

PUBLIC ATTITUDE TOWARDS THE URBAN REGENERATION PROJECT OF CANALUL MORII, CLUJ-NAPOCA, ROMANIA

Flavia-Oana NAN¹, Maria HOSU² 

ABSTRACT. – **Public Attitude Towards the Urban Regeneration Project of Canalul Morii, Cluj-Napoca, Romania.** The acceleration of urbanization has underscored the crucial role of urban green spaces (UGS) in fostering environmental sustainability and enhancing human well-being; however, a persistent gap remains between urban planning practices and community preferences. This study investigates residents' attitudes toward the urban regeneration project of Canalul Morii, analyzing both the strengths and the limitations of the newly created UGS. Through a comprehensive Environmental Attitude Questionnaire (EAQ) survey of 120 residents, we determined whether the recreative function of the newly regenerated segment of Canalul Morii is in line with the needs and wishes of Cluj-Napoca's residents. The results indicate that age and the education level play the most important roles in shaping the attitudes towards the urban regeneration project. The results of this study confirm that the revitalization of Canalul Morii is perceived relatively positively, fulfilling its recreational function, also being in line with the measures outlined in the project's initial description. With an average EAQ score of 3.88 ("Neutral" to "Partially Positive"), the questionnaire demonstrates that modern urbanization measures are aligned with residents' needs.

Keywords: *mobility corridors, development, infrastructure, GIS, grid.*

¹ Babeş-Bolyai University of Cluj-Napoca, Faculty of Geography, 5-7 Clinicilor Street, Cluj-Napoca, Romania, e-mail: flavia.nan122@gmail.com

² Babeş-Bolyai University of Cluj-Napoca, Faculty of Geography, 5-7 Clinicilor Street, Cluj-Napoca, Romania, e-mail: maria.hosu@ubbcluj.ro



1. INTRODUCTION

The rapid urbanization of the 21st century has amplified the importance of urban green spaces (UGS) in advancing environmental sustainability and enhancing human well-being (Wu, Chen, Webster, Xu, & Gong, 2023). UGS—including parks, gardens, urban forests, and other vegetated areas—serve multiple roles within cities: they deliver vital environmental services (Aronson, et al., 2017), sustain biodiversity (Berthon, Thomas, & Bekessy, 2021), and provide recreational settings that foster public health (Diener & Mudu, 2021) as well as social cohesion (Dash, Shenoy, & Prabhu, 2024).

In the current context, we are witnessing an increasingly pronounced process of functional reconversion of under-used urban areas, aligned with the requirements and objectives of sustainable development promoted at European level. Within the European Union, regulations have been established to encourage the creation and expansion of UGS, acknowledging their essential contribution to improving quality of life, public health, and urban resilience in the face of climate change. These regulations are framed within Sustainable Development Goal No. 11 (SDG 11) – ‘Sustainable Cities and Communities,’ part of the United Nations 2030 Agenda for Sustainable Development.

In the case of Cluj-Napoca Municipality, these principles of sustainable development are explicitly formulated in the General Urban Plan (GUP), approved in 2011. *Chapter 3 – Proposals for Urban Planning, Subsection 3.2.1.4 – Environmental Protection. Green Spaces*, sets out relevant measures for the integration of landforms into the city’s green space network. Among these, two measures are particularly noteworthy. *Measure 37* stipulates the provision of land for the establishment of public green areas through mandatory land re-parceling operations in restructuring and urbanization zones. This measure aims to create a coherent green infrastructure through responsible spatial planning, recovering and capitalizing available land. Likewise, *Measure 41* highlights the use of significant topographic features of the city as functional and landscape landmarks, such as the Someşul Mic River corridor or Cetățuia Hill. This measure promotes the integration of natural landforms into the landscape and functional identity of the city, transforming them into essential components of the urban public space.

