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Vegetation and Its Impact According to User's Perception: Case of North Land Use Plan of Guelma City

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Abstract
The vegetation takes a primordial place in the reflection on our urbanity for the balance of the ecosystem. Guelma, attractive Mediterranean city, by the picturesque character of its site, incites to discover it from the inside to better understand its urban landscape. In this same regard our study focuses on the north land use plan of the city. Today, the city is characterized by accelerated urbanization, which leads to the consumption of natural resources. One of the consequences of these phenomena is the deterioration of green substrates, by fragmentation of natural environments and agricultural areas. The objective is to show the role of vegetation in the satisfaction of the users of north land use plan of Guelma city, this can only be done through a survey of the various users of this city. Finally, recommendations dedicated to the proposal of the implementation of ecological planning to the management.
Keywords: Vegetation; users; perception; Guelma city; northland use plan.

1. Introduction

The word vegetal element is found in various fields and each time takes on a different meaning depending on the discipline. In the humanities in general, and urban planning in particular, plant elements meet the definition of natural space, with regard to the new vision of the city as an ecosystem in its own right (D.U.V.I.G.N.A.U.D.P, 1974). In the imagination of urban planners, there is no doubt that vegetation brings more comfort and happiness to the inhabitants. It is clear: it creates an atmosphere, brings society together, filters views, welcomes wildlife, individuals like to feel the physical presence of leaves, the coolness brought by shade...

However, these are the feelings of space specialists, which does not prevent us from looking at other feelings experienced by city dwellers (Olivier BALAŸ, & J.-L.B, 2013). For them, the perception of plants is inseparable from the aesthetic perception of their habitat. Therefore, the planting of vegetation, which is necessary in a city that will be wetter and more walkable than today, cannot be considered only from its visual impact or its climatic role. It must also be thought from the ambiences offered for the uses, for example from the public space and from housing to live, work, circulate, and recreate well (Olivier Balaÿ, 2012; Adedeji et al., 2018; Nia et al., 2017).

Neighborhood as a location of the built environment refers to a small part of a city or suburb that provides housing and related services to a smaller percentage of the resident population. In other words, the community can be studied in terms of the density of the resident population, which can range from 2,500 to 25,000 residents, with sizes up to 30 acres (Agboola, O. P et al, 2018, Aziz Amen & Nia, 2018).

The accelerated growth of urbanization over the past decades is leading to a deterioration of the balance between vegetation and impervious surfaces in cities due to the demand for social rent. The biggest challenge is the adequate supply of green spaces and their even distribution among the inhabitants. According to the "*Land Use Policy Framework", the amount of green space per inhabitant in urban areas (10 m²)* (Tok, E et al,2020).

In addition, a multitude of studies have been initiated to address neighborhood-related issues, namely: a greater sense of resident involvement, increased social exchange at the neighborhood, improved safety, reduced environmental pollution, and reduced neighborhood health risks (Francis et al., 2012; French et al., 2014; Middleton, 2010; Bonilla 2013; Peter et al., 2010; Song &Knaap, 2003; Broadbent, 1990, Amen,2021).

Unlike traditional planning methods, based solely on socio-economic concerns, which underestimate the biophysical environment: soil, fauna, flora, landscape, etc., ecological planning calls on knowledge of the norms of the material environment so as not to lose the great natural balances (F.A.L.Q.U.E.M,1972).

The diagnosis of the ecological quality of neighborhoods is generally based on a diagnosis of the daily functions of users, which are the basis of architectural and urban values: These are the values of well-being, awareness, landscape, and satisfaction.

2. Material and Methods

Our research work integrates these three elements:

1. Residential neighborhood : l'environnement où se passe le phénomène physique, bâti d'interaction (bâtiments, infrastructures, mobilier...) et naturel (parcs, végétation, plans d'eau,...).

2. The actors: A user who regularly perceives and experiences a set of physiological phenomena in this environment.
3. The scenario: it consists in defining in advance the qualities of the vegetation element, in order to think about a new concept that integrates to the maximum the respect and the preservation of the vegetation, where the survey by questionnaire is presented as a tool of choice to achieve this integration. Two tools for the action of this survey are: the questionnaire and the users.

