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## **ANALYZING THE IMPACT OF URBAN GROWTH ON URBAN QUALITY OF LIFE IN THE CITY OF EL ELUMA: A MULTIDIMENSIONAL STUDY**

**Abstract:** Contemporary cities are facing increasing pressures resulting from the rapid pace of urban growth and the associated imbalances that affect residents' well-being and the sustainability of urban systems. The COVID-19 pandemic has exposed the fragility of the conventional urban expansion model, particularly in the absence of integrated planning, which has exacerbated issues related to land-use density and inadequate infrastructure. In light of the growing awareness of the importance of sustainable development, new trends in urban planning have emerged that aim to reconcile urban growth with quality of life by adopting holistic approaches that consider social, economic, and environmental dimensions. The concept of urban quality of life, with its multidimensional normative character, is closely tied to the outcomes of urban growth both positive and negative thus necessitating its study in the context of local dynamics and transformations. This research falls within this framework, aiming to explore the relationship between urban growth and urban quality of life by analyzing the morphology of urban expansion in the city of El Eulma (Setif Province) and assessing its impact on the living conditions of residents. The city is characterized by a pattern of rapid and heterogeneous urban growth, resulting from the interplay between official planning policies and informal on-the-ground practices, leading to a complex urban landscape.

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The study adopts a qualitative analytical methodology, based on an examination of the morphological characteristics of urban growth and an evaluation of urban quality of life indicators. The goal is to provide a critical reading of the current situation and offer planning recommendations grounded in the principles of sustainable development, contributing to the improvement of the urban living environment and the achievement of a balance between expansion and urban well-being.

**Keywords:** urban planning, urban expansion, urban services, social inequalities, urban environment, urban morphology, spatial inequalities

## Introduction

In recent decades, the world has witnessed accelerated urban transformations marked by the expansion of city boundaries and increased population density phenomena commonly referred to as urban growth. While this growth often reflects economic and social dynamism, it also poses complex challenges related to quality of life in urban areas, particularly when it occurs in the absence of effective and comprehensive urban planning. Hence, there is a growing need to study the relationship between urban growth and urban quality of life, not merely as interrelated phenomena but as fundamental elements in understanding the transformations that affect residents' everyday lives.

Urban growth refers to both the spatial and demographic expansion of cities, through either the outward extension of the urban fabric or increased population density, which results in changes in land use and infrastructure demands. In contrast, urban quality of life is a multidimensional concept that reflects the social, psychological, and material well-being of individuals in urban areas, encompassing elements such as housing, services, the environment, mobility, and civic engagement.

Previous studies affirm that urban growth can negatively impact quality of life, especially in the absence of planning frameworks that consider environmental and social dimensions. For example, a study on the city of Arequipa, Peru, found a link between urban expansion and the degradation of water quality and increased disease prevalence (Carpio, O. V., & Fath, B. D., 2011). Similarly, research in Barcelona showed that areas with higher quality of life tend to attract more residents, influencing urban growth patterns and reshaping the city's urbanization map (Royuela, V., Moreno, R., & Vayá, E., 2010). A recent review emphasized that urban planning can serve as an effective tool for enhancing residents' subjective well-being, particularly through improved public spaces, mobility, and social integration (Mouratidis, K., 2021).

In the context of rapid urbanization, contemporary cities especially in developing countries face multidimensional challenges encompassing social, environmental, and economic aspects. Unplanned and rapid urbanization has direct effects on residents' quality of life, often exacerbating social inequalities and placing increasing pressure on urban infrastructure. According to UN estimates, the global urbanization rate is expected to reach 54% by 2030, with approximately 60% of the urban population concentrated in developing countries (Djefal, D., & Bouchmal, S., 2019).

With the growing interest in sustainable development and related concepts such as the "healthy city" and the "ecological city," a new paradigm of urban planning has emerged one that is rational and anticipatory in its governance mechanisms. This paradigm places the citizen at the center of the urban process to ensure more democratic and responsible man-

agement. However, this shift presents new challenges, particularly concerning how to improve urban residents' quality of life and ensure that urban investments align with the requirements of sustainable development (Andrea Monica State, 2015).

Developing countries are undergoing an unprecedented process of urbanization in terms of both scale and complexity, making its management extremely difficult given the limited available resources (Burgel, G., 1993). Bairoch (1996) described this phenomenon as urban inflation, noting that urbanization in these regions is not necessarily associated with sustainable economic development unlike the historical pattern observed in industrialized countries. Consequently, this form of urbanization does not lead to improved living conditions, especially in terms of adequate housing, access to potable water, and air pollution control. Unplanned urban growth, characterized by uncontrolled expansion, is one of the main causes of the intensifying urban problems in these regions.

Within this context, the city of El Eulma is experiencing rapid and hybrid urban growth, marked by high population density. This growth is largely driven by private investment in the commerce and housing sectors, along with public sector interventions in infrastructure and housing development. A study by Boudiaf (2019) highlighted the dual nature of this urban expansion, often characterized by contradictions between public and private intervention mechanisms. The city's spatial development frequently occurs outside existing legal and regulatory frameworks, complicating urban planning and governance efforts.