Although the concept of ‘Sustainable Development’ is closely linked to residents’ daily lives, bureaucratic urban planning often neglects residents’ perceptions and attitudes toward UGS, prioritizing broader objectives such as economic efficiency, spatial optimization, and ecological functionality (Cortés-Cediel, Cantador, & Bolívar, 2021). In practice, however, expectations and

preferences for UGS differ significantly by age, gender, education level, and socio-economic background (Lahoti, Dhyani, & Saito, 2024). Moreover, the phenomenon of *Green Gentrification* demonstrates that the provision of high-quality green spaces can increase local living costs, with potentially adverse effects on socially disadvantaged groups (Chang, 2024). When residents' needs and preferences are insufficiently considered, the outcome may be reduced user satisfaction, lower levels of use, and diminished health benefits and community cohesion, ultimately leading to an inefficient use of urban resources (Țigan & Brînzan, 2014).

Therefore, this study was carried out to focus on residents' attitudes towards the newly integrated segment of Canalul Morii near Ion Luca Caragiale Park in Cluj-Napoca Municipality, where an urban regeneration of the area has been conducted, and therefore the opinion of the residents is important for the purposes of further UGS planning.

With the development of a comprehensive Environmental Attitude Questionnaire survey, this research aims to (a) assess the residents' care for the environment; (b) determine the perceived function of UGS in the vicinity of the built-up areas; (c) assess the quality or lack of quality of the newly integrated segment of Canalul Morii; and (d) determine the influence the project has on the perceived improvement of the living standard in the respective area by making more rational use of limited land resources.

2. STUDY AREA

According to the *General Report of the General Urban Plan (2011)*, Cluj-Napoca Municipality is located in the northwestern part of Romania, within Cluj County (classified as a NUTS 3 region by the European Commission), the North-West Development Region (NUTS 2), and Macroregion 1 (NUTS 1). Geographically and historically situated in Transylvania, Cluj-Napoca currently represents the main urban agglomeration and the most significant polarizing center of the region, often informally referred to as the "capital of Transylvania". This study concentrates on the central neighbourhood, where the urban regeneration project took place. Fig. 1 illustrates the geographic location of Cluj-Napoca within Romania, as well as the newly regenerated segment of Canalul Morii and Ion Luca Caragiale Park.

