

## Research Article

# The Role of Urban Sustainability in Placemaking: Measuring the Urban Dimension

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**Abstract:** The research sheds light on the importance of the role that urban sustainability plays in placemaking, where the research discussed the principle of including sustainability at the urban level in its comprehensive concept, which includes the economic, environmental, and social dimensions in the placemaking process to reach sustainable models of urban places that are environmentally friendly and inexpensive or consuming energy sources. Renewable and more appropriate to the cultures and values of the local community, and the researchers emphasized that reaching an urban place-based on sustainability will contribute significantly to adapting to the problems of climate change, the shortage of energy sources and its high cost, reduces environmental pollution problems, increases the efficiency of the use of spaces and meets the different needs of its users. The primary research data were obtained for the selected samples (Salhia Residential Complex and Al Salam Residential Complex) using a questionnaire as a tool consisting of a set of questions directed to 20 people who were identified according to the experience and objectives of the study. And coming out with the conclusions of the practical study that showed that the process of a sustainable urban placemaking is dynamic and that by its nature it supports continuity and compatibility with the environment. However, there are complementary principles, foundations, and goals added from a sustainable perspective to reach urban spaces that are more compatible and responsive to the current challenges.

**Keywords:** Environmental Pollution, Climate Change, Sustainable Urban, Urban Space.

## 1. Introduction

The world has witnessed a growing interest in the concepts of placemaking and urban sustainability to provide the best services to the human being and improve the quality of life by making places livable and competitive in response to contemporary global challenges such as environmental, economic, cultural, social, security and health challenges [1]. Some believe that there is a discontinuity between the process of creating a place and urban sustainability. They are separate concepts that work in isolation from the other. Still, they are largely interrelated as there is a relationship between urban sustainability goals and principles of placemaking because the goal of sustainability is to create a sustainable place

that achieves a better quality of life for the population and provides a healthy climate and environment, social and economic well-being, and safety [2].

Sustainability added the participatory design principle by integrating the local community into the decision-making process through several mechanisms such as questionnaires, opinion polls, personal interviews, and discussion sessions on social media [3]. The goal of preserving local identity and culture, preserving water resources, recycling waste, reducing pollution by reducing the use of non-renewable energy sources, relying on local raw materials, and encouraging traditional crafts and small projects by integrating them in urban areas has been added [4]. As for the conceptual level, the theory of

sustainability in the placemaking expressed the required balance between what is available and what is required to take place from the environment only as much as it needs without violating future generations' rights. The research idea appeared in a statement of ways to activate urban sustainability principles in the manufacture of a sustainable place. The research's general objectives were crystallized in building a comprehensive theoretical framework on the role of urban sustainability in placemaking. The research deals with addressing the general problem of the research represented by (the existence of discrepancies in the production of urban places as a result of the lack of integration of the principles, principles, and objectives of urban sustainability in its relationship with the principles, principles, and goals of the urban placemaking) and the goal of the research were defined in (First: Verifying the levels of the relationship between urban sustainability and the urban placemaking. Second: To reach a knowledge base for the concepts of urban sustainability and space-making at the level of principles, goals, and strategies). In achieving its goal, the research was based on the hypothesis: (The research assumes a common vocabulary that contributes to the integration of the relationship between urban sustainability and urban placemaking). Therefore, the research seeks to build a knowledge model that unifies urban sustainability and urban placemaking.

## 2. Literature Review

### 2.1. Concept of Urban Placemaking

The term placemaking is a relatively new term. However, it reflects the traditional and familiar concept to it, meaning that it is the effectiveness of transforming space into a place that enables people to communicate and feel welcome and polarized. Space becomes a place when it is intended, that is when it contains a specific function or activity that is either through Reforming the existing urban fabric or by building new activities according to urban design principles and strategies. The concept of placemaking began as a response to the loss of a sense of place in urban spaces resulting from the spread of modern planning principles, which made cities lose their identity and make them devoted to the vehicle at man's expense [5]. It strengthens the connection between members of society and the places they share, as it is a cooperative process through which the surrounding environment is reshaped to achieve maximum shared values, and it pays special attention to cultural and social identities [5].

It is the field that is concerned with the art of placemaking for people, and the concept of place has been linked to man, and urban design is what meets the needs of man by the urban designer in the direction of achieving

these needs, so the urban design is concerned with making and producing a place that is for everyone and easy to use and reach [6].

