

REVIEW

Gentrification as a field of study in environmental sciences

La gentrificación como campo de estudio en las ciencias ambientales

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ABSTRACT

This article examines the interaction between gentrification and environmental sciences in Colombia, using a hermeneutic desk review approach to unravel how this urban phenomenon influences and is influenced by environmental factors. Through the hermeneutic circle method, adapted for a single researcher, a deep understanding of the existing literature is achieved and main lines of research are identified. Areas explored include green gentrification, climate change impacts, health and well-being effects, environmental justice, and associated public policies. The study highlights the need for policies that balance environmental improvement with social protection, and underlines the importance of including local communities in urban planning processes to prevent displacement and increase social equity. This interdisciplinary approach provides valuable insights to understand the complexity of gentrification and its multiple dimensions in an urban and environmental context.

Keywords: Green Gentrification; Climate Change; Environmental Justice; Public Policies; Colombia.

RESUMEN

Este artículo examina la interacción entre la gentrificación y las ciencias ambientales en Colombia, utilizando un enfoque de revisión documental hermenéutica para desentrañar cómo este fenómeno urbanístico influye y es influenciado por factores ambientales. A través del método del círculo hermenéutico, adaptado para un solo investigador, se logra una comprensión profunda de la literatura existente y se identifican las principales líneas de investigación. Las áreas exploradas incluyen la gentrificación verde, los impactos del cambio climático, los efectos en la salud y el bienestar, la justicia ambiental y las políticas públicas asociadas. El estudio destaca la necesidad de políticas que equilibren la mejora ambiental con la protección social, y subraya la importancia de incluir a las comunidades locales en los procesos de planificación urbana para evitar desplazamientos y aumentar la equidad social. Este enfoque interdisciplinario proporciona insights valiosos para entender la complejidad de la gentrificación y sus múltiples dimensiones en un contexto urbano y ambiental.

Palabras clave: Gentrificación Verde; Cambio Climático; Justicia Ambiental; Políticas Públicas; Colombia.

INTRODUCTION

Gentrification, understood as the process by which neighbourhoods or urban areas undergo a significant socioeconomic transformation, often resulting in the displacement of less affluent populations by higher-income ones, has gained renewed interest in the field of environmental sciences.^(1,2,3) This phenomenon not only modifies the aesthetics and demographics of cities but also poses critical challenges and unique opportunities

for urban sustainability and social justice.^(4,5,6)

In Colombia, as in many other parts of the world, gentrification has been driven by urban development policies that seek to revitalize urban centres and attract economic investment.^(7,8) However, this process is often accompanied by unintended consequences, such as an increased cost of living and the exclusion of original inhabitants who cannot withstand escalating prices for housing and services.^(9,10,11) These changes have social and economic implications and profoundly affect the urban environment, influencing everything from vegetation cover to mobility patterns and resource use.^(12,13,14)

In this context, this article proposes to explore gentrification from an environmental perspective, analyzing how this phenomenon affects and is affected by the environmental aspects of urban areas.^(15,16,17) Through a hermeneutic documentary review, the interactions between gentrification, urban planning and environmental justice in Colombian cities are examined to identify strategies that can align economic development with social equity and environmental sustainability.^(18,19) The research focuses on reviewing previous studies, current policies and emerging trends that mark the evolution of this complex phenomenon.

The rationale for the research

The study of gentrification in the context of environmental sciences in Colombia is particularly relevant due to the urgent need to understand how urbanization processes affect environmental sustainability and social equity.^(20,21) The hermeneutic methodology employed in this study is particularly justified because it allows for an in-depth interpretation of texts and documents that address this complex phenomenon, providing a holistic understanding that integrates multiple perspectives and disciplines.^(22,23)

Adopting the hermeneutic circle method, characterized by its iterative approach between understanding specific parts and the whole,⁽²⁴⁾ is crucial in studies that address multidimensional phenomena such as gentrification. This method facilitates understanding how gentrification has been conceptualized and studied in various disciplines and allows for reevaluating and synthesizing this knowledge in light of new data and emerging theories.

Despite abundant research on gentrification in economic and social terms, there is a significant gap regarding its impact and relationships with the environment in Colombian urban contexts. This study seeks to fill that gap by exploring how gentrification influences urban environmental policies, access to green spaces, and air and water quality, among other factors.