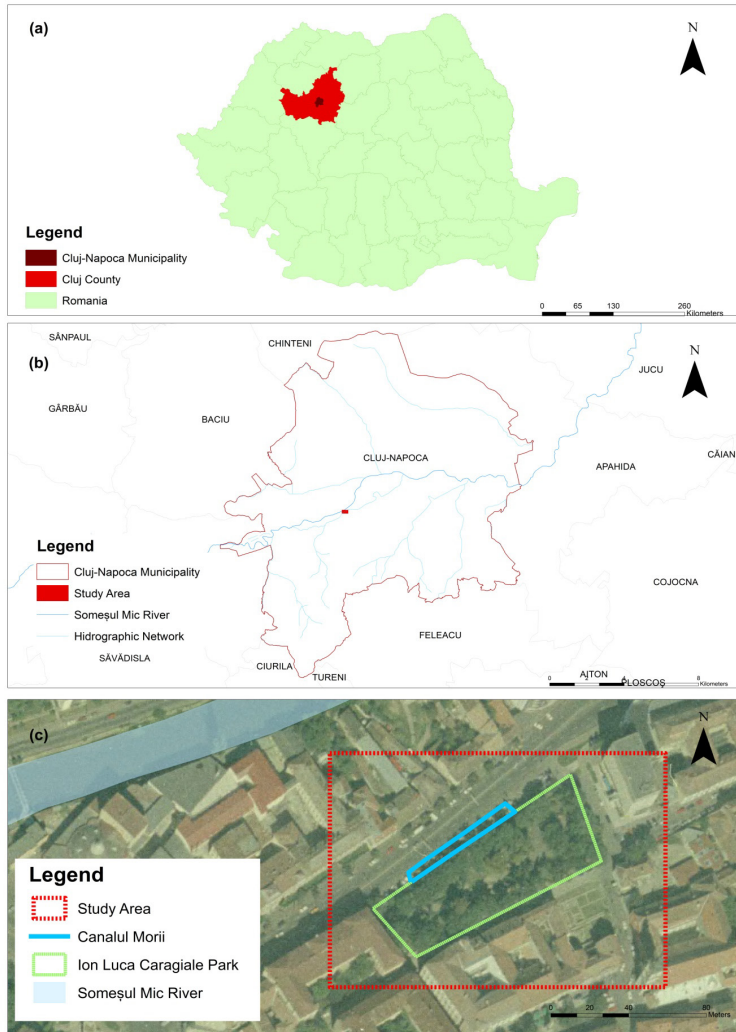


Fig. 1. Description of the study area: (a) national geographic setting of the study area in Romania; (b) regional geographic setting of the study area in Cluj-Napoca; (c) details of the study area. *Source: the authors*

The works related to the project “*Rehabilitation of Ion Luca Caragiale Park and Octavian Petrovici Street*”, including the partial redevelopment of Barițiu Street through the uncovering of Canalul Morii, commenced on October 13, 2023, under the coordination of the Cluj-Napoca Municipality. According to official statements, the project was completed in June 2025 and is currently in the

reception phase. The total regenerated area amounts to 11,676 m², consisting of Ion Luca Caragiale Park (4,864 m²), Octavian Petrovici Street (4,597 m²), and George Barițiu Street (2,215 m²).

With the uncovering of Canalul Morii—previously covered with concrete slabs during the 1980s—and its integration into the newly redeveloped Ion Luca Caragiale Park, the watercourse has been reconverted into a pedestrian-accessible recreational green space, enhanced through specific landscape interventions.

The project included the arrangement of embankments, installation of informational panels, and placement of urban furniture, while access to the water surface was facilitated in order to encourage direct interaction between residents and the natural environment reintroduced into the urban fabric.

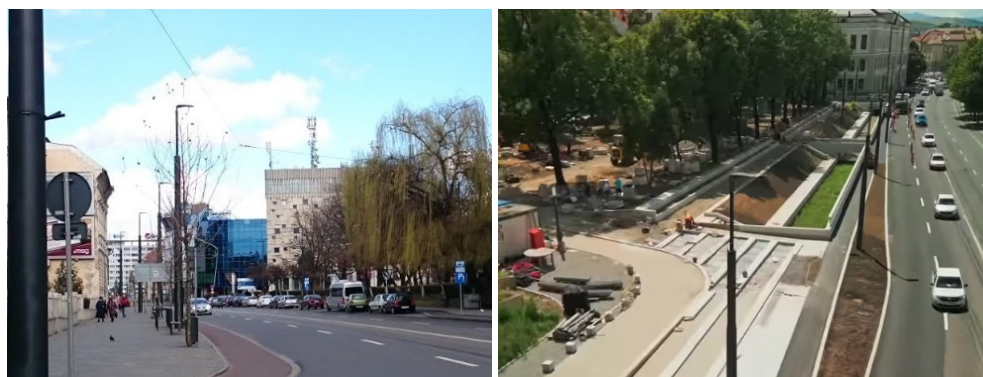


Fig. 2. Canalul Morii before and after the revitalisation. *Source: Monitorul Cluj*

The regeneration and modernization project of Ion Luca Caragiale Park, together with the uncovering of Canalul Morii, constitutes one of the most significant recent urban interventions in Cluj-Napoca. Its relevance derives not only from the physical and symbolic scale of the works, but also from their integration into broader strategies of sustainable urban development and the protection of cultural and natural heritage.

3. SURVEY DESIGN AND DATA COLLECTION

Environmental attitudes generally encompass any disposition toward the natural or built environment; however, researchers examining this topic typically focus on individuals' concern for nature and the extent to which they

care about the state of the natural environment (Gifford, 2002). More specifically, the notions of *environmental attachment* and *environmental appraisal* are frequently discussed in connection with environmental attitudes. Environmental attachment refers to an individual's subjective perception of a place, thus expressing personal feelings and experiences related to the environment. In contrast, environmental appraisal places emphasis on the environment itself, assessing its quality or the perceived lack thereof.

