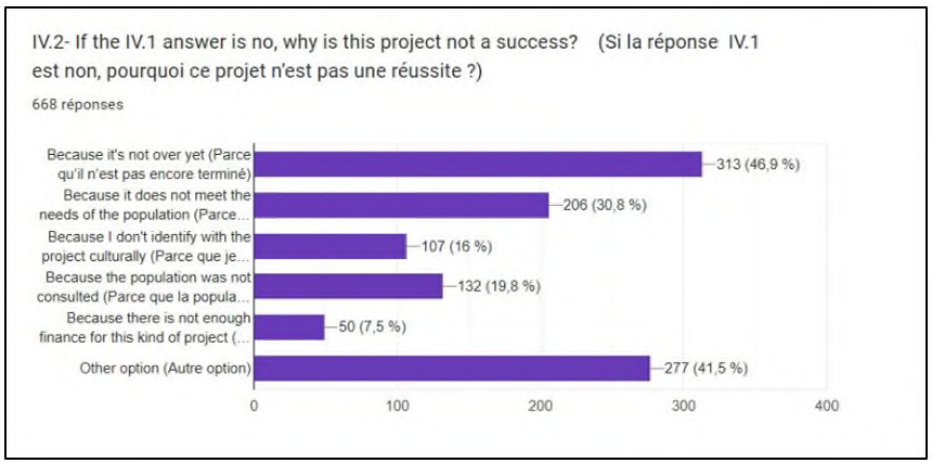

Figure 27. Respondents thinking that project is 'not' successful

Despite the notion of community participation returning as an important point, it did not appear to be a priority for the agency in charge. The authorities may have though that the population does not care about the state coffers or has little information on the financial realities of the country. However, the case of Libreville is different because of the size of the population: 857,000 inhabitants. Almost everyone is acquainted with each other, and information travels so quickly about everything, which means that the government cannot hide information about the financial realities of the country. Therefore, 7.5% of the participants believe that the project cannot be a success because there is not enough money to finance this kind of project using the funds of the state.

On the other hand, 32.6% of the respondents continue to believe that the project is a success because it will certainly end. Seventeen percent of them declare that the project meets the needs of the population, and therefore see it as a success.

Fourteen percent identify with the project culturally and consider it a success for that reason. Some judge the project a success because they believe that the population was consulted (40 people out of 1,009). A quarter of respondents found that the budget of the country can finance such projects and that the Gabonese State should focus on such projects moving forward (Figure 28).

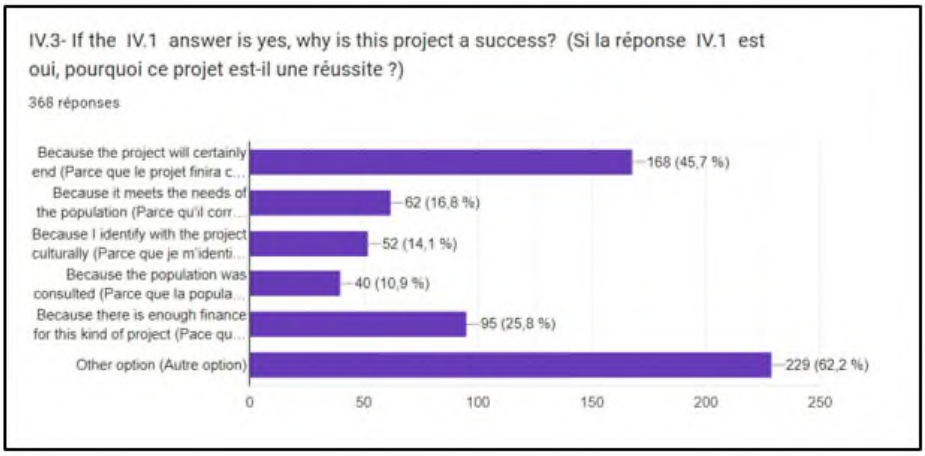

Figure 28. Respondents thinking that project is successful

However, the question remains as to what can be expected in terms of rent or the cost of a property in the project area once it comes to an end. This is the question asked by most of the respondents who believe in the project. For this reason, half of the participants admit that prices will increase, while another group of people refrained from answering this question.

A General Point of View of the Local Population Through Social Networks

After nine years of waiting, the population of Libreville was finally able to see what was hidden behind the walls of the northern zone of the Baie des Rois project.

Several people moved to discover if the dream that was sold to them by the pro-government media were a reality. According to the publications of 'Je N'ai Pas Choisi d'être Gabonais, J'ai Juste De La Chance' (Facebook 2022), a Gabonese media outlet on Facebook with more than 32,565 subscribers, more than 679 Gabonese rushed to give their opinion on the project within the first 24 hours (Figure 29). For the vast majority of comments, the public felt a strong disappointment with the progress of the project. After nine years of work, it is not what they expected to see. 'Just a few aisles, stands, and shelters; it is well below my expectations,' said Yasmine Atouviang in her comment. Mr. Urvis Mondanga said that if after nine years, we have walkways, in 2035, we will surely have two buildings, and that with the same ovations as the marvellous inauguration, with a concert and fireworks.

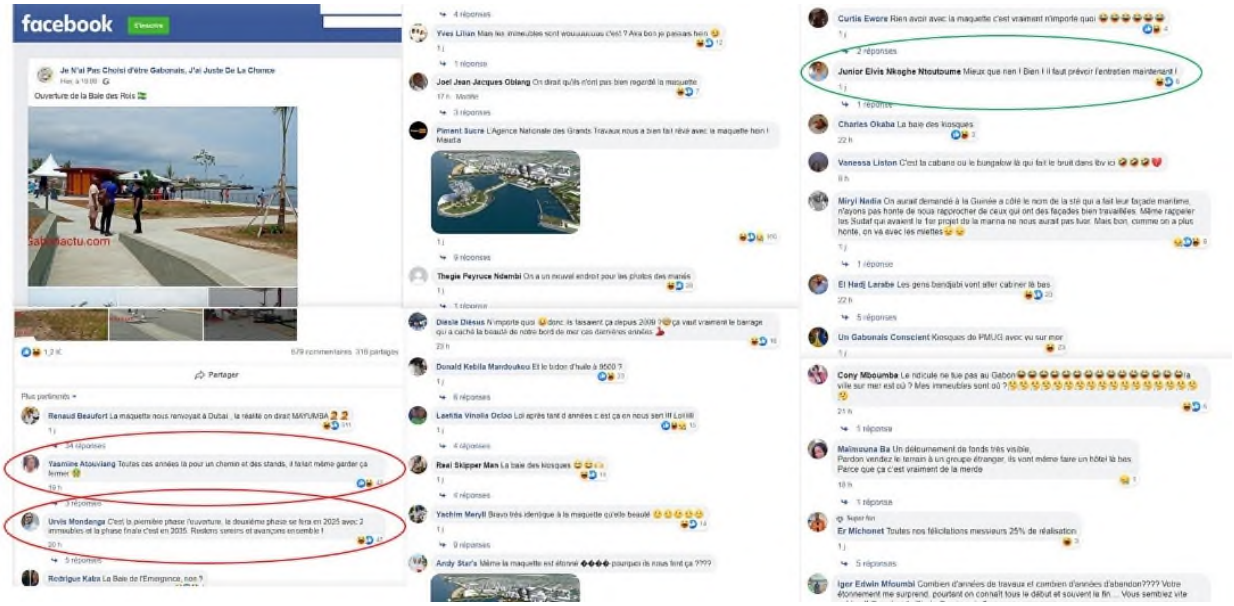

Figure 29. Comments on the publications made by 'Je N'ai Pas Choisi d'être Gabonais, J'ai Juste De La Chance,' a Gabonese social media, on the project 'La Baie des Rois,' on Facebook, 20 August 2022, after the opening of the northern promenade (Facebook 2022).

Some of the comments expressed massive disappointment with the progress. Other comments, such as that of Mxlle Fanny, mention different aspects to be taken into account. For Fanny, if she were a tourist, she would opt for a simpler visit to Libreville, like going to the small culinary shops on the street and eating local cakes. This brings out the desire that the local population have to show tourists what they have to offer, which is unique to them. Graziella Mvouambah launched an emotional cry, saying, 'Where are the tourists, will they come one day?' (Figure 30). Gabonese living in Libreville have strong doubts about whether the facilities will bring in tourists or evolve the urban perimeter in the manner promised to them by the government (Facebook, 2022).

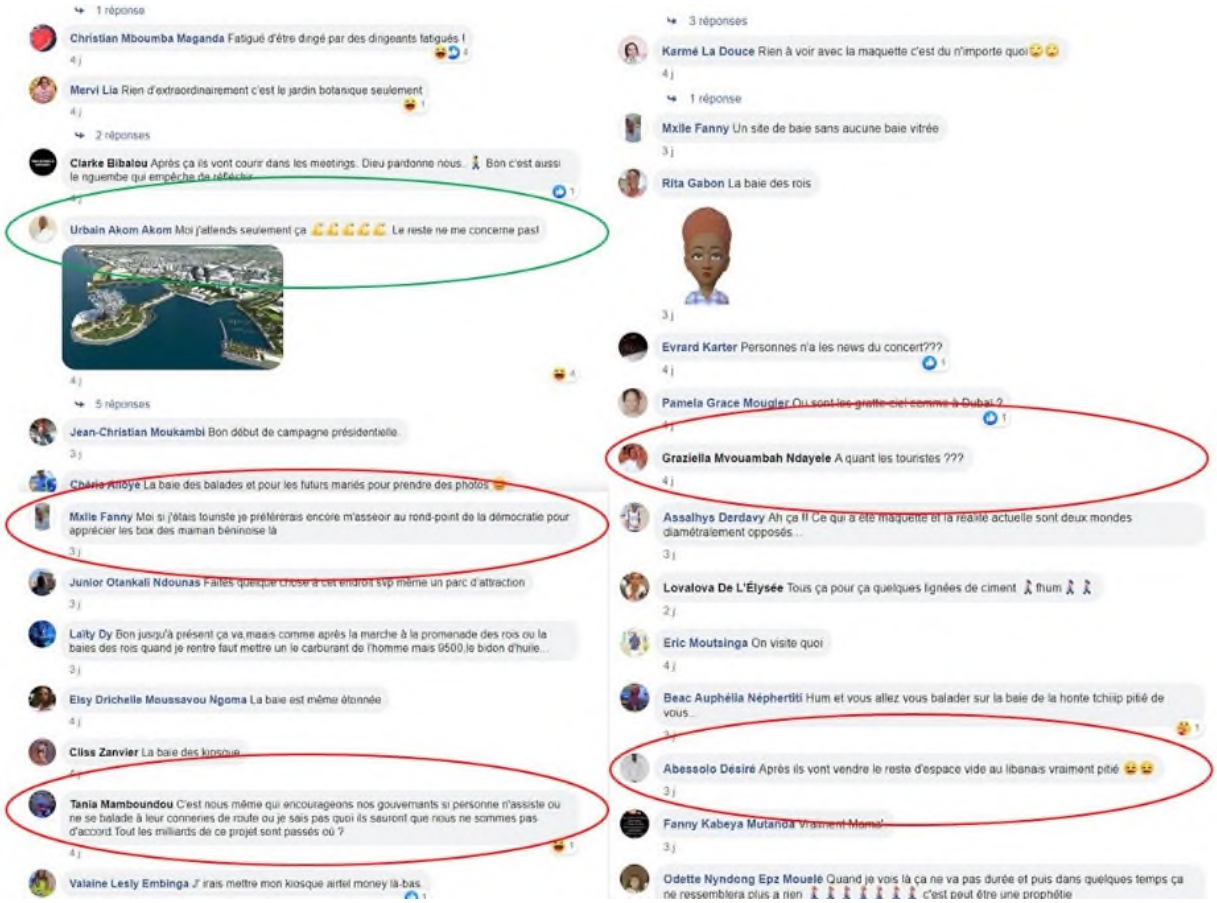

Figure 30. Comments on the publications made by 'Je N'ai Pas Choisi d'être Gabonais, J'ai Juste De La Chance,' a Gabonese social media, on the project 'La Baie des Rois,' on Facebook, 20 August 2022, after the opening of the northern promenade (a continuation) (Facebook 2022).

Conclusion

The neoliberal agenda that has taken over the cities of the world bring with it certain pressures for public administrations to lure mobile capital and investments into their countries. Unfortunately, urban regeneration projects have become the means of the local authorities to gentrify urban areas which do not appear appropriate for the global investment capital. Despite the voluminous literature produced by academics to reveal the importance of public participation and the inclusion of local communities in the decision-making processes of the urban regeneration projects, many large-scale urban regeneration/ development projects have been designed by developer firms and the public sector, with little or no public presence. In our case, Libreville in Gabon has had a long history full of authenticity and local culture which deserves to be presented to the local and international visitors. The colonial history of the country and the dominant French influence in Gabon, resulted in a simple waterfront development urban regeneration project, King's Bay, which contains very little authenticity, local history, and culture. This type of project had already been criticised heavily in the literature, with the project of the Gabonese government also following the scheme, by producing the same unimaginative waterfront development which could be found anywhere in the world.

The survey results reveal that Gabonese people have attachment to their city, and they are ready to participate in meetings regarding the King's Bay project; but they were not consulted. Many of them could not perceive any connection between the new waterfront project and the authenticity of their culture. They think that the King's Bay project does not represent their culture,

and after waiting for almost a decade, and with large amounts of public funds being spent, they were disappointed by what they observed in the project area.

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RESEARCH ARTICLE

Determining the Urban Morphology of Historical Settlements through Water Supply Lines: The Case of Eğrikapı Neighborhood*

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ABSTRACT

The study aims to provide a new perspective toward urban morphology and archaeological research regarding determining the historical settlement areas within the framework of urban planning theories. The study reveals the spatial change in historical settlement areas over the centuries based on numerical data such as distribution plan, flow rate, construction date, and elevation values of water supply lines. The study uses the comparative analysis method for the case of the Eğrikapı Neighborhood in Istanbul, one of the neighborhoods fed by Kırkçeşme water supply lines in Istanbul between the 16th-19th centuries. In order to determine the periodical urban development of the neighborhood and the changes in the urban texture within the boundaries of the settlement area, used water supply lines. The results show that a new method, obtained through water supply lines, can be used when analyzing urban morphologies for historical settlements . This study explains the concept of habitable areas and the factors associated with them, outlining the principles for determining habitable areas based on each factor.

Keywords: Water supply lines, urban morphology, Kırkçeşme water supply lines

1. Introduction

Urban morphology generally covers the urban patterns formed by the combination of streets, parcels and buildings, which are the basic physical components of a city. The aim of urban morphological research can be expressed as explaining the essence of the forms that produce the built environment and the processes that enable the transformation of space. Urban morphology aims to explain how the components that make up an urban pattern have been formed, how they transform, and how they relate to one another (Ünlü, 2018, pp. 61–62). When looking at the historical neighborhoods of Istanbul, no clear information is generally found apart a few important neighborhoods about the urban development process of these settlements, which are the building blocks of the city. The process of urban development means that changes in the urban pattern throughout history, such as the character of the construction network (e.g., dense, sparse, wooden, masonry), the polar effect created by focal points such as places of worship and baths, and the contribution of public buildings to population movements. Fountains are one of the main factors forming the backbone of the urban system, and if they triggered the growth of cities, the fact that the spatial formation of cities throughout history revolve around fountains and distribution networks is an expected result. Ulaş and Kısa Ovalı (2017, p. 393) stated, "The characteristic features of urban growth, such as construction and road networks, can be described as cells that spread as a mass." From this point of view, one can say that extending the distribution network will cause existing land use will change and an unplanned network of parceling to emerge.