This study is novel in the Colombian context because it integrates the environmental dimension of gentrification, an area little explored but of growing importance as cities face climate change and sustainability challenges. Moreover, it is relevant because it offers insights to inform public policies and urban development strategies that balance economic growth with social justice and environmental protection.^(25,26,27)

By analyzing gentrification from an environmental perspective, this study contributes to a better understanding the long-term consequences of urban renewal processes. Thus, it provides valuable information for stakeholders, including urban planners, politicians and communities, on how to design urban interventions that are inclusive and environmentally friendly.^(28,29) These assessments underline the importance of addressing gentrification not only as an economic or social challenge but as a complex intertwined with environmental sustainability, highlighting the need for interdisciplinary research and public policy approaches.

State of the art

The study of gentrification in the field of environmental sciences has evolved considerably, encompassing several lines of research that intersect in urban development, social justice and environmental sustainability.^(30,31) Below is a state of the art that breaks down the main lines of research in this area:

Green Gentrification

This line of research explores how green infrastructure interventions in urban areas, such as parks, community gardens, and green corridors, can lead to gentrification by increasing property values and attracting higher-income residents.⁽³²⁾ These studies analyze both the environmental benefits and the social challenges that arise, including the displacement of low-income populations and the privatization of formerly public green spaces.^(33,34)

Gentrification and climate change

This area examines how climate change adaptation policies can influence gentrification processes, particularly in coastal and other areas vulnerable to extreme weather effects.⁽³⁵⁾ Research focuses on how improving infrastructure to increase climate resilience can also increase property prices, displacing local communities.^(36,37)

Impacts on health and well-being

Studies in this area investigate the effects of gentrification on the health and well-being of affected

communities.^(38,39) This includes changes in air quality, accessibility to health services, and the dynamics of public spaces that can affect residents' physical and mental well-being.^(40,41,42)

Environmental justice and gentrification

This strand focuses on how gentrification processes can perpetuate or mitigate environmental inequalities.⁽⁴³⁾ Researchers explore urban and planning policies that can lead to a more equitable distribution of environmental benefits and how to prevent urban improvements from benefiting only higher socioeconomic groups.⁽⁴⁴⁾

Legislative and public policy issues

Research in this area addresses how legislation and public policy can influence gentrification processes and their environmental consequences.⁽⁴⁵⁾ These studies propose legislative frameworks and policy recommendations for managing gentrification in ways that promote sustainable development and protect the rights of vulnerable communities.

METHOD

A hermeneutic documentary review approach using the circle method was adopted for the methodology.⁽⁴⁶⁾ This method, traditionally used in the interpretation of texts, was adapted for a comprehensive analysis by a single author (figure 1).

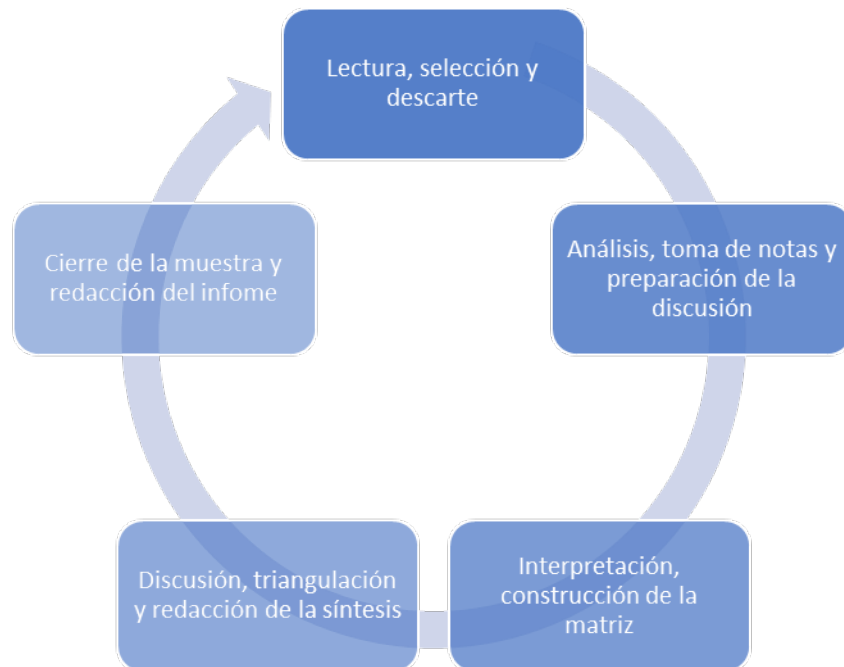


Figure 1. Hermeneutic circle used

Description of the methodology

The hermeneutic circle method is based on the premise that a text, or a body of literature, is achieved through a dialectical process between understanding specific parts and the whole. Initially, a preliminary exploration of the literature was conducted to gain an overview of issues related to gentrification in the environmental sciences.⁽⁴⁷⁾ This initial phase allowed for identifying key sources and emerging concepts related to the topic.