### 2.2. Urban Sustainability

Sustainability, in general, is meeting the needs of the present without affecting the requirements of the future, and sustainable development includes various fields such as agriculture, sociology, economics, politics, and the environment. The concept of sustainable architecture came to represent an extension of these applications with their various implications, given the fact that multiple human needs represent a common factor among all disciplines [7], [8]. The concept of sustainability in architecture has expanded to include sustainability at the level of urban planning, which deals with urban and spatial formations affecting urban development that achieve continuous compatibility with changing needs and urban systems, The concept of sustainability in architecture has expanded to include sustainability at the level of urban planning which deals with urban and spatial formations affecting urban development that achieve continuous compatibility with changing needs and urban systems that define the foundations for sustainable urban planning through three basic elements affecting the composition of the urban fabric. It can be defined based on the three foundations of sustainability, environmental, social, and economic [9].

It means urban sustainability in terms of the environment: it aims to encourage the design, implementation, and management of environmentally friendly buildings and reduce the negative impact of the building on the natural environment and on a structurally and functionally sound environmental system, in addition to preserving nature from waste and pollution, and at the same time benefiting from these wastes through Recycling and renewal and preserves fixed assets of natural resources and avoids the over-depletion of renewable and non-renewable resources, and this means their dependence on alternative and renewable energy sources to reach a reduction in their environmental footprint with less production of pollutants, more efficient use of urban land, greater reliance on recycling processes, and from Then reduce the city's contribution to climate change.

- Urban sustainability means from the social point of view: achieving social sustainability represents the human dimension because it lies in preserving the sustainable social and cultural identity from the depth of the nation's civilized legacy by discussing the method of adapting the local environment to the trends of sustainability. Make cultural and social determinants the basis of the sustainability process. It is concerned with creating urban systems that have

longer viability, a better quality of life, and sustainable self-sufficiency so that the development processes do not go beyond the limits of the carrying capacity and the ability to replenish the natural resources system of that society.

- As for the economic aspect: it means the ability to use economic resources optimally so that it can contribute to meeting the requirements of society at present and future time through investment in employees, providing job opportunities, investing in the future, and supporting national economic growth, it aims to achieve a reduction Cost by improving efficiency, reducing energy use, and introducing naturally occurring raw materials.

### 2.3. Sustainable Urban Placemaking

The definition of placemaking has evolved in terms of its concept and what it is over time, and many dimensions have been added to enrich this definition to make it more compatible with the era in which it appeared. To the modern requirements that have emerged, although the placemaking by its nature is a sustainable design that represents the harmonious relationship between the place and the surrounding environment, in years The previous one witnessed a great development at the conceptual level, the purpose of which was to save the environment from the negative impacts on it through a set of complementary principles and standards that were added to the placemaking to achieve sustainability more effectively as the goal has become to reach environmentally friendly places that are consumed from their sources from natural sources.

Sustainability in the placemaking is a complementary theory to reach the goal of creating qualitative places that are attractive and effective, healthy, and efficient places for society in order to create a state of balance and recast the determinants and elements to consider environmental quality considerations in the design and control the process of consumption and depletion of resources so as not to affect the right Future generations. Sustainability added environmental, social, economic, technical, urban, security, cultural, and health dimensions to the goals of the placemaking to achieve the required integration between the various goals.

It is a process whereby environmental considerations are considered in the design, planning, and management of the built environment. Furthermore, a philosophical approach concerned with the aesthetics of the place such as space containment, proportions, scale, texture, and proportions and works to reduce energy and resource consumption and is compatible with the surrounding environmental and climatic conditions through positive environmental practices that aim to reduce the

environmental impact, enhance the health of users and improve the economic situation by reducing the consumption of energy, materials, and resources and enhancing Equality and social justice. Sustainable places are required to be based on the principle of balance between environmental, social, and economic goals, and they must have:

- 1) A healthy environment by minimizing the negative impact of the activities on human health and the environment by eliminating toxic materials and reducing solid and liquid waste and environmental emissions.
- 2) Raise the place's economic level by reducing energy consumption, conserving resources, using renewable raw materials, and efficient environmental management.
- 3) Creating living, welcoming places that encourage knowledge and innovation and enhance social interaction opportunities among the population.

#### 2.3.1. Dimensions affecting the sustainable urban placemaking

Several influencing aspects in the placemaking differ in their dominance according to the location, function, and objectives of the place, limiting environmental, economic, cultural, social, functional, urban, recreational, urban, health, and security aspects.