However, revealing this process with numerical data is an important process, and determining the variables in the historical process and obtain and converting numerical data into visual data are necessary (Ulas, 2021). In this regard, the following two questions are being asked: How can this developmental process throughout the history of the neighborhoods in Istanbul be determined, and what would be the most appropriate method for observation, measurement, and calculation?

Throughout historical periods, water supply lines have been an indispensable part of urban pattern and a very important urban actor. Maintaining a city's activities during its urban development involves water systems. However, more than one variable should

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be examined in this regard. The research area should be kept broad, and the study should be supported by both written and visual sources. Very little research is found in which quantitative data such as the routes for the water reaching a city, the spread of urban distribution lines, the amount of water supplied from fountains, and land use have been presented alongside urbanization. Because water is a vital necessity, how it has affected urbanization throughout history and whether it actually has an impact are important issues that need to be investigated. The changes that Istanbul has undergone throughout its history can be determined along this axis through observation, measurement, and various mapping methods. From this point of view, the aim of the study is to determine the urban development of residential areas based on numerical data regarding fountains (e.g., water distribution plan, flow rate, construction date, and elevation values) using a mapping-based method (Ulas, 2021).

2. Methodology

The study compares within its scope the construction techniques used in water supply lines through the Kırkçeşme water supply lines, which are understood to have the most data collected among the historical water supply lines of Istanbul, to the phenomenon of urbanization developing along the axis of the water distribution network and investigates how these interaction together. (For the first time, the hydraulic values of fountains and mapping methods are used to analyze the process of urban development of a city along the axis of water resources. The study can use the obtained results to determine where the population has been concentrated, how public and commercial buildings have been located, and what changes they have undergone over time. Finally, the study will arrange the results obtained from the analyses of other historical water systems and settlement areas that developed in parallel with these water systems under the sciences of hydraulics, urbanism and cartography and present a novel combined study.

Turoğlu and Bayraktar (2013) examined the water supply lines built in Sinop during the Roman period, as well as the dykes, pools, arches, covered water reserve structures (*maksem*), and fountains connected to these lines. Aksoy's (2015) doctoral dissertation on the Izmit water supply lines took the coordinates of the water structures for the purpose of identifying and recording as a method and arrived at significant data as a result of drawings, measurements, photography, and source scanning. By means of these data, Aksoy conducted a hydraulic analysis of the water supply line and determined the urban pattern of the city that formed around it. Margeta et al. (2018) conducted a hydraulic analysis of an idle Roman water supply line extending to the city of Solin and Diocletian's Palace and identified the topographical and structural features of the water supply line. In addition, they revealed the main transmission plan of the waterway, as well as the plan of the distribution lines.

Kafesçioğlu (2016) examined the changes in the urban morphology in the section between Karaköy and Tophane and investigated the building types and usage patterns in the urban fabric of the region. He analyzed maps of Galata, Pera, and Pangaltı that had been prepared by the Municipal Engineer G. D'Ostoya between 1858-1860, the Huber maps dated between 1887-1891, the insurance maps made by Charles E. Goad's company between 1904-1906, the maps made by Suat Nirven between 1948-1950, and lastly the current plans from 2010 in order to understand the spatial transformation. The examinations involved boundaries, building islands, building parcels, and road routes.

When considering the measurement and mapping methods used in the above studies together as a method, the research has selected within its scope the comparative analysis method, which is one of the research methods used for collecting information by examining the similarities and differences of two or more situations, events, or objects. In accordance with this methodology, the study carried out an identification analysis over the selected water supply lines and then obtained period maps showing the changes in the city's construction and road networks during the time period the water facility was in operation. The changes in the distribution plan and urban morphology were then incorporated into the current city plan. The study then compares the development of the waterway and the urban growth movement over the centuries through the integrated map obtained at the end of these processes (Figure 1).

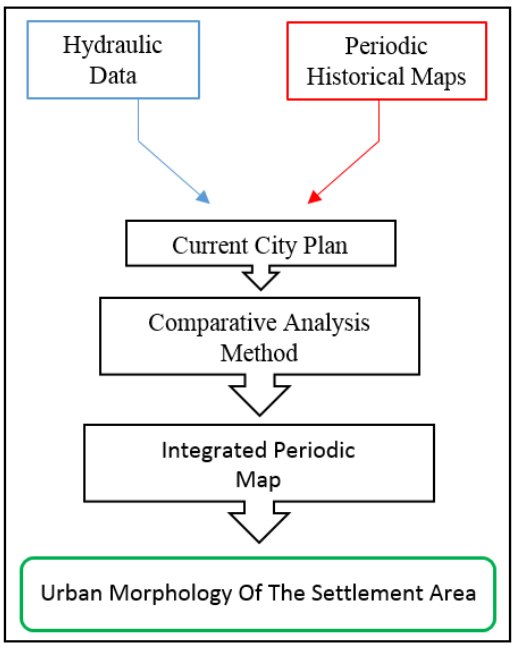

Figure 1. Flow diagram showing the application of the method (Ulas,2024).

3. Comparative Analysis of the Waterway Distribution Plan and Periodic City Maps Through the Example of Eğrikapı Neighborhood

In line with the determined method and sampling, the study first researched historical source publications before identifying the network plan for the water supply lines in the field. After obtaining the data on the water supply lines, period city plans were accessed from the maps of Istanbul throughout history.

3.1. Identifying the Water Network and Obtaining Information on the Fountains

Mimar Sinan's involvement in various restoration, water supply, urban development projects and the construction of different buildings in various parts of the city throughout Istanbul had provided him with experience in the city's urban morphology (Bozdogan et al., 2006). The Kırkçeşme water supply lines had been built in 1563 under the hand of Mimar Sinan; 300 fountains were built in the first phase, with new fountains being added to the main transmission line in the following years until the number reached 580 (Çeçen, 1988, p. 149). Within this scope, the research has selected as examples the Kırkçeşme water supply lines due to having the most available data, and Eğrikapı Neighborhood due to being one of the historical neighborhoods in Istanbul first fed by the facility. Information on the water distribution plan and its related structures were examined in the following sources: Prof. Dr. Kazım Çeçen (1988), Mimar Sinan's distribution notebook, the Istanbul Water and Sewage Administration (ISKI) Foundation Water Directorate, İbrahim Hilmi Tanışık's (1943) books, Affan Egemen's (1993) descriptions of the fountains, and Ayverdi's (1958), Pervititch's (1922), and Kauffer's (1807) Istanbul Maps, as well as other sources such as blog pages on the Internet describing historical buildings and oral accounts of individuals and institutions (Ulaş, 2021).

Çeçen's (1988) work identified the water network and noted the fountains on the current city plan of that day. In addition, the daily amount of water flowing from the fountains was divided into regional service branches. However, the rapid growth of Istanbul has required confirming these distribution plans on the current city map. For this reason, this article first compared the distribution plans showing the fountains on various web pages (Istanbulium, 2024) and Çeçen's (1988) plans to the current city map. The article then processed the data obtained from various sources and the distribution plans Çeçen presented over the current city plan on a tablet computer before starting the survey work in the field with topographic devices. The field study then made coordinate measurements with a GPRS device for the distribution lines, *maksems*, and fountains.

As seen in Figure 2, elevation measurements were made for the distribution lines and tap levels of the fountains; the distribution plans Çeçen (1988) drew were then overlapped with the points for which measurements were able to be made by taking into account the historical maps. The obtained data were digitally processed into a 1:1000 city plan in the AutoCAD program. While markings and drawings were made on the current plans, the daily water amounts given from the fountains were found by analyzing the flow values Çeçen presented on a neighborhood basis. For the convenience of future historical research, the flow rates of the

fountains have been calculated separately for Ottoman and modern measurement systems and shown on the map presented in Figure 3 (Ulas,2024).

Figure 2. An example measurement process (Ulaş, 2021).

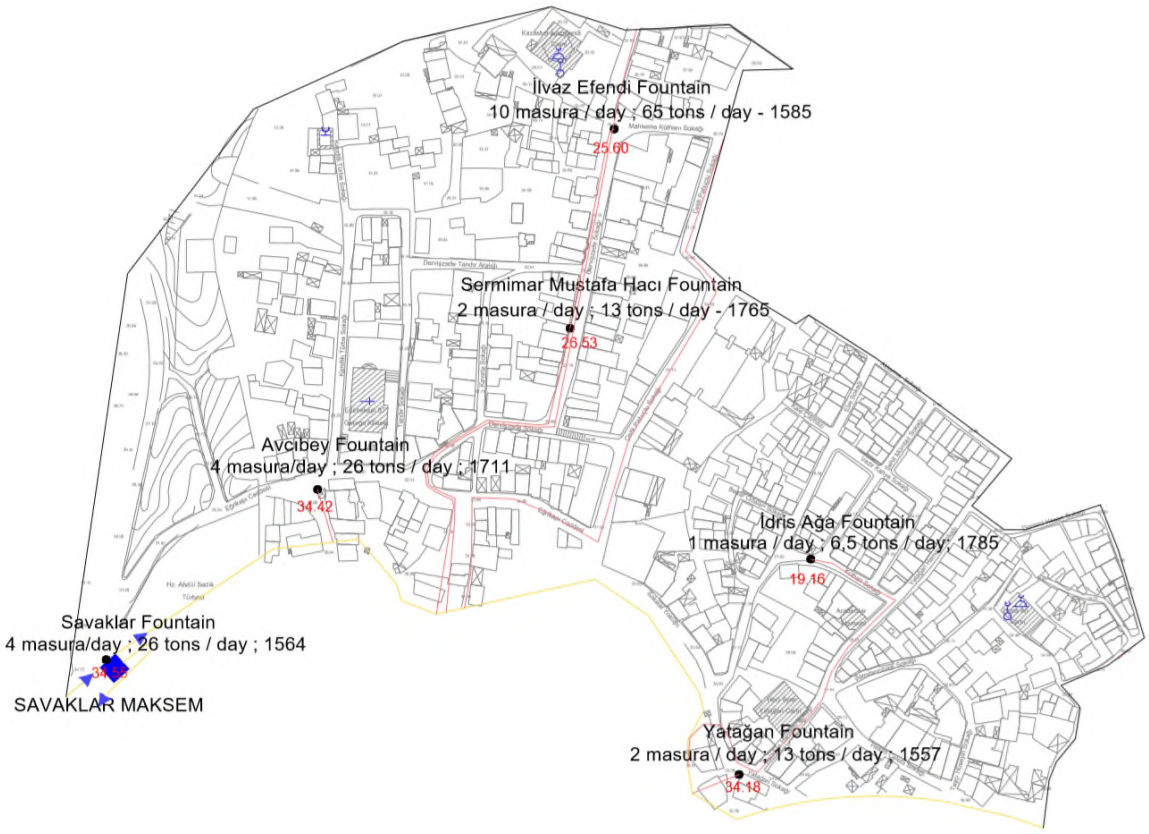

Figure 3. Eğrikapı Neighborhood distribution network and fountains (flow rate, construction date, elevation value) on the city plan (Ulaş,2021).

3.2. Access to Maps Showing the City Plan between the 16th-19th Centuries.

With the construction of the Kırkçeşme water supply lines in the 16th century, Istanbul started to grow and develop. The Kırkçeşme water supply lines in particular were used to revive the city neighborhoods that had started to shrink after the supply of water to the fountains that had been built in previous periods had become idle (Çeçen, 1988). However, because this revitalization and growth is not evidenced with numerical data, the exact extent is unknown. For this reason, a need can be said to exist for examining the changes by showing the maps that specify the construction and road network of the city before and after the construction of the facility, as well as the plans that have information about the distribution lines.

Buondelmonti (1420) is known to have drawn the first map of Istanbul in the form of a perspective plan by making on-site observations. This map reflects the Byzantine period of Istanbul in general terms and was reprinted with varios techniques in the following centuries. The 16th-century map of Istanbul in Sebastian Münster's atlas *Cosmographia* published in Basel in 1544 is important because it was published just before the construction of the Kırkçeşme water supply lines (Yetişkin Kubilay, 2016). The map presented by Sebastian Münster in 1544 was reprinted by the German publisher and editor George Braun and Franz Hogenberg in 1572 as "Byzantium Constantinopolis" in a more detailed realistic manner. In this regard, Cahit Kayra's "Istanbul Maps" and "Maps of Old Istanbul" were the first publications to bring together different maps about Istanbul. However, instead of dealing with all aspects of maps about Istanbul, these publications were simply a compilation of the archival materials available to the author. The work *Istanbul Maps 1422-1922*, edited by Ayşe Yetişkin Kubilay and published by Denizler Kitabevi, is very important in terms of presenting a holistic cartographic history of Istanbul for the first time (as cited in Cantemir, 2010, pp. 747–750). The first scientific scale plan of Istanbul was drawn in 1786 by François Kauffer, a topographer and cartographer, 360 years after Buondelmonti had drawn the first map of the city. The 1786 map has an original scale of 1:17,280 and contains very valuable information in terms of social and architectural identification such as land and sea routes; piers and harbors; gates on the city walls; tombs and cemeteries of all religions; religious buildings including mosques and churches; civil buildings such as fountains, *ayazsma* [springs considered holy to Greek Orthodox], schools, and palaces, gardens, embassy palaces, and locations where people of all religions lived (Kaya, 2024). The 19th-century fires, especially those in the inner-city walls, caused major changes to the main spine of the city.

In this regard, Ekrem Hakkı Ayverdi prepared 1:2,000 scale maps of high scientific quality called "19th-Century Istanbul Maps", and these maps have a very important place among historical maps in terms of the determinations and detailed analysis. These provide a detailed map of streets, orchards, places of worship, fountains, and similar administrative, military, and civilian structures. In the late 19th-century, fire insurance maps had started being made in line with the needs of the foreign companies that came to Türkiye for trade purposes. These were drawn by C. Goad in 1905 and 1906 and by J. Pervititch in the 1920s. Goad Maps are quite similar to Pervititch Maps. However, while Pervititch Maps are more specific, sometimes structures that cannot be found here can be found on Goad Maps. Pervititch Maps have a higher resolution compared to Ayverdi Maps, and because they show buildings and their construction methods, they also help identify the building stock on a historical basis. The map's legend also shows the different colors for each type of building construction (Figure 4).