The aim of this research is to examine the impact of urban growth on urban quality of life by analyzing its spatial, social, and environmental dimensions, and exploring how these dimensions interact within the local case study of El Eulma. The study seeks to offer a critical assessment of the current urban reality and to derive planning recommendations that support quality of life amidst ongoing urban transformation. From this, the following primary research question arises:

***To what extent does urban growth affect the urban quality of life in the city of El Eulma (Setif Province)?***

This question leads to several sub-questions:

- What are the most prominent manifestations of urban growth in the studied area?
- How is this growth reflected in the social, economic, and environmental dimensions?
- Is there a direct relationship or impact between urban expansion and residents' satisfaction with their living conditions?

The central hypothesis of this research posits that: "Unregulated urban growth negatively affects urban quality of life by placing pressure on infrastructure, disrupting service distribution, and increasing social and environmental inequalities."

## **Methodology and Tools Used**

The central research question guiding this study is: "To what extent does urban growth affect the urban quality of life in the city of El Eulma (Setif)?" This study seeks to explore the causal relationship between urban expansion and residents' living conditions. To achieve this objective, a comprehensive and multidimensional approach was adopted, enabling an in-depth understanding of urban interactions from multiple perspectives.

### ***Methodological Approach***

The study employed Multi-Criteria Analysis (MCA) as a suitable methodological framework for assessing urban growth in all its complexity. MCA is an effective tool for evaluating various alternatives based on a set of diverse and sometimes conflicting criteria and objectives, thereby supporting decision-making processes in urban planning. It allows for the assessment of different scenarios by integrating multiple perspectives, reflecting the intricacies associated with urban growth and quality of life.

### ***Data Collection***

To ensure the collection of accurate and reliable data, a dual approach was adopted:

1. Field Observation (In Situ): This method enables the analysis of urban transformations within their natural environment, offering direct and nuanced insights into the reality of the urban space.
2. Online Questionnaire: Structured questionnaires were developed based on specific indicators to quantitatively and qualitatively assess various dimensions of urban quality of life. Between 319 and 395 questionnaires were distributed to ensure an adequate response rate.

### ***Data Analysis***

The collected data were analyzed using ArcGIS Pro 3.2.0, a platform offering advanced spatial analysis capabilities. This software allows for the detailed mapping of results, which enhances the understanding of urban trends and the interpretation of urban dynamics. Specific analyses included:

#### *Average Annual Growth Rate*

This indicator helps identify the periods during which the city experienced significant urban expansion. It serves as a tool to understand patterns of land consumption and development trends over time, offering a quantitative measure of the speed and direction of urban growth.

#### *HQE2R Methodology*

Based on this methodological framework, quality of life in El Eulma is evaluated using a set of multi-criteria indicators derived from the High Environmental Quality for Urban Renovation (HQE2R) method. This framework relies on five main indicators subdivided into fifteen specific sub-indicators, addressing various aspects of the urban environment.

#### *Multi-Criteria Decision Analysis (MCDA)*

Also referred to as the Multi-Criteria Evaluation Matrix, this methodology is used to evaluate and rank alternatives in the presence of multiple, often conflicting criteria. It provides a structured and transparent framework to support decision-making by weighing different factors and facilitating the prioritization of urban development strategies.

By adopting Multi-Criteria Analysis (MCA) as a methodological framework, employing a dual data collection approach, and utilizing advanced spatial analysis tools, this study seeks to provide a comprehensive assessment of the impact of urban growth on the quality of life in the city of El Eulma. The ultimate goal is to generate valuable insights to support sustainable urban planning processes and improve residents' living conditions.

### ***Indicator Selection***

An indicator is defined as “a tool or device that provides information or signals about the value of a specific variable,” making it a means of measuring and evaluating a particular phenomenon based on objective criteria. According to Gilles Sénécal and colleagues (2005), indicators serve as simplified representations of complex phenomena, aiming to highlight the interactions within urban and environmental systems and contribute to their understanding and analysis.

Adopting a diverse range of indicators allows for a multidimensional analysis of the urban reality, offering more comprehensive insights into the quality of life in cities. Several studies have employed various approaches in selecting indicators, depending on local contexts and research objectives. However, this process is often influenced by a degree of subjectivity, which poses a challenge when evaluating urban quality of life (Andrea Monica State, 2015).

In the present study, the selection of indicators is based on an adapted version of the HQE2R methodology, recognized for its effectiveness in analyzing urban environmental issues. Furthermore, the adopted definition of quality of life aligns with the World Health Organization’s (WHO) recommendations, which emphasize the need for an integrated and sustainable urban environment that addresses social, economic, and environmental dimensions.

## **Results and Discussion**

This section constitutes a core component of the study, aiming to provide contextual, theoretical, and terminological interpretations related to the research topic. These interpretations contribute to the establishment of a knowledge framework that enables the reader to grasp the theoretical and conceptual foundations underpinning the study, thereby underscoring its significance. Additionally, this part clarifies the key concepts and terms related to urban quality of life and urban growth, ensuring a shared understanding between the researcher and the reader and paving the way for a more in-depth analysis. It also presents the results of the indicator analysis and the adopted methodology.