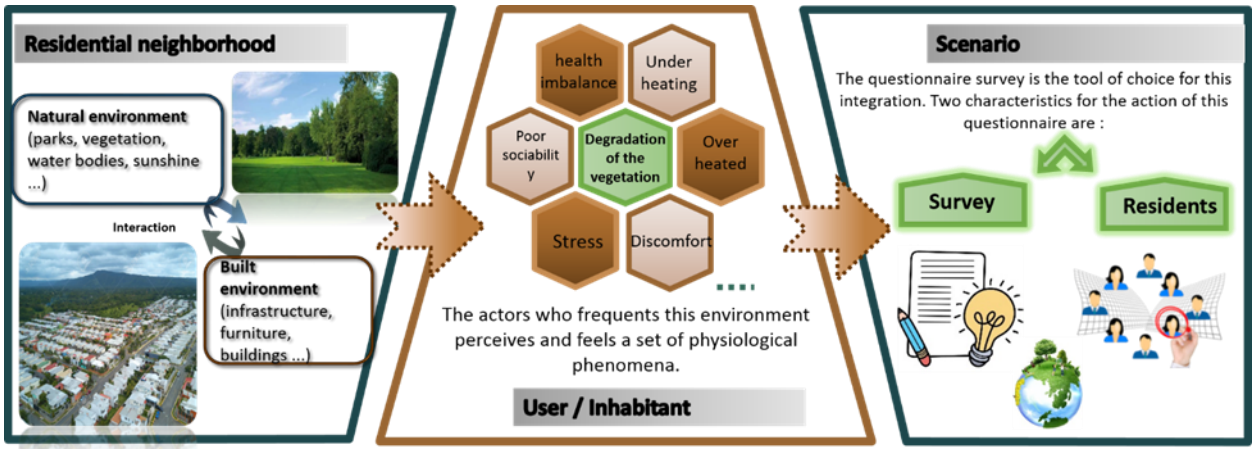

Figure 1. Structure of the Study (Developed by Author).

2.1 Case Study

The objective of this study is to show the socio-psychological effects of the green areas in residential neighborhoods through the perception of users. Where the northland use plan "POS NORTH" of Guelma city has been chosen for this application.

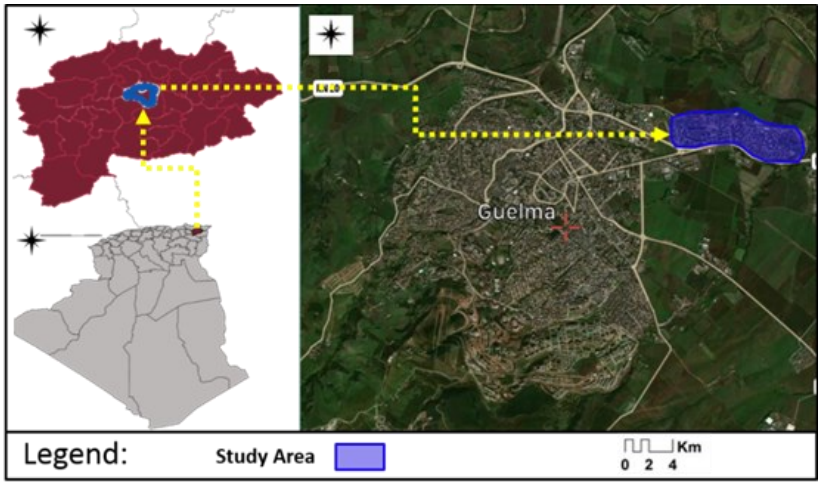

Figure 2. geographical location map (Developed by Author)

- **Geographic location of the city:**

The state of Guelma is located in the Northeast of Algeria.

- **Geographical location of the neighbourhood:**

Our study area, which is the northland use plan "POS NORTH", is located north of the city of Guelma.

2.2 Method

Green spaces are always considered as an index of environmental quality in urban areas. To this end, the analysis of the role of vegetation in the neighborhood consists of a set of evaluation criteria and sustainable indicators.

