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Received: 18/01/2025

Revised: 17/03/2025

Accepted: 09/04/2025

Published: 12/04/2025

Academic Editor:

Dr. Alexandros Bartzokas-Tsiompras

DOI: 10.48088/ejg.w.bau.16.2.108.121

ISSN: 1792-1341



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1. Introduction

In 2020, Lisbon (Portugal) was elected the Green Capital of Europe. Since then, the “green seal” has been a constant presence in the city marketing strategy associated with a good urban quality of life. According to the EU (2020), the increase in green areas and sustainability measures have driven the economy to help overcome the population loss observed in Lisbon by attracting new residents of a specific standard: young, highly educated, high-income, and, most likely, White. Nevertheless, the promotion of racial representation and equity still seems a distant dimension to be achieved in a green city when analyzing the projects associated with the EU’s “Green City Award,” with a focus on the green economy and energy transition. Ecologically, the highlight has been the green corridors and the general expansion of greening. Social aspects, such as environmental justice (Checker, 2020; Verheij & Nunes, 2020) and uneven access to nature in a neoliberal and capitalist city (Smith, 2008; Harvey, 1996) promoting greening and sustainable strategies have not been at the top of the agenda, so they have remained as promises of expanding green areas for all neighborhoods in the city (Verheij, 2019). Spaces of nature in cities (Kos, 2008) are (re)produced within the capitalist logics of space (Lefebvre, 1991; Santos, 1997), so they replicate the conflicts and contradictions characteristics of that mode of production (Castree, 2000), such as in their distribution and appropriation by different inhabitants based on income, race, and neighborhood (Leff, 2004; Löwy, 2018).

One of the theoretical-conceptual possibilities for understanding these conflicts and contradictions is operationalizing the concept of green gentrification, which various authors have treated as ecological or environmental gentrification. Gentrification is a polysemic and open term, with many discussions and interpretations, but, in general, authors (Smith, 1979 and 1986; Marcuse, 1985; Zukin, 1987; Hamnett, 1991; Atkinson, 2002; Slater, 2006 and 2009; Mendes, 2008 and 2015; De, 2025) have agreed the process involves increasing property prices, intensifying new construction and renovation, improving unit quality, local population profile changes, and attracting higher-income newcomers to modify the ethnic-racial profile of the neighborhood or area. The concept of green gentrification (Dooling, 2009; Pearsall, 2010; Gold & Lewis, 2016; Haase et al., 2017; Anguelovski & Connolly, 2019) incorporates a new dimension in the gentrification perspective, the direct or indirect displacement of which results from green investments. Thus, introduced or recovered environmental amenities improve the desirability of an area and reshape its inhabitants' profiles. Klein et al. (2020) explained that environmental or green investments are produced in the same social structure of income

Research Article

Green Gentrification in Lisbon (Portugal): A Study about Marvila's Riverfront

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Abstract: Lisbon is considered a green European city. However, some greening projects have generated extra rent and increased the prices of new urban developments, especially along the Tagus River, indicating a possible green gentrification process. Green gentrification is a recent concept designed to understand direct and indirect displacement and exclusion in an area after some environmental requalification project, the territorialization of the UN Sustainable Development Goals, and parks. A delimited case study was conducted in the area of Braço de Prata/Matinha in Marvila parish to recognize the existence and materialization of this contemporary type of gentrification in Lisbon. This new and original research was based on the analysis of references about green gentrification, statistical data analysis, real estate prices, and field observation. Absence of direct displacement data and interviews are acknowledged limitations. Marvila is an uneven area in the city, including many concentrated social housing projects as well as redevelopments along its riverfront with high premium residential units after the reconversion of a brownfield into a greenfield. A new urban green park changed the urban plan, which eliminated heavy traffic, connected the city with the river, and created the possibility of a permanent view of the Tagus. After the requalification and the implementation of environmental amenities, the local population, elderly working-class communities who had lived with the surrounding industries, pollution, and contamination for decades, could not afford to live in the area due to the high prices of green and sustainable housing based on green gentrification, which is an environmental injustice.

Keywords: Green gentrification; Lisbon; Marvila; social displacement; urban development; environmental justice

Highlights:

- Green gentrification is a recent and important concept that reveals uneven access to nature in the city.
- Greening projects can increase real estate prices, displace inhabitants, and be environmentally unjust.
- Braço de Prata/Matinha neighborhoods are potential cases of green gentrification in Lisbon, Portugal.

concentration, inequality, and lack of access to housing. In this sense, green gentrification reinforces the denial of low-income populations, Indigenous and Black communities, migrants, and refugees to access quality green spaces. The origin of the green gentrification concept, in the second half of the first decade of the 2000s, is found in academic production geographically referenced in the Global North (i.e., the United States and Europe). According to Quinton et al. (2022), the theme of green gentrification emerges from studies on gentrification, environmental justice, and political ecology in North American cities.

Green gentrification (Gold & Lewis, 2016; Anguelovski, 2016; Anguelovski et al., 2017; Baumgartner, 2021a and 2021b) excludes much of the urban population from benefiting from living close to natural amenities and in sustainable houses due to the selectivity generated within the real estate market. The process is driven by projects that increase urban green areas (e.g., linear parks, community gardens, and urban forests); the renaturalization of lakes, lagoons, riversides, and coastal areas; the territorialization of the UN Sustainable Development Goals; the use of sustainable technologies in construction; the implementation of green or blue infrastructure offering environmental services; and other aspects of the green and sustainability city marketing like observed in Lisbon.