### ***Quality of Life: A Multidimensional Concept and Its Evolution in Urban Thought***

The concept of quality of life in urban areas has become a central focus in urban studies and planning, emerging in diverse contexts such as sustainable development, integrated planning, and social welfare policies. Since the 19th century, various intellectual currents have sought to address the challenges of rapid urban expansion and the associated disparities in living conditions.

In this regard, early urban planning pioneers such as John Ruskin advocated a vision of the city centered on aesthetics, emphasizing that urban spaces are not merely physical structures, but should also embody a human dimension that fosters a sense of belonging and comfort. Meanwhile, the public health movement championed by figures like Ebenezer Howard highlighted the importance of improving the urban environment by integrating green spaces into urban fabric. This was reflected in the “Garden Cities” concept, which aimed to achieve a balance between population density and access to natural spaces.

In the second half of the 20th century, a new direction emerged in understanding urban quality of life. Kevin Lynch, in his seminal work *The Image of the City* (1960), emphasized the importance of visual and experiential perception in shaping the urban environment’s appeal and its impact on inhabitants’ well-being. From this perspective, cities

should not only be evaluated using technical criteria such as infrastructure and service provision, but also through residents' experiences and perceptions of urban quality and suitability for daily life. This approach led to a more integrated assessment of quality of life, combining quantitative and qualitative criteria, including sensory and lived dimensions.

Despite this progress, the concept of quality of life remains a subject of debate among scholars due to its complexity and multidimensional nature. Some researchers have used it critically to analyze urban dysfunctions. For instance, Durand and Harv (1977) considered quality of life not only a measure of well-being but also an analytical tool for revealing gaps in urban policies. In this light, the concept has increasingly become a central component in urban planning strategies, serving as a key benchmark for evaluating the sustainability and livability of cities. Generally, quality of life encompasses both tangible dimensions, such as infrastructure and public services, and intangible aspects related to personal satisfaction and emotional connection to place.

Efforts to provide a comprehensive definition of quality of life have led institutions such as the World Health Organization (WHO) to propose an inclusive perspective. The WHO defines quality of life as "an individual's perception of their position in life, within the cultural and value systems in which they live and in relation to their goals, expectations, standards, and concerns." This definition includes health, psychological, social, and environmental factors affecting individuals' lives and autonomy. It is especially relevant in urban contexts, offering a practical framework for evaluating living conditions in cities. However, it also highlights the challenges of measuring such a multifaceted concept, particularly given the diversity of urban experiences and the differing expectations across social, economic, and cultural groups. As such, assessing quality of life requires a balanced integration of quantitative data and qualitative insights.

In sum, quality of life is not merely a theoretical construct but a fundamental criterion for assessing cities' performance and their ability to meet residents' needs. With the growing focus on sustainable development, integrating this concept into urban planning strategies has become essential to ensuring more sustainable, equitable, and livable urban environments. Nevertheless, defining appropriate indicators for measuring quality of life remains a challenge, especially in light of the broad diversity of urban contexts and the social and cultural heterogeneity of urban populations.

### ***Urban Quality of Life: Between Theoretical Aspirations and Field Challenges***

The concept of quality of life also referred to as urban well-being is used in various contexts depending on the perspectives of different urban stakeholders. For policymakers and politicians, it has become a strategic communication tool employed in election campaigns and in promoting local development policies, where it is presented as a key criterion for assessing the success of urban projects in improving living environments. For residents, quality of life is often viewed from a personal and practical perspective, reflecting their daily living conditions and how well they adapt to the urban spaces they inhabit, in addition to the level of services and facilities available to them.

### ***The Challenge of Measuring Quality of Life: Between Subjective and Objective Dimensions***

Despite efforts to assess quality of life through scientific and objective methods, it remains a relative and variable concept due to its direct dependence on residents' perceptions and expectations. The sense of quality of life is not only tied to tangible material factors such as

adequate housing, infrastructure, and basic services, but is also influenced by intangible elements like feelings of comfort, safety, and belonging. This subjective nature makes it difficult to establish standardized criteria for measuring quality of life across different cities, as priorities and needs vary across social and cultural groups.

Furthermore, these differences in perception complicate the formulation of urban policies, as citizens' views on quality of life may conflict with the planning visions of local authorities. For example, while officials might view the development of major infrastructure like roads and bridges as enhancements to quality of life by facilitating mobility, residents might perceive such projects as leading to the loss of green spaces or the degradation of the urban environment, negatively impacting their daily well-being.

Urban quality of life is thus a complex phenomenon encompassing spatial, social, economic, and cultural dimensions that interact dynamically. It cannot be reduced to a single element like the availability of facilities and services but must be understood through a holistic lens that considers the interactions between residents and the urban spaces they inhabit. Therefore, a multidisciplinary approach combining urban geography, sociology, economics, and urban planning is essential to gain a more integrated and comprehensive understanding of this concept.

In Algeria, quality of life is a key element in urban policies and a central pillar in development and planning strategies. This focus is reflected in laws and regulations governing spatial planning and urbanism, especially Law 90-29, which mandates consultation among various stakeholders including local administrations, investors, and civil society to ensure more inclusive urban planning that meets residents' needs.