In this respect I have the four functions of the city: live in, move, work, recreate as criteria, and the values As indicators which are the reactions of the users which are:

- Value of the quantity and types of vegetation
- Recreational value
- Landscape value
- User participation value

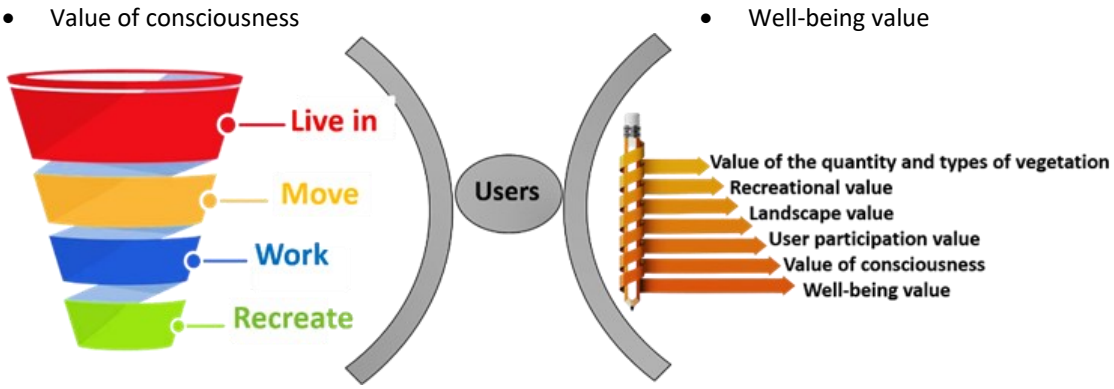

Figure 3. criteria and indicators diagram (Developed by Author)

2.2.1 Data collection

A survey was developed to determine the psychosocial impact of urban green spaces and the satisfaction of residents. North Pos area population in 2019 was 6,500, according to APC. Therefore, 363 surveys were conducted with a sample size of 5% and a confidence level of 95%. , and met face-to-face and on the line, in French or Arabic. The number of surveys conducted in the neighborhood is determined by the demographic measure (Tok, E, 2020).
The questionnaire includes a number of question types grouped under three categories, including recognition of residents, measurement of environmental value, and participation in the management of community initiatives. The evaluation criteria are derived from the Public Space grid (Zaid, 2015), whose detailed criteria are well-being, awareness, landscape, and satisfaction values.

Table 1. The indicators used to estimate environmental values.

Distribution Modern Design	
indicators	*Questions*
Well-being value	Is there any vegetation in your neighborhood? In your opinion, what is the percentage of vegetation compared to the built-up area in your neighborhood?
Value of consciousness	Have you done any private initiatives in your neighborhood? Do you consider vegetation in the city: unavailable, optional, not important?
Satisfaction value	How would you rate your neighborhood? How satisfied are you with your neighborhood?
Landscape value	Do you like the complete removal of this vegetation to build your neighborhood? What are the issues with vegetation in the neighborhood?

3. Results and Discussion

3.1 Well-Being Value

The question asked about the value of user wellbeing, the percentage of greenery to the built environment in the neighborhood, and problems with degradation of the green cover. 239 people responded negatively to the question of whether they had a lack of greenery (see, Figure 8). Based on the survey data, the users (239 people "66%") who affirmed the lack and degradation of vegetation in their neighborhoods were used as the main group to determine user profiles, satisfaction, and psychosocial impact of green cover. This initially reflects the lack of harmony in the relationship of the inhabitant with their environment in this neighborhood. Thus, the social demand for green planning increases.