Our main research questions are related to the identification of a possible green gentrification process and how it materializes in the city of Lisbon. In this capital of Portugal, potential areas exist for studying and observing green gentrification in different intensities and phases of development, such as Jardim da Cerca da Graça in the Historic Center; Lumiar in Alta de Lisboa, where several large urban green parks were created in spatial contiguity – Parque das Conchas, Quintas dos Lilases, Parque Oeste, and Parque de Calvanas; in Campolide/Avenidas Novas, a more central part of the city, with the requalification and remodeling of Praça de Espanha; and in the Braço de Prata/Matinha area, along the Tagus River, in Marvila parish. This last area was chosen for conducting qualitative research to understand potential green gentrification in progress. This space, due to the magnitude of its brownfield requalification, with massive urban redevelopment and the expansion of greening strategies, is the living place of working-class and elderly communities. José António Videira, president of the Marvila Parish Council, explained during an interview with Figueiredo (2019, p. 02) that the riverfront residents have seen some benefits in the renovation and rehabilitation projects, like the green park (i.e., Parque Ribeirinho Oriente). However, they were concerned because they perceived that “the houses are not for the inhabitants. (...) They will modernize and boost Marvila but with high-end developments [2,700 new residential units in Braço de Prata and Matinha] that are not open to social mobility and the middle class.”

2. Methodological Notes

The general methodological procedures of this qualitative research were based on the reading and analysis of several bibliographic references, conducting fieldwork to directly observe the spaces under study, collecting cartographic and statistical data, and monitoring websites specializing in the real estate market. Anguelovski et al. (2017) indicated that in green gentrification studies, indicators determining the existence of the process over a specified time relate to the population’s socioeconomic profile and real estate dynamics. The most common are average income, qualifications and employment, property ownership, race, color, ethnicity, age, education, poverty rates, and property values. The authors also explained that studies on green gentrification have generally highlighted potential signs of displacement more than quantifying it.

The difficulty of empirically and quantitatively proving displacement was also affirmed by Haase et al. (2023), who wrote that methodologies for evaluating green gentrification are still in the initial phases of development: “Just proving ‘normal’ gentrification is already difficult. The empirical recording of displacement through the valorization of greenery is even more challenging and is only in its infancy, also in terms of its inclusion in conventional gentrification research” (Haase et al., 2023, p. 7 – author’s translation). However, the authors minimized this situation and explained that it is often more important to present critical positions on the process of nature appropriation in the city by the real estate market to denounce injustice than to gather “evidence” for a case study.

Considering the methodological strategies defined by Anguelovski (2016), Gould and Lewis (2016), Anguelovski et al. (2017), Alkon et al. (2020), Quinton et al. (2022) and Haase et al. (2023), this original study on green gentrification in Lisbon, carried out in 2023, aggregated general data to characterize the population (i.e., residents, age groups, income, occupation, gender, education, demographic density, population growth, and decrease rate) and the urban space and urban development projects (i.e., buildings, units, infrastructure, and sanitation) in an official Portuguese source, the *Instituto Nacional de Estatísticas – INE* (Portuguese National Institute of Statistics). Notably, the indicator of “race-color-ethnicity” was unconsidered in the census beyond its importance in analyzing the intersectionality between racialized communities and environmental justice. The direct data collected by observing the landscape and property prices supported the analysis of exclusionary displacement (Marcuse, 1985; Atkinson, 2002) but did not allow us to confirm direct displacement.

During the literature review, open-access Portuguese and English articles, chapters, and books about green gentrification, environmental gentrification, and ecological gentrification were evaluated. Cucca et al. (2023) analyzed 229 articles in English published between 1977 and 2021: 60 articles addressed climate gentrification, 19 addressed ecogentrification, 83 operationalized ecological gentrification, 89 described environmental gentrification, 161 investigated green gentrification, and 56 explored resilience gentrification. Of these, 114 associated gentrification directly with environmental justice or injustice concerning inequality in the access and distribution of green spaces: 112 were in the US, 45 in Europe, and 24 in Asia. Moreover, 80% dealt with city centers. The most discussed element of urban nature on gentrification was parks, which appeared in 94 works.

Observations of daily life and the urban landscape, as indicated by Lefebvre (1973), helped compose a field notebook with details about residents and users and the quality and uses of edified space, which allowed for inferring actual income classes and economic profiles. Field works in the study area were conducted during Winter 2023 between January and March and Summer 2023 in July. This profile of the actual inhabitants was useful for confronting the desired profiles of newcomers and possible residents of the new housing developments. To ensure the reliability and validity of the field observations, a comprehensive photo documentation was carried out to register the stage of the urban landscape. The preliminary research results were submitted to peer discussion in a public session, with the presence of a representative of the Camara Municipal de Lisboa (Lisbon City Council), at the Nova University of Lisbon in March 2023.

Real estate market dynamics and prices were evaluated using INE statistical data and direct data collected in a cyclical survey of the prices per square meter of properties for sale in the study area from January to September 2023. The value per square meter in the rental market increased following the same pattern of the acquisition market because if owners paid more or realized that property values increased, they tended to pass it on to the rental prices. Moreover, many projects were still in the construction phase, which resulted in the low availability of rental market stock. The following websites were referenced to collect and monitor real estate prices: Idealista (<https://www.idealista.pt/>), Riverside Prata (<https://www.prataRiversidevillage.com/>), Portuguese newspapers’ real estate sections (Público [<https://imobiliario.publico.pt/>] and

Diário de Notícias [https://www.dn.pt/tag/imobiliario.html]). This research allowed us to understand the increase in demand for properties connected with nature after the quarantine decrees of the COVID-19 pandemic.