In order to investigate the environmental attitudes of Cluj-Napoca residents regarding the urban regeneration works of Canalul Morii, an Environmental Attitude Questionnaire (EAQ) was employed. The instrument was structured into items designed to capture the following variables: (a) Residents' care for the environment; (b) Perceived function of UGS in the vicinity of the built-up areas, (c) Assessment of the quality or lack of quality of the newly planned Canalul Morii space, (d) Influences of the project on the perceived improvement of the living standard in the respective area.

An online questionnaire consisting of 20 questions was developed using the Google Forms platform. This platform was selected due to its accessibility, ease of use for both researchers and respondents, and its capacity to centralize and export data in formats compatible with statistical analysis software, in this case Excel.

- a) The development of the questionnaire followed several key stages:
- b) *defining the research objective*. The first stage involved establishing the main objectives that guided the construction of the instrument.
- c) *Questionnaire structure*. The questionnaire was organized into sections corresponding to the variables under investigation (Table 1).
- d) *Types of questions*. Closed-ended questions with predefined answer options were employed, using a five-point Likert Scale.
- e) *Pilot phase*. Prior to the official launch, the questionnaire was tested on a small group ($n = 3$) to assess the clarity of wording and technical functionality. Based on the feedback received, minor adjustments were made to the order of questions and the phrasing of certain items.
- f) *Distribution*. The questionnaire was distributed online via social media, e-mail, and other digital channels to ensure a diverse sample. Participation was voluntary, and respondents were informed that all data would be processed anonymously and confidentially.

Given that it was neither feasible nor justified within the time constraints of this research to administer the questionnaire to the entire population of Cluj-Napoca—and, in practice, such an undertaking would be impossible—particular attention was paid to ensuring the representativeness of the sample. To guarantee

that the sample would adequately reflect the target population and that the results could be generalized, the sample size was calculated. The absolute sample size was initially determined using the following formula:

$$n = t^2 * p * (1-p) / e^2$$

$$n = 1,96^2 * 0,5 * (1-0,5) / 0,05^2 = 384,16$$

where:

n = sample size

t = theoretical value of the accepted probability (commonly $t = 1.96$ for a 95% confidence level)

p = proportion (commonly set at 0.50)

e = margin of error of representativeness (accepted values typically range between 1% and 5%)

Subsequently, the sample size was adjusted to account for the total population of Cluj-Napoca Municipality, using the correction formula:

$$n_c = n / [1 + (n-1)/N]$$

n_1 = corrected sample size

n = obtained sample size

N - total population of the Cluj-Napoca Municipality (286,598 inhabitants, according to the 2021 Census)

$$N_1 = 384,16 / [1 + (384,16-1) / 286598]$$

The corrected sample size for applying the perception scale was determined to be 165. With 165 valid responses, the study achieves a 95% confidence level that the results reflect the true population values within a $\pm 5.0\%$ margin of error (assuming a population proportion of 50%).

4. RESULTS

4.1. Socio-Demographic characteristics

The socio-demographic characteristics of participants across age groups are presented in the following graphs. The sample shows a relatively balanced age distribution, with the majority falling into the middle-age (46–55) and late middle-age category (56–65) (Fig. 3).