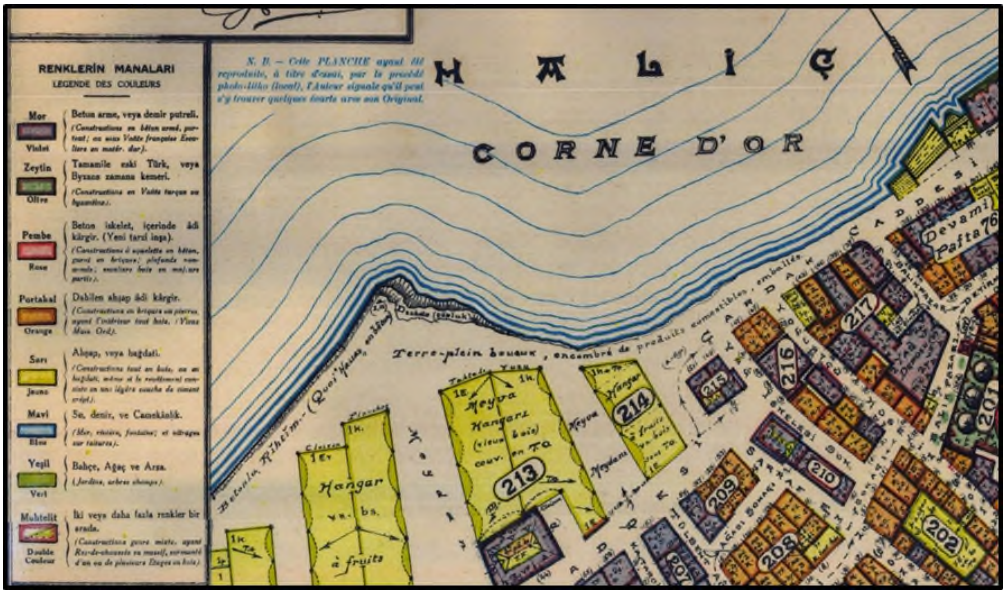

Figure 4. Pervititch Map (1922-1945) Eminönü sheet - A sample view showing the building stock legend (Pervititch, 1922/45, Sheet 78).

The historical maps drawn between the 16th-19th centuries enable access to most of the construction, road networks, and other urban components of those periods. Thus, the data belonging to the periodical maps alongside the data from the water distribution plan can be shown on the current city plan in different colors over the centuries. The study accessed these maps from the Fatih Municipality website, which presents them in high resolution and in layers (Fatih Municipality, 2024).

3.3. Showing the Water Distribution Lines on the Current City Plan Through the 16th-19th-Century Period Maps

Sefer and Ahunbay's (2015, p.78–122) study identified mosques, baths, inns, fountains, schools, and similar buildings in the neighborhoods they studied on old maps and then incorporated them into the current Istanbul plan. They were thus able to reach many important conclusions about the building stock of the neighborhoods throughout the city's history, as well as the formation of spaces and the growth of the settlement area. The current research has determined within its scope the morphology of the neighborhood and the surrounding part of the city to reveal the urban space. Based on this study method, important historical buildings have been identified within the borders of Eğrikapı Neighborhood by taking into account their construction dates. The study also examines the reconstruction activities of the neighborhood after disasters such as earthquakes and fires and found estimated construction dates for the madrasahs, baths, tombs, and houses that had been built. For this purpose, the study benefitted from written or anonymous sources describing the neighborhood along the axis of historical buildings. By taking the topography into account, the study divides Eğrikapı Neighborhood into regions before conducting the examination over the 300-year period starting in 1550 and ending in 1850 (Figure 5).

3.3.1. Region A

The part of this region starting with the *Savaklar Maksem* coincides with the starting fountain of the transmission line and is generally shown as idle areas on historical maps. Although the area around the church appears empty on the G. Braun and F. Hogenberg map, the Pervititch maps show some wooden structures thought to date back to the 16th century (Yetişkin Kubilay, 2010, p. 43–44; Pervititch, 2000, p. 29). The aforementioned Panaiya Suda Church had been built before the 9th century, and the settlement area has grown with new additions over time (Turan, 2021). Accordingly, to scan the surrounding structures of this section where the Panaiya Suda Church is located by taking into account the construction date of the church would be correct. The section seen from the hill toward the coast has a fountain that had been built between 1750-1850. However, based on the Pervitich maps, the construction can more likely be said to coincide with the period between 1650-1750, as some wooden and masonry structures are found that were built after the fire (Figure 5).

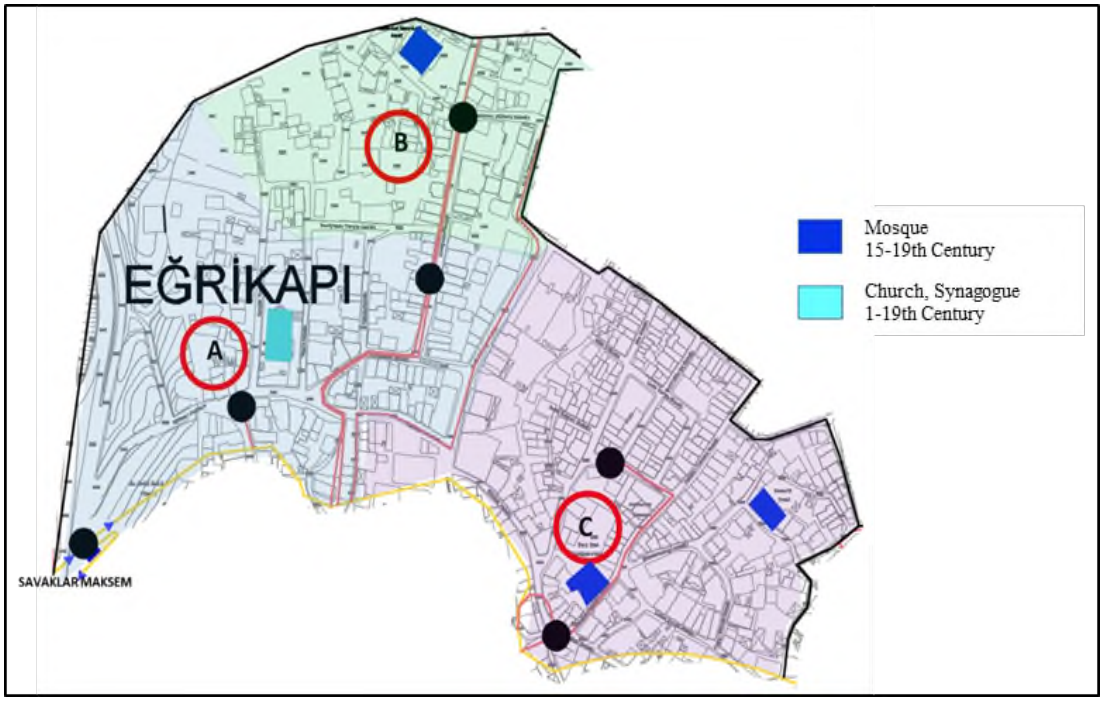

Figure 5. Examination of urban components by dividing Eğrikapı Neighborhood into regions in the historical process.

3.3.2. Region B

One of the first period (1550-1650) fountains stands out in this part near the coast. In addition, just below the fountain is the Ivaz Efendi Mosque (1586), which had been built on the foundational remains from the Byzantine period (Üstündağ et al., 2017, p. 318). When examined from the Pervititch plans, the old-style wooden structures stand out. In addition, the G. Braun and F. Hogenberg map shows a dense construction at the base of the city wall. The study tries to determine the construction network and urbanization movement of the region by scanning the buildings with colors according to the historical period in which they were built in light of the information obtained from both the maps and source publications.

3.3.3. Region C

The Pervititch and Ayverdi maps show some old-style wooden buildings in this region. In addition, old dated accounts indicate that this island was an active residential area with the Yatağan Bath (1650) and had been built in the mid-17th century right next to it. Also, many buildings were rebuilt after fires (Arabacılar Bath, 2024). The Hacı İlyas Yatağan Mosque and Hoca Ali Mosque (16th century), which served as a masjid and later a mosque especially during the reign of Fatih Sultan Mehmet, are on the periphery of the region (Üstündağ et al., 2017, p. 232). When considering the building network presented on the Pervititch sheets and the information obtained from other historical buildings, scanning the surrounding buildings as mostly early period works would be correct. However, newer construction sites are found toward the coast. By making use of historical buildings and other source publications, the scanning process was also carried out along this route as the middle period (1750-1850; Pervititch, 2000, p. 29).

After the zoning process, the buildings, fountains, and distribution lines were registered on the current city plan with the color scanning method. This updated map using the color scanning method shows distribution lines, fountains, and structures in color according to the construction date. Taking into account construction dates, the map also shows the fountains in the form of colored circles whose sizes are proportional to their flow rates and colors match their time period. The base unit of water given daily by a fountain is1 *masura* / day, namely 6.5 tons / day, and the base circle diameter has been accepted as R = 2 units, with the other circles being drawn as multiples of it according to the flow rate value. After this process, the estimated historical settlement and road network of the area in question was identified within the borders of Eğrikapı Neighborhood. The next process created a city map integrated with the water distribution lines by scanning the areas where historical buildings coincide with the current city plan (Figure 6).

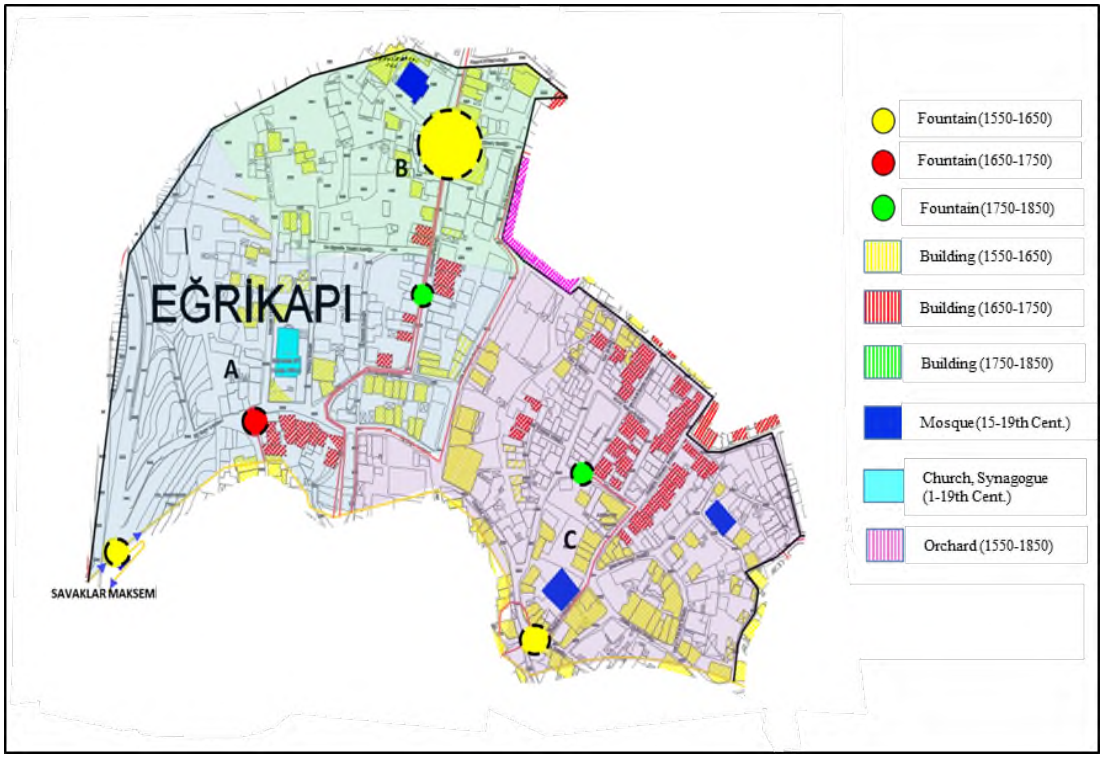

Figure 6. Periodic map obtained by the colorization and scanning method.

4. Assessment and Conclusion

This study has been conducted for the Eğrikapı Neighborhood using the comparative analysis method and observed the settlement areas to have grown and developed with the spread of the water distribution lines and the emergence of fountains. Settlement areas are understood to have been formed over time around the fountains in particular. Accordingly, the results this study has obtained can summarily be listed as follows:

When monitoring the movements of the fountains, settlement, and road network of the land over the centuries through the Integrated Periodic Map, these urban components have been determined to follow the same kind of movement and orientation, whether in unison or consecutively within a certain time interval.

The number of fountains and the area served increased as the water flow increased, some irregular growth in the boundaries of the neighborhoods was also noticed to have occurred.

Wherever the topography is suitable, fountains and places of worship move in unison.

While the urbanization movement did occur from the center to the periphery in the early periods when the water supply lines were first put into service, after the mid-18th century, an opposite movement from the periphery to the center was understood to have occurred.

When analyzing the fountains' elevation values; the settlement areas is understood to have moved toward the hills.

Based on the Eğrikapı Neighborhood, the ability to monitor the spatial changes that cities have undergone throughout history and to determine the construction and road network have been proven possible with the help of historical water distribution systems.

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RESEARCH ARTICLE

The Importance of Habitable Areas in Urban Design

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ABSTRACT

When making urban design settlement plans, decisions about which areas can be opened for habitation should demonstrate compliance not only with the principles of planning disciplines but also with fundamental legislation regarding suitability for zoning. In the discipline of planning, when conducting threshold analysis to determine habitable areas, all factors influencing the region are considered separately as artificial and natural thresholds. However, when evaluated in the context of the emerging conditions of our time, this issue becomes even more significant.

Indeed, the suitability of land for habitation in the planning domain can be presented with an approach that prioritises today's important concepts and developments, such as natural disasters, public interest, nature conservation, ecology, and sustainability, while considering the relevant disciplinary and legal regulations. In contemporary urban design, it is increasingly essential to create appropriate habitable solutions based on the geographical, geological, historical, cultural, and functional physical characteristics of the settlement, as well as new concepts such as climate change, disasters, technological hazards, and planetary protection, while also adhering to existing legal sanctions.

This study explains the concept of habitable areas and the factors associated with them, outlining the principles for determining habitable areas based on each factor.

Keywords: Habitability, habitable area, threshold analysis in land use

Introduction

Today, the lack of green areas in and around residential areas, as well as environmental pollution such as water, air, and soil pollution, transportation accidents, fires, floods, earthquakes, landslides, avalanches, tsunamis, disasters, epidemics, etc., are on the rise, with most attributed to climate change. These increases make sustainable living in cities and residential areas challenging at all levels. Currently, one of the primary measures to minimise the effects of these problems is the proper selection of residential areas in urban construction.

This study focuses on determining and emphasising the importance of functional construction areas within settlements. In addition, it underscores the general landscape view that can be built outside residential areas, including considerations for geographical features such as sinkholes and other relevant factors. This study highlights the significance of the concept of a "habitable area" for all urban design planners. It begins by defining this concept and examining the factors that influence habitable areas. Planners are then tasked with determining habitable areas in city plans on the basis of these factors. The essential principles for determining the results are presented in the form of explanatory figures. Subsequently, new sanctions for determining habitable areas are proposed by evaluating the relationship between these principles and zoning law. Ultimately, inferences based on these principles and sanctions are stated.

1. The Concept of Habitable Area

The concept of "habitable area" generally refers to areas deemed suitable for creating urban environments that can accommodate various functions such as housing, commercial centres, industrial zones, and tourism destinations. These areas play a crucial role in the development of settlements and cities. The primary characteristic of habitable areas is their suitability for construction in urban design. Therefore, when developing plans for a settlement, identifying habitable areas is a fundamental step. Ensuring the

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accuracy of these determination is essential for the sustainable growth and development of cities and settlements of all sizes. Failure to do so may lead to the construction of buildings in areas unsuitable for habitation, resulting in urban environments that are vulnerable to various risks and ultimately unsustainable in the long term (T.C. Çevre ve Şehircilik Bakanlığı, 2015).

In urban planning and related disciplines, the concept of habitable areas encompasses areas that can be designated for settlement through careful planning. An integral part of planning settlements involves the exclusion of unsuitable areas for land use. Consequently, the planned urban areas are situated within habitable zones, ensuring that development occurs in appropriate locations.