Based on the data collected, we created an indicative database to characterize and locate new and under-construction developments, including buildings, complexes, construction years, unit types, sizes, use types, amenities, parking spaces, and layouts, to determine their pricing variations and examine the marketing strategies associated with greenery/parks and sustainability. Garcia-Lamarca, Connolly, and Anguelovski (2021) stated that most studies on green gentrification have managed to capture potential displacement, exclusion, and marginalization through indirect indicators and increased property values in environmentally redeveloped areas.

Interviews or surveys with the remaining residents or the displaced (which is more challenging) could be a source of a more subjective comprehension of the psychological (Cramer-Greenbaum, 2023) and social impacts of green gentrification in everyday life. We acknowledge that the missing data about direct displacement, expulsion/eviction, and the deficiency of primary data collection from affected local residents are two limitations of this research framework.

3. Study Area: Braço de Prata and Matinha Neighborhoods along the Tagus Riverfront

The studied area was the polygon delimited by the Tagus Riverfront; the streets of Vale Formoso, Fernando Palha, Fábrica de Material de Guerra, and Cintura do Porto; and the avenues of Marechal Gomes da Costa and Infante Dom Henrique. Locally, the toponyms of Braço de Prata e Matinha refer to this space, located on the eastern riverfront of Lisbon in the parish of Marvila (Figure 1). According to CML (2017), it has an area of 6.23km² with 37,793 residents.



Figure 1. Location of the study area – Braço de Prata and Matinha – in Marvila parish in Lisbon, Portugal (Source: Camara Municipal de Lisboa [CML], 2021).

According to the Lisbon City Council (CML; 2008), despite its proximity to the redeveloped spaces of Expo'98, currently, Parque das Nações, the Eastern Riverfront (Figure 2) area, maintains an aging population profile with low working qualifications, little social cohesion, and high unemployment rates: "The Eastern Riverfront is the one with the least symbolic capital, being historically associated with industrial work and, therefore, as a dirty and polluted area" (CML, 2008, p. 49, original in Portuguese). According to Mazon and Henriques (2021), 85% of the total number of Marvila inhabitants live in social housing projects. Carvalho and Carmo (2012) highlighted that in 2009 when the average income in Lisbon was €1,508, it was €1,180 in Marvila. According to Mazon and Henriques (2021), an adult in Portugal is at risk of poverty with a monthly income lower than €501.

To Konstantinovas (2020), Marvila is a fragmented, segregated space where the railway (built in 1856) separates and produces two distinct spatial realities and landscapes. “Old Marvila” (Figure 2), close to the river for industrial use and occupied by the working class, was the place of unused space and abandoned industries that have been redeveloped with high-end housing projects. In contrast, “New Marvila” boasts countless social housing projects and empty green spaces.



Figure 2. The evolution of land reclamation and the reconversion of the industrial area (a) in 1947 with the construction of the urban development, Riverside, and (b) the green area, Parque Ribeirinho do Oriente (Sources: Folgado & Custódio, 1999; CPU – Architects International, 2019).

“Old Marvila” is where the gentrification occurred, with intense and fast renovation, redevelopment, and incorporation into the real estate market, as well as the projects in Braço de Prata and Matinha (Figure 3). For the developers and public government, the few residents in this space (Table 1) justified the urban redevelopment projects, so these mostly older women should not block new business possibilities and extra rent. However, “New Marvila” has tended to retain social housing, which is segregated and separated from the desirable “Old Marvila” with two physical barriers: 1) a railway and 2) a green barrier of the projected urban park Quinta do Marquês de Abrantes. The park will act as a visual green barrier along the railway to create a green view from the back of renovated and gentrified new developments along the riverfront while hiding the large blocks of social housing complexes (Figure 4).



Figure 3. Two “vilas operárias” (working-class housing) in our study area at different stages: (a) On Vale Formoso Street, the renovation and gentrification are visible in the urban landscape. (b) Close to the Riverside Prata Living Concept on Zófimo Pedroso Street, the old standard and inhabitants are still in place (Source: Author, February 2023).

Table 1. Population and constructed profile of Braço de Prata/Matinha, Marvila parish, between 2011 and 2021. Source: INE Portugal, available at <https://censos.ine.pt/> (Organized by the author August 21, 2023).

| Census | Inhabitants | Buildings |
|--------|----------------------------|-----------------------------|
| 2011 | 1,593 (867 women; 726 men) | 228 (771 residential units) |
| 2021 | 1,172 (630 women; 542 men) | 235 (837 residential units) |