Nevertheless, the main challenge in implementing these policies lies in the gap between the legislative framework and on-the-ground realities. Although legal mechanisms exist to enhance urban quality of life, their execution is hindered by weak coordination among concerned entities, limited resources, and demographic pressures that pose additional challenges to the sustainability of Algerian cities.

Furthermore, residents' perceptions of quality of life in Algeria are often influenced by factors such as housing issues, overcrowding, the quality of public services, and access to green spaces and recreational facilities. This suggests that urban policies should go beyond the physical dimensions of infrastructure to include more integrated strategies aimed at improving living conditions comprehensively, taking into account the diverse aspirations of the population.

Quality of life in urban areas is a dynamic concept influenced by multiple factors, making its measurement and application in urban planning a complex process that requires a balance between objective and subjective dimensions.

### ***Sustainable Urban Planning in Algeria: Between International Commitments and Field Realities***

#### *Official Approaches Toward Urban Sustainability*

Like many developing countries, Algeria has committed since 1994 to implementing the outcomes of the Rio de Janeiro Summit by adopting urban policies aimed at balancing economic development and the preservation of natural resources. This commitment materialized in the adoption of strategies inspired by the United Nations 2030 Agenda, focusing on

issues such as sustainable urban planning, improvement of public transportation systems, and protection of green spaces.

However, the actual implementation of these strategies has faced structural challenges tied to the political, economic, and social context of the country. Since the 1990s, Algeria has undergone a series of crises, from a security crisis that led to massive population displacement toward cities, to an economic crisis resulting from the collapse of oil prices and IMF structural adjustment measures. These factors weakened the state's financial capacities and directly impacted the implementation of sustainable urban development projects.

These crises led to rapid and unregulated urbanization, with Algerian cities experiencing massive population influxes from rural areas to major urban centers, resulting in widespread informal expansion. Informal settlements spread across city outskirts without proper planning or adequate infrastructure, making it difficult for local authorities to control urban development. Providing basic services such as water, sanitation, and transportation remains a persistent challenge.

Despite these obstacles, Algeria has witnessed noticeable improvements in some urban aspects since the early 2000s, thanks to intensified efforts and a relative economic recovery that allowed the state to invest in housing and infrastructure projects. Broad programs for city rehabilitation have been launched, such as the "New Town" program, aimed at creating integrated and sustainable cities in terms of planning and services.

Nonetheless, quality of life in many Algerian urban areas continues to suffer from structural problems, especially in informal neighborhoods that emerged during crisis periods. The issue of sustainability remains strongly present, as Algerian cities face serious environmental challenges such as air pollution, poor waste management, and a shortage of green spaces factors that directly impact residents' quality of life.

Sustainable urban planning constitutes a key pillar for improving urban quality of life by promoting balance between the social, economic, and environmental needs of the city. Despite Algeria's ongoing efforts toward this direction, on-the-ground obstacles still hinder the effective implementation of sustainable strategies. Achieving more sustainable urbanization requires structural reforms at the level of legislation, financing mechanisms, and the involvement of local actors and civil society in urban planning processes. A more integrated approach should also be adopted, incorporating sustainability principles not only in urban planning but also in economic and social policies to ensure a more balanced and livable urban environment for all residents.

#### *Components of Humanizing Urban Spaces (Toward a More Human-Centered City)*

According to H. Bérubé and O. Chatelan (2017), drawing on UNESCO's 1996 report, the humanization of cities relies on three fundamental principles:

- The Right to the City: As articulated by Henri Lefebvre (1972), this principle refers to enabling all residents to access and benefit from urban spaces, while ensuring their interaction with the environment in a way that enhances social cohesion and preserves urban identity.
- Participatory Governance: This involves engaging citizens in decision-making processes and recognizing them as active agents in managing urban affairs, rather than passive recipients of urban policies.

- Promoting Urban Solidarity: Through the design of neighborhoods and public spaces that foster social interaction and reduce class disparities, contributing to more equitable social and economic inclusion.

In Algeria, cities face significant challenges in achieving this model, particularly due to rapid urban growth and the emergence of informal neighborhoods that lack even the most basic living conditions. Nevertheless, some initiatives have begun to move toward improving the quality of urban spaces and strengthening civil society participation, particularly through the rehabilitation of old neighborhoods and upgrading public service infrastructure.

However, obstacles still hinder the actual implementation of this approach, such as weak coordination among stakeholders, the absence of effective mechanisms for citizen engagement, and ongoing economic and social challenges that impede the development of more humane urban spaces. Therefore, adopting a more inclusive model of urban planning that considers social and cultural dimensions is among the key priorities for achieving more equitable and sustainable cities in Algeria.

### ***Description of the Study Area and Selected Sample***

#### *El Eulma: An Urban Pole City*

El Eulma, as a prominent municipal center, stands as one of the key actors in the urban landscape of Sétif Province, with its importance extending beyond to the eastern region of Algeria. Located on the High Plateaus within the territory of Sétif Province, El Eulma is the second-largest city in the province, covering an area of approximately 1,986 hectares. According to the Algerian classification, El Eulma is categorized among major urban cities, with an urbanization rate reaching 94% in 2021 surpassing that of Sétif city itself, which was estimated at 88%. The population of El Eulma in the same year was estimated at 227,126 inhabitants, representing 66% of the total urban population of the Sétif metropolitan area and 19% of the province's total population.