Adaptation for a single author

Since a single author conducted the research, adapting the method involved an iterative, in-depth review of each selected paper. To do this, the author alternated between understanding specific fragments and reflecting on how these were integrated into the overall understanding of the topic. This strategy allowed us to delve deeper into the texts, reinterpret them in light of new information and critically reflect on how each piece of information contributed to the understanding of gentrification from an environmental perspective.

Process of analysis

The analysis began by identifying the most relevant documents from academic databases and grey literature sources on gentrification and environmental science. Articles, reports, and books that directly addressed

gentrification in environmental contexts or provided relevant contextual information were selected. The author employed textual analysis techniques to disaggregate these studies' arguments, methodologies, and results. During this process, interpretations were revised in successive cycles, refining the author's understanding and adjusting the overall interpretation based on a progressive integration of details and the larger picture.

Ethical and logistical considerations

Special attention was paid to scholarly integrity, ensuring proper attribution of all sources and maintaining a critical perspective on potential biases in the selected texts. In addition, all stages of the hermeneutic process were documented to ensure methodological transparency and facilitate the reproducibility of the study in future research.

This hermeneutic methodology allowed for a deep and nuanced understanding of how gentrification impacts and is influenced by environmental, social and political factors, especially in the Colombian context.

RESULTS

Between 2018 and 2023, gentrification as a topic of study in the environmental sciences experienced several key developments and trends that reflect its complexity and growing importance within academia. During this period, green gentrification emerged as an area of significant interest.⁽⁴⁸⁾ Research focused on how green infrastructure projects in urban areas can lead to increased property values and, consequently, the displacement of lower-income populations. Studies also explored the environmental and social justice implications of this phenomenon.

In addition, there was growing concern about the effects of gentrification on the mental and physical health of affected communities.⁽⁴⁹⁾ Studies focused on how changes in the urban fabric can affect variables such as stress, access to services, and community cohesion.⁽⁵⁰⁾ This focus reflects an expansion of the study of gentrification beyond its direct economic and social impacts. The main trends and a brief description of them are set out below.

Increase in empirical studies and bibliometric analysis

There was a notable increase in empirical studies and bibliometric analyses on gentrification. These studies helped map the evolution of research in this field, identifying the main geographical areas of study and trends and gaps in the existing literature.

Interdisciplinarity in research

Gentrification began to be studied in disciplines such as urban geography, urban planning, and political ecology, reflecting a trend towards more holistic and interdisciplinary approaches. This has allowed for a deeper understanding of the mechanisms and effects of gentrification in different contexts and scales.

Global and local perspectives in the study

While most previous studies focused on North America and Europe, the study period highlighted a growing interest in exploring gentrification in Latin American, Asian and Australian contexts. This has enriched the literature with diverse perspectives and contributed to a more global understanding of the phenomenon.

Between 2018 and 2023, gentrification research in the environmental sciences expanded markedly, reflecting increased scholarly interest and a diversification in methodological and conceptual approaches. The literature review during this period highlighted several key concepts and limitations associated with the study of gentrification from an environmental perspective.

Main concepts used

Green and climate gentrification: Concepts such as green and climate gentrification were identified and developed, examining how urban interventions in green infrastructure or climate adaptations can raise property values and displace current residents.

Gentrification-induced displacement: This concept remained central, exploring how urban improvements can lead to the displacement of low-income populations, often without offering them viable housing alternatives within their communities.

Spatial and social justice: Studies highlighted the importance of considering spatial and social justice when implementing urban infrastructure projects, highlighting how these can perpetuate existing inequalities if not properly managed.

Limitations of the Field of Study

A significant limitation in the study of gentrification is the lack of a consistent and operationalizable definition, which hinders comparability across studies and the generalizability of results. Many studies need to be more

expansive regarding available data, which restricts long-term analysis and assessment of the multifaceted impacts of gentrification on communities. Although research has expanded globally, a concentration on North American and European contexts still predominates, with fewer studies in Asia, Africa, and Latin America, which may bias understanding of the phenomenon.

This analysis was concluded by examining the word cloud of the codebook constructed by the author. This procedure yielded the main concepts and themes addressed according to their frequency (figure 2).



Figure 2. Word cloud of the codebook after debugging of terms

These concepts and limitations illustrate how gentrification in the environmental sciences is evolving, highlighting theoretical advances and areas that require additional attention to improve the equity and effectiveness of urban and environmental policies. The integration of interdisciplinary approaches and the geographic expansion of studies are essential to address these challenges and take advantage of gentrification's opportunities for research and urban intervention.

Analysis of the Colombian context

In Colombia, gentrification and its environmental, social, and political implications took prominence during 2018-2023, reflecting unique challenges associated with rapid urban development and renewal policies. Studies conducted during this period emphasized how gentrification transformed the physical structure of Colombian cities and exacerbated pre-existing problems related to social equity and environmental sustainability.