As a fundamental principle, in zoning plans and all types of urban design plans, it is possible for an area to be suitable for some functions and unsuitable for others. In other words, when developing a settlement plan, habitable areas should be identified on the basis of their intended functions. In essence, determining the function of areas designated for settlement is crucial for assessing their suitability. For instance, while a certain area within an urban residential zone may be deemed suitable for an active green space like a park, another area designated for residential use may not meet the criteria for habitation and could be classified as non-habitable. Therefore, it is imperative to classify the habitable areas within the entire settlement and determine which areas are suitable for specific functions.

The classification in this regard can be made depending on the habitability factors. For example, while some areas may pose risks due to earthquakes, they could still be suitable for settlement with appropriate precautions. In addition, active green spaces such as playgrounds, parks, and open sports areas are integral parts of urban environments. These areas may be distinct from habitable zones or could be situated in areas deemed unsuitable for habitation but suitable for recreational purposes because of their lack of construction. By detailing habitable areas in this manner, a systematic classification addressing various urban functions can be established, enabling detailed determination of habitable areas in settlement plans.

2. Factors Affecting Habitable Areas

Specific features of the areas play a significant role in determining habitable areas because they provide insights into habitability. These characteristics indicate whether an area is suitable for settlement. Below, each factor is discussed individually along with its rationale.

2.1. Topographic Structure

The formations comprising plains, slopes, high slopes, hills, and streams within the land's topography provide suitable conditions for construction. However, hills and areas with very steep slopes are generally unsuitable for construction due to several reasons. Unless compelling reasons exist otherwise, they should be excluded from habitable areas. These reasons include

- Transportation challenges arising from steep slopes
- Difficulty and high cost of construction
- Susceptibility to disasters such as landslides and avalanches
- Amplification of flood impacts
- Vulnerability to various natural disasters triggered by earthquakes

Given that most completely flat and plain areas can be utilised for agricultural purposes based on soil quality, these regions should be retained within settlement areas to serve agricultural functions while being excluded from construction zones.

2.2. Geological Structure

Differences in land stratification, which constitute the geological structure of the settlement area, are significant factors in determining habitable areas, especially in terms of the dangers they pose to earthquakes. This factor always necessitates the preparation of settlement suitability maps, which are produced from geological structure and stratification analyses conducted by geological technical teams. In these maps, at least the areas unsuitable for earthquakes are clearly identified. Planners should exclude these areas from habitable areas. In addition, on these maps, areas that can be settled with precautions are graded according to the rock types they comprise. By specifying the measures to be taken on the basis of the functional areas in the plan, they can be considered conditionally habitable areas.

The areas to be excluded from the completely habitable area are termed "Geologically objectionable areas," which should also be delineated on the current maps. Although these areas can be excluded from habitable areas in the plans, planners must take

special precautions regarding their dangers. The land and surface soil structure, including watery swamps, reed beds, and habitable areas, should be excluded. Alluvial areas consist of weak soils that are not earthquakes-resistant, as indicated by the fact that stream beds.

2.3. Streams: Stream Beds and Stream Reclamation Boundaries

These are boundaries created by calculating the flood levels of natural streams. On both sides of the stream axis, further than the natural banks of the stream, boundaries extend to 15, 20, and 30 meters. The boundary varies according to the stream width and is fortified with stream reclamation retaining walls. Stream reclamation boundaries are initially established to prevent streams within residential areas from overflowing and causing floods, thereby damaging the surrounding residential areas. Retaining walls are constructed in sizes appropriate to the stream's flow, and the stream is rehabilitated to resemble an open channel. According to relevant regulations, it is necessary to refrain from constructing any buildings close to these reclamation boundaries, which are established depending on the characteristics of the region. As a general rule, it is necessary to keep stream beds clear of construction. Stream beds contribute to environmental flooding during stream floods and intensify flood risks. The primary cause of floods is the "overflow of water into river beds due to the inappropriate use of stream beds for purposes other than their intended use" (Karagüler & Korgavuş, 2022). Furthermore, stream beds, composed of wet and alluvial soils, form weak ground for construction and are not resistant to earthquakes. Moreover, the risk of water pollution in streams supplying water due to settlements underscores the need to keep stream beds free of construction. This issue will be elaborated further in chapter 2.6. Therefore, it is imperative to exclude stream beds from habitable areas.

2.4. Airport Obstacle Limits

These boundaries are set according to the topography of the airport environment. The "Air obstacle limit" is established to ensure safe aircraft operations at airports, prohibiting the elevation of obstacles in designated areas surrounding airports (Sivil Havacılık Genel Müdürlüğü, 2024). At airports surrounded by or close to residential areas, ensuring obstacle-free aircraft take-off and landing is crucial. Therefore, obstacle boundaries are established around airports to regulate the placement of structures within appropriate elevations for aircraft landing and take-off movements. These boundaries, categorised as first, second, and third degrees, vary in distance from the airport. Relevant regulations have imposed building bans and height limitations for areas between these boundaries. Building heights in settlements constructed within these boundaries should adhere to construction conditions specified for these regions to prevent accidents during aircraft take-off and landing. A schematic drawing illustrating the airport obstacle boundary is provided in Figure 1. This issue is further detailed for military airports due to defence considerations. In addition to limiting building heights to prevent take-off accidents, it is essential to protect buildings in these areas from take-off noise. According to the 6th paragraph of the 5th article of the Construction Rules Circular for the Airport and Its Surroundings, all zoning regulations or constructions within Airport obstacle plan boundaries must comply with the Environmental Regulation published in the Official Gazette No. 27601 dated 4/6/2010, using noise-blocking materials based on the Noise Evaluation and Management Regulation (Sivil Havacılık Genel Müdürlüğü, 2022). This noise parameter underscores the need to plan settlement approach distances to protection zones. Therefore, the obstacle boundaries around airports, particularly up to the first-degree obstacle boundaries, should be kept free of habitable areas.

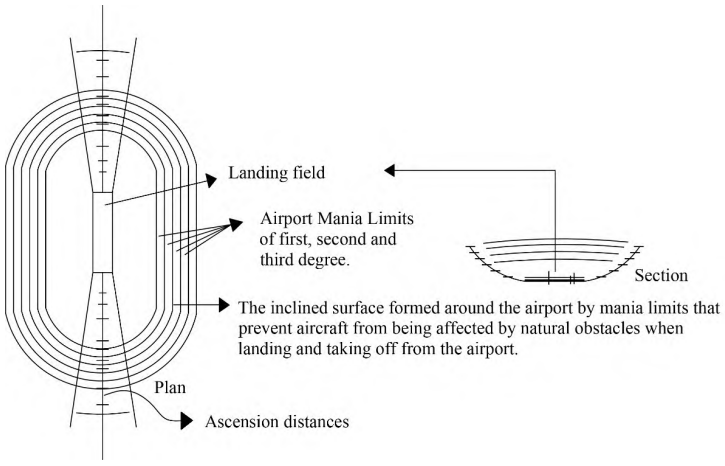

Figure 1. Schematic Description of Airport Mânia (Obstacle) Limits (created by the authors).

The inclined surface depicted in Figure 1 represents the area surrounding the airport, delineated by airport obstacle boundaries, designed to prevent aircraft from encountering natural obstacles during take-off and landing manoeuvres.

2.5. Forests and Areas that Have Lost Their Forest Quality

As it is widely acknowledged, forests hold legal significance in terms of protection. When formulating settlement plans, it is imperative that urban expansion does not encroach upon forested areas. The intricate relationship between settlement patterns and forests poses the risk of wildfires spreading from settlements to forested regions and vice versa. Professor Dr. Ünal Akkemik highlighted the ramifications of this interconnection in forested areas, noting that "increased human activity and equipment presence in forests contribute to heightened fire incidents" (Akkemik, 2021).

To mitigate the risk of forest damage, buffer zones can be established between urban functions, construction zones, and forested areas. Consequently, forested areas should be excluded from habitable zones in planned settlements. However, "Areas that have lost their forest character" may be legally designated for removal from the forest, typically for repurposing through planning for construction. From a global perspective of nature conservation and ecological sustainability, reforestation of these areas would represent a far more sustainable planning approach. Hence, it becomes imperative to exclude not only forested areas but also those that have lost their forest quality from habitable zones to ensure their preservation alongside forested regions.

2.6. Drinking Water Basins, Lakes, and Ponds

Protecting natural lakes, water basins, dam lakes, and ponds, which serve as sources of drinking and utility water vital for human health, necessitates maintaining their environments free from pollution. Consequently, all activities and practises that could lead to pollution must be eliminated from the vicinity of these bodies of water. Therefore, constructions should be situated at a considerable distance from lakes to prevent the discharge of pollutants such as sewage and wastewater, thereby safeguarding the purity of the water we consume and utilise and mitigating the risk of waterborne diseases. To this end, the "Regulation on the Protection of Drinking and Use Water Basins" outlines absolute, first (short), second (medium), and long-distance protection zones, which dictate building restrictions or controlled construction conditions in the vicinity of lakes for the preparation of zoning plans. The area between the absolute protection zone and the lake shore is designated as an absolute protection area, where construction is prohibited. Meanwhile, the areas between the short- and medium-distance protection zones are subject to limited construction conditions imposed by water administrations. The long-distance protection zone is delineated on the basis of the topographic features of the lake, with the protection area encircled by this zone designated for controlled construction. Figure 2 illustrates a schematic representation of these protection zones. This area, which is encompassed by the long-distance protection zone, is defined in the regulation as follows:
“The long-distance protection area encompasses the entire drinking-use water basin outside the absolute, short- and medium-range protection areas of natural lakes, dam lakes, and ponds from which drinking-use water is supplied or planned to be provided” (Tarım ve Orman Bakanlığı, 2021).

Preventing the occurrence of epidemic diseases in settlements around natural lakes, dam lakes, streams, and rivers, which serve as sources of drinking and potable water, is paramount. Consequently, novel urban design approaches such as healthy and smart cities have rapidly gained significance in the realm of future urbanisation and settlement models (Karagüler & Korgavuş, 2020). In 1854, Dr. John Snow provided a pioneering example of a smart city based on data usage. By mapping the spread of cholera cases in London, he identified water—not air—as the cause of the cholera epidemic in the city area (Öztaş, 2020).

In light of the protection requirement explained above, when crafting settlement plans at all scales, the absolute protection area of natural lakes, dam lakes, and ponds, which serve as water resources linked to the settlement, must be strictly excluded from habitable areas and surrounded by an absolute distance protection zone. Short-, medium-, and long-distance protected areas surrounded by other zones can be included within habitable areas by implementing controlled and minimal construction conditions and employing smart sewer systems.

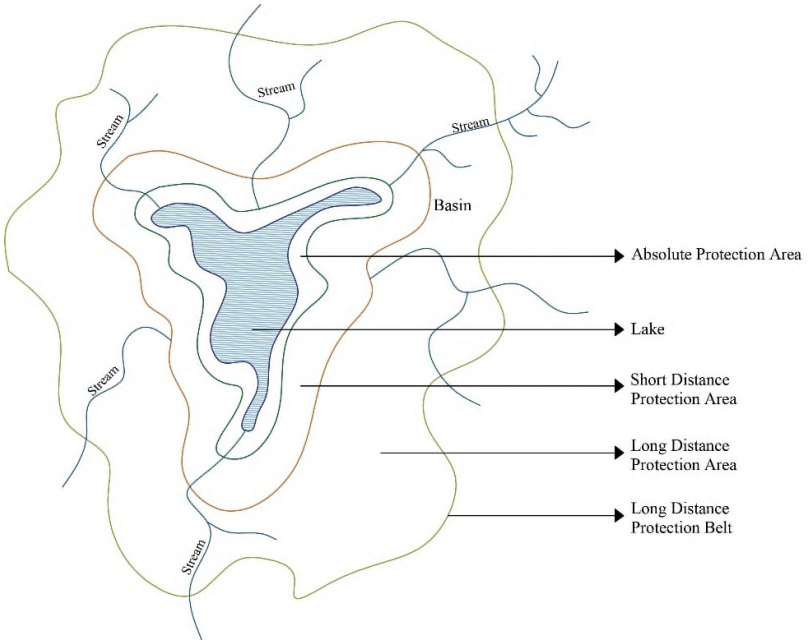

Figure 2. Schematic Representation of Lakes and Drinking Water Reservoir Protection Belts and Zones (created by the authors).

2.7. State Highways Environment

The Ministry of Transport safeguards the areas surrounding the routes of state highways with the highway expropriation border, according to the Highways Law. As per the General Directorate of Highways, this demarcation delineates the region subject to expropriation beyond the road boundaries of state-built highways and extends along both sides of the road. The space between the road and this border is designated for public use, and no structures other than public buildings necessitating highway public services can be erected within this zone. Consequently, the General Directorate of Highways determines the expropriation of the area between the road boundary line and the expropriation border of state highways within the planning area in accordance with the public interest. Planners are advised to exclude these areas from habitable zones. Figure 3 illustrates the highway expropriation boundaries and the expropriated area. The remnants of parcels resulting from expropriation, depicted in this schematic representation, are documented in the title deed through abandonment, thus forming a new parcel (Karayolları Genel Müdürlüğü, 2023).

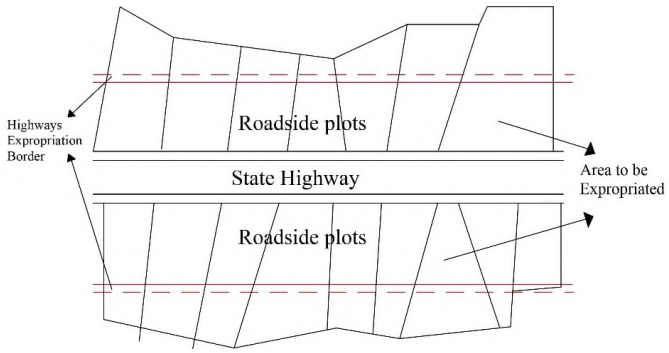

Figure 3. Schematic Representation of Highway Expropriation Boundaries (created by the authors).

2.8. Coasts

Coasts are subject to sanctions specified in coastal law, which includes definitions of shoreline, shoreline, coastal edge line, and coastline. In accordance with public interest, coastal areas and coastlines are open to the public; however, they are also areas that are restricted and subject to expropriation due to their vulnerable ground structure and susceptibility to disasters such as earthquakes and tsunamis.

Currently, various measures are being developed to protect coastal settlements from tsunamis, such as high breakwaters, coastal walls, coastal forests, and fortified coastal structures. All these measures, along with the expropriation of coastlines, necessitate that coastal areas be excluded from inhabitable zone limits to safeguard coastal settlements.

The coastline, as defined in coastal law, is the area that transmits the spread of damage caused by a tsunami disaster to the settlement area behind it, making it the first to be affected by such disasters. Therefore, as depicted in Figure 5, the coastal forest precautions mentioned above can be implemented in this region. Furthermore, coastal fortifications can be constructed between residential areas and the coastline, as illustrated in Figures 4 and 5.