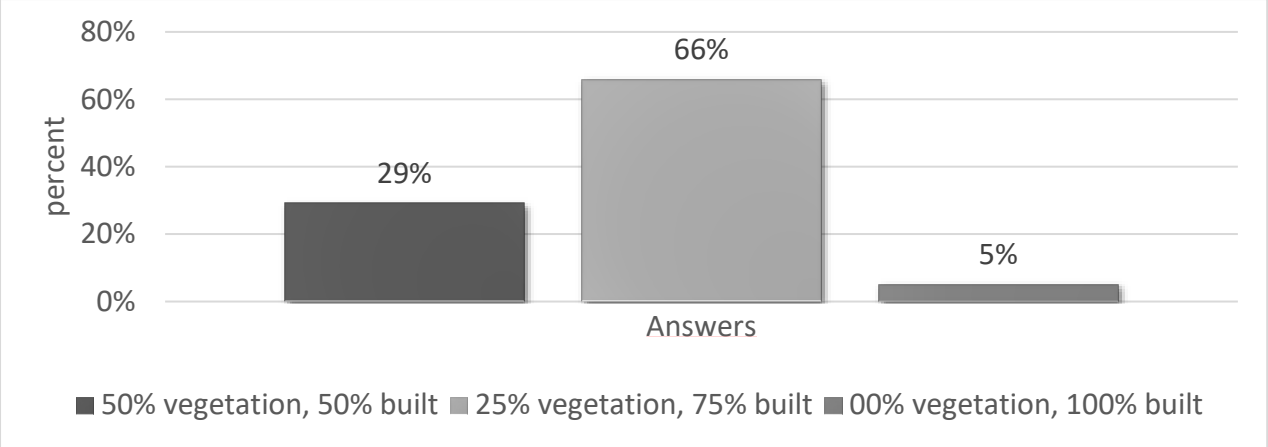

Figure 4: Analysis of the value of the well-being of the vegetation in the neighborhood north land use plan in Guelma city.

Indeed, it consists in appealing to the two criteria, namely the political criterion and the criterion relating to the relation of the man with his environment, by intervening at the same time on the subject that is the citizen of the city and on the object that is the urban green space.
Increase environmental awareness: Only awareness and increased knowledge can influence behavior. Education, including school-based education, public awareness, information and training, is essential to promoting the presence of nature in cities and increasing awareness levels. These actions are essential to change attitudes so that individuals have the ability to assess and act on the environmental issues around them.

3.2 Value of consciousness

This is illustrated by two diagrams (Fig.02). These two questions answer the general points, they verify that the residents are aware of the importance of urban vegetation and its different proximity services. 80.20% and 69.80% of the residents of the surveyed communities think that, therefore, the residents consider the green space as an essential component in the neighborhood. But the residents declare the management responsible to only one actor, the State. For this, it is necessary to establish a process of awareness of values.

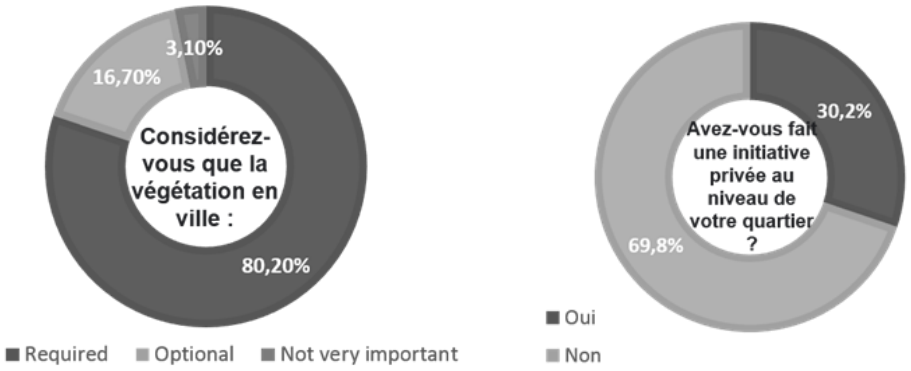

Figure 5: Analysis of the value of vegetation consciousness in the land use plan of the northern district of the city of Guelma.

A number of questions remain regarding the local management strategy of these elements in the City of Guelma, which leads us to make the following recommendations:

- Organize the agencies specialized in the management of green spaces by identifying the roles of each agency and mobilizing them ;
- Continuous training of staff through the ongoing development of materials, machines and management methods ;
- Facilitate public networks to share experiences,
- Strengthen the work of environmental protection associations to raise public awareness and encourage the creation of new associations related to green spaces to broaden the scope of all those working to protect these spaces; - Create a public environmental agency modeled on the city's ecological agency to

guide the development of green spaces in Paris, coordinate the dynamism of the entire system of urban actors and accompany the environmental changes in the territory; - Citizen participation and involvement in the various development efforts to ensure their satisfaction;

3.3 Satisfaction value

The results of the satisfaction value in the diagrams "figures 3" show that the respondents were generally dissatisfied with the condition of the green space in the whole sample. To this end, it can be seen that society has an increasing demand for natural places. These shortcomings are the result of poor planning and design of green spaces and a lack of resources to maintain these green spaces. A very inefficient governance model, as the different actors do not really play their roles separately, and they are poorly coordinated. The Association for the Protection of the Environment of the Province of Guelma has not been able to carry out its advocacy mission because of its low profile.