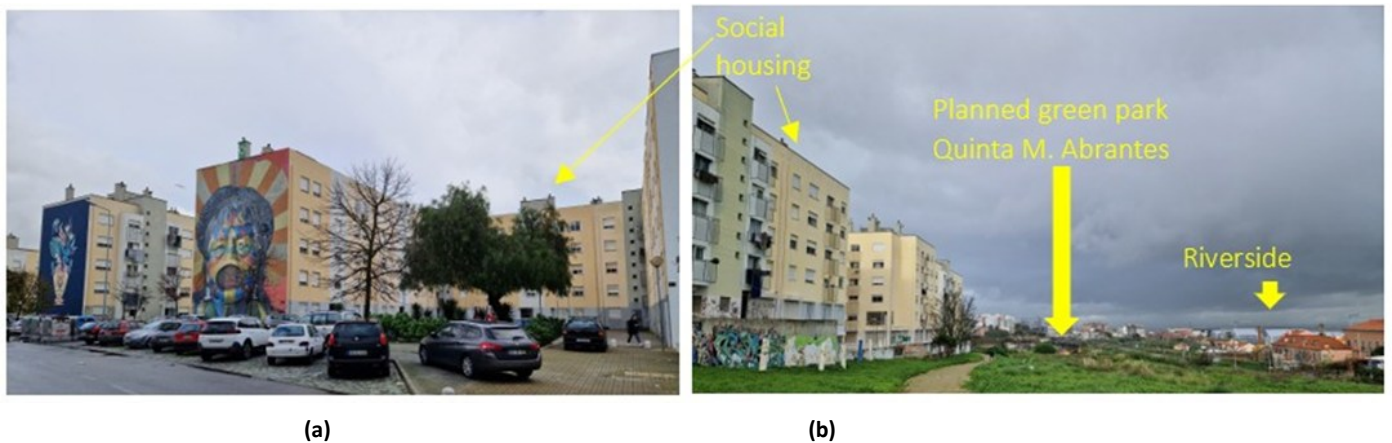


Figure 4. a) The social housing projects on José A. Pessoa Street in Marvila and (b) the planned green park of Quinta do Marquês de Abrantes, a possible green barrier between the social housing and new premium areas along the Tagus Riverfront (e.g., Riverside; Source: Author, January 2023).

Yagci and Silva (2021) explained that the Braço de Prata area is configured as a large brownfield in a fragile and fragmented territory with a segregated and socially stigmatized neighborhood (Figure 5). For CML (2008), the greatest difficulties encountered for the urban development of Braço de Prata-Matinha are related to the disqualification and abandonment of the industrial complex and the intensity of traffic along Cintura do Porto Street, which creates a spatial segregation of the built space related to the river bank. Notably, this street was closed, and the heavy truck traffic was rerouted to the back of the area due to the implementation of the park Ribeirinho do Oriente. The result was a traffic-free zone and an open view of the Tagus River. According to Oliveira (2014, p. 2), only urban regeneration through a series of interventions would enable the space to overcome its “empty, obsolete and devitalized condition.”



Figure 5. The former gasometers from the old gas industry are still visible. For decades, working-class people have lived in front of this highly polluted factory with heavily contaminated soil. Currently, structures have been incorporated into the landscape, with soil decontamination in process. Several houses on Vale Formoso Street are for sale or under renovation (Source: Author, February 2023).

Since the 2000s, Lisbon's municipal plans for the study area have been planning to convert industrial use and requalify the area by expanding green areas to occupy a space that was considered empty and deserted. The CML (2008) estimated that the Jardim Braço de Prata development (currently Riverside) would incorporate 4,729 inhabitants, mostly young people, changing the population profile. The use of the environmental dimension was understood as a competitive advantage for Lisbon in a situation of competition between European cities in attracting new and qualified residents and tourists (CML, 2010). Clearing the Tagus riverside and using the landscape to support recreational, leisure, and tourism activities, integrating with high-end housing projects, culminated with the plan of the Parque Ribeirinho Oriente (CML, 2011).

The municipal plans for the area clearly predicted an increase in urban density and a population rejuvenation. Even though popular participation in urban planning processes is mandatory and regulated by Portuguese legislation (Código do Direito de Participação Procedimental e Acção Popular - CDPPAP, Law 83/95; Bases Gerais da Política Pública de Solos, de Ordenamento do Território e de Urbanismo, Law 31/2014), the actual residents had almost no presence in the process. The Matinha Plan (CML, 2008), which is the basic planning instrument for the reconversion and requalification of the study area, had 16 registered participations, but the majority were from representatives of the real estate sector and only two independent individuals, but without themselves as local residents (Egiamb, 2021). The popular participation in the Loteamento A (Matinha) had the participation of just two people, and just one was from the area of influence of the project (CCDLVT, 2019).

4. Results and Discussion

4.1 Urban development and greening projects

With industrial obsolescence, urban redevelopment and conversion into a residential area with sophisticated real estate projects have produced possibilities for new uses of its occupation. The city government has planned the transformation of the Braço de Prata-Matinha brownfield into a greenfield connected with a green system of ecological corridors in Lisbon since the end of the first decade of the 2000s. The actions were to favor a change in the population profile of the area, especially in terms of age, to attract young people to promote its rejuvenation (CML, 2008).

However, the existing residents were not considered in the projects since all projects, from housing to greening, would affect so few people, according to the real estate development agents. This vision concerning the existing inhabitants was shared by the CEO of the company that managed the Prata Riverside Village Concept in an interview with a local newspaper. According to João Sanches, the Prata Riverside was “a large-scale project in an area where there is still no consolidation of life. We are in a very interesting neighborhood that is now very fashionable – Marvila-Beato – which, we are sure, will be a great neighborhood, as it mixes very Portuguese tradition and contemporary times and a close connection with the river” (Diário Imobiliário, 2018, p. 02, emphasis added).

In Marvila, the issue of the rent gap (Smith, 1979) and the vast number of vacant buildings and houses (Konstantinovas, 2020), which proved to be an important real estate business opportunity, are also the condition for the reproduction of the real estate capital. The liberalization of the housing market in Portugal, in the context of the implementation of the neoliberal agenda since the 1990s, opened the space for a wave of urban rehabilitation laws that facilitated and simplified building renovation works. These policies were also implemented in the rental market, and legislation for urban rent (Revisão do regime jurídico do arrendamento urbano, Law 31/2012) created a fast-track process for displacement. This new law allowed thousands of houses with old rent contracts to be unlocked in the historic center of Lisbon and other parts of the city to provide property for urban renewal and other more profitable uses. In our study area, for some time, the media (Sousa, 2018) has been denouncing cases of real estate bullying, forcing old residents with old rental contracts to leave their homes in the name of urban rehabilitation and economic prosperity.