El Eulma and Sétif together form the core of urban activity in the province, attracting nearly 49% of the total urban population, equivalent to about 29% of the province's entire population. This can be attributed to El Eulma's strategic geographical location, which positions it as a key crossroads on both regional and national levels. This position has been further strengthened by the East-West Highway, which crosses the city for approximately 10 kilometers, making it a central hub in transport and mobility networks. Additionally, the railway line connecting Constantine and Algiers further enhances El Eulma's role as a major transportation point in northeastern Algeria.

#### *El Eulma: A Dynamic Commercial Hub*

The economic profile of El Eulma is prominently reflected in its vibrant commercial activity, making it one of Algeria's most significant trade centers, with economic influence extending beyond national borders, particularly toward Tunisia and Libya. The city serves as a major hub for both wholesale and retail trade, establishing itself as a magnet for investment and economic activity, while also providing local and regional employment opportunities—factors that reinforce its urban appeal.

El Eulma's rapid economic growth is accompanied by increasing urbanization, with the city following an upward trajectory in terms of urban and service development. As a result of this momentum, El Eulma is expected to benefit in the future from improvements in infrastructure and urban facilities, potentially reflecting positively on residents' quality of

life by enhancing services and public amenities in response to the city's accelerated urban expansion.

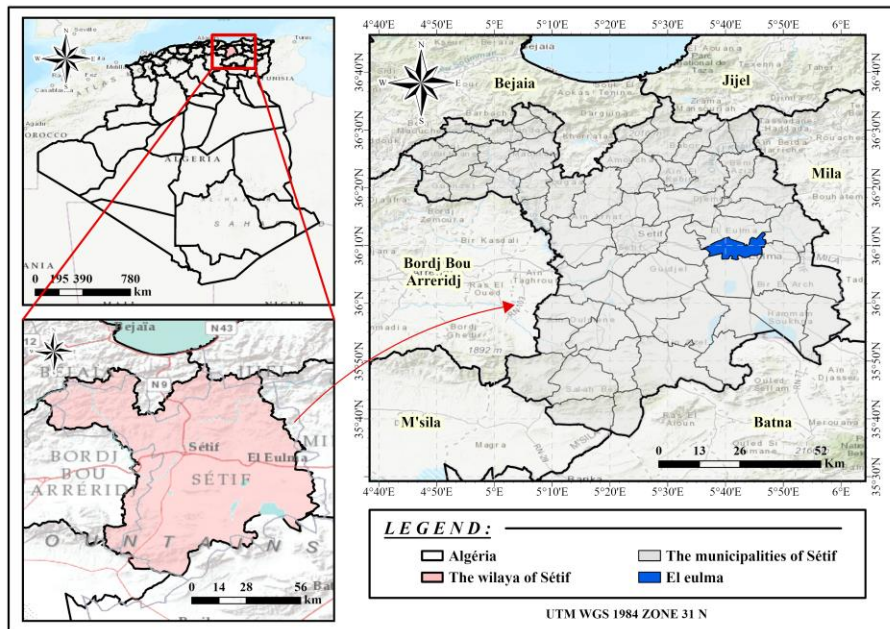


Fig. 1. Map of the Municipality of El Eulma

### *El Eulma: Hybrid and Rapid Urban Growth – Dynamic and Multifaceted*

#### *Origin and Development:*

The city of El Eulma originated from a small residential nucleus consisting of 40 traditional houses, clustered near a water spring known as “Ain Tefetika,” in a fertile agricultural setting. In 1862, it became an official residential center, and in 1875 it was declared a city by a decree from the French governor. Europeans settled there for military purposes, given its strategic elevation and vital role in communication networks.

Over time, the city underwent major urban transformations influenced by various factors, including demographic growth, administrative upgrades, and economic and real estate dynamics. Its geographical location along National Road No5 which connects the capital to eastern Algeria further reinforced its role as a key urban hub.

El Eulma's urban expansion reflects a hybrid model between spontaneous growth and official planning. The city developed primarily from the bottom up, through self-built housing, which accounts for approximately 74.91% of the total housing stock, compared to only 25.09% constructed under public policies. These self-constructed buildings occupy around 87.30% of the city's total urban area, highlighting the pivotal role of residents in driving this development, with only limited governmental intervention.

This urban model serves as evidence of the strength of the local economy, as residents rely on their own resources to construct homes that fulfill both residential and commercial needs. These buildings are often vertical in form (R+2, R+3, etc.) and are typically inhabited by extended nuclear families, reflecting a cohesive social structure. Most importantly, these homes serve dual functions, with the ground floor designated for commercial activities and

the upper floors used for residential purposes enhancing the city's dynamism as a vibrant commercial center.



Fig. 2. Example of self-built housing

Although not entirely directed by public policy, this type of urban growth demonstrates the residents' smart adaptation to economic changes combining housing needs with commercial functions which strengthens El Eulma's position as an economic engine both locally and nationally.