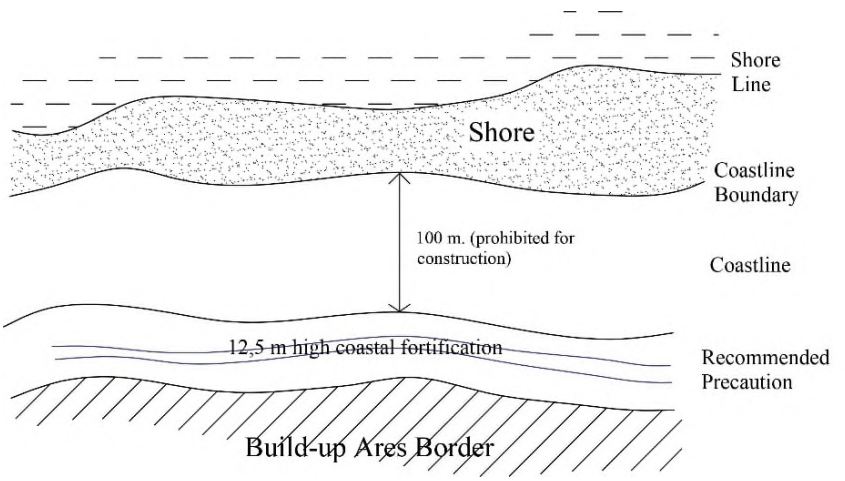

Figure 4. Coastal Law Compliance in Planning with Required Coastal Lines and Areas along with Tsunami Protection Area Proposal (created by the authors).

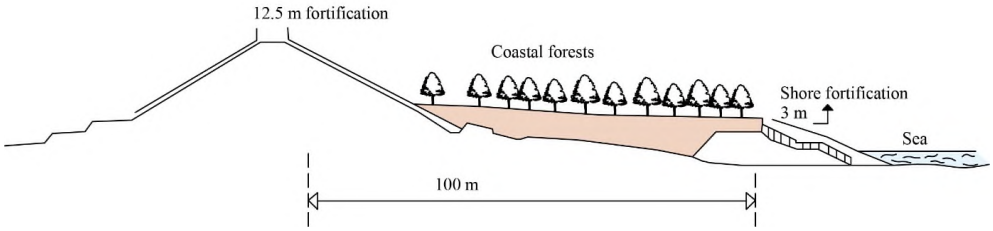

Figure 5. Coastal Fortifications and Coastal Forests, Rikuzentakata (Güler et.al, 2018).

2.9. Historical and Natural Conservation

Historical and natural conservation areas within or near residential zones, whether officially designated as protected areas or not, are safeguarded by the Cultural and Natural Heritage Protection Law, which typically prohibits construction within these zones. However, within conservation zoning plans encompassing protected areas, limited construction may be permitted to sustain local urban life while preserving these areas. This provision predominantly applies to urban and historical protected zones, whereas areas devoid of current settlements, such as natural reserves and archaeological sites, remain subject to construction bans. In all instances, the final decisions regarding these areas are determined through the formulation of "Conservation Plans" (T.C. Kültür ve Turizm Bakanlığı, 1983). Consequently, as protected areas necessitate distinct consideration within the framework of Conservation Development Plans, they should be excluded from the boundaries of inhabitable zones when planning the settlement areas they inhabit.

3. Evaluation of The Determination of Habitable Area Boundaries in Terms of Its Application in Planning

The growing significance of habitable areas in contemporary contexts necessitates that their planning applicability be reinforced by legal sanctions alongside principles of design discipline. Measures such as expropriation and legalisation will be essential to clearly delineate their implementation. Moreover, depending on the characteristics of the settlement, various additional factors may come into play. The following evaluations can be conducted from these perspectives:

3.1. Disciplinary and Legal Necessity of Areas to Be Excluded from Habitable Area Boundaries

The areas that require exclusion from habitable area boundaries, determined on the basis of factors influencing these boundaries, can be implemented through planning disciplines. However, such practises should not only be mandated legally but also enforced through planning disciplines. Table 1 illustrates the legal and disciplinary requirements for areas that are unsuitable for habitation due to influential factors in determining habitable areas. The table demonstrates that despite building restrictions, planning disciplines can mitigate concerns by assigning non-building functions, thereby allowing structures to remain within habitable areas through planning decisions. According to Table 1:

- Areas legally mandated for exclusion from habitable area boundaries via building bans include: geologically hazardous areas, wetlands, stream beds and their improvement areas, regions within 1st-degree air transportation obstacle limits, forests, absolute protection zones of lakes and ponds, expropriation areas for state highways, and coastal zones designated as natural and archaeological protected areas.
- Areas where construction bans are absent but exclusion from habitable area limits can be facilitated by planning disciplines encompass: highly sloped areas (over 40%), areas devoid of forest cover, and regions within 2nd-degree air transportation obstacle limits.
- Areas not subject to building bans but can be retained within habitable area boundaries through planning precautions include: regions within air transportation obstacle limits other than 1st and 2nd degree, short, medium, and long-distance protection zones of lakes and ponds, and areas with moderate slopes below 40%.

Table 1. Legal Requirements for Areas that Must Be Excluded from the Borders of Habitable Areas According to the Factors that Are Effective in Determining Habitable Areas (created by the authors).

	Habitability / Areas	Non-Habitable Area	Construction Prohibited	Controlled Construction	Legal Requirement
Topographic Structure	High slope areas (40%+)	+	-	+	+
	Sloping areas (40% -)	-	-	+	-
	Plain and Plain Areas	+	+	-	-
Geological Structure	Geologically objectionable areas	+	+	-	+
	Gradually Determined Geological Sites for Settlement	-	-	+	+
	Wetland, Swamp, and Reed Areas	+	+	-	-
Streams	Stream Beds and Adjacent Reclamation Areas	+	+	-	+
Airport Obstacle Limits	Areas Under 1st Degree Airport Obstacle Limits	+	+	-	+
	2. and Areas Under 3rd Degree Airport Obstacle Limits	-	-	+	+
Forests	Forest Areas	+	+	-	+
	Areas That Have Lost Their Forest Quality	+	-	-	-
	Private Forest Areas	-	-	+	+
Drinking Water Basins	Absolute protection areas	+	+	-	+
	Short, Medium, and Long-distance Protection Areas	-	-	+	+
State Highways Environment	Areas within the Expropriation Borders of State Highways	+	+	-	+
Coasts	Coastal Area	+	+	-	+
	Coastline	+	+	-	+
Historical Conservation	Natural and Archaeological Protected Areas	+	+	-	+
	Urban and Historical Protected Areas	-	-	+	+

3.2. Expropriation

Without appropriate legal qualifications for areas earmarked for exclusion from habitable zones, challenges may arise regarding their implementation within planning disciplines. For instance, unless a legal basis exists for expropriating regions that have lost their forest cover to be reclaimed as forested areas, it cannot be assumed that they will remain off-limits for construction, even with a designated plan. Similarly, expropriation may be essential for areas impacted by unique circumstances, such as pasturelands awaiting expropriation and public rural green spaces.

Delaying the expropriation of areas legally designated as open to the public yet prohibited from construction, such as coastal zones, can lead to significant practical difficulties despite the presence of plans and laws. Another illustration is the case of "special forest areas." While forested areas are public property and are typically excluded from habitable zones, regions with special forest status may pose unique challenges. Because these areas constitute private property, they cannot be subject to expropriation. Consequently, despite their forested characteristics, they may remain within the boundaries of habitable areas, albeit with limited construction possibilities.

3.3. Legalisation Guiding Planning by Zoning Law

Coastlines, airport obstacle boundaries, protection zones of lakes and ponds, state highway expropriation boundaries, stream reclamation, and stream bed boundaries—all significant factors in determining habitable areas—should be officially designated as "boundary lines" on current maps. This measure would facilitate the development of settlement plans of all scales and ensure practical functionality in practise.

Planners can formally acquire these boundaries from relevant institutions through "institutional opinions" during the determination of habitable areas. However, it would be highly beneficial if these boundary lines were officially recorded on the plan bases, which are the current maps. This action would contribute to the efficiency of plan-making processes and preempt any ambiguity or dispute regarding these boundary lines.

3.4. Other Factors that May Occur Depending on the Characteristics of the Settlement

In addition to the factors outlined here that affect the determination of habitable areas, there may always be other factors unique to the characteristics of a settlement. These factors can define distinct formations that effectively delineate habitable areas and may warrant their exclusion or the implementation of appropriate measures by planners to mitigate their impact on settlements.

Beyond the primary factors discussed earlier, settlement characteristics, such as proximity to waste disposal or storage sites or proximity to military zones, may introduce additional local factors. In such cases, these areas could be excluded from habitable zones, or planners could establish green buffer zones between these areas and the settlement to ensure that they remain within habitable zones while safeguarding settlements from their effects.

For instance, mining licenced areas or pasturelands within planned settlement areas may also require consideration. Although these areas might be excluded from habitable area boundaries in zoning plans, measures can be implemented in accordance with their legal status and protocols established by relevant ministries.

Results and Discussion

- Establishing habitable areas is foundational to a healthy and sustainable planning approach. The precision with which areas requiring exclusion from habitable boundaries are identified directly correlates with the accuracy and effectiveness of the subsequent planning process.
- In urban design and settlement planning, the determination of habitable areas often relies on the "threshold analysis" technique. However, as we consider the pursuit of sustainable living in future urbanisation and settlement designs, it becomes essential to evaluate the impacts of emerging scientific and disciplinary factors, such as climate change, natural disasters, and ecological considerations. In today's context, where these issues have gained paramount importance, the areas requiring exclusion from habitable zones, as mentioned in the article, may undergo quantitative and qualitative changes. Therefore, it is imperative that the threshold analysis method evolves and adapts to accommodate these evolving circumstances. In general, uninhabited areas are open to illegal and unplanned construction. Therefore, expropriating the areas that will be taken out of the habitable area, that is, the areas that cannot be settled, as much as possible, is actually one of the most effective solutions in terms of preventing illegal and unplanned construction.
- The areas pinpointed for exclusion from habitable zones in this study embody fundamental and critical zones crucial in present-day circumstances. These areas are subject to fluctuations in both their quality and quantity over time, contingent

on the characteristics of the planned settlement area. In settlement planning across all scales, areas excluded from the most suitable habitable area boundaries encompass a range of significant zones, including forested areas, geologically hazardous regions, wetlands, stream beds, reclaimed areas, zones affected by first-degree air transportation obstructions, protected areas around lakes and ponds, zones designated for state highway expropriation, coastal regions, and natural and archaeological protected areas.

- Areas designated for exclusion from settlements to establish habitable areas in urban design should not be perceived as unused or dysfunctional spaces. In contrast, these areas perform critical tasks that contribute to the health and sustainability of settlements. Although they may lack social activities, they typically consist of passive green spaces that serve to protect the city. Their presence is essential for providing oxygen to urban environments, regulating urban climates, and bestowing various other benefits associated with green areas. When determining habitable areas in urban design, it is essential to recognise and assess these areas for their vital functions rather than dismissing them as dysfunctional or unused.

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RESEARCH ARTICLE

Revitalising and Renovating the Visitor Experience in the Historic Piazza San Marco; Based on the Installation Project Generated by Midjourney AI

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ABSTRACT

The historic San Marco Square, a UNESCO World Heritage Site and Venetian architectural symbol, will encounter a challenge in balancing its historical relevance with the evolving demands of a modern public space. This article investigates the potential of artificial intelligence (AI), specifically Midjourney AI, to revitalise the Square's visitor experience while maintaining its distinct identity. By studying the Square's spatial features and "Quality of Place" specifications, this paper recommends the installation of AI-powered installations to enhance comfort and social interaction. During the period which these installations are exposed to customers and visitors, the goal is to preserve the historical context while also inspiring people with a renewed sense of amazement and participation.

Based on research in urban planning and cultural heritage management, the study claims that AI technology could be an effective tool for improving public areas while maintaining their historical integrity. This approach is consistent with the rising emphasis on human-centred design in public places, which values diversity, accessibility, and an impression of community.

Keywords: Piazza San Marco, Midjourney AI, Installation, Spatial Quality, Visitor experience

Introduction

For decades, San Marco Square has charmed visitors as the vibrant hub of Venice, Italy. The Square, surrounded by the renowned Doge's Palace, St. Mark's Basilica, and the Procuratie Vecchie and Nuove, represents the Venetian Republic's artistic and historical history. However, the needs of a modern public space necessitate a reevaluation of how the Square operates, and visitor flow must be considered alongside the Square's historical relevance and cultural vibrancy.

This article focuses on the possibilities of AI technology, especially Midjourney AI, to revitalise San Marco Square. By assessing the Square's overall spatial quality, the article recommends AI-powered installations to improve the visitor's experience. These temporary artworks aim to generate a feeling of wonder and involvement while preserving the Square's ongoing status as a vibrant public area. (Pereira Roders and van Oers, 2011) (Naheed and Shooshtarian, 2022) (Nocca, 2017)

The following sections explore the rich history of San Marco Square, analyse its current spatial qualities, and propose AI-powered installations that can revitalise the visitor experience. The paper concludes by emphasising the importance of responsible AI integration, which can add a new spatial experience to a historical context without harming its identity.

A Storeyed Past: A Journey Through Time

San Marco Square boasts a rich and well-documented history dating back to the 9th century. Originally, the area was a marshy basin bordering the Venetian lagoon. Through a testament to Venetian ingenuity, the area was gradually filled and paved, transforming it into the political and social centre of the Republic of Venice. The iconic Doge's Palace, a symbol of Venetian power and a masterpiece of Gothic architecture, rose on the eastern side of the Square starting in the 14th century. Across the Piazza stands St. Mark's Basilica, a dazzling example of Byzantine architecture, originally constructed in the 9th century and subsequently expanded throughout the centuries. Flanking the western side of the Square are the Procuratie buildings, which originally housed government officials and administrative offices. Construction began on the Procuratie Vecchie (Old Procuracies)

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in the 12th century, followed by the Procuratie Nuove (New Procuracies) in the 16th century. These grand structures now house museums and shops, further enriching the cultural tapestry of the Square. (Ammerman *et al*., 2017)

Quality of Place and Square Standards: Redefining the Square's Public Realm

San Marco Square's viability as a public area depends on its capacity to satisfy recognised "Quality of Place" requirements. These include elements such as accessibility, safety, comfort, and social interaction. Square requirements incorporate aesthetics, historical significance, and cultural vibrancy. (Uzgoren & Erdönmez, 2016)

AI analysis can help design temporary installations that meet these requirements. For instance, AI-powered interactive displays might provide multilingual information and accessibility features, while information regarding visitor movement patterns could drive the layout of seating areas and performance spaces, encouraging a more energetic and inclusive atmosphere (Dinçer, Akyüz and Etike, 2022) (Figure 1).