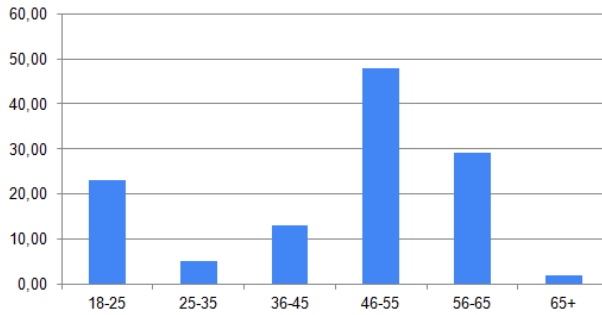


Fig. 3. Age Distribution. *Source: the authors*

The sample was predominantly female, with 67% of respondents identifying as women compared to 33% identifying as men, a difference of 34% (Fig. 4). In terms of educational attainment, the majority of respondents reported higher education, with 36% holding a bachelor's degree and 50% a master's or doctoral degree (Fig. 5).

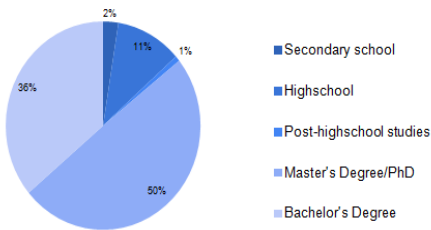


Fig. 4. Gender Distribution.
Source: the authors

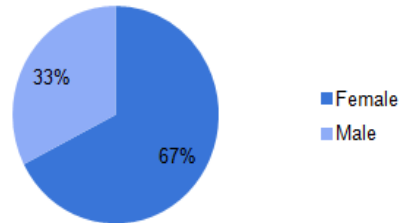


Fig. 5. Education Level.
Source: the authors

4.2. Overall attitudes towards the urban regeneration project

The results of the sociological process explained before confirm that the project of urban regeneration of Canalul Morii is perceived relatively positively, fulfilling its recreational function, also being in line with the measures outlined in the project's initial description. With an average EAQ score of 3.88 ("Neutral" to "Partially Positive"), the questionnaire demonstrates that modern urbanization measures are aligned with residents' needs. In Fig. 6 each answer option is shown as a percentage, for a better visualization.

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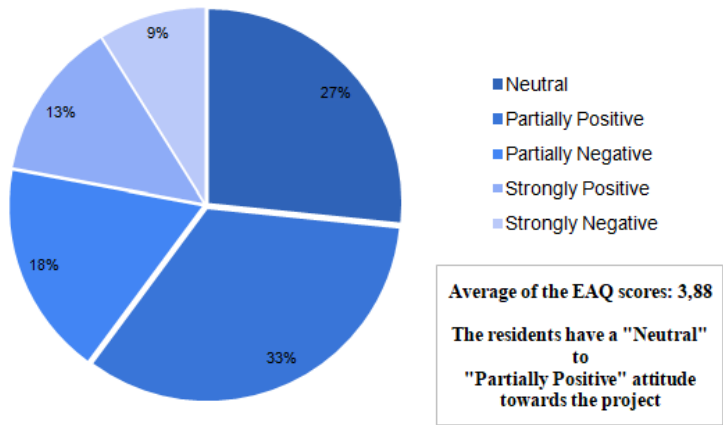


Fig. 6. Residents' attitude towards the Urban Regeneration of Canalul Morii.
Source: the authors

Age group (Fig. 7) represents the main demographic characteristic influencing variation in the EAQ score. The data show that respondents aged 18–25 (average EAQ score = 3.90) and those aged 46–55 (average EAQ score = 4.01) exhibit the most positive attitudes toward the urban regeneration project.

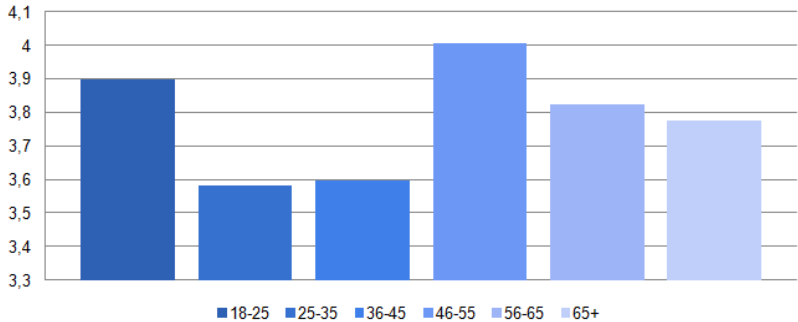


Fig. 7. Average of the EAQ score/age group. *Source: the authors*

Another variation in the EAQ score emerges when the population is disaggregated by gender. As illustrated in the Fig. 8, female respondents demonstrate a more positive attitude toward the urban regeneration project, with a mean score of 3.92, compared to male respondents, who recorded a mean score of 3.76.