The analysis results of real estate dynamics in the area revealed that these agents (e.g., financial companies, real estate funds, construction companies, land owners, and public authorities) involved in the reconversion, renovation, and commercialization of the area surrounding Parque Ribeirinho do Oriente have noted that the social life and presence of people living in the area constitute a “small” contingent, so they do not impede real estate development and possible gentrification. Furthermore, environmental amenities (i.e., green spaces and river views) are potentially valued to offer possible guarantees for generating extra income in the process of renovating the Braço de Prata (i.e., Riverside Village) and Matinha (i.e., Loteamento A) and its incorporation and development by the real estate market. Specifically, digital nomads have a special place in Lisbon among the desired profiles of young newcomers.

Yagci and Silva (2021) explained that with the digitalization of work, a new caste of privileged jobs and workers (i.e., digital nomads) has been created and welcomed. In addition to a simple change in the job market, the idea of remote working has been strongly linked to a new way of urban life: the tendency to search for temporary housing. This aspect has significantly impacted housing production and use due to the possibility of higher rents for temporary versus long-term contracts. In a worldwide competition to attract digital nomads, Lisbon is using the idea of green capital with several environmental amenities to attract temporary residents. However, per Yagci and Silva (2021), this approach has led to a new pattern of space consumption, with the proliferation of coworking spaces (i.e., coworking) that promote the commodification (due to an aesthetic component) and the *trendification* of abandoned industrial buildings (Figure 6). Besides the residential use of the old brownfield, the city government has promoted the location of startups – innovative, creative companies – especially in the Beato area, a neighborhood along the Tagus Riverside next to Braço de Prata-Matinha. This *trendification* or *hipsterization* process commonly includes social media (Santos, 2019; Dantas, 2019) and the association of the Tagus Eastern Riverfront with internationally famous places like Lisbon's “SoHo” and “Meatpacking District,” where the High Line is located, a recurrent example of green gentrification in New York.

Lisbon has generally provided a bull market for real estate investors. To Antunes and Seixas (2022), the real estate market in Portugal has boomed with above-average growth among EU countries. For example, between 2006 and 2020, the price of residential units increased by 51% for purchases and 23% for rentals. The great demand for property in Portugal from 2010 onward is explained by a set of endogenous and exogenous factors. According to Antunes and Seixas, these include a) changes in local legislation favoring the liberalization (i.e., deregulation) of the property market, particularly for rent; b) public policies facilitating the purchase of a home at low interest rates; c) a series of tax exemptions for Europeans, real estate funds, and real estate investment companies; d) the “Golden Visa” program, which issues residence visas to individuals who make residential real estate investments worth a minimum of €500,000 or €350,000 for properties over 30 years old in urban rehabilitation areas, which has increased the attractiveness of the Portuguese real estate market to foreigners; e) favoring investment in local accommodations

for tourism and short-term rentals (e.g., Airbnb); f) changes in technical standards for building renovation; and g) Portugal’s attractiveness in the tourist scene.

Marvila’s riverfront has captured sizable real estate investments, which have skyrocketed the price per square meter in Braço de Prata/Matinha. Cabral (2022) explained that the price per square meter in Marvila increased by 124.9% from the first quarter of 2018 to the fourth quarter of 2021 due to appreciation related to Prata Riverside Village. Hence, this development ... change[d] the perception of the value of land through the transactions it had generated, at values per m² far above what was the recently local reality. It is the effect of what a hypermedia development, with the signature of an architect awarded a Pritzker Prize, a privileged location, and the ambition to revolutionize that area of the city produces on the expectation of the evolution of the m² value in a parish that, until a few years ago, most Lisbon residents would have difficulty locating on the map. (Cabral, 2022, p. 04)



Figure 6. (a) Advertising for a new urban development in a former warehouse promoting the trendiest place in Lisbon. (b) The graffiti “stop gentrificaç@o” shows that some people have perceived the process (Source: Author, March 2023).

After the Prata Riverside, other developments (e.g., Jungle Lofts, Prateato, and The Brick) improved the valorization of Marvila land above Portugal’s average. Real estate market data by INE details when Marvila became a trendy spot in Lisbon (Figure 7). The price per m² in Marvila exceeded the general numbers for Lisbon between 2020 and 2021, when Parque Ribeirinho do Oriente was inaugurated (July 2, 2020) and the first Riverside units were delivered. These events may indicate that the presence of the green area and the accomplishment of the first phases of the real estate development positively impacted the market, whether due to the security of real estate investments or the availability of environmental amenities with a park and unrestricted views of the Tagus River without road traffic.

The whole Riverside project (Figure 8) represents the most crucial change in the socio-spatial pattern of the Braço de Prata area because it is linked to the significant presence of new residents and users with strong media engagement due to its environmental amenities (Figure 9), the *gourmetization* of gastronomy and breweries (we include the Delta Cafeteria that offers an “experience” beyond the simple act of drinking a coffee by configuring itself like the “Starbucks effect” described by Banzhaf & McCormick, 2007), and the installation of art galleries and other luxury real estate projects. These factors escalate the potential for reappropriating the area with increasing land prices and the desire of various entrepreneurs to relocate businesses depending on the expected profile of the new residents/users.