Figure 1. *San Marco Square, (www.Googlemap.com)*

Transformation and Spatial Harmony

The transformation of San Marco Square from a marshy area to a grand public space reflects not only Venetian ingenuity but also sophisticated urban planning skills. The square's almost rectangular layout and the surrounding buildings create a sense of enclosure and monumentality that inspires awe. The repetition of arches along the Procuratie buildings and the colonnades lining the southern side fosters visual harmony and a sense of rhythm (Figure 2). The scale and height of the buildings surrounding the Square contribute to its grandeur, while the openings and arches in their facades offer glimpses of the city beyond and contribute to the overall skyline. This interplay of architectural elements creates a unique spatial quality that has captivated visitors and scholars for centuries. Studies on the Square's spatial qualities highlight the importance of both wind patterns and shadows cast by the surrounding buildings. Understanding these factors is crucial for any future interventions that aim to enhance the visitor experience and maintain the Square's historical and cultural significance. (Gümüş İ.and Erdönmez E., 2021; Erdönmez Dinçer E., Akyüz and Etike, 2022)

Figure 2. *San Marco Square, View to St. Mark's Basilica and Bell tower, (www.theartpostblog.com)*

Understanding Space: Beyond the Picturesque Facade

To effectively revitalise San Marco Square, a deeper understanding of its current spatial qualities and consideration of several key parameters is crucial:

Wind Patterns: The Square experiences strong winds, particularly during the Bora (Bora, originally defined as a very strong cold wind that blows from the northeast onto the Adriatic region of Italy, Slovenia, and Croatia.) season. Based on the investigation and analysis of wind patterns in San Marco Square, it is possible to establish light and spatial structures as temporary installations. Considering the strong wind that blows in the square in some cold seasons of the year, it can be said that these wind patterns, if properly planned for the time of holding, do not pose a particular threat to the holding of temporary exhibitions and the installation of related equipment. (Beaucage, Brower and Tensen, 2014)

Shadow and Access Patterns: Buildings around the Square cause substantial variations in shadow throughout the day. To improve pedestrian flow and comfort and foster a more user-centric environment, analyses could potentially be used to design temporary installations or shade structures. (Gago *et al*., 2013)

Limitations and Considerations

San Marco Square, according to its historical value and the huge number of tourists it attracts, has restrictions on renovations or interventions. Any renovations must balance the need for improvement while preserving the Square's historical integrity and preventing undue wear and tear. (Dincer and Guzer, 2020)

Despite these limitations, AI technology presents fascinating possibilities for improving San Marco Square's operation and visitor experience. By carefully considering historical preservation, user experience, and environmental sustainability, AI-powered artworks may create a lively and engaging public place that respects the Square's rich legacy while catering to the requirements of a contemporary audience. (Erdönmez and Polat, 2011; Gümüş and Erdönmez, 2021)

Designing Installation Projects with AI: A Threshold for Exploring the Future

Imagine a square adorned with AI-generated, ephemeral light installations that dance with the changing Venetian sky. Interactive installations powered by AI could offer visitors unique perspectives of the Square's history or real-time environmental data. AI could also be used to create dynamic, temporary pavilions that provide shade, host performances, or showcase local art, fostering a sense of wonder and engagement. (Ploennigs and Berger, 2023; Rashid, 2024)

Due to its high historical importance, human destruction during its lifetime, the large number of visitors, and the risk of destruction and excessive wear and tear, San Marco Square has many limitations in its performance and use. For this reason, there are many features to improve the quality of visitors' experiences. The use of these capacities causes more interaction and cooperation of visitors with the public space of the square, creating a sense of place and strengthening its quality standards.

At the same time, it is possible to improve all the factors related to the visitors' experience by respecting the history, preserving the privacy of the ancient monuments, and observing the privacy of the square landscape with the help of artificial intelligence with installation projects. (Cruz *et al*., 2023; Ploennigs and Berger, 2023; Radhakrishnan and Radhakrishnan, 2023)

Midjourney and perception of ancient monuments

The way artificial intelligence Midjourney looks at ancient monuments and how to imagine a known space in it completely depends on the user's ability to write commands and prompts. In fact, there is a preconceived notion about most of the famous artefacts in Midjourney based on how they are defined in relation to artificial intelligence, but these notions are completely changed by writing commands and user prompts and the effectiveness of commands from each other (Figure 3).

Figure 3. *–style raw –v 6.0 –ar 4:3 - generated by Midjourney AI, installation project for San Marco Square, By the authors*

Based on this, the output of several images generated by artificial intelligence Midjourney may have underlying differences based on the variability of other commands and prompts added to the basic prompt, due to the same background of that work, i.e. San Marco Square in Venice. (for example, the design of the installation project in San Marco Square for this article)

Finally, and at the time of writing the basic instructions, by defining the project and the artwork that is to be designed and produced, as well as by setting and determining: The type and angle of view of the project, style, type of finishing and design of the artwork, material, weather and climate, light, image dimensions, aspect ratio, and a wide range of features and settings related to image creation can create thousands of created images (Figure 4).

Figure 4. *–s 250 –v 6.0 –ar 1:1 - generated by Midjourney AI, installation project for San Marco Square, By the authors*

Revitalising and renovation the visitor experience in historic Piazza San Marco

To increase the quality of the sense of place and the experience of visiting the historical square of San Marco and to create a new artistic experience for visitors, we opened a new installation project as a colourful threshold to the world full of myth and history of San Marco.

The concept of creating a gateway for a new look at the basilica, the brick bell tower, and other buildings that surround the square from behind the coloured glass of the colourful installation.

The process of writing prompts and instructions for the generate of the Project of revitalising and renovating the visitor experience in Piazza San Marco

First, to define this project and choose the *style* of the artwork, the word *installation* is determined, which is the final goal of this project. In the next step, imagining ordering a photo to the photographer, we should write all our requests in the form of prompts and commands necessary for the type of image output we want (Table 1).

-Cinematic (for example), [PHOTOGRAPHY TYPE] [SUBJECT/ACTION]
-[SHOT TYPE] [LOCATION] [FASHION] [YEAR] [FILM STOCK] [CAMERA] [DIRECTOR] [EMOTION] [LIGHTING] [COLOUR]
-[costume description] [fashion colour palette] [fashion brand] [fashion material]
--ar 16:9 (for example) [your choice of aspect ratio]
--s value (for example) [if you want to use the default Midjourney Aesthetic, value range= 0 - 1000]
--style raw (for example) [unless you want to use the default Mid-Journey Aesthetic to focus more deeply on your style keywords]
--w value (for example) [short for --weird, brings unconventional results, value range= 0 - 3000]
--s value --w value [default Midjourney Aesthetic with an unconventional touch]
►Organic Level ►Detail level ►Hyper Level •Parameters

Table 1. *Overview of prompt structure in Midjourney AI, By authors*

Dedicated prompt structure for the installation Project in San Marco Square

It is worth noting that in the process of writing prompts for Midjourney artificial intelligence, each time an image is generated, it has a specific result, and no output of the prompts is similar. Therefore, in the entire process of analysing the outputs of this artificial intelligence, all the focus can be on the selected outputs based on the project's needs.

The next critical point is that even similar prompts in different generates have different results. This is why the valuation of Midjourney AI outputs is measured on the basis of each image created by it. Although in the new Midjourney artificial intelligence updates, new parameters have been designed to preserve the main character in the created images (–cref), which can cause the production and design of several output images around a subject, character, or even a specific building in the near future.

In the following, we have given the main body of the prompt related to the installation project for San Marco Square in general, and the outputs related to these prompts have also been given:

- architectural photography, cinematic,
- revitalise the San Marco Square in Venice, an intricate lattice framework made by colourful glasses,
- a contemporary style structure, sun shining through, designed by Renzo Piano, photo by Iwan Baan, respect original form, explore possibilities for adaptive reuse, integrate public spaces without compromising the monument's historical integrity, eco-friendly materials, energy-efficient solutions, harmonious balance between the past and future, hyper-detailed, low crowd of people, natural light
- –style raw –v 6.0 –ar 4:3

The results of images generated by the above Prompts written according to the project's defined needs are shown in (Figure 5) and (Figure 6) as well as (Figure 7).

Figure 5. *–s 250 –v 6.0 –ar 4:3 - generated by Midjourney AI, installation project for San Marco Square, By the authors*

Figure 6. *–s 250 –v 6.0 –ar 4:3 - generated by Midjourney AI, installation project for San Marco Square, By the authors*

Figure 7. *–s 250 –v 6.0 –ar 4:3 - generated by Midjourney AI, installation project for San Marco Square, By the authors*

Conclusion: A Sustainable and Inclusive Future

San Marco Square captures Venice's spirit, a city that has prospered at the crossroads of modernity and tradition. By combining AI technology with empathy and respect for history, we can design a Square that is not only visually appealing but also inclusive, sustainable, and sensitive to the demands of a modern public place. The possibilities are limitless, and as AI technology advances, the prospect of ever more immersive and engaging experiences in San Marco Square grows increasingly captivating.

However, it is critical to note that AI is a tool, not a replacement for the Square's historical and cultural significance. AI-powered installations should be temporary and inconspicuous, aiming to improve the tourist experience while preserving the Square's timeless appeal. Public engagement and community participation in the planning process are critical. By adopting a responsible and collaborative approach, San Marco Square could employ AI technology to drive positive change. This synthesis of historical significance with cutting-edge technology may result in a lively public place that inspires wonder, encourages inclusion, and serves as a paradigm for the future of urban life.

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RESEARCH ARTICLE

Discussing the Concept of "Hierarchy" in Urban Planning Studies

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*This study is based on the research project "Redefining Settlement Hierarchy Criteria", which was completed as a YTU Comprehensive Research Project (KAP Project No.29.03.02. KAPO1) in 2010-2013, and the ongoing research process thereafter.

ABSTRACT
While preparing analysis, synthesis, and planning approaches in City and Regional Planning studies, the concept of "hierarchy" is important at all stages, regardless of the location and size of the planned settlement. In these studies, the role of settlement within its country, region, sub-region, identity, potentials, problems, and dynamics within production-consumption relations are explained with the concept of "hierarchy". Various components of settlements through this concept; Transportation, centre size, green and open areas, and population and building density distributions, are important in terms of determining priorities qualitatively and quantitatively. There are criteria that determine the degree/content of "hierarchy" in discussions of every function, sector, and size. Although there are criteria that determine inter-scale, inter-plan, inter-sectoral, and inter-functional staging in urban planning studies in Turkey, including the urban design scale from upper-scale plans, the inconsistencies between accepted criteria both in public institutions and organisations related to urban planning, in academic studies, and in the legal system, the criteria are not updated according to changing conditions, and there is a lack of comparative database; It makes it difficult to make healthy analysis, analysis, and make decisions for the future. This study discusses the "settlement hierarchy" criteria, which differ and need to be updated, within the scope of administrative borders, jurisdictional borders, and criteria determining borders.[1]

Keywords: Hierarchy, settlement hierarchy, hierarchy criteria, administrative border, geographical border

Introduction

The concept of "hierarchy", which comes from the concept of hierarchy, is a military term that indicates uninterrupted communication with each other, a sequential, orderly relationship, and interdependence within the scope of both relationships and people's duties and status. When the content of the word hierarchy is examined; It based on the French word "hiérarchie", which means "clergy, religious ranks, chain of command, rank order". The word is derived from the Ancient Greek word ^{h}ierárχēs *ιερα΄ρχης*, which is used in the sense of "high-ranking priest, sacred ritual leader, abbot" and expresses a step up in religious leadership status. It consists of the words hiéro (sacred, saint) and archie (management, power) (Turkish Etymology Dictionary, 2024).

The concept of 'hierarchy' is explained as a form of social organisation in which authority is strictly and precisely distributed among different orders of importance, such as the order of stages, a series of steps gradually increasing in terms of importance and value, and authority being at the highest level to the greatest extent in the Turkish Language Society (2024).

Although each of these definitions is expressed in different ways, a series of gradually increasing levels of importance and value constitute the general acceptance. In the concept of radialization, reaching the highest rank / degree is seen as a basic goal, and the idea that the target point has passed the previous steps successively and successively is adopted. Therefore, the concept is based on the assumption that the highest level dominates all previous stages, surpasses them step by step, and includes all previous stages.

In these definitions, a reverse or static process, such as skipping a step, staying in place, or going down a step, etc. is not included/not taken into account, and these situations are considered failure. This acceptance considers and aims at the continuous growth of all settlements in terms of spatial, demographic, national, and international relations in urban planning.

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Since the 1960s, zoning implementation plans and national development plans prepared by the State Planning Organisation (Devlet Planlama Teşkilatı-DPT) have also adopted this approach. "Hierarchy of Settlement Centres in Turkey-Country Settlement Centres System", which was conducted in the 1980s, was built on this behavioural pattern and understanding. The State Planning Organisation acceptances dated 1982 are still in force and are used, at least partially, in both professional and academic environments.

Within the scope of this study, several basic issues are discussed, such as the role of "hierarchy" in urban planning and the facts that need to be reconsidered, especially the authority limits of institutions, their different evaluations on staging, and the effects of the lack of a comparative database on the planning process.

Relationship between Geographical and Administrative Borders and Hierarchy in Turkey

The concept of “border,” which is also used in different disciplines, is the line separating the lands of two neighbouring states, provinces, districts, villages, or individuals; the last line from which something can spread or expand; and the point/end where something ends; It is defined as the external environment of the entity or domain (Turkish Language Society, 2024). Beyond its physical meaning, the concept of “border” also has an important place in creating space and defining and establishing relationships in urban planning.

Geography is the science that studies people and places and the relationship between them. A geographical region is the largest geographical unit that is similar within itself and is distinguished from its surroundings by certain geographical features (Dictionary of Geography, 2007). With the region, the coherent part of a spatial whole in terms of certain qualities is described and spatial clusters / sub-regions are defined (Yiğit, 2006). While determining the boundaries of geographical regions, natural conditions and social and economic features are taken as the basis. Small units that differ in terms of these conditions and characteristics within a geographical region are called ’geographical sections’ (Geographical Dictionary, 2007).

This study focuses on the effects of the "borders" of physical space on "hierarchy", which is an active concept in city and regional planning throughout the historical process, and the accepted and used research topics related to it. These are the "Hierarchy of Settlement Centres in Turkey - Country Settlement Centres System" study, which started with the 1st Turkish Geography Congress in 1941, conducted by State Planning Organisation in 1982, and then "The Nomenclature of Territorial Units for Statistics - NUTS" conducted in 2002. Urban and Rural Settlement Systems Research in Turkey (Türkiye’de Kentsel ve Kırsal Yerleşim Sistemleri Araştırması - YER-SİS)” study and provincial and district “Socio-Economic Development Ranking Research (Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırmaları - SEGE)” conducted in intermittent years. In addition to these studies affecting staging, the changes in provincial and district borders, their numbers, and the number of metropolitan municipalities and their effects on staging have been taken into consideration, but the legal regulations in Figure 1 have not been elaborated in detail. The studies carried out by the central government, the laws that have been reconsidered and regulated, and the acceptances that have affected the classification of settlements since 1941 are shown in Figure 1.

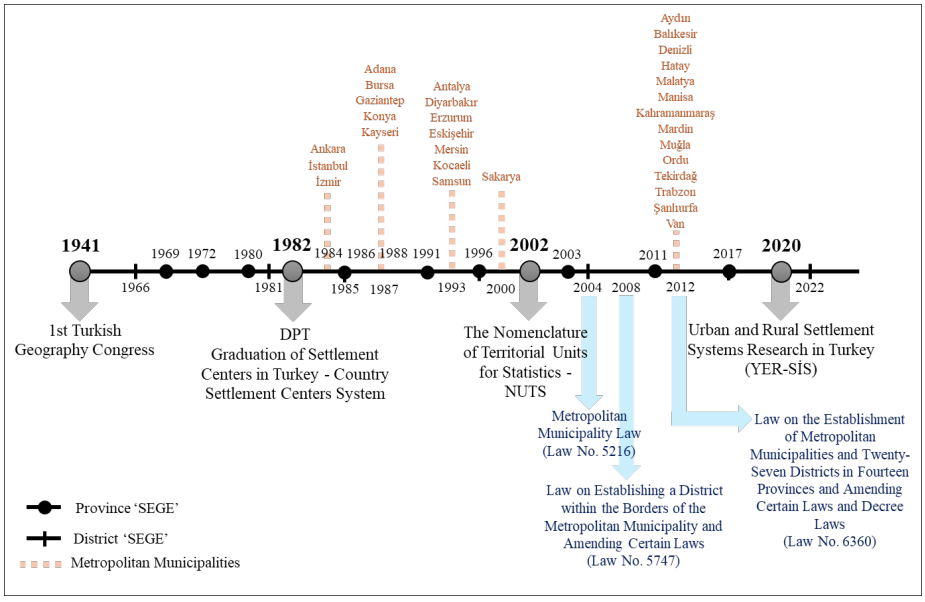

Figure 1. Studies and changes in law regarding staging in Turkey after 1940

The geographical regions of Turkey known today were determined at the First Turkish Geography Congress held on 6-21 June 1941, and the country was divided into 7 (seven) main geographical regions and 21 geographical divisions (Table 1, Figure 2) (Turkish Geographical Society, 2006).