*Dual Urban Growth: Horizontal Expansion and Vertical Densification*

El Eulma has experienced diverse forms of urban development, expanding along two parallel axes: continuous horizontal sprawl and increasing vertical densification of its urban fabric (Figure 03). The city has a population density of 114.4 inhabitants per hectare three times the average density of its municipality, which is 33 inhabitants per hectare.

Topographic features and the legal status of land have shaped this expansion, despite its negative repercussions on the urban landscape. It has led to the formation of continuous urban blocks and affected the local climate through the emergence of urban heat islands. Tracking land consumption over time provides an accurate indicator of the pace and direction of the spatial growth the city has undergone.

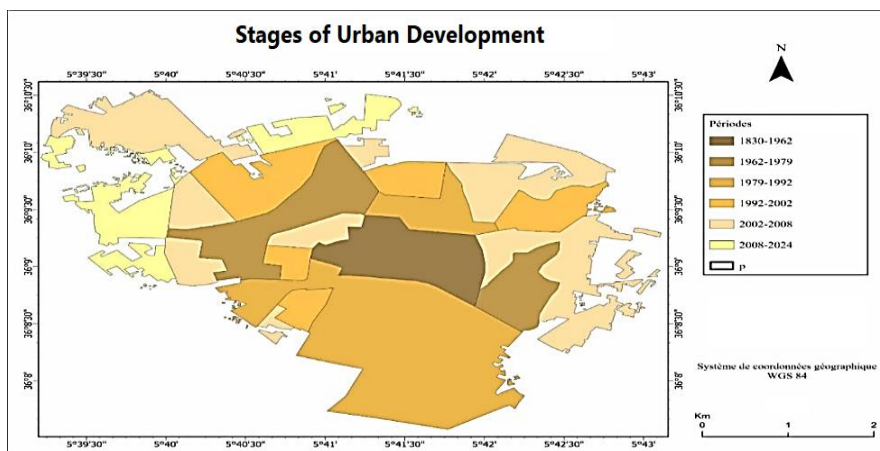


Fig. 3. Urban growth of El Eulma from 1962 to 2024

Measuring the Rate of Spatial Growth of El Eulma: The rate of spatial growth of the city of El Eulma is measured using the Average Annual

Growth Rate ( $\bar{a}$ ), a widely applied indicator in various fields such as financial and demographic analysis. Its value is calculated using the Following formula:

$$\bar{a} = \sqrt[T]{\frac{St}{S0}} - 1 \quad (1)$$

Where:

$\bar{a}$ : Average annual growth rate.

ST: Land consumed in year  $t$  (or any subsequent point in time such as  $t+1$ ,  $t+2$ , etc.).

So: Land consumed in the base year 0.

T: Number of years between the two periods.

This indicator enables the measurement of both the speed and direction of urban expansion over time, serving as an analytical tool to assess the dynamics of urban growth in the city.

*Table 1: Result of Applying the ( $\bar{a}$ ) Indicator*

Periods	Consumed Land Area (hectares)	Average Annual Growth Rate of Consumed Land ( $\bar{a}$ )
Before 1962	86	Reference Period
1962-1977	176	5%
1977-1987	735	15%
1987-1998	1050	4%
1998-2008	1473	3%
2008-2024	1986	3%

Source: Prepared by the authors

The results of the ( $\bar{a}$ ) indicator reflect varying rates of urban growth over successive historical periods, as patterns of urban expansion have been influenced by multiple social, economic, and political factors. These transformations can be categorized into four main phases:

*Period of Rapid Urban Growth (1962–1977)*

This phase was marked by significant demographic movement. The return of indigenous populations to their lands after independence, along with a major influx of migrants from rural areas, led to intensive urban expansion. This growth manifested in the emergence of unstructured neighborhoods that addressed urgent housing needs, reshaping the city’s landscape.

*Period of Moderate Growth (1977–1987)*

This phase saw a shift in urban development policies. Declining rural migration rates led to relatively stable urban sprawl. Government strategies promoted collective housing as an effective alternative, reducing land consumption compared to previous horizontal expansion patterns.

*Period of Socioeconomic Stagnation (1987–1998–2008)*

During this period, urban development was affected by security, political, and economic crises, resulting in decreased investment in housing and public infrastructure. Nevertheless, major cities like El Eulma continued to receive new waves of rural migration, which increased population density without a corresponding expansion in urban infrastructure.

### *Period of Urban Renewal and Recovery (2008–2024)*

This phase witnessed a new wave of urban dynamism driven by economic improvements. Major projects in housing and urban infrastructure were launched. El Eulma benefited from large-scale housing programs, particularly in the form of collective housing units, which helped reduce land consumption compared to previous informal expansion patterns.

These varying phases illustrate the significant influence of economic and political factors in shaping the urban structure. They highlight the need for flexible planning strategies that respond to the dynamics of urban growth, while promoting sustainable practices and controlling urban sprawl.

### *Quality of Life in El Eulma: Between Reality and Residents' Perceptions*

#### *HQE2R Methodology*

Based on the adopted methodology, the quality of life in the city of El Eulma is assessed using a set of multi-criteria indicators derived from the HQE2R methodology. This approach relies on five main indicators, which are further broken down into fifteen sub-indicators (Table 3). These indicators were selected according to the World Health Organization (WHO) definition of quality of life, enabling a comprehensive evaluation of the factors that directly or indirectly influence residents' well-being within the urban environment.