Prata Riverside is a high-end development responsible for financing the riverfront park. It has been a project since 1999, but construction began in 2015. The complex is now called Prata Riverside Village, with 40 buildings in 12 sections (ten for residential use and two for retail and services) and 700 residential units. In an interview with Pinheiro (2017, pp. 1–2, emphasis added), João Sanches (project manager) explained,

[Riverside] is a neighborhood for normal people to live in, but it is a neighborhood that we want with great quality. The equipment, materials, landscaping, proximity to the river, level of infrastructure, coating of buildings, all of this is of high quality. Therefore, it is not a lower middle-class thing; it is a middle-class, upper-middle-class thing. There will eventually be, for large apartments, a component of people with great financial capacity because they are large and will end up being expensive.

This declaration shows that Riverside was designed for newcomers with a particular budget and lifestyle that is not related to the profile of the existing residents.

Detailed price research in February and July 2023 identified 70 units in Riverside for sale on various specialized and real estate agency websites. The marketing always paid respect to the architect Renzo Piano, the author of the project, and made an association with the green park and the river. The average value was €6,218.62 per m², with the highest price at €11,568.63 and the lowest at €4,833.33. Since the newcomers’ profile must have a higher income than the communities around the development, to keep the exclusivity and an accurate selection of residents, the highest values per m² (i.e., € 11,568.63) correlated with the smaller units (51m³ of the total area) in the park section, right in front of Parque

Ribeirinho and the Tagus River. The units with park and river views had higher prices, which indicated that the environmental amenities had an immediate impact on the appreciation of the development.

Although Riverside is spatially more significant, other real estate developments have been built in the area that are strongly associated with valorization and the potential for extra rent. The new projects all represent the redevelopment or renovation of older working-class quarters (*vilas operárias*), warehouses, and old factories. Thus, the intense capitalist spatial transformation associated with the environmental amenities of Marvila’s riverfront has produced intense speculative pressure from real estate agents that has increased the potential for green gentrification.

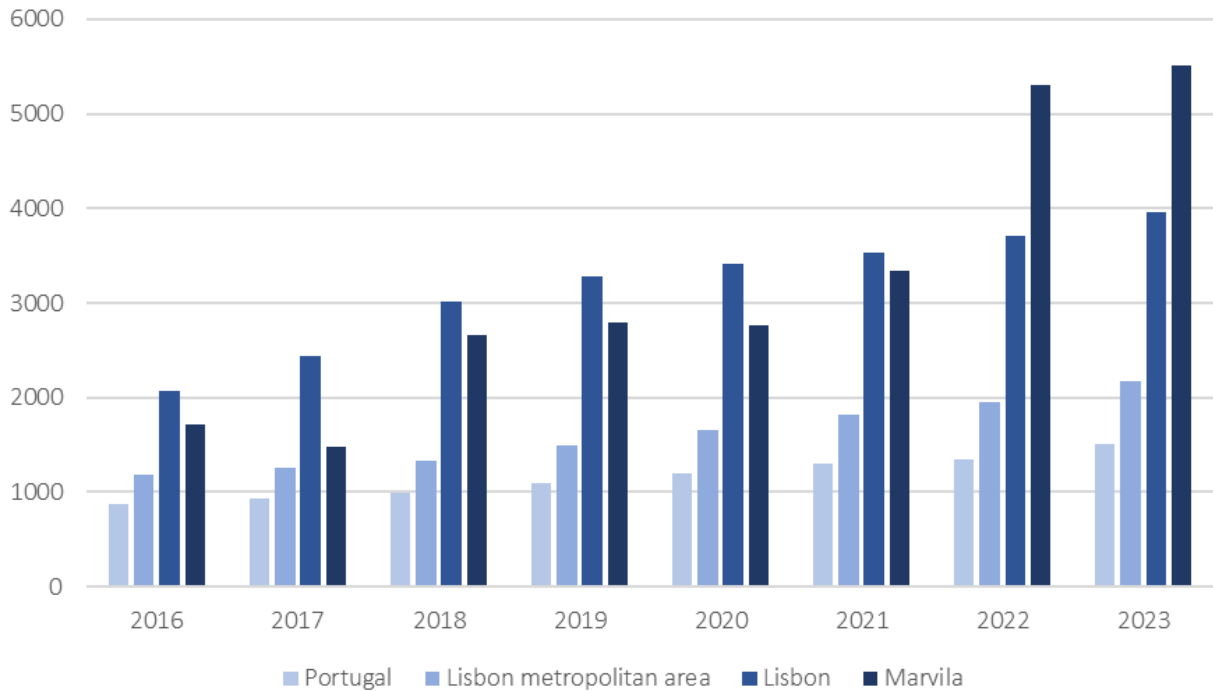


Figure 7. The evolution of the average purchase price of residential units between 2016 and 2023 (in € per m²) in Portugal. Source: INE Portugal (Organized by the author, July 20, 2023).



Figure 8. Model of the Riverside development at the development’s sales stand, with the units identified (Source: Author, January 2023).



Figure 9. Publicity of the Prata Riverside Village in a public space. The marketing strategy is, “The blue from the Tagus, surrounded by the green and the light of Lisbon, just live it.” The appropriation of the riverfront view and the green area of the public Parque Ribeirinho do Oriente is evident in the valorization of this development. However, Marvila’s residents are not intended to live there (Source: Author, March 2023).