It is understood that in the First Geography Congress (1941), a distinction was made mainly by taking into account the administrative borders, landforms, and vegetation under the conditions of the period in determining the regions, and regional natural thresholds were not taken into account. Today, many provinces remain within the borders of more than one geographical region, as the borders of geographical regions do not overlap with the borders of provinces and districts, or as provinces later include different districts within their administrative borders (Figure 2, Figure 4).

Table 1. Geographic regions and divisions

Geographic region	Geographic division
The Aegean Region	Aegean Division
	Inner West Anatolian Division
The Mediterranean Region	Adana Division
	Antalya Division
The Marmara Region	Southern Marmara Division
	Çatalca-Kocaeli Division
	Ergene Division
	Yıldız Mountains Division
The Black Sea Region	Western Black Sea Division
	Central Black Sea Division
	Eastern Black Sea Division

Geographic region	Geographic division
Central Anatolia Region	Konya Division
	Upper Sakarya Division
	Middle Kızılırmak Division
	Upper Kızılırmak Division
Eastern Anatolia Region	Upper Euphrates Division
	Erzurum-Kars Division
	Upper Murat-Van Division
	Hakkari Division
Southeastern Anatolia Region	Middle Euphrates Division
	Tigris Division

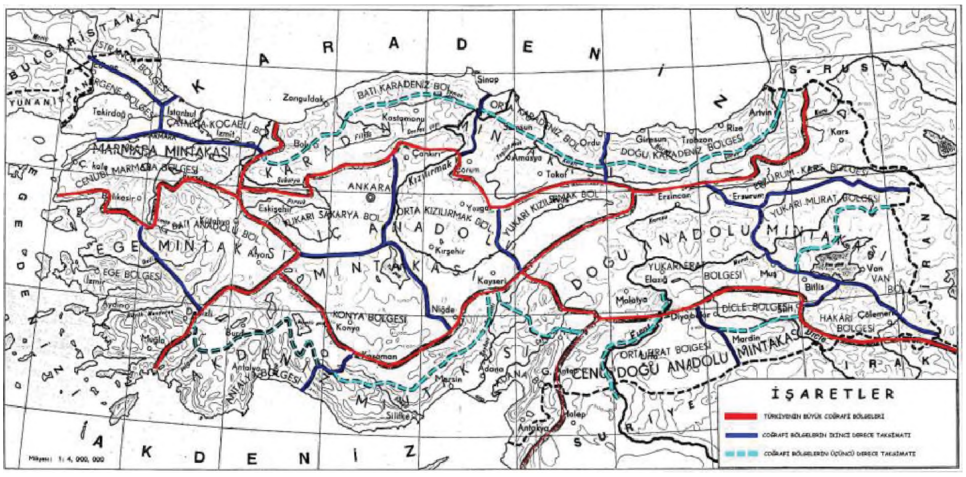

Figure 2. Geographical Regions of Turkey according to the First Geography Congress (1941) (Özçağlar, 2006)

In the 1950s, studies on rivers, plains, plateaus, etc. related to this problem at the borders of geographical regions and divisions were conducted. Criticisms were made on the basis that natural elements were not taken into consideration, it was pointed out that the geographical border between the Black Sea Region and the Eastern Anatolia Region was incorrect, and the borders of the Central and Western Black Sea geographical sections were incorrect, and discussions were made emphasising that the border between the Mediterranean Region and the Southeastern Anatolia Region should pass through the Euphrates River (Erinç, 1953; Gürsoy, 1957; Yiğit, 2006). In the 1980s, studies from foreign sources (Erol, 1983 and Louis, 1985) indicated that Turkey could be handled with different regional and departmental borders. On the other hand, from the 1950s to the 1980s, the number of districts established increased (Table 2); the borders of districts, provinces and regions have changed. However, these studies did not change the situation, and our geographical division has remained the same for 83 years.

In 1941, within the scope of division into geographical regions and sections, the country's population was approximately 18 million and consisted of 62 provinces and 401 districts. During this period, Turkey had 81 provinces, 922 districts, and a population exceeding 85 million (Table 2, Figure 3).

Regarding regional and province-district border disputes, although the administrative borders of 53 of the 81 existing provinces remain within a single geographical region, the administrative borders of 28 provinces are located in more than one geographical region (Figure 4). Apart from the provincial level, the administrative borders of 15 districts at the district level are located within different regional borders. This situation causes problems in regional approaches and district/provincial level urban planning

Table 2. Number of provinces and districts in Turkey by year (Ministry of Interior, General Directorate of Provincial Administration)

Year	Number of Provinces Established	Number of Districts Established
Before 1923	55	285
1923-1926	0	26
1927-1936	6	43
1937-1947	1	47
Late 1947 (subtotal)	**62**	**401**
1948-1958	5	119
1959-1969	0	37
1970-1981	0	0
Late 1981(subtotal)	**67**	**557**
1982-1992	9	276
1993-2003	5	16
2004-2018	0	73
Grand Total	**81**	**922**

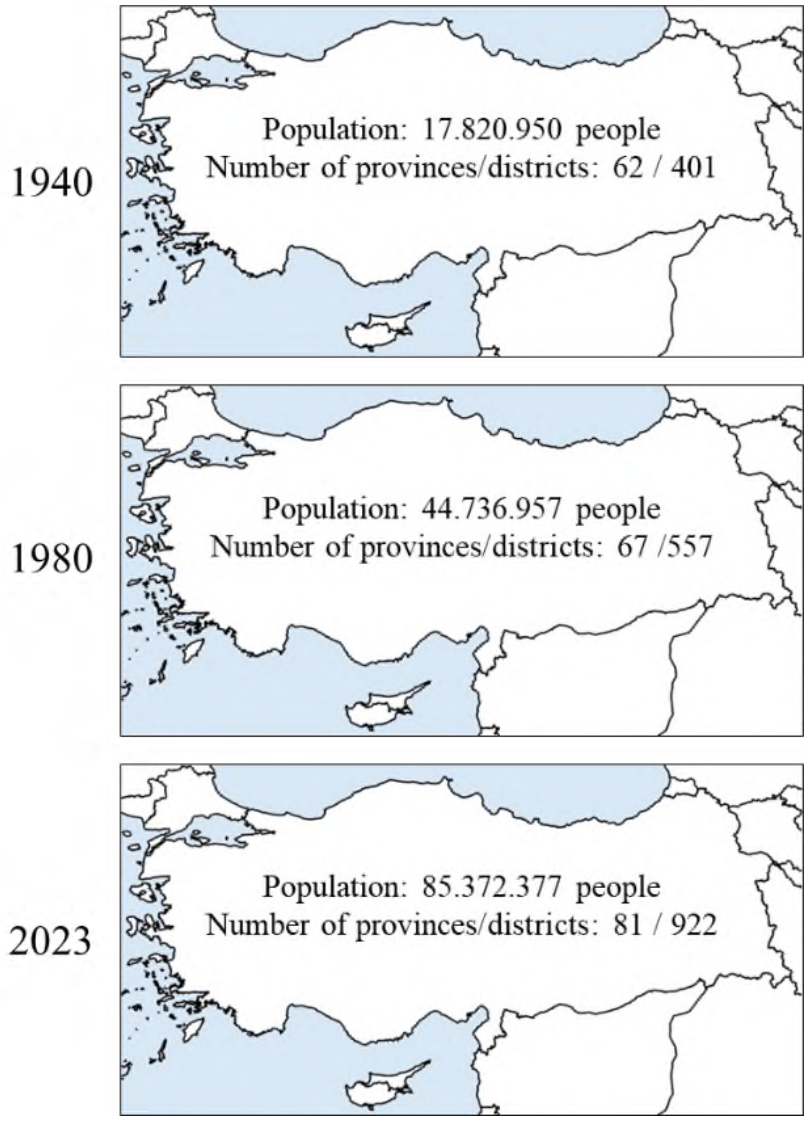

Figure 3. Population and number of provinces/districts in Turkey by years (1940-1980-2023)

studies, especially in obtaining and comparing quantitative data and statistical information. Because being located within the borders of more than one geographical region affects the relations between settlements and hinterland, residence-workplace, residence-service areas, sometimes a district or settlement is located outside the administrative borders within which it is located, but is closer to it and/or another geographical region and/or It may be related to the province. The partnerships, intercultural relations, similarities, and socioeconomic associations established with settlements located in different geographical regions on the map, but with which they have more relations than the province / geography to which they are administratively connected due to their natural and artificial thresholds, are increasing.

Figure 4. Turkey's geographical regions and provincial borders (The authors created the figure schematically adding geographical region and section boundaries to the provincial administrative boundaries.)

When the study "Hierarchy of Settlement Centres in Turkey - Country Settlement Centres System" was published by The State Planning Organisation in 1982 and is still valid, the country consisted of 67 provinces and 557 districts (Table 2), while the "township", "forest village", "hamlet", which are not valid today, were made. There were settlements with defined borders and characteristics such as. This hierarchy, dated 1982, consists of seven degrees, and the Istanbul Metropolitan Area is stated as the seventh level as the highest degree and the hamlets as the first degree as the lowest. However, the hierarchy criteria of the study differ within themselves. While the 1st, 2nd and 3rd level settlements were considered in terms of their administrative borders, cities after the fourth stage were evaluated according to the diversity of goods and services they offered.

Another important issue in this regard is the diversification and change of goods and services offered in the country since the 1980s, and the fact that the goods or services that were required to be present in a settlement in the mentioned years or the services that were an important development to offer are now invalid / ineffective and other services have replaced them.

For example, in the 1990s, while the presence of a PTT, even a mailbox, or a telephone in public spaces in a settlement was an important service for the settlement, in the early 1990s, with the introduction of mobile phones into daily life, base stations were located, different operators offered services, and mobile phone ownership increased. Hierarchy has increased in the settlements where it has increased, and academic research has been updated in this sense. Nowadays, cargo, moto courier, application usage, e-invoice, e-commerce, frequent use of e-mail, purposes of use, qualities of transported goods and presentations, etc. affect the hierarchy. Therefore, the evaluation criteria affecting hierarchy should be updated. Accessibility to technological and global developments only by settlements with high socioeconomic levels is another issue that needs to be discussed.

During the 2000s, when Turkey's negotiations to join the European Union (EU) gained momentum, the Nomenclature of Territorial Units for Statistics (NUTS) was effective in strategic planning in European countries to ensure compatibility with EU policies. In this application, which aims to produce regional statistics in the EU according to a single spatial classification, to form a basis for socioeconomic analyses and to determine the general framework of regional policies, administrative unit borders, area, and population sizes are considered.

This classification, which came into force in Turkey in 2002, was made according to the criteria of population size, socio-economic homogeneity, and being in the same functional region and geographical neighbourhood. There are differences between regions because the reasons are not considered using a holistic approach when determining the regions. In this classification, a classification has been made within the existing provincial and district borders and regions without introducing any new questions

about geography, natural structure, or new information. In this context, 81 provinces in Turkey are accepted as Level 3, 26 regions as Level 2, and 12 regions as Level 1 (Table 3).

Table 3. Statistical Regions in Turkey (Level I, II, III) (Ministry of Industry and Technology, Development Agencies Directorate)

Level I Code	Level I Region Name	Level II Code	Level III-Cities	Level I Code	Level I Region Name	Level II Code	Level III-Cities
TR1	Istanbul	TR10	Istanbul	TR7	Orta Anadolu	TR71	Kırıkkale, Aksaray, Niğde, Nevşehir, and Kırşehir
TR2	Batı Marmara	TR21	Tekirdağ, Edirne, and Kırklareli			TR72	Kayseri, Sivas, and Yozgat
		TR22	Balıkesir, Çanakkale	TR8	Batı Karadeniz	TR81	Zonguldak, Karabuk, and Bartın
TR3	Ege	TR31	İzmir			TR82	Kastamonu, Çankırı, and Sinop
		TR32	Aydın, Denizli, and Muğla			TR83	Samsun, Tokat, Çorum, and Amasya
		TR33	Manisa, Afyonkarahisar, Kütahya, and Uşak	TR9	Doğu Karadeniz	TR90	Trabzon, Ordu, Giresun, Rize, Artvin, and Gumushane
TR4	Doğu Marmara	TR41	Bursa, Eskişehir, and Bilecik	TRA	Kuzeydoğu Anadolu	TRA1	Erzurum, Erzincan, and Bayburt
		TR42	Kocaeli, Sakarya, Düzce, Bolu, and Yalova			TRA2	Ağrı, Kars, Iğdır, and Ardahan
TR5	Batı Anadolu	TR51	Ankara	TRB	Ortadoğu Anadolu	TRB1	Malatya, Elazığ, Bingöl, and Tunceli
		TR52	Konya, Karaman			TRB2	Van, Muş, Bitlis, Hakkâri
TR6	Akdeniz	TR61	Antalya, Isparta, and Burdur	TRC	Güneydoğu Anadolu	TRC1	Gaziantep, Adıyaman, and Kilis
		TR62	Adana, Mersin			TRC2	Şanlıurfa, Diyarbakır
		TR63	Hatay, Kahramanmaraş, and Osmaniye			TRC3	Mardin, Batman, Şırnak, and Siirt

Figure 5. Geographical Regions of Turkey and NUTS Level I Regions (the authors created the figure schematically adding geographical region and section boundaries to the NUTS regions.)

The geographical borders of 1941, the settlement classification of 1982, and the Nomenclature of Territorial Units for Statistics (NUTS) of 2002 have resulted in data whose criteria do not support each other, whose borders do not overlap, whose authorities differ, and whose statistical data cannot be compared (Figure 5).

As can be seen in Figure 1 and Table 2, after the classification of all these regions, in 2012, 30 metropolitan municipalities were formed with border changes made by Law No. 6360 on the Establishment of Metropolitan Municipalities in Fourteen Provinces and Twenty-Seven Districts and Amendments to Certain Laws and Decree Laws. After 32,247 neighbourhoods and 18,253 villages, 81

provinces and 922 districts were reached within the borders of the country (Ministry of Internal Affairs Turkey Civil Administration Departments Inventory, 2024) (Figure 6).