- 1) Social aspects related to placemaking.

The most important features of sustainable societies are those that provide a sense of societal well-being, security, and community justice as well to empower the local community by giving priority to the views of local communities in place-making plans through:

- Active participation in the process of designing a place for people and local communities by expressing an opinion and clarifying the actual material and moral needs of local communities, which in turn enhances social capital [10].
- Respecting local cultures and values, customs, and beliefs and expressing them through creating the urban space.
- Applying the principle of mixing in land uses because it has an important role in increasing social interaction between residents, achieving a hierarchy of the road network, reducing walking distances, and achieving fairness in distributing services among the local population.
- Achieving public benefit by creating job opportunities simultaneously with residential growth.
- Creating an urban society based on flexibility and adaptation to what is new and what is existing.
- Adaptation and harmony of the local context with the existing pattern.

- Promoting social justice in the distribution of wealth, opportunities, and social services.
- Creating social events that reflect the moral values of the place [11].

#### 2) Environmental aspects related to placemaking.

The impact of the environmental dimension on making an environmentally sustainable place contributes to:

- Providing a healthy environment by minimizing the negative impact of the activities based on it on human health and the environment by eliminating toxic materials and reducing solid and liquid waste and environmental emissions.
- Balance with nature in terms of mixed-use of lands and achieve an economy dependent on the place that does not lead to the consumption of natural resources or to increase the production of waste more quickly than the natural environment can absorb.
- Preserving the environment and enhancing the interactive relationship between the place and the surrounding environment [12].
- Preserving environmental diversity and enhancing it for future generations.
- Preserving water resources, biodiversity, and green fabric.
- Optimal use of energy and reliance on clean energy sources.
- Waste treatment, recycling, and reuse of water from buildings.
- Reliance on local materials for implementation [13].
- Resilience and resilience in the face of environmental changes and adaptation - maintain the quality of life in urban areas.
- Transforming urban places into the living, welcoming places that encourage knowledge and innovation.
- Focusing on the relationships between population activities and the environment, a relationship of complementarity and harmony [14].

#### 3) Economic aspects related to the placemaking.

Urban economic indicators have emerged as an important tool for measuring the extent to which the place meets economic needs without causing more environmental collapses and maintaining a certain level of social justice through:

- Designing a vibrant place, which in turn is a key to economic success and provides more passers-by and tourists, which increases economic activity in the place [15].
- Local industries and traditional crafts increase economic activity and job opportunities for local communities.
- Reducing cost, improving efficiency, and lower energy consumption.

- The community's self-sufficiency will enable the government to move towards meeting complementary needs, such as continuing education and social services.
- Providing local job opportunities that lead to the survival of the capital in the local community itself and lead to reducing or controlling the leakage of capital out of the community
- Diversity and multiplicity of work opportunities in the place
- Places of competitive advantage, encouraging local activities and events
- Enhancing the economic identity of the place [16] (15)

#### 4) Technical aspects related to placemaking.

It is considered one of the most important aspects that must be provided in the place, which is a basic pillar of the sustainability of the place, including: the development of means that achieve a renewed view to activate the idea of sustainability in line with the spirit of the times and the requirements of the stage, and it has been possible to extract the role of modern technologies in achieving the concept of the sustainability of the place within several levels, including what concerning the design, as if the place is designed to last long and perform its role all the time and be resistant to natural disasters, and that the place achieves the maximum rates of investment for energy, water and materials, as well as for the place to be able to self-sufficiency in energy and to be flexible and accept modifications and changes in the future, as well as to avoid damages with regard to building materials, the maximum use of renewable building materials must be provided, with the necessity to use durable materials and products, choose energy-saving materials, and then use recyclable materials. As for the site, the site's wealth must be evaluated, along with the use and re-operation of existing buildings.

After rehabilitating it, then signing the building and directing it in a way that reduces the burden of changing environmental conditions on it. It also includes employing modern technology to serve society's goals and using cleaner technology in industrial facilities. The introduction of contemporary technologies within the space, such as lighting, interactive visual aids, relying on smart technology and computers, and resorting to natural energy generation methods, water reuse, and thermal insulation.