4.2 Green gentrification in Lisbon

Lisbon’s material nature (i.e., the green space and the river), the plans and representation of a green city, and the sustainability discourse (from the local public authorities to the real estate agents) have been incorporated into real estate products. Nature, green spaces, waterfronts, and sustainable ideas are highly valued in contemporary cities worldwide (Checker, 2011; Freytag et al., 2014; Gilbert, 2014; Immergluck & Balan, 2017; Silva et al., 2021). These cities share a strong association between public authorities and developers, which allows for large real estate projects, usually designed by a renowned architectural firm. Neoliberal practices and public-private partnerships have been observed in the implementation of greening projects in desirable areas with high potential for extra rent, which increases private profits and intensifies the pressure on the poorest in the housing market per Gould and Lewis (2016) and Kocisky (2021) in the United States and Haase et al. (2022) in Europe. The greening project resulting in the implementation of the Parque Ribeirinho do Oriente is an example of a public-private association. Despite private investment in designing, building, and maintaining the green area, the city government changed the traffic system by closing Cintura do Porto Street and diverting the heavy traffic. This public action transferred value to the private properties connected through the park at Riverside along the Tagus. Without traffic, an old roundabout connecting highways to the port with an intense flow of trucks was completely closed and reconverted into a green garden (Figure 10) integrated into the Parque Ribeirinho do Oriente.

Braço de Prata/Matinha was historically occupied by elderly and working-class people who lived for decades with the surrounding industries while being exposed to soil and air contamination. However, as soon as the area was decontaminated and became environmentally friendly with parks and green areas, many residents were forced to leave because their old, protected rental contracts were replaced, along with negative experiences in this fast and brutal neighborhood transformation. The decades of exposure to environmental harm did not generate political and economic capital to guarantee the actual environmental benefits – yet another case of environmental injustice – in a conceptualization described by Acselrad (2010), Dooling (2009), Pearsall (2010), Checker (2011), and Sax et al. (2022).

Due to the large stock of social housing and the population’s profile, the geographical prejudices associated with the Marvila parish and the intense process of deindustrialization along the riverfront were overcome by urban and environmental requalifications. However, all new residential real estate developments (e.g., the Riverside and Loteamento A) were designed for newcomers with high incomes, so they are priced above the market. The aesthetic dimension of the river (i.e., the view) and the proximity of green areas, with the Parque Ribeirinho do Oriente playing an important role since it created a traffic-free zone and open “eternal” direct views of the Tagus, help explain the inflated housing market prices. Although this article cannot state in numbers, values, and percentages how much these environmental amenities have increased property prices,

an analysis of marketing strategies and the appreciation of the area after creating the park while simultaneously beginning the construction of the Riverside indicate value creation through the appropriation of nature, as explained in other spatial realities by Hermann and Haddad (2005); Czembrowski et al. (2019); and Bockarjova et al. (2020).



Figure 10. Praça 25 de Abril with a sculpture dedicated to the builders of Lisbon. The old roundabout, paved in Portuguese stone, was converted into a garden and integrated into Parque Ribeirinho do Oriente. The background shows a sector of the Riverside development under construction (Source: Author, February 2023).

The production and appropriation of nature in this part of Lisbon, excluding the possibilities of living near green and environmentally safe spaces due to the valorization of the area in real estate marketing, has resulted in the process of green gentrification. The real estate absorption of environmental amenities is primarily related to the possibilities of greening actions presented in Lisbon's municipal plans, including those used for its successful candidacy as the "Green Capital of Europe." The real estate market operates in partnership with public authorities, whether municipal (i.e., local plans and actions) or national (i.e., possibly participating in the Golden Visa program). Furthermore, the prospect of improving the economic environment exists – associated with green consumption and a contemporary and sustainable lifestyle – to attract a younger population profile (while possibly displacing elderly residents).

The mark of the green gentrification in Braço de Prata/Marvila is an exclusionary displacement, observed when homes are vacated by low-income residents, other low-income residents cannot afford to move in because rents and sales prices have increased. However, it is possible to foresee direct displacement and expulsion/eviction in the area, but with caution, since there is a lack of statistical data. Critically, no data exists from the national census that quantifies the process of green gentrification and the change in the population profile, with the displacement of the elderly population and those with lower income from the area along the Marvila's riverfront. The last census was in 2021, before the spatial transformation. Hence, the identification of green gentrification is based on bibliographical references, the interpretation of cartographic documents, indirect statistical data, analyses of real estate market behaviors, and the direct observation of this space in several field works.

Therefore, the following elements indicate green gentrification associated with the requalification of the Braço de Prata/Matinha brownfield, the implementation of Parque Ribeirinho do Oriente as a green area, soil decontamination, and the view of the Tagus River:

1. Since the process of green gentrification is complex (Banzhaf & McCormick, 2007; Haase et al., 2023) and non-linear (Rigolon & Collins, 2022), greening projects and soil decontamination occurred before the new residents arrived. These desirable newcomers have a profile (i.e., age, income, and qualifications) contrasting with the actual residents (i.e., the elderly and working-class groups). This fact was indirectly perceived while conducting fieldwork, interviewing developers, and analyzing property prices.
2. Green gentrification has been reported in several studies in North America and Europe (Banzhaf & McCormick, 2007; Pearsall, 2010; Gould & Lewis, 2016; Krings & Schusler, 2020; Ali et al., 2020; Sax et al., 2022; Haase et al., 2023) after brownfield reconversion into green residential upper-class neighborhoods.
3. Although the Parque Ribeirinho do Oriente public space is without gates or fences and is open 24/7, the services are unsuitable for everyone since the prices are higher than city standards. Banzhaf and McCormick (2007) called it the "Starbucks effect" in one of the first studies on green gentrification. A coffee shop in the park sells simple coffee. However, an experience included with the price of a regular espresso was €3.50, while in other areas of Marvila, the prices were between €0.70 and €1.10. Green gentrification has also been observed in the sophistication of grocery stores, the presence of art galleries and signature design stores, and luxurious restaurants in and around the new greening projects. In this case, it is associated with a retail gentrification (Guimarães, 2018, 2022), which can change the commercial pattern, bringing a new retail profile, sophisticated restaurants, and high-class services. To Slater (2006), Quastel (2009) and Anguelovski (2016) this is an indirect indicator of local consumption pattern changes, and helps understand the arrival of higher-income residents and users.

4. The construction of Riverside and the park implementation resulted in resident removal marked by direct displacement since the land was unoccupied by a former industrial complex, and the green area was incorporated as a street and area from the port. In the studied area, the process of green gentrification was understood through exclusionary displacement (Marcuse, 1985), with the high potential for direct displacement in the quarters of Vale Formoso, Vale Formoso de Cima, Fernando Palha, Fraternidade Operária, Zófimo Pedroso, do Acúcar, and Direita de Marvila Streets. Only information from the 2031 demographic census will provide statistical data to confirm this possibility. Nevertheless, property prices point to a high-income resident profile. The association between property values, the population's profile, and the possibility of green gentrification were previously studied by Ali et al. (2020); Sax et al. (2022); Farrow et al. (2022); and Haase et al. (2023). As mentioned, in Riverside, the units for sale in February 2023 had an average price of €6,218.62/m² above the parish average of €5,506.00/m² (first quarter of 2023) and close to double the average of all Lisbon (€3,965.00/m²). However, note that the average net monthly income in 2022 was €1,034.00 in Portugal and €1,195.00 in the Lisbon metropolitan area, according to INE data (2022) to understand the gentrification process as a result of exclusionary displacement or spatial selectivity based on the impossibility of existing inhabitants to continue living in this area.
5. The ethnic and racial dimensions of granting environmental justice and avoiding green gentrification have been underestimated and underrepresented in Lisbon. Former studies (i.e., Anguelovski et al., 2019; Connolly & Anguelovski, 2021; Jelks et al., 2021; and Bauer, 2023) wrote about "greening and whitening," a demographic change in an area formerly occupied by racialized residents with an influx of White newcomers after a particular greening initiative. The racial issue has not been politically and critically addressed in Lisbon's green agenda. A lack of statistical data about race in Portugal can make the existent inequalities in the distribution and quality of accessing green spaces invisible. The specific level of maintenance with careful tree pruning and lawn trimming found in Parque Ribeirinho do Oriente was not observed during the fieldwork in green areas located on the poor outskirts of the city. Although a large proportion (79%, according to Verheij, 2019) lived close to green areas, the green capital plans and marketing material did not reflect the racialized population or the quality of spaces in neighborhoods occupied by immigrants.

5. Conclusions

The results from bibliographical, statistical, and empirical research helped to understand the production of urban space in Lisbon based on the area's occupation and urban development along the Tagus River. The green gentrification along Marvila's riverfront, produced by the real estate market and approved by the local government, has resulted in the presence of green areas and is closely related to the view of the Tagus River and the soil decontamination process. The qualities of greening and the aesthetics of the river are part of the strategy to convince people to purchase property there. This strategy has successfully overcome the recognized geographical stigmas and devaluation of the old industrial zone. The Parque Ribeirinho do Oriente has generated extra and green rent, which has driven the attention of the real estate market and produced green gentrification.

Moreover, this study in Braço de Prata/Matinha helped comprehend the process of green gentrification on a large geographical scale, with changes affecting the elderly and working-class communities. When completed, the urban redevelopment of Riverside (Braço de Prata) and Loteamento A (Matinha) alone will deliver 270,000 m² of high-end residential buildings, sophisticated retail, and trendy services to the market, with no traces of social housing. This redevelopment has had a significant spatial impact on the dynamics of the real estate and the economic, social, and demographic aspects of this area in Marvila parish. Moreover, this impact has moved beyond Riverside and Loteamento A to generate expectations of extra income based on the surroundings' expansion of the green gentrification process at a lower speed, especially due to the protection of old rental contracts. Additionally, how the development projects have been implemented while aimed at the external consumer market denotes the intense financialization of the real estate market and nature in a city marketing strategy connected to the green capital seal to attract nationals, foreign (i.e., Golden Visa) residents, digital nomads, and tourists.

Apolitical and uncritical sustainability plans, actions, and discourses can create a direct link between real estate development, green agendas, and the financial system pricing and valorization of nature and environmental amenities. The large housing stock (i.e., recently built, under construction, and planned) may not necessarily be occupied since it may only be an investment possibility. Nonetheless, real estate developments in the area – empty or occupied – have impacted the housing market while inducing the green gentrification indirectly identified along Marvila's riverfront. Finally, excluding the poorest, the elderly, and the working class from the environmental benefits of converting a brownfield into a greenfield is a case of environmental injustice.

To prevent the advance of the green gentrification process, it is imperative to think of ways to control the generation and appropriation of differential incomes due to the expansion of green areas or the implementation of strategies that guarantee the environmental quality of an urban space. The great challenge would be to contain the appreciation of housing units in the real estate market, the interests of private investors in nature projects in the city, and the neoliberal aspirations in many urban governance proposals. Direct action by the State to control the real estate market goes against many current proposals to withdraw from the state sector, privatize environmental services, and transfer the maintenance of green and blue infrastructure to the private sector. However, the presence of the State is necessary to prevent green gentrification, guarantee the equal right to nature in the city, and promote environmental justice.

Funding: This research received no external funding.

Acknowledgments: The author is thankful to Prof. Dr. Margarida Pereira, from the Interdisciplinary Center for Social Sciences (Nova University of Lisbon), for the support during a postdoctoral internship.

Conflicts of Interest: The author declares no conflict of interest.

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