In environmental terms, gentrification in cities such as Bogotá, Medellín and Cartagena was often associated with increased infrastructure construction and urban development projects that sought to modernize and revitalize urban areas. Although these projects promised environmental benefits, such as more green spaces and improved waste management, in many cases, they resulted in reduced publicly accessible green spaces and increased pollution due to increased vehicular traffic and construction activities. Loss of urban biodiversity and decreased air quality were notable consequences in densely populated areas.

From a social perspective, gentrification exacerbated inequality and displacement in Colombia. As properties in central areas rose in value, lower-income residents were forced to move to urban peripheries with fewer services and accessibility. This phenomenon intensified socioeconomic segregation and limited displaced people's economic opportunities. Moreover, the process often needed to be accompanied by adequate social housing or tenant protection policies, leaving many families without viable options.

Politically, gentrification in Colombia was framed by broader debates about urban planning and spatial justice. Political decisions often favoured investors and developers at the expense of local communities. The lack of effective mechanisms for citizen participation in planning processes and poor transparency in allocating contracts and permits for large projects were critical points of tension. In addition, social movements and advocacy groups opposing gentrification projects often faced significant obstacles to being heard, reflecting a democratic deficit in urban governance.

As Colombia rapidly urbanized, the need for more inclusive and sustainable development approaches became increasingly apparent. Integrating environmental and social considerations into urban planning and creating policies that promote effective spatial justice were recognized as crucial to mitigating the negative impacts of gentrification and fostering more equitable and livable cities.

DISCUSSION

In the context of environmental sciences, the study of gentrification addresses critical dimensions ranging from land use analysis to the socioeconomic impact on affected communities.⁽⁵¹⁾ In the study period between 2018 and 2023, the importance of integrating educational aspects into gentrification research and analysis was highlighted, especially in training future environmental scientists and urban planners.

Academic programs began to emphasize the need for an interdisciplinary approach combining urban planning, social justice, and environmental science.⁽⁵²⁾ This educational approach sought to prepare students to understand and address the complexities of gentrification as an economic or real estate market phenomenon and its effects on urban biodiversity, access to green space, and social equity.^(53,54,55) The curricula included courses that analyzed case studies of cities that implemented green infrastructure projects and their positive and negative consequences on local communities.

Applying these educational and research approaches in Latin America faced significant challenges.^(56,57) First, the lack of consistent and accessible data on urban changes and their environmental impacts limited the ability to conduct longitudinal studies that could inform effective policies. In addition, variability in urban and environmental legislation between and within countries complicated the application of uniform strategies for studying and managing gentrification.⁽⁵⁸⁾

Another challenge was the political and economic resistance to integrating environmental justice considerations into urban development. In many Latin American cities, gentrification projects were promoted under the premise of urban renewal and improved quality of life, but often without adequate dialogue with affected communities, resulting in displacement and increased spatial segregation.^(59,60)

To address these challenges, educational and research institutions in Latin America should strengthen their collaborations with government and community agencies. This could facilitate the creation of more robust and contextualized study frameworks that consider local social and economic dynamics. The importance of including community voices in urban planning processes to ensure that gentrification projects are developed fairly and sustainably was also highlighted. Education, therefore, plays a crucial role in training future professionals, raising awareness, and empowering communities to manage their urban environments actively.

CONCLUSIONS

From 2018 to 2023, the gentrification study in Colombia's environmental sciences revealed a complex interaction between urban development and social justice. Incorporating green infrastructure strategies was seen as a double-edged sword, where, while attempting to improve environmental quality, it also drove increases in land values that resulted in the displacement of vulnerable populations. This underscored the need for policies that balance environmental improvement with effective social protection.

Education about gentrification was identified as a crucial factor in fostering more conscious and equitable urban planning. Academic programs that integrated multidisciplinary analyses of the socio-environmental impacts of gentrification better prepared future professionals to face and manage these challenges inclusively, highlighting the importance of educating planners and policymakers on approaches that consider both sustainability and social equity.

The challenges faced in Colombia regarding gentrification reflected the importance of involving communities in urban decision-making processes. The lack of effective and transparent community participation in urban planning was a significant obstacle to achieving spatial justice. This period underscored the need for policy reforms that facilitate greater collaboration between citizens, governments and developers to ensure that the benefits of urban development are more equitably accessible.

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FINANCING

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CONFLICT OF INTEREST

No conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Gelber Rosas-Patiño.

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Research: Gelber Rosas-Patiño.

Methodology: Gelber Rosas-Patiño.

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