#### 5) Cultural aspects related to placemaking.

The placemaking is concerned with preserving the local identity and historical places and integrating them within contemporary frameworks and encouraging tourism development through the sustainability of historical places and their maintenance, reuse of historical buildings, and reviving cultural events and activities. Placemaking based on art and culture shapes the urban space around the arts

and related cultural activities. With the region's culture, it gives the place a local identity based on art and culture. Creating public spaces for cultural events, festivals, and preserving the local identity [16].

6) Urban aspects related to placemaking [17], [18].

- Bringing life to life by creating a vibrant place. Furthermore, it achieves urban interconnection (with the shops and surrounding sectors) and creates undivided places that are interconnected and connected between them.
- Enhancing the place's continuity and inclusiveness by creating a visually, physically, and functionally continuous place.
- Enhancing the visual complexity and difference of the components that make up the physical body of the place.
- Emphasizing flexibility and innovation by creating a place that is easy to change and develop.
- Quality of public transportation and ease of access and transportation
- Encourage walking
- Encouraging condensation and mixed-use
- Furnishing streets and public spaces, good lighting, guiding signs, and providing green spaces.
- Existence of an urban centre or centers with various activities.

### 2.3.2. Sustainable Urban placemaking indicators

Through the theoretical framework and previous studies, general indicators of sustainable placemaking can be included as follows:

- Not only does it reduce energy consumption and reduce environmental impact, but it also reduces construction costs and maintenance costs.
- It creates a pleasant and comfortable work environment that supports an active and healthy lifestyle.
- It improves the health of the users and raises their productivity rates,
- Design suitability to the ecosystem and cultural context.
- Responding to environmental factors.
- The use of specialized and appropriate technology for functional needs, such as energy conservation and others.
- Using renewable building materials to the maximum extent possible.
- Avoid using energy intensively because it threatens the environment.
- Creating opportunities for reuse of materials and recycling of construction debris.
- Flexibility, innovation, and future expansion and adaptation of use.

- Respecting the site's natural and cultural resources and minimizing the negative impacts of any design.
- Promoting cultural and social activities that reflect the moral values of the place and preserving the local identity.

### 2.3.3. Mechanisms for Sustainable Urban placemaking

There are a set of mechanisms in sustainable placemaking that must be considered [19]:

- It establishes the social, ethical, and economic values and the deep-rooted customs of society, as it must reconcile in the connection between the past and the present and societal visions.
- A good measure of sustainable urban space.
- Intensification, diversity, multiple options, and encouraging mixed-use.
- Personal and local character, highlighting the architectural identity of the region.
- Preserving the natural environment, integrating the building with the surrounding context, and preserving environmental diversity.
- Efficient and effective management placemaking must ensure that the available resources are used and directed.
- Creating a sustainable place requires societal strategies led by local and global partnerships.

Placemaking contributes to the development of the urban form by restoring and strengthening urban centers, creating vital places, and employing public art to enrich the urban landscape through the presence of an urban centre or centers with various activities and diversity in the uses of the land and urban interconnection (with the shops and surrounding sectors).

## 3. Research Methods

### 3.1. Data Process and Analysis

Two domestic testing projects were selected; The research represented by (the existence of a common vocabulary in integrating the relationship between sustainability and placemaking). From projects that are grouped to create commercial enterprises. The vocabulary of the urban dimension: (0) unrealized; (1) a weak role; (2) an acceptable role; (3) an average role; (4) a good role in making a sustainable urban place, and then calculating the verification ratios within the Program Microsoft Excel.

### 3.2. Location Study

#### 3.2.1. Nisan Residential Complex 28 (Al Salhiya)

Located on Abu Nawas Street along Haifa Street on Al-Karkh - Al-Salhiya was implemented in 1983, established on an area of 36 hectares (580 x 621 meter). The project

penetrates the main street with a width of 50 meters, an extension of the Al-Senak Bridge. The project contains cultural buildings, parking lots, markets, and social centres. Components of the project, the residential area, includes residential buildings, Cultural buildings, central buildings, shelters, unmarried people's housing, commercial area, offices and markets, Public services: educational, health, religious, infrastructure.