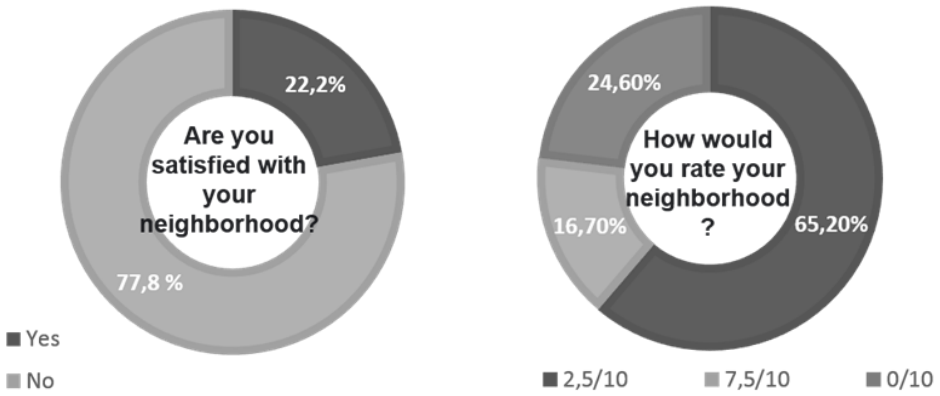

Figure 6: Analysis of the satisfaction value of vegetation in the land use plan of the northern district of the city of Guelma.

3.4 Landscape value

Similarly, the results of the landscape value of the scheme show that residents have a perception of visualization of aspects with aesthetic value of natural elements, especially vegetation, which represents the most important landscape elements that they imagine. Today, by infusing the three pillars of the latter, it appears crucial to reconcile the various landscape issues with sustainable development; the environmental, social, economic transcend the landscape issues. Towards a new utopia "*sustainable urban landscape*" for urban development. Introducing a global approach to sustainable urban landscapes in construction and urban development operations is a first element of response to create the ideal landscape of sustainable districts.

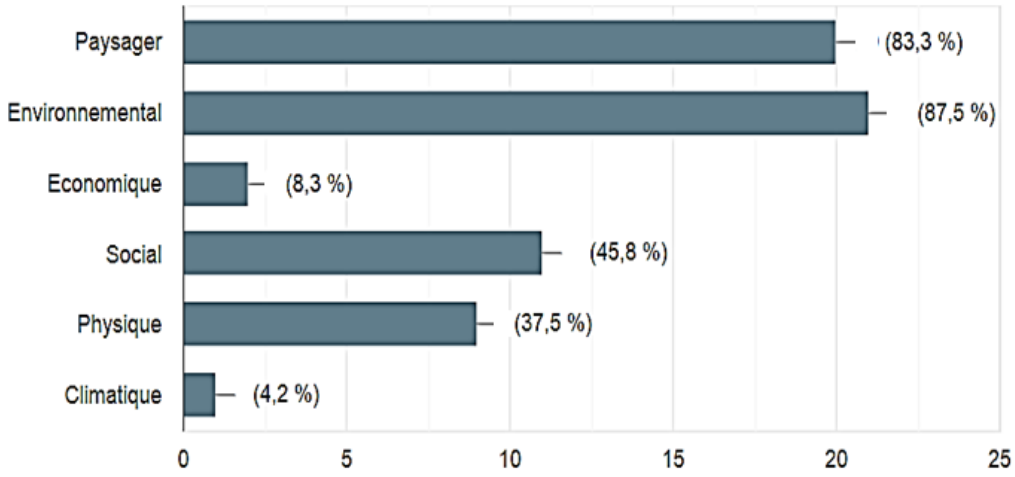

Figure 7: Analysis of the landscape value of vegetation in the land use plan of the northern district of the city of Guelma.

4. Conclusion

Urban vegetation is becoming increasingly important in scientific and social theory and discourse, and is seen by planners as a concrete example of the concept of sustainable development being considered; this is particularly relevant to making cities greener, more lively and more pleasant. Finally, it makes suggestions for the implementation of ecological planning and management. Driven by the desire to better integrate with urban nature to improve the living environment of these citizens, green spaces have emerged. They also play multiple roles at different levels of the city: ecological, aesthetic, psychological and social, and their absence is a phenomenon that must be analyzed.

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