The aim of this assessment is to offer an integrated vision of the degree of alignment between urban reality and citizens' needs and aspirations, through an analysis of the environmental, economic, and social dimensions that define quality of life. This approach helps guide urban policies toward improving living conditions and enhancing sustainability in urban planning.

#### *Determining the Representative Sample Size and Technical Characteristics of the Selected Neighborhoods*

The sample size was determined based on a 95% confidence level and a 5% margin of error, requiring the collection of 255 to 316 responses per neighborhood, through the distribution of 319 to 395 questionnaires to ensure an adequate response rate.

This study focuses on two residential areas in El Eulma: Maziane Saâou and Houari Boumediene, in order to analyze differences in the impact of urban growth on quality of life based on housing typology. The first area (Maziane Saâou) includes 150 collective housing units, with an estimated population of around 750 inhabitants. The second area (Houari Boumediene) consists of 250 individual villas, housing approximately 1750 inhabitants. This selection allows for a comparative analysis of the impacts of urban expansion on two distinct types of neighborhoods and highlights differences in collective vs. individual housing in terms of quality of life and urban living conditions.

#### *Technical Characteristics of the Studied Neighborhoods*

The analysis covers Houari Boumediene and Maziane Saâou, which differ in several aspects:

- Social and demographic composition
- Architectural style
- Urban functions and available services

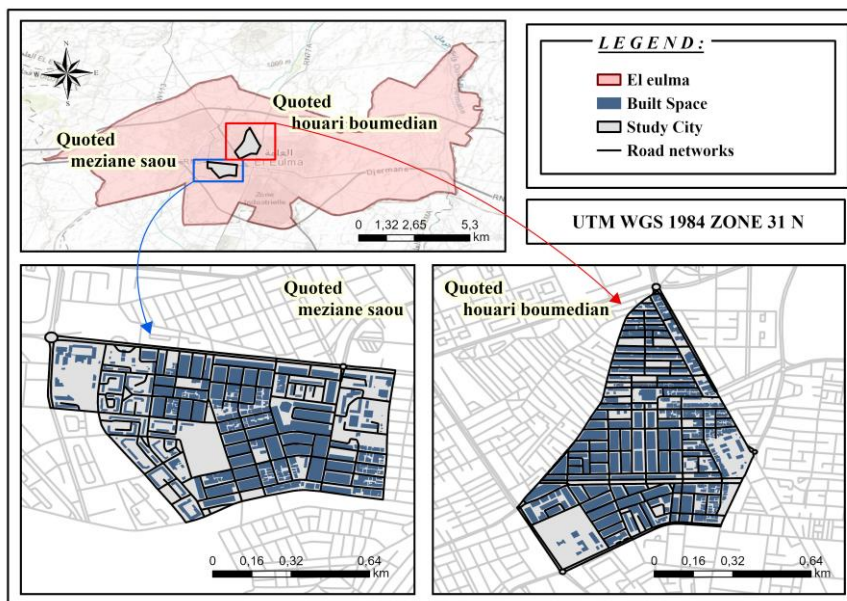
Maziane Saâou is located on the western side of the city, while Houari Boumediene lies to the north, both near the historical core of El Eulma (Figure 04). This diversity reflects

differences in the development of urban spaces, offering an opportunity to compare quality of life in varying urban contexts.

*Table 2: Technical characteristics of the selected neighborhoods*

Neighborhood	Housing Typology	Number of Dwellings	Number of Residents	Area (hectares)	Gross Density (dwellings/ha)
Maziyan Saou	Public Collective	150	750	1.875	80
Houari Boumediene	Self-Built Individual	250	1750	10.83	30

Source: Prepared by the authors



*Fig. 4. Location of the two selected neighborhoods*

Table 3: Results of the indicator assessment

Neighborhoods		MEZIANE SAOU			HOUARI BOUMEDIENE		
Indicators	Sub-indicator	YES	NO	OBS	YES	NO	OBS
Improve the quality of the local environment.	Improvement and coordination of the site with visual comfort	121	134	<u>NR</u>	37	279	<u>NR</u>
	Improvement of housing efficiency	98	157	<u>NR</u>	178	138	R
	Improvement of cleanliness and health	75	180	<u>NR</u>	86	220	<u>NR</u>
	Improvement of security and risk management	200	55	R	219	99	R
	Reduction of waste and noise	107	146	<u>NR</u>	98	218	<u>NR</u>
Preserve and enhance heritage and conserve resources	Preserve and enhance built and natural heritage	92	163	<u>NR</u>	262	54	R
	Improve water resource management and its quality	169	86	R	124	197	<u>NR</u>
	Prevent urban sprawl and improve space management	160	95	R	16	300	<u>NR</u>
Improve integration.	Environmentally friendly transportation infrastructure	75	180	<u>NR</u>	132	184	<u>NR</u>
	Enhance the neighborhood's attractiveness by creating living and meeting spaces for all city residents	46	209	<u>NR</u>	183	131	R
	Ensure diversity of functions (economic/social)	115	140	<u>NR</u>	220	96	R
Improve diversity	Diversity in housing	/	255	R	223	93	R
	Diversity in employment	255	/	R	212	104	R
Strengthen social ties	Strengthen social cohesion and participation	170	85	R	237	79	R
	Improve solidarity networks and social capital	107	146	<u>NR</u>	226	90	R

R: realized NR: no realized

Source: Prepared by the authors

### Weighting

To ensure greater accuracy and objectivity in analyzing perceptual results which, despite following a scientific methodology, may be influenced by subjective factors a multi-criteria matrix was adopted to weight the data.