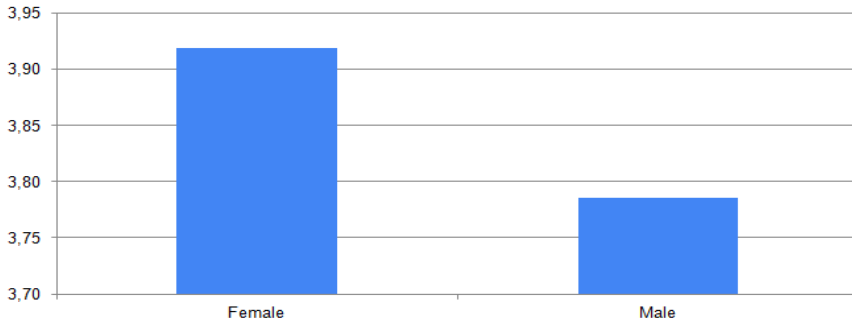


Fig. 8. Average of the EAQ score/gender. *Source: the authors*

Furthermore, the variation in EAQ scores becomes more pronounced when the sample is segmented by educational attainment. Respondents with bachelor's, master's or doctoral degrees generally exhibit moderately positive attitudes, while those with lower secondary, post-secondary (non-tertiary) and high school education tend to display neutral to partially positive views (Fig. 9).

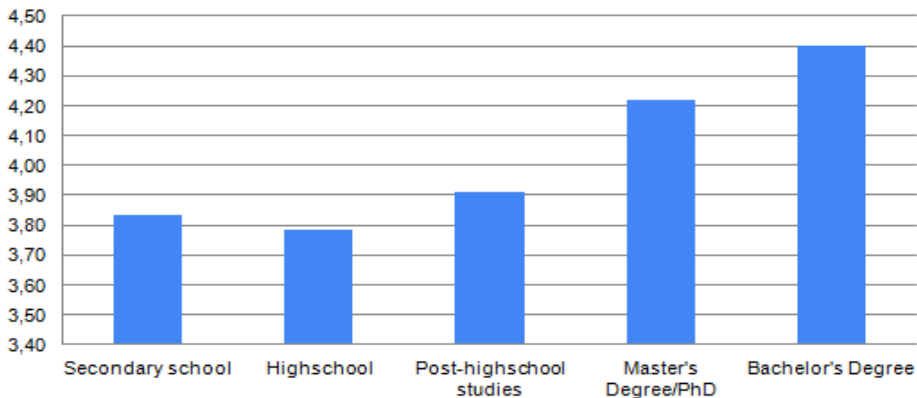


Fig. 9. Average of EAQ score/education level. *Source: the authors*

The table below presents the mean scores calculated for each item of the questionnaire. Furthermore, in order to enable a more detailed analysis of potential issues raised by the urban regeneration project, the mean values corresponding to each variable included in the questionnaire were also computed.