Complex details: The complex is designed in the form of four main residential stores: the northern, southern, eastern, and western neighbourhoods, interspersed with children's playgrounds, green areas, and pedestrian paths that do not intersect with car roads to ensure the safety of residents and children while they are moving within the residential complex, and the design of the car routes surrounding them for the project has been considered. Furthermore, linking the residential sectors, and the car parks are branched out of them, as these parking lots are not more than (80 meters) at the entrance to the residential buildings. Apartment and the number of apartments in each locality depend on the number of residential buildings and their height. The number of residents in the complex is about 13800, about 3300 residents for the northern residential locality, 4050 residents for the southern residential locality, and 2880 for the western residential neighbourhood, while the number of residents is about 3570 residents for the residential locality with a population density of 383 people/hectare.

### 3.2.2. Al-Salam Neighborhood Residential Complex

The complex is in the Al-Bayaa area on a relatively small area in the western section of the second Karkh side of the city of Baghdad and is adjacent to the north by the industrial district and the al-Amil neighborhood and separated from them by the highway, and from the east are Al-Risala neighborhood and Al-Saydiyah district and from the south are the police areas and the Al-Shuhada neighborhood and Al-Alam. At the same time, from the west, Tabuk neighborhood and officers and jihad neighborhood areas. It was implemented in Baghdad in 1985, consisting of residential buildings with three floors adopted to construct the pre-fabrication system. It is an integrated residential complex that includes a vertical residential complex and includes all basic services such as schools, kindergartens, public and administrative services, markets in addition to car parks, and is a good example of pre-fabricated residential complexes In Iraq (depending on residents' point of view and the demand for housing units in it).

This neighborhood's construction is distinguished by its pre-cast type, which is distinguished by its high-quality durability and wonderful architectural design. Furthermore, its construction was supervised by Indian and Western

companies, and it was implemented as a model neighborhood identical to the latest in Europe.

## 4. Result and Discussions

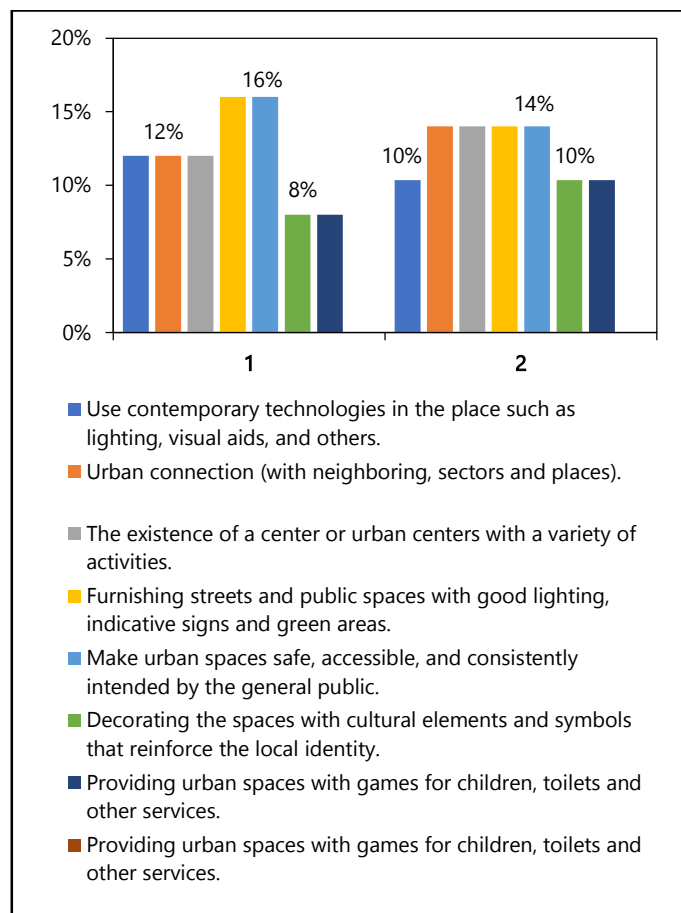
The development of the contemporary city essentially concerns various aspects of life. Development is a process of change state from state to state in that time different. The development and growth of the city went very well dynamic. According to Catanese [20], factors that can influence the development of this city can be physical or non-physical factors

The concept of thought is based on the movement or movement of the population in an area or people's movement out of a certain area. The movement or displacement of the population is caused by one component of the ecosystem that is not functioning properly, resulting in imbalances in the local ecosystem and the occurrence of new ecological adaptations for residents who move from their home areas to new areas (urban).