In the context of this study, weighting is used to adjust the quality-of-life results according to the importance of each indicator. This enhances the precision and fairness of the analysis, rather than relying solely on direct responses that may be biased or unbalanced.

The weighting coefficients for each indicator were defined (Table 4) based on their relative importance within the urban community, allowing for a fairer evaluation of quality of life that considers residents' actual priorities in their specific contexts.

*Table 4: Weighted results*

Criteria	Coefficient	Meziane Saou		Houari Boumediene	
		Score	Weighting	Score	Weighting
<i>Strengthening Social Bonds</i>	4	1	4	2	8
<i>Enhancing Diversity</i>	3	2	6	3	9
<i>Improving Integration</i>	1	1	1	1	1
<i>Preserving and Promoting Heritage, and Conserving Resources</i>	2	2	4	2	4
<i>Local Environmental Quality</i>	5	1	5	2	10
<i>Total</i>			<i>20</i>		<i>32</i>

Source: Prepared by the authors

## **Research Findings**

### ***Housing and Living Standards***

- Houari Boumediene, mainly composed of self-built housing, offers a better standard of living.
- Self-built homes meet residents' daily needs and aspirations, increasing satisfaction and attachment to place.
- Over two-thirds of the city's housing units follow the self-building model, highlighting its significance.

### ***Cleanliness and Environmental Challenges:***

- Both neighborhoods face cleanliness issues, but causes differ:
- Houari Boumediene: Waste accumulation due to intense commercial activity.
- Maziane Saâou: Ineffective waste collection and limited resident awareness/engagement.

### ***Sense of Belonging:***

- Stronger in Houari Boumediene, reflected in efforts to preserve architectural and heritage identity.

### ***Urban Growth and Built Environment:***

- Self-built housing contributes to urban sprawl.
- Consequences include increased building density, urban heat island effects, and visual disharmony in urban design.

### ***Functional Diversity:***

- Houari Boumediene: Mixed-use (residential + commercial), leading to:
- Higher neighborhood dynamism.
- Increased attractiveness, economic and social activity, and job creation.
- Maziane Saâou: Primarily residential, lacking functional diversity and economic vibrancy.

### ***Social Ties:***

- Both areas show improved social interaction.
- More noticeable in self-built areas due to stronger community traditions and neighborhood solidarity.
- Reflects enduring Algerian values of cooperation and mutual aid despite rapid urban changes.

### **Conclusion**

The study results indicate that quality of life in the urban environment is not the result of a single factor but is shaped by a combination of interconnected elements that influence individuals' daily experiences in their residential neighborhoods. Among the most prominent of these factors are:

- Housing quality: The characteristics of the building, such as space, design, and materials used, play an important role in determining the comfort and functionality of the home.
- Social and economic status of residents: Purchasing power, employment opportunities, and income levels affect quality of life, along with cultural and social factors that shape individuals' perceptions of their environment.
- Residents' perception of public spaces and their sense of ownership: The more individuals feel they own and have control over these spaces, the more they use them, improving quality of life.
- Legal nature of urban spaces: The ownership of the space (private, public, semi-public) affects its use and how residents interact with it, influencing overall quality of life.
- Individual characteristics of residents: Such as gender, education level, and personal experiences, which determine how they assess their surrounding environment and their satisfaction with it.

Therefore, quality of life cannot be addressed in isolation from the social and cultural contexts of each area. In neighborhoods dominated by self-built housing, residents show greater involvement in shaping their environment, which enhances their sense of belonging and improves their perception of their quality of life. On the other hand, in neighborhoods where residents have not participated sufficiently in planning their spaces, feelings of alienation and disconnection may prevail, negatively affecting daily life quality.

- Quality of life as a shared responsibility: Quality of life cannot be limited to material factors alone, as it also depends on the extent to which residents engage in developing their environment and participating in decision-making processes. A sustainable urban environment requires joint interaction between local authorities and citizens, where the focus is not only on providing infrastructure but also on involving residents in managing and using urban spaces. From this perspective, quality of life can be considered an indicator of the success of governance systems in meeting residents' needs, while taking into account different local contexts.

Despite the numerous studies on the concept of quality of life, the question remains: Can a single, comprehensive definition of this concept be applied to all urban environments? The reality suggests that the diversity of neighborhoods, differences in their social structures, and varying residents' needs make it difficult to adopt a unified model to accurately measure quality of life. Every community and individual has different perceptions of what makes life "good," according to their specific circumstances. Therefore, it seems nec-

essary to adopt a more flexible approach that considers local differences, reflecting the complexities of the urban environment more realistically and ensuring that policies align with residents' needs and aspirations in various urban contexts.

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