Table 1. EAQ variables and their respective items

Resident's care for the environment	Perceived function of UGS in the vicinity of the built-up areas	Assessment of the quality or lack of quality of the newly planned Canalul Morii area	Influences of the project on the perceived improvement of the living standard in the respective area
Such an intervention was imposed given the density of constructions in the urban space surrounding Caragiale Park EAQ score- 3.80	The more a park contains diverse natural elements (e.g., flowers, trees, streams, shrubs, lakes, etc.), the more diversified will be the specific relaxation opportunities within that park EAQ score- 4.70	Do you agree with the hypothesis that the uncovering of the Canalul Morii sector and its integration into Ion Luca Caragiale Park will lead to the optimal capitalization of the watercourse? EAQ score- 4.17	The arrangement and integration of the Canalul Morii sector into the Caragiale Park has negative effects for the population, due to the reduction of available parking spaces EAQ score- 3.41
The integration of Canalul Morii into the respective sector will support the importance of walking, not only along the nearby commercial streets EAQ score- 4.33	I consider that the new function of the park is rather to support social interactions, especially for students of nearby universities EAQ score- 2.18	Linking a segment of Canalul Morii to Caragiale Park has a positive outcome on leisure and recreational activities EAQ score- 4.38	The arrangement and integration of the Canalul Morii sector into Caragiale Park increases the well-being of the population residing in that area EAQ score- 4.40
I do not have much connection with the respective area and I am not interested in this project EAQ score- 3.45	The association of the two elements – Caragiale Park and Canalul Morii – plays a significant role in reducing the level of stress caused by the urban environment EAQ score- 4.23	I consider it important that this project be continued in other sectors of Canalul Morii as well EAQ score- 4.20	Adding Canalul Morii to the green space of Caragiale Park will result in the increase of real estate values in that area EAQ score- 2.28
Canalul Morii and Ion Luca Caragiale Park are becoming increasingly valuable, as the artificial urban environment continues to expand EAQ score- 4.39	Green areas within built-up spaces enhance the well-being of the city's population EAQ score- 4.81	Expanding the park with the respective sector of Canalul Morii will increase the number of park visitors EAQ score- 4.37	This intervention makes no sense because the benefits it brings are negligible EAQ score- 3.91

Resident's care for the environment	Perceived function of UGS in the vicinity of the built-up areas	Assessment of the quality or lack of quality of the newly planned Canalul Morii area	Influences of the project on the perceived improvement of the living standard in the respective area
The arrangement and integration of the Canalul Morii sector into Caragiale Park increases the overall well-being of the city's population EAQ score- 4.34	I have never considered the importance of Canalul Morii in enhancing the perceived level of well-being EAQ score- 2.70	I believe that the benefit of uncovering Canalul Morii in the Caragiale Park sector is insignificant for the city's population EAQ score- 3.72	The arrangement and integration of the Canalul Morii sector into Caragiale Park is not in favor of the population, as the space is too limited EAQ score- 3.78
AVERAGE			
4,06	3,72	4,17	3,56

Source: the authors

The highest mean score was recorded for the variable *“Assessment of the quality or lack of quality of the newly planned Canalul Morii area”*, highlighting the significance of the regeneration project in the perception of the local population; transforming the underused elements of the urban landscape.

The second highest mean score was associated with *‘Residents’ care for the environment’*, reflecting a strong inclination towards a sustainable and environmentally friendly future. Subsequently, the variable *‘Perceived function of UGS in the vicinity of built-up areas’* obtained a mean score of 3.72, suggesting that UGS in these areas could benefit from further improvement. Conversely, the lowest mean score was recorded for the variable *‘Influences of the project on the perceived improvement of the living standard in the respective area’*. This result can be explained by the concern that such a project may exacerbate the already strained infrastructure of Cluj-Napoca and contribute to rising rental prices in the area, which are already considerably high.

5. DISCUSSIONS

In general, our results showed interesting relationships between perception and attitudes of the urban regeneration project of Canalul Morii and factors such as age, gender and studies, which indicated that the age group seems to play a crucial role.

The analysis of socio-demographic characteristics revealed distinct patterns that shape the attitudes of the population. The 46–55 age group is usually characterised by high rates of living with children and full-time employment.

This suggests that their positive opinion towards the project comes from the need of having high-quality UGS nearby for family-leisure activities (Xu, Georgiadis, Cremonini, Marini, & Toselli, 2024). The 18–25 age group showed a different pattern. Being well informed about the concepts of sustainability and living in a new era of modernisation, they have a preference towards urban development (Oinonen & Paloniemi, 2023). It is important to note that with higher education come more positive attitudes, fact also linked in the knowledge of sustainable development, a wish for modernisation and care about the environment (Meyer, 2015).