**Table 1.** Survey results of the urban dimension

Category	Indicator	Number
Urban Sustainability A1-6	Use contemporary technologies in the place, such as lighting, visual aids, and others.	A (1-6)-1
	Urban connection (with neighboring, sectors, and places).	A (1-6)-2
	The existence of a center or urban center with a variety of activities.	A (1-6)-3
	Furnishing streets and public spaces with good lighting, indicative signs, and green areas.	A (1-6)-4
	Make urban spaces safe, accessible, and consistently intended by the public.	A (1-6)-5
	Decorating the spaces with cultural elements and symbols that reinforce the local identity.	A (1-7)-6

It is evident from the analysis results that all indicators contribute to achieving the urban dimension in both projects, but in varying proportions, as shown in Figure 1. For comparing the impact of indicators, the percentages achieved within the projects were found as follows:



**Figure 1.** The percentages of achieving urban sustainability in the placemaking. (1) Al Salhiya Residential Complex; (2) Al-Salam residential complex.

Urban sustainability is represented through variables (the introduction of contemporary technologies within the place such as lighting, visual aids, etc., urban interconnectedness (with the neighboring shops, sectors, and places), the existence of an urban center or centers with various activities, furnishing streets and public spaces with lighting, visual signs, and green areas, making urban spaces Safe, accessible and constantly intended by the general public, furnishing the spaces with cultural elements and symbols that enhance the local identity, afforesting urban spaces with appropriate trees and plants, equipping urban spaces with toys for children, toilets and other services).

The application results revealed that the singularity (the introduction of contemporary technologies within the place such as lighting, visual aids, etc.) was achieved by 12% in the H<sub>1</sub> sample and by 10% in the H<sub>2</sub> sample. The terms (urban correlation (with shops, sectors, and neighboring places), the existence of an urban center or centers with various activities) were achieved by 12% in the H<sub>1</sub> sample and 14% in the H<sub>2</sub> sample. It achieved the vocabulary (street furniture and public spaces with lighting, visible signs, and green areas, making urban spaces safe, available, and constantly intended by the public, by 16% in the H<sub>1</sub>

sample, and 14% in the H<sub>2</sub> sample. As for the vocabulary (furnishing spaces with cultural elements and symbols that enhance local identity, equipping urban spaces with toys for children, toilets, and other services.), It was achieved by 8% in the H<sub>1</sub> sample and 10% in the H<sub>2</sub> sample, as shown in Figure 1.

The quality of the living environment is one of the main dimensions of sustainable development [21]. Now, the focus of sustainability research is no longer limited to natural environmental issues in understanding global ecology (air quality, water, biodiversity, soil, minerals, and energy), but also on the human-built environment, such as buildings, infrastructure, open space, and historical heritage). Various aspects in urban spatial planning, such as the shape and structure of the city, vitality, city identity, city quality, respect for local cultural traditions and values, including historical heritage in the form of buildings that are an important part of sustainable development.

## 5. Conclusion

In light of the analysis of the results, it becomes clear the necessity of activating the urban dimension, which is one of the structural elements of a sustainable place in light of following planning policies and principles of sustainable urban design, making urban spaces safe, available and constantly intended by the general public, afforestation and equipping urban spaces with toys for children, toilets and other services and the necessity of an urban interconnection (with the shops, sectors, and neighboring places), the existence of an urban center or centers with activities and the provision of open spaces that achieve integration and social interaction between the population, the local community, and the surrounding environment, in addition to the emphasis on sustainable development as a key element in making a sustainable urban place within cities.

This is due to its effective indicators (the introduction of contemporary technologies within the place such as lighting, visual aids, etc., the existence of an urban center or centers with a variety of activities, the furnishing of streets and public spaces with lighting and visual signs and green areas, making urban spaces safe and available and constantly intended by the public, afforestation. Urban spaces with appropriate trees and plants) and their positive effects are acceptable to individuals, so when they are present, the place turns into a distinct and attractive place after it was neglected or lacking vitality. The vocabulary has achieved (street furniture and public spaces with lighting, visible signs, and green areas, making urban spaces safe and available. Moreover, it refers constantly by the general public, the afforestation of urban spaces with appropriate trees and plants (the highest proportions, followed by the vocabulary) (urban interconnection (with shops, sectors

and neighboring places), the existence of an urban center or centers with various activities), as for the vocabulary (the introduction of contemporary technologies within the place such as Lighting, visual aids) furnishing the spaces with cultural elements and symbols that enhance the local identity, preparing urban spaces With toys for children, toilets, and other services.) It has achieved the lowest rates.

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