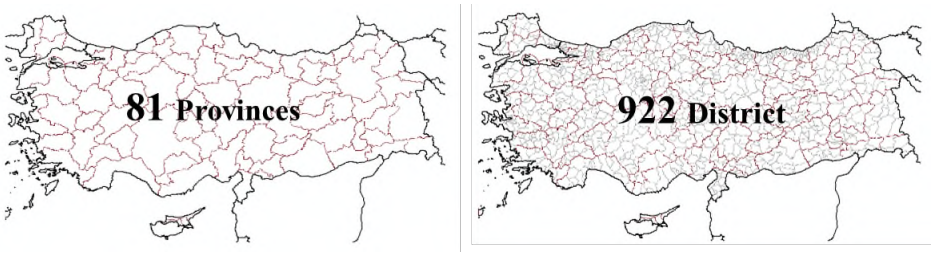

Figure 6. Administrative borders at the provincial and district levels in Turkey

Another criterion used in urban planning studies to determine the role, identity, and future mission of settlements within the region is socioeconomic development levels. Socio-Economic Development Ranking Research (Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırmaları - SEGE) studies are prepared at the provincial and district level by the Ministry of Industry and Technology. These studies are carried out intermittently to determine the development levels and trends of districts, provinces, and regions.

Provincial level Socio-Economic Development Ranking Researches of Provinces and Regions were prepared in 1969, 1972, 1980, 1985, 1991, 1996, 2003, 2011, and 2017. In 2017, Socio-Economic Development Ranking Research (SEGE) measured socio-economic development through 52 variables for 81 provinces. With the research, the index scores and ranks of Level-2 regions and provinces were determined, according to the natural breakdowns in the scores; Provinces are grouped in 6 development levels, and Level-2 regions were grouped into four development levels (Figure 7). However, considering the periodic intervals of the years in which the studies were conducted, it is seen that they were not conducted at standard intervals and were last conducted in 2017.

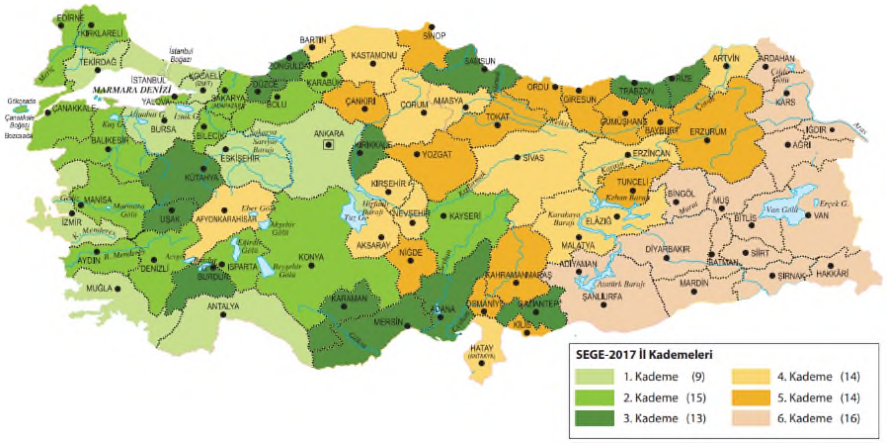

Figure 7. Provincial level SEGE in 2017 Map of Development Levels (Ministry of Industry and Technology, General Directorate of Development Agencies)

District-level Socio-Economic Development Ranking Research was prepared in 1966, 1981, 1985, 1996, 2004, 2017, and 2022. In 2022, Socio-Economic Development Ranking Research (SEGE) will measure socio-economic development through 56 variables for 973 districts. In the research, the index scores and ranks of the districts were determined according to the natural breakdowns in the scores; The districts were grouped into six development levels (Figure 8). Since the studies conducted at the district level and the socioeconomic development level studies conducted at the provincial level were conducted on different dates, it becomes difficult to compare and make inferences about the province-district dynamics.

In the studies in question, socio-economic development of the provinces and districts; It is discussed within the framework of the basic variables of demography, employment and social security, education, health, financial, competitive and innovative capacity, quality of life, and accessibility.

In 2020, the study “Urban and Rural Settlement Systems Research in Turkey (YER-SIS)” was conducted to reveal the effects of developments on settlements, to analyse the direction and intensity of relations between urban and rural settlements, and to reveal the service delivery sizes and areas of influence of settlements by the General Directorate of Development Agencies of the Ministry of Industry and Technology. As part of this study, the "Interprovincial and Regional Socio-Economic Network Relations Report" was prepared. The aim of this study is to determine the socioeconomic horizontal and hierarchical relations between settlements, to determine the intensity of the relations that settlements establish with each other with different needs, and to reveal their positions and importance in the network by examining these relations within the "network approach".

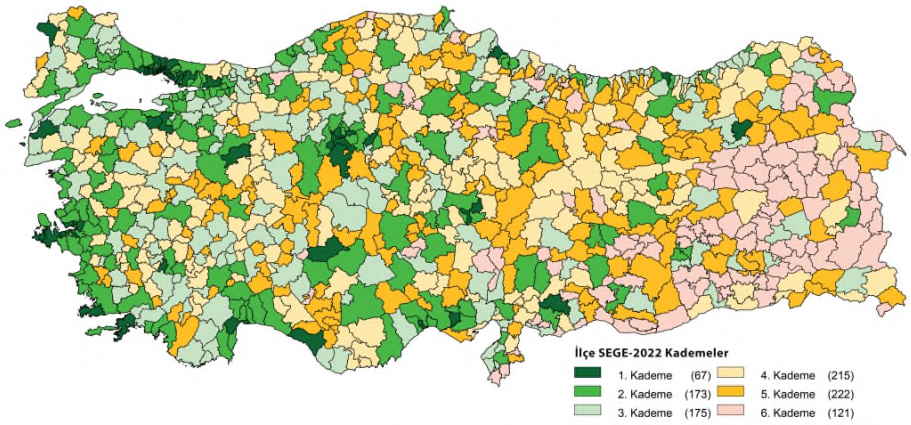

Figure 8. District-level SEGE in 2022 Map of Socio-Economic Development Levels(Ministry of Industry and Technology, General Directorate of Development Agencies)

Mersin–Anamur District as an Exemplary Settlement

Mersin is a city located in the Mediterranean Region in the south of Turkey, adjacent to the provinces of Karaman, Konya, and Niğde in the north, Adana in the east, and Antalya in the west, consisting of 13 districts and with a coastline of 321 km to the Mediterranean. Anamur District of Mersin Metropolitan Municipality, located in the west, which was examined in terms of inter-settlement relations within the scope of this research, is approximately 206 km from the city centre and approximately 3 h away on the D-400 highway, which is parallel to the coast. The fact that the district is related to the Gazipaşa District of Antalya Province, which is located in the west at a distance of approximately 80 km and can be reached in 1 h and 20 min, is one of the many settlements that can serve as an example of this problem (Figure 9). In this case, while Anamur District is located within Mersin Province for all kinds of interaction due to administrative dependency, its economic, social, and cultural relations are with Gazipaşa District of Antalya Province, making Anamur's development, global connexions and accessibility different when evaluated together with Antalya and different centres affects the results to be achieved. This situation is interpreted in different ways in regional development and provincial strategic and environmental plans. In fact, in the Çukurova Regional Plan (2014-2023) covering the provinces of Mersin and Adana (TR62) prepared by the Çukurova Development Agency, Anamur District has no relationship with either the central districts or other regional centres of Mersin in terms of socio-economic relations and is defined as a relatively low-level centre in its sub-region (Figure 10).

Figure 9. Anamur District's Relationship with Mersin Centre and Gazipaşa District (The Figure created by authors.)

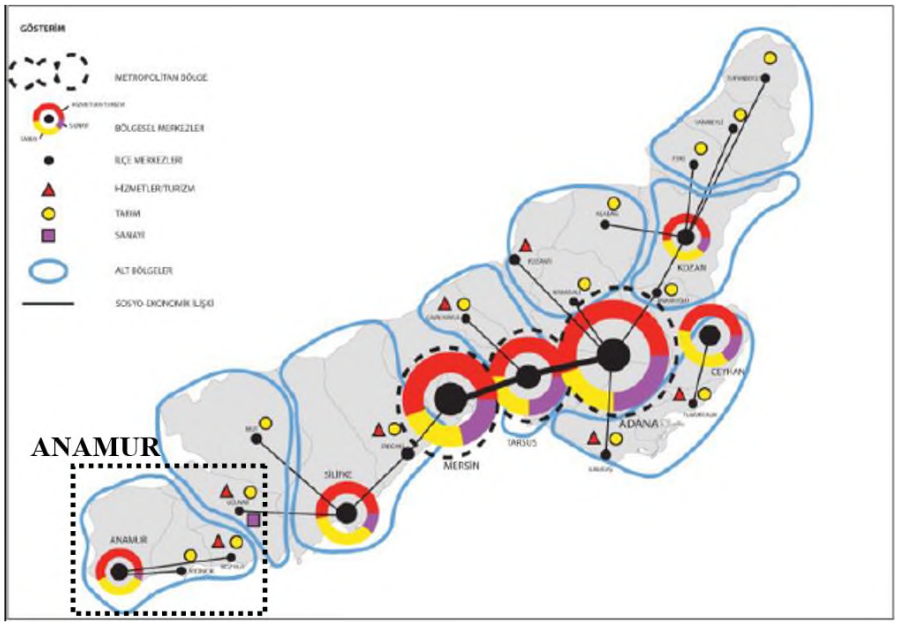

Figure 10. Metropolitan Centre, Sub-Regions, and Anamur District in the Çukurova Region (Çukurova Development Agency 2014-2023 Çukurova Regional Plan)

Legal Systems and Institutions Regarding Hierarchy in Urban Planning

Regarding inter-scale hierarchy, which is one of the most basic elements of urban planning, in the Third Chapter of the Spatial Plans Construction Regulation, titled Spatial Plan Hierarchy and General Principles, there is a hierarchical unity of plans according to the 2nd paragraph of Article 6, where spatial planning stages and relations are discussed:

"Article 6 - (2) Spatial plans are prepared in accordance with plan staging. In accordance with the principle of hierarchical unity between plans, each plan must comply with the decisions of the upper level plans in force, form a whole with its report, and direct the plan at the lower level."

According to this article, each plan level must comply with previous upper-scale plan decisions and, in principle, reflect the decisions on the lower-scale plans.

The hierarchy relationship between scales is important to ensure the integrity of plan decisions, and 1/100,000 scale Environmental Plans are accepted at the top level of upper-scale spatial plans. However, the boundaries of 1/100,000 scale plans differ according to Statistical Regional Units, such as those prepared by Development Agencies, those prepared by the Ministry of Environment, Urbanisation and Climate Change, and those prepared by Metropolitan Municipalities within the provincial borders. In fact, because plan changes and revisions are made at short intervals, such as two or three years, this causes problems in compatibility with subscale plans.

Regardless of the scale and settlement boundaries within which City and Regional Planning studies are conducted, within the scope of the analysis required by the plan scale, it is mandatory to obtain opinions, information, ongoing projects, projects that are being conducted, projects that are planned to be conducted, and the problems of the area from the institutions and organisations related to the plan.

In paragraph j of the first paragraph of Article 7 of the section on General Planning Principles of the Spatial Plans Construction Regulation published in the Official Gazette No. 29030 dated 14.06.2014:

"In the preparation of plans, it is essential to obtain the opinions of institutions and organisations and relevant parties by using methods such as surveys, public opinion polls and research, meetings, workshops, announcements, and information on the Internet to ensure participation according to plan type.",

In the first paragraph of Article 8 in the Principles on the Making of Spatial Plans section:

"In the process of preparation of spatial plans, plan changes, revisions and additions, public institutions and organisations or plan authors obtain data, opinions and suggestions from relevant institutions and organisations on the subjects specified in general headings in this Regulation, according to the type and level of the plan, and carry out the necessary analysis, surveys, research and studies are carried out."

Expressions is included.

These institutions are especially important in making decisions that affect upper-scale plans and their projections, lower-scale plans, investment decisions, and projections. Differentiation of jurisdictions/authority limits of institutions and organisations makes it difficult to obtain data within common borders. Because the projection years and project boundaries of the projects produced by the institutions in question vary, it is not always possible to make sound decisions.

For example, the Ministry of Agriculture and Forestry conducts studies on agricultural lands, agricultural forest regions, agricultural basins, Turkey's Agricultural Basin borders, Ministry of Agriculture and Forestry Regions, Turkey River Basin borders, and the Directorate General for State Hydraulic Works (DSI)'s authority borders, areal sizes, and different province and district settlements (Figure 11). The differentiation of agricultural areas, basin borders, and thresholds according to institutions, which are expected to be highly defined and effective in determining the boundaries in question, creates problems in evaluating the data needed in urban planning studies.

Figure 11. Ministry of Agriculture And Forestry Affairs Borders of Turkey's Agricultural Basins, Regions of the Ministry of Agriculture and Forestry, Borders of Turkey's River Basins, and the authority limits of the Directorate General for State Hydraulic Works (DSI) (The figure was created by combining the regional maps obtained from the websites of the relevant institutions (Ministry of Agriculture and Forestry, Directorate General for State Hydraulic Works).)

Another example of receiving institutional opinions is the jurisdiction of different transportation modes such as Highways and State Railways under the transportation heading, as well as the intersection of different provincial borders. It is understood that the upper-scale plan decisions in question are not taken into account in the lower-scale urban planning studies of the cities, which cover different geographical regions and sub-regions and do not carry out coordinated studies and sharing with the settlements they pass through (Figure 12).

Figure 12. General Directorate of Highways Regions: 18 regions (Ministry of Transport and Infrastructure General Directorate of Highways)

Another differentiation regarding boundaries is the theoretically defined and accepted bounded areas that are emphasised in scientific studies at the academic level and during urban planning education, such as “sub-region”, “district”, “neighbourhood (different from administrative size)”, “neighbourhood unit”, “small neighbourhood unit”.

Settlement Characteristics Affecting Hierarchy

Up to this section, the studies that are in force in Turkey and affect the classification of settlements have been explained. The most important issues that need to be taken into consideration in "hierarchy" research, where quantitative values are mainly based on administrative boundaries, are the natural structure and the economic factors related to the natural structure.

These are the settlements where geography-based boundaries are effective, considering the natural structure, which is the main subject of this study. Typologies of settlements, goods and services offered in the settlement, the qualities of these services and the change in their qualities, areas of influence, access to services, public/private sector investments in the settlement, and their sustainability are related to staging. The subject of natural structure-geography changes in the context of the "settlement hierarchy" in the context of the locations of the settlements, their macroforms, and their relationships with the topography.

This difference directly affects the economic and social structures of the settlements, the demographic structure, and the components of the demographic structure. Not every settlement legally defined as "village" or "rural", for example, is considered to be at the same level within the system of settlements, even if their population size is the same. Even the location of coastal settlements on the shores of rivers, lakes, or seas impacts the level of settlement. The fact that settlements and cities are on the coast, in coastal plains, on slopes, on hills, in mountains, in forests, or near forests affects the labour potential, livelihoods, and natural economic structures of these settlements.

In Conclusion

In this research article, the relationship of "hierarchy", "borders" and "study area / planning area boundary", which have an important place and meaning in City and Regional Planning studies, is discussed. The institutions and organisations in Turkey and the Spatial Plans Regulation and the current ones made on different dates are also discussed. The incompatibility of the current criteria with each other and the effects of this incompatibility on urban planning are revealed.

Within the scope of this study, in which some findings of the research are presented, settlement typologies, changing qualities of the goods and services offered by settlements, risks such as natural disasters that will affect the future of settlements, and global climate change are also discussed.

Apart from the population and area size of a settlement, its current and future role in revealing international sub-regions, national and regional relations, sustainability within the scope of different scenarios, and the determination of geography and natural structure should be accepted as inevitable in the preparation processes of plans dominated by public interest facts.

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