The items that scored lower than the mean average of 3,88 represent deviations that need to be studied (see table). Ion Luca Caragiale Park, already characterized by a relatively limited surface area, is perceived by part of the local population as vulnerable to the pressures exerted by the continuously expanding urban infrastructure. In a context where the road network of Cluj-Napoca is marked by significant congestion, the reintegration of Canalul Morii into the urban landscape may be regarded negatively, as it could further reduce the space available for pedestrian and vehicular circulation. At the same time, in light of the continuous rise in real estate prices, some respondents expressed reluctance toward any modifications in the vicinity of residential buildings, fearing potential negative impacts on property values. Questionnaire results also indicate that residents do not generally perceive the surface occupied by buildings in the analyzed area as either excessive or poorly managed. The high presence of young people—pupils and students—frequenting Caragiale Park reinforces its predominant social function in public perception. This outlook may be linked to a diminished or absent urban memory concerning Canalul Morii, given that the canal was covered with concrete slabs for over three decades. As a result, it was effectively erased from collective consciousness, with younger generations in particular unaware of its historical existence near the park.

Additionally, the persistent issue of waste pollution contributes to a negative perception of Canalul Morii, undermining both its image and its potential reintegration into the urban environment as a valuable element. With regard to not deeming the project important for the city's overall population, a possible explanation is that the respondent sample included both residents of the central area of the municipality and those from peripheral neighbourhoods, thus offering a broader and more representative perspective on public perceptions.

The present research is subject to several limitations that must be acknowledged. First, the survey sample was both numerically and geographically constrained, reflecting predominantly the perspectives of an urban population segment active in online environments. This sampling approach may limit the overall representativeness of the findings. Second, the actual number of respondents

was lower than the sample size estimated through statistical calculations, which could reduce the accuracy and reliability of the results. Consequently, while the study provides valuable insights into residents' perceptions of the Canalul Morii urban regeneration project, its conclusions should be interpreted with caution and complemented by further research employing larger and more diverse samples.

Building on the findings of this study, future research should seek to broaden the scope and depth of analysis regarding urban regeneration projects. Expanding the sample size and ensuring greater demographic and spatial diversity would improve the representativeness of results and allow for more nuanced conclusions. Longitudinal studies could also capture how residents' perceptions evolve before, during, and after the implementation of such projects. Furthermore, comparative analyses with other Romanian or European cities could highlight similarities and divergences in public attitudes toward UGS regeneration.

Beyond survey-based methods, incorporating qualitative approaches such as interviews, focus groups, or participatory workshops would provide deeper insights into residents' lived experiences and expectations. Finally, future investigations should explore the tangible impacts of regeneration projects on health, wellbeing, and property values, while also addressing the potential risks of green gentrification to ensure equitable urban development.

6. CONCLUSIONS

This study highlights that the revitalization of Canalul Morii, through its integration into Ion Luca Caragiale Park, is perceived by residents as a generally positive contribution to urban sustainability, wellbeing, and the enhancement of recreational opportunities in Cluj-Napoca.

While differences in perceptions across age, gender, and education levels underline the heterogeneous nature of public attitudes, the overall findings confirm that such projects hold substantial potential for strengthening the role of UGS in improving quality of life. At the same time, concerns regarding infrastructure pressures and rising housing costs reveal the complex challenges that accompany regeneration initiatives in rapidly growing cities.

The case of Canalul Morii underscores the necessity of designing urban interventions that are not only environmentally sound and aesthetically valuable, but also socially equitable and responsive to community needs. As cities across Europe and beyond grapple with the dual demands of urbanization and sustainability, the Cluj-Napoca experience serves as both a model and a reminder: successful regeneration requires not only physical transformation, but also the active engagement of those who inhabit the urban landscape.

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