

Chapter 12

Green gentrification and displacement in Barcelona

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Introduction

Increasing numbers of cities are planning and implementing urban green space in the face of environmental challenges such as climate change, and to improve urban livability from ecological, economic and social standpoints. Research illustrating the multi-fold benefits of urban green spaces is extensive. Findings include reduced air pollution (Baró et al., 2014), increased biodiversity (Camps-Calvet et al., 2016), improved physical and mental health (Triguero-Mas et al., 2015; Gascon et al., 2016) and stronger local social ties (Connolly et al., 2013). From an economic development perspective, abundant and high-quality green spaces have been found to strengthen the identity of an area as an attractive and desirable place to work and live, and boost local economies and real estate values (Anguelovski, 2015; Baycan & Nijkam, 2009; Dale & Newman 2009; Immergluck & Balan, 2018).

Nevertheless, a growing number of studies are also finding that the benefits that urban green space bring are often unevenly distributed. As a result, the creation or restoration of green amenities in cities may not bring health and social benefits to *all* residents, and indeed might lead to exclusion and displacement (Checker, 2011; Curran & Hamilton, 2012; Goodling et al., 2015; Gould & Lewis, 2017; Wolch et al., 2014). In the United States, where the majority of green gentrification research has taken place, researchers have found that wealthier and whiter neighbourhoods are those with the largest, best maintained and/or most easily accessible green spaces (Wolch et al., 2005;

Boone et al., 2009) or the most extensive urban forest canopy cover (Heynen et al., 2006). This is an issue of concern for equity and justice because such exclusionary dynamics, if not recognised and actively addressed, will likely only grow in the twenty-first century under the increasingly popular green and sustainable urban agenda (Connolly, 2018). Urban greening, in this light, might become a (new) prominent axis for generating deeper urban inequalities as it becomes embedded in urban capitalist development dynamics.

The pathway through which green amenities become drivers of displacement has been dubbed ecological, environmental or green gentrification (Checker, 2011; Dooling, 2009; Pearsall, 2010). This concept helps explain why and how improving the urban environment through greening measures can make historically disadvantaged residents vulnerable to displacement. As first defined by Sarah Dooling, environmental gentrification involves “the implementation of an environmental planning agenda related to public green spaces that leads to the displacement or exclusion of the most economically vulnerable human population while espousing an environmental ethic” (Dooling, 2009: 630).

In this chapter, through a longitudinal and quantitative spatial analysis, we consider how green gentrification and concurrently displacement is manifesting in the city of Barcelona in the context of greening projects since the 1990s. The next section provides a more in-depth theoretical review of the literature on green gentrification and displacement, explaining how these topics are approached, while the subsequent section outlines Barcelona’s greening trajectory since the democratic transition in the late 1970s. We then detail the spatial quantitative findings of our research in Barcelona to illustrate how housing and population trends changed through time near 18 new

parks built in the working-class north-eastern part of the city since 1992. The key result to report here reveals a possible displacement of elderly and working-class residents from the more central-eastern areas of Barcelona toward northern, more affordable neighbourhoods. In the final section, we reflect on what the conceptual apparatus of green gentrification brings to studies of contemporary displacement.

Defining green gentrification and displacement

Gentrification is a process whereby low-income – and often people of colour – residents are displaced as a “rent gap” is closed by investors achieving a rapid rise in cost of land and housing, provoking socio-cultural transformations of the neighbourhood (Clark, 1988; Smith, 1996). An emerging body of research examines how urban sustainability planning and processes of city re-naturing are incorporated into public-private redevelopment strategies that intensify gentrification processes. This research uncovers how green infrastructure serves as a catalyst for gentrification, and how the sustainability framework in which it is embedded both facilitates and conceals this process. The literature, at present largely situated in the United States and Canada, conceptualises this phenomenon as green gentrification (Gould & Lewis, 2017), ecological gentrification (Dooling, 2009) and environmental gentrification (Pearsall, 2010; Checker, 2011; Curran & Hamilton, 2012; for some of the few cases to date outside of North America see Sandberg, 2014 and Anguelovski et al., 2019). Scholars in this area seek to understand how the benefits of greening are distributed. They often find that lower income and non-white populations are systematically denied access to the benefits of urban greening such as improved health and quality of life as a consequence of larger development trends that lead to displacement from newly greened areas

(Anguelovski, 2014; Anguelovski et al., 2019; Dooling, 2009; Gould & Lewis, 2017).

Green gentrification literature, in its essence, highlights the social-ecological underpinnings of processes of urban marginalisation and exclusion. And while some city administrations are attempting to address inequities in greenspace access,¹ the creation of urban green amenities in low-income areas often generates a *green space paradox*. Neighbourhood-scale case studies so far have found that that increases in the number, size and quality of urban green spaces in areas facing gentrification pressures make these areas even more attractive and desirable, with both quantitative and qualitative research findings showing that greening contributes to the displacement of low income, people of colour and otherwise disadvantaged populations (Checker, 2011; Curran et al., 2012; Dooling, 2009; Gould & Lewis, 2017; Goodling et al., 2015; Pearsall, 2010; Quastel, 2009). These populations then tend to occupy areas where green spaces are either scarce or poorly maintained (Heynen et al., 2006; Anguelovski, 2015). Meanwhile, real estate developers, public agencies and local politicians tout green amenities as a competitive advantage, focusing on the environmental and economic benefits of greening and obviating the need for social and health benefits for all residents.

In the US context, several studies have shown how the remediation of former industrial sites, known as brownfields, make a neighbourhood attractive for gentrification and displacement of the populations who suffered the consequences of industrial development, while richer homeowners and investors capture the gains from the appreciation of their property assets (Anguelovski, 2014; Banzhaf & McCormick, 2006; Curran & Hamilton, 2012; Dillon, 2013; Eckerd, 2011; Essoka, 2010; Pearsall, 2010;

¹ For examples, see the report *Greening without Gentrification: Learning from Parks-Related Anti-Displacement Strategies Nationwide* <http://ioes.ucla.edu/project/prads>

Steil & Connolly, 2009). While these studies have found that brownfield redevelopment can generate environmental gentrification, city-wide assessments of the impacts of environmental clean-up and associated green space creation are few in number. Most research conducted to date considered indicators of *potential* displacement, like increased property values, rather than the actual displacement of residents (Immergluck & Balan, 2018; Pearsall, 2010).

Displacement has been found to take place in multiple ways in the green gentrification literature. Green space creation or rehabilitation leads to a “whitening” of neighbourhoods as African American and Latinx populations are displaced, as Gould and Lewis (2017) have found in various New York City boroughs. In Seattle, greening has directly led to the displacement of homeless people whose notions of home and inhabitation of public green spaces does not coincide with ideological constructions of the same terms from state agencies and housed residents (Dooling, 2009). Patrick’s (2014) queer ecological critique of New York City’s iconic High Line uncovers the temporal and spatial displacement of queers and native plants that occurred through the High Line’s development. The creation of Medellín, Colombia’s 74-square-kilometer greenbelt is generating a new landscape of pleasure and privilege for middle and upper classes as the livelihood territories of low income, indigenous, self-built housing residents are being grabbed for nature conservation and elite uses, leading to the physical, social and ecological displacement of low income indigenous residents (Anguelovski et al., 2019). Many of these cases illustrate how ‘nature’ is mobilised in an exclusionary fashion, following the pervasive notion of (white and well-to-do) conservationists who consider the environment as something pristine and unpeopled (Finney, 2014).

Several of the previous cited studies also point to a pernicious process of social, cultural and procedural displacement that often underlies green gentrification. This manifests in many interconnected layers. One relates to how greening is desired (or not), as many people of colour may not feel included in a traditional park space (Wolch & Byrne, 2006) or might even see such spaces as sites of oppression and violence (Finney, 2014). Another is how (apparently) sustainable urban planning goals and processes displace the *possibility* of people of colour, low income and disadvantaged populations to frame the broader political debate about justice, equity and greening, as participation in planning is limited to technocratic discussions of what a new green space should look like (Checker, 2011). Debates around what a green neighbourhood and city should be and who they are for are displaced by the idea that new green infrastructure projects are inherently good for all. This points to the critical importance of avoiding a post political approach to urban sustainability (Swyngedouw, 2007). This means recognising that greening is by no means a politically neutral goal but rather unfolds within profit-driven city making dynamics and, like any urban process, is deeply connected to processes of exclusion, dispossession and displacement of low income and people of colour.

Environmental gentrification, and the possible multi-fold displacement it entails, is an essential consideration for any urban sustainability model that seeks to simultaneously promote ecologically and socially responsible urban planning. Without this awareness, municipal representatives and sustainability advocates who uncritically accept calls for more urban green space may, against their own intentions, create new socio-spatial inequities (Pearsall & Pierce, 2010).

Now turning to our quantitative spatial analysis of Barcelona: is green

gentrification unfolding in the city, and might it be leading to displacement? In the sections that follow, we take up this question through first providing a historical backdrop to greening in Barcelona, then highlighting results of a spatial analysis of new parks created since 1990 across working class districts of the city.

The transformation and greening of democratic Barcelona

In the 1970s, the legacy of the almost 40 year Franco dictatorship left many Spanish cities with a poor quality built environment (Anguelovski, 2014). This included enormous deficits in housing, schools, cultural centres, health services, public transportation and basic infrastructure (Saurí et al., 2009). While there were insufficient public parks and gardens, the most socially vulnerable areas of the city had a particularly acute lack of green space. Strong neighbourhood associations formed to protest for better public facilities and the improvement of neglected urban space in old and new urban peripheries (Calavita & Ferrer, 2004). After the first municipal democratic elections of 1979, Barcelona's City Council decided to prioritise increasing the number of parks and gardens through the implementation of new urban plans. Neighbourhoods were taken care of first as part of the overall strategy that sought, as stated by the City Council, "the creation of a balanced and integrated Barcelona, without segregation, with social and territorial equality for all citizens" (Casas, 1995 cited in Calavita & Ferrer, 2004: 60). During this time, green spaces were primarily designed to provide meeting places and playgrounds for elderly residents and children respectively (Saurí et al., 2009).

A new stage of urban redevelopment started when Barcelona won the bid for the 1992 Olympic Games (Anguelovski, 2014). Although the Olympics were initially seen as an opportunity to modernise Barcelona's infrastructure while retaining redistributive

goals (McNeill, 1999), the scale of spatial redefinitions negated this approach. Barcelona's public green spaces instead shifted almost entirely toward the mega-event demands of the Olympics. The City Council began to negotiate directly with developers that built the necessary infrastructure rather than with neighbourhood groups about the design and placement of green space. During this period of "strategic urbanism," the social component present in the initial creation of public spaces during the early 1980s diminished (Monclús, 2003; Montaner, 2004; Anguelovski, 2014). Neighbourhood-scale social interactions became less of a priority, as new Olympic parks and facilities were designed more as aesthetic amenities for visitors than for residents. The latter in turn had fewer places for sitting and holding neighbourhood meetings or other social and cultural activities (Saurí et al., 2009).

Following the 1992 Olympic Games, the later stages of post-dictatorship redevelopment were characterised by efforts to leverage the newfound international appeal of Barcelona. During most of the 1990s, public park design and construction was often privately funded and was always tightly connected to economic development (Saurí et al., 2009; Montaner, 2004; Anguelovski, 2014). Toward the end of the 1990s, the city focused on redeveloping the remaining formerly industrial space in the Poble Nou neighbourhood (Sant Martí district). Near the newly built Universal Forum of Cultures event space, a luxury residential project was anchored by the second largest public park in Barcelona. Named the Diagonal Mar Park, it was marketed as the central component of the residential project's sustainability strategy but was widely criticised as being designed as an amenity for the high-end condominiums surrounding it (Anguelovski, 2014).

This redevelopment of Barcelona took place in the broader context of a housing boom, speculation and "mortgaged lives" for many working-class residents (Garcia-

Lamarca & Kaika, 2016). The housing boom reinforced the predominant tenure of homeownership in the city, although the Franco-era housing stock in many working-class districts meant that these areas were not as attractive to capital and thus not as prone to (green) gentrification dynamics as other more central parts of Barcelona with sizeable rent gaps. While widespread homeownership appeared to limit vulnerabilities to rental property-related evictions, which are significant due to very weak Spanish renter protection laws, the supposed security of mortgaged homeownership was a smokescreen as the profound 2007 real estate financial crisis provoked thousands of foreclosures and evictions across the city.

Understanding this evolution of urban greening in democratic Barcelona provides important context for us to then turn to show how new environmental amenities in the city shape who benefits from urban life.

Green gentrification and displacement trends in Barcelona

In order to understand whether the distribution of new environmental amenities became more or less equitable as Barcelona implemented its greening agenda, and where this might have led to displacement, we examined how housing and population trends changed over time near 18 new parks built in the northeast of the city since 1992. We gathered data from various official city of Barcelona data sources at the smallest spatial unit available from 1992 to 2008² for: 1) home sale values, 2) household income, percent of population with a bachelor's degree or higher; 3) percent of population over 65 years old living alone; 4) percent of immigrant population whose nationality is from the Global

² The 2008 real estate financial crisis resulted in a significant drop in housing prices and substantial emigration from the city, thus we stopped our analysis at this date.

North; and 5) percent of immigrant population whose nationality is from the Global South. The latter was used as a proxy for non-white race and non-Caucasian ethnicity because neither race nor ethnicity data is gathered in Barcelona or Spain. The country as a whole has a relatively recent and intense history of immigration from countries in the Global South, which makes the immigration from the Global South variable indicative of people of colour in the city (Pelissier & Piñol, 2011). The main Global South immigrant groups in Barcelona arrived in the 1990s and early 2000s from Latin America (especially Ecuador, Bolivia, Colombia), North Africa (Morocco, Algeria, Nigeria, and Senegal) and Asia (especially Pakistan, China, and the Philippines). Used in parallel with percent of immigrant population whose nationality is from the Global North -groups which tend to be whiter and wealthier, and thus a more privileged population in terms of accessing housing- we were able to at least estimate possible racial and ethnic displacement related to urban greening.

Barcelona's high home ownership rate, explained previously, results in low residential mobility because people tend to stay in their homes for most of their lives. Vulnerabilities to displacement are thus greater for tenants and residents who can no longer afford their neighbourhood amenities and have difficulties going elsewhere to access basic services. Key populations who are at greater risk of displacement in Barcelona therefore include renters, elderly people living alone, working-class residents and residents from the Global South.

For our spatial analysis, we mapped all new parks built in Barcelona between 1992 and 2004 (see Figure 1) and identified whether areas near parks experienced above average changes by comparing the trends within 100, 300 and 500 metre buffers of parks to those of the larger districts where the parks are located over a 4 to 12 year time period

(depending on when the park was built and the availability of data). Parks that are clustered together and built at the same time were merged into one buffer for the purpose of analysis, resulting in 13 buffer areas reported in the results. We also verified the statistical significance of green gentrification trends by running global ordinary least squares (OLS) and local geographically weighted regressions (GWR) in order to confirm that parks were playing a causal role in the spatial variations we observe. The OLS regression model assumes spatial stationarity, that is, that the relationships between the sociodemographic variables and the distance to parks variable are equal across space, while the GWR technique tested for variation across space. Since the city of Barcelona changed census tracts between years, models were conducted for data from 2000 and from 2008, and regression coefficients were compared between the two years (see Anguelovski et al., 2018: 471-472 for further details). In the findings below, we present the general dynamics that these analyses demonstrated.

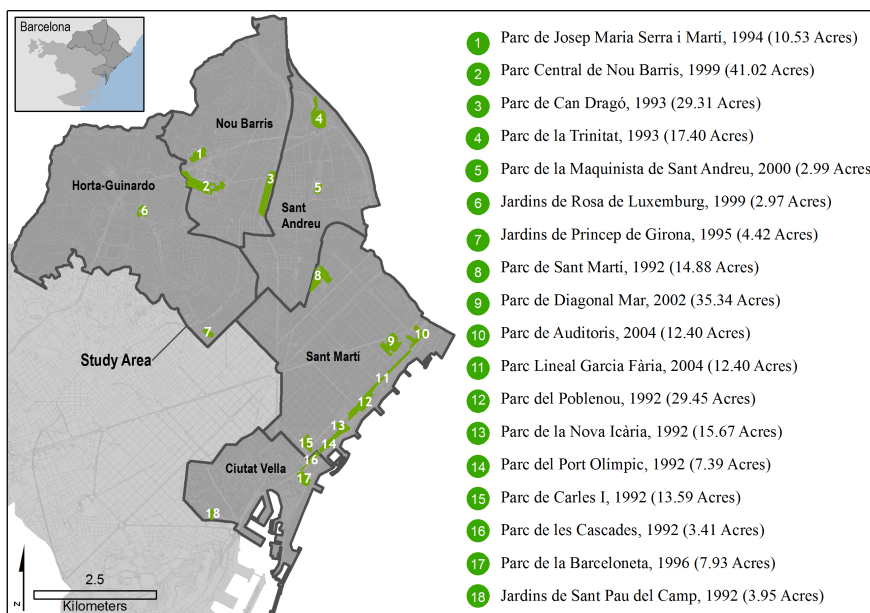


Figure 1. In green, parks built between the period 1992–2004 within the Ciutat Vella, Sant Martí, Sant Andreu, Nou Barris, and Horta-Guinardó districts. Source: Anguelovski et al., 2018.

In order to determine the parks and gardens that appear to be associated with

green gentrification, we allotted one point to parks with buffer areas that outpaced the districts where they are located in terms of of the five sociodemographic variables studied, and then added these points to form a composite score (Table 1). We identified areas near parks with greater increases than the district for the same period of time for the population with a bachelor's degree or higher and with the elderly population. For the percent of immigrants from the Global North variable, we identified areas near parks with above average increases in Global North populations *and* below average increases in Global South populations. Income and home value variables are used interchangeably as the fourth variable due to data availability; we have one or the other for all parks, but not all data for all parks. Therefore, a score of 4 would imply gentrification is occurring near parks across the full spectrum of indicators.

Park Name (Year Built)	District	Bachelor's Degree	65 or Older Living Alone	Global North	Income	Home Sales	Total
Jardins de Sant Pau del Camp (1992)	Ciutat Vella	0	0	0	0	0	0
Parc de la Barceloneta (1996)	Ciutat Vella	1	1	0	0	0	2
Jardins Príncep de Girona (1995)	Horta-Guinardó	0	1	1	0	1	3
Jardins de Rosa de Luxemburg (1999)	Horta-Guinardó	1	0	0	0	0	1
Parc de Can Draçó (1993)	Nou Barris	1	0	0	0	1	2
Parc Josep M. Serra i Martí (1994)	Nou Barris	0	0	0	0	1	1
Parc de Nou Barris (1999)	Nou Barris	1	0	0	1	0	2
Parc de la Trinitat (1993)	Sant Andreu	1	0	0	1	1	2
Parc de la Maquinista (2000)	Sant Andreu	1	1	0	0	0	2
Parc de Sant Martí (1992)	Sant Martí	0	0	0	0	0	0
Parc del Poblenou (1992)	Sant Martí	1	1	1	1	0	4
Parc de Diagonal Mar (2002)	Sant Martí	1	1	0	1	0	3
Parc del Port Olímpic (1992)	Sant Martí	1	1	1	1	0	4

Table 1. Final green gentrification indicator scores for parks within the study area, with the 18 parks merged to 13 when parks were clustered together and built at the same time. Source: Anguelovski et al., 2018.

Using these indicators, we find that five parks in the Sant Martí district, where the former industrial Poble Nou neighbourhood is located, are associated with strong environmental gentrification (4 out of 4 rating). These parks were built in a time of significant urban revitalisation driven by the Barcelona's 1992 Olympic Games. In

addition, other parks in the Sant Martí district built at different times –including the Diagonal Mar, Auditoris and Garcia Fària Lineal parks– experienced moderate environmental gentrification (rating 3 out of 4). So did the Príncep de Girona Garden in the southern area of the Horta-Guinardó district, located close to the desirable and gentrifying Gràcia district. The GWR findings support these results, showing that geography matters (Anguelovski et al., 2018). High green gentrification trends were not found in all other parks located in the northwestern zone of Barcelona and in parts of the Ciutat Vella district (1 or 2 out of 4 rating).

Figure 2 below summarises the results of our analysis.

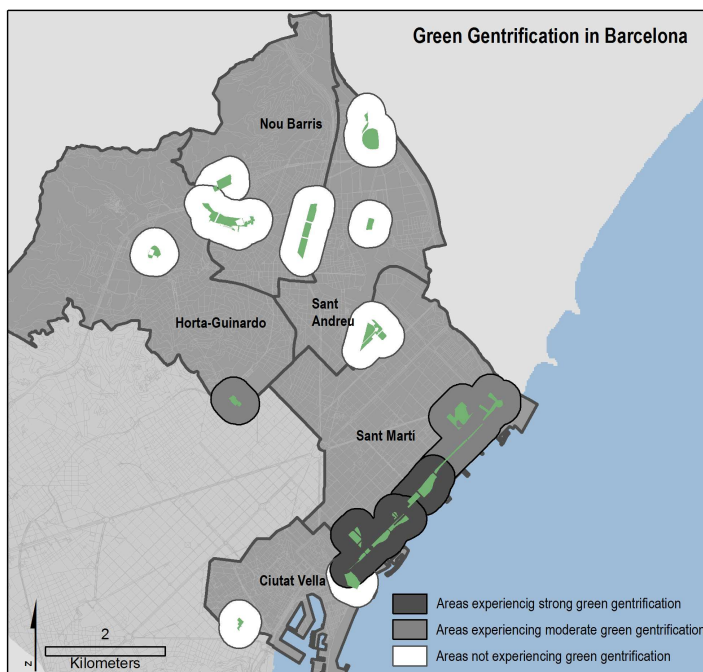


Figure 2. Areas where strong, moderate and no green gentrification seem to be occurring. Source: Anguelovski et al., 2018.

A particularly interesting result that emerged was with the elderly population, where we found that the percentage of residents 65 and older living alone decreased closer to parks in all of Ciutat Vella and Sant Martí districts. The strong spatial divide in

the trend of the 65 and over population living alone echos findings from other socio-economic variables showing a separate process of demographic change happening in costal parks in comparison to parks located further inland. Parks near the coast tend to show a greater decrease of elderly people living alone -as well as residents with no university degree, lower incomes and those born in the Global South- than the larger districts in which the parks are located. The general validity of the GWR model again shows that the spatial divide between more coastal and more inland parks is by no means a spatially random process. This result reveals a possible displacement of residents –levered by the creation of new green spaces– who are elderly, low income, without a bachelors degree and from the Global South from the central-east areas of Barcelona toward the northern, more affordable, neighbourhoods in the city. Exploratory interviews with municipal staff similarly underlined that many residents from the city centre were displaced to the periphery during the 1990s and 2000s through processes of real estate expropriation and/or speculation. It seems from these results that parks function as another axis for the socio-demographic shifts we analysed.

While the northern areas of the city do have some green space, many are in close proximity to highways. These areas are generally less well connected to the city centre, and the overall housing and public equipment infrastructure are of lower quality than other parts of Barcelona. In these sites, residents might have good access to green space but not to other socio-environmental goods that are critical for broader well-being and urban livability. Barcelona thus seems to illustrate a form of green goods polarisation and re-segregation. Greener and more desirable neighbourhoods are populated by more priviledged residents while low income, people of colour and elderly groups are displaced/confined into somewhat green but more socially fragmented and isolated

neighbourhoods.

Conclusion

This chapter sought to introduce the paradoxical role that urban greening can play in cities, highlighting how attempts to physically green cities is not necessarily good for all as it can spur or exacerbate exclusion, marginalisation and displacement. We explained how the emerging literature on ecological, green or environmental gentrification is exploring these dynamics, and mobilised our spatial and temporal quantitative analysis of the city of Barcelona, one of a handful of studies on green gentrification outside the United States, to see the impacts of new park creation in key working-class districts.

Our study suggests that the impacts of park creation in socially vulnerable neighbourhoods depend on their context of creation, setting and overall built environment. In Barcelona, it seems that green gentrification has occurred in parks located in more desirable neighbourhoods such as the old industrial and waterfront areas within the Sant Martí and Ciutat Vella districts or in the more central southern area of Horta-Guinardó. For parks located in extremely dense distressed neighbourhoods such as the Raval in the Ciutat Vella district (which also tend to be much smaller parks), or in northern neighbourhoods with a semi-old building stock associated with the late dictatorship or early transition period, green gentrification appears to not have taken place. We also found that elderly people seem to be particularly vulnerable to physical displacement. Future studies could attempt to track displacement and population reconfiguration through an entire urban area, as population flows of low-income residents and people of colour from greened gentrifying neighbourhoods to more marginalised and also greened neighbourhoods (such as the northwestern districts of Barcelona) might create new forms of socio-spatial segregation. While this study focused

on a longitudinal and quantitative spatial analysis of green gentrification and possible displacement processes, more in depth qualitative research is required to understand if any potential cultural, social or procedural displacement dynamics are intertwined in these green gentrification processes in Barcelona. Qualitative research is also required to explore how green amenities can be introduced to redeveloping districts like Sant Martí and Ciutat Vella without making them instruments for gentrification. Finally, considering the significance of tourism in the city of Barcelona, researching the impact of tourist rental flat locations in relation to green space and green gentrification dynamics is a pending task for future research.

Our findings and other green gentrification studies highlight how, despite the positive benefits brought by urban greening, new green spaces can also act as a (new) axis for urban exclusion because of the urban (re)development dynamics greening is embedded within. This stands in stark contrast with narratives touting greening as a solution for a more sustainable city, as it begs the question of how and for whom the city is being created. As a concept, green gentrification signals how green space can act as a catalyst for land and housing revalorisation, displacing low income, people of colour and other vulnerable populations.

Regarding deeper understandings of processes of contemporary displacement, an important function of green gentrification as a critical conceptual apparatus is in uncovering the post political nature of much sustainability and green planning taking place in cities around the world. This means that planning tends to take as given the idea that “all green is good”, rather than questioning and opening up the broader planning and development framework to ask what type of greening neighbourhood residents, especially in working class and minority neighbourhoods, need and want. In this way the

possibility for people of colour, low income and disadvantaged populations to frame the broader political debate about justice, equity and greening is displaced, as participation in planning is limited to technocratic discussions of what a new green space should look like. In this way, not only do residents face possible physical displacement, but, previous to this, they are procedurally displaced through the planning process despite efforts to solicit resident input and participation in planning.

As awareness grows about green gentrification, some communities are exploring a “just green enough” strategy (Curran and Hamilton, 2018) where gentrifying actors and long-term residents work together to remediate and redevelop contaminated sites without displacement. Such strategies are in their infancy and move against solely profit-driven development dynamics, and thus require community organising and mobilisation. “Just green enough” strategies might however be a temporary stop gap, highlighting the need for housing-centred strategies to combat displacement. Furthermore, the leading examples of “just green enough” approaches also require a large infrastructure of policies to combat displacement when greening occurs, which generally results from decades of organising. While such bottom up resistance strategies are certainly crucial, this chapter points to the importance of integrating a critical vision of urban greening into planning and development processes to mitigate the potential exclusionary effects of making a physically greener city.

References

Anguelovski, I. (2015). From toxic sites as LULUs to green amenities as LULUs? New challenges of inequity, privilege, and exclusion in urban environmental justice. *Journal of Planning Literature*, 31(1), 23-36.

Anguelovski, I. (2014). *Neighborhood as refuge community reconstruction, place remaking, and environmental justice in the city*. Cambridge, Massachusetts: The MIT

Press.

Anguelovski, I., Irazábal-Zurita, C. & Connolly, J.J.T. (2019). Grabbed urban landscapes: Socio-spatial Tensions in Green Infrastructure Planning in Medellín. *International Journal of Urban and Regional Research*, 43(1), 133-156.

Anguelovski, I., Connolly, J., Masip, L., Pearsall, H. (2018). Assessing Green Gentrification in Historically Disenfranchised Neighborhoods: A longitudinal and spatial analysis of Barcelona, Spain. *Urban Geography*, 39(3), 458-491.

Banzhaf, H. & McCormick, E. (2006). *Moving beyond cleanup: Identifying the crucibles of environmental gentrification*. Andrew Young School of Policy Studies Research Paper Series No. 07-29. Atlanta: Georgia State University.

Baró, F., Chaparro, L., Gómez-Baggethun, E., Langemeyer, J., Nowak, D. J., & Terradas, J. (2014). Contribution of ecosystem services to air quality and climate change mitigation policies: the case of urban forests in Barcelona, Spain. *Ambio*, 43(4), 466-479.

Baycan-Levent, Tuzin, & Nijkamp, Peter. (2009). Planning and management of urban green spaces in Europe: Comparative analysis. *Journal of Urban Planning and Development*, 135(1), 1–12.

Boone, C., Buckley, G., Grove, M., Sister, C. (2009) Parks and People: An Environmental Justice Inquiry in Baltimore, Maryland. *Annals of the Association of American Geographers* 99, 767-787.

Calavita, N. & Ferrer, A., (2004). Behind Barcelona's success story – citizen movements and planners' power. In Marshall, T., ed. *Transforming Barcelona: The Renewal of a European Metropolis*. London: Routledge, 48-66.

Camps-Calvet, M., Langemeyer, J., Calvet-Mir, L., & Gómez-Baggethun, E. (2016). Ecosystem services provided by urban gardens in Barcelona, Spain: insights for policy and planning. *Environmental Science & Policy*, 62, 14-23.

Checker, M. (2011). Wiped out by the "greenwave": environmental gentrification and the paradoxical politics of urban sustainability. *City & Society*, 23(2), 210–229.

Clark, E. (1988). The rent gap and transformation of the built environment: Case studies in Malmö 1860-1985. *Geografiska Annaler. Series B. Human Geography*, 241-254.

Connolly, J.T.J. (2018). From Jacobs to the Just City: A foundation for challenging the green planning orthodoxy. *Cities* DOI: 10.1016/j.cities.2018.05.011

Connolly, J. J., Svendsen, E. S., Fisher, D. R., & Campbell, L. K. (2013). Organizing urban ecosystem services through environmental stewardship governance in New York City. *Landscape and Urban Planning* 109(1), 76–84.

Curran, W., & Hamilton, T. eds (2018). *Just Green Enough: Urban Development and Environmental Gentrification*, Abingdon and New York, Routledge.

Dale, A., & Newman, L. L. (2009). Sustainable development for some: green urban development affordability. *Local Environment*, 14(7), 669-681.

Dillon, L. (2013). Race, Waste, and Space: Brownfield Redevelopment and Environmental Justice at the Hunters Point Shipyard. *Antipode*, 46(5), 1205–1221.

Dooring, S. (2009). Ecological Gentrification: A Research Agenda Exploring Justice in the City. *International Journal of Urban and Regional Research*, 33(3), 621–639.

Eckerd, A. (2011). Cleaning up without clearing out? A spatial assessment of environmental gentrification. *Urban Affairs Review*, 47(1), 31–59.

Essoka, J. D. (2010). The gentrifying effects of brownfields redevelopment. *Western Journal of Black Studies*, 34(3), 299–315.

Finney, C. (2014). *Black Faces, White Spaces: Reimagining the Relationship of African Americans to the Great Outdoors*. Chapel Hill, NC: University of North Carolina Press.

García-Lamarca, M. & Kaika, M. (2016). ‘Mortgaged lives’: the biopolitics of debt and housing financialisation. *Transactions of the Institute of British Geographers* 41: 313-327.

Gascon, M., Triguero-Mas, M., Martínez, D., Dadvand, P., Rojas-Rueda, D., Plasència, A., & Nieuwenhuijsen, M. J. (2016). Residential green spaces and mortality: A systematic review. *Environment international*, 86, 60-67.

Goodling, E., Green, J., & McClintock, N. (2015). Uneven development of the sustainable city: shifting capital in Portland, Oregon. *Urban Geography*, 36(4), 504–527.

Gould, K. A., & Lewis, T. L. (2017). *Green Gentrification: Urban sustainability and the struggle for environmental justice*, Abingdon and New York, Routledge.

Heynen, N., Perkins, H. A., & Roy, P. (2006). The Political Ecology of Uneven Urban Green Space. *Urban Affairs Review*, 42(1), 3–25.

Immergluck, D. & Balan, T. (2018) Sustainable for whom? Green urban development, environmental gentrification, and the Atlanta Beltline. *Urban Geography*, 39: 546-562.

McNeill, D., 1999. *Urban change and the European Left: tales from the new Barcelona*. London: Routledge.

Monclús, F.J. (2003). The Barcelona ‘model’: and an original formula? From ‘reconstruction’ to strategic urban projects (1979–2004). *Planning Perspectives*, 18(4), 399-421.

Montaner, J.Ma. (2004). La evolución del modelo Barcelona (1979–2002). In J. Borja, Z. Muxí, 31 & J. Cenicacelaya (Eds.), *Urbanismo en el siglo XXI: una visión crítica: Bilbao, Madrid, Valencia, Barcelona*. Escola tècnica superior d'arquitectura de Barcelona, Edicions UPC.

Patrick, D.J. (2014). The matter of displacement: a queer urban ecology of New York City's High Line. *Social & Cultural Geography*, 15(8), 920-941.

Pearsall, H. (2010). From brown to green? Assessing social vulnerability to environmental gentrification in New York City. *Environment and planning. C, Government & policy*, 28(5),872.

Pearsall, H. (2009). Linking the stressors and stressing the linkages: Human-environment vulnerability and brownfield redevelopment in New York City. *Environmental Hazards* 8 (2): 117-132.

Pearsall, H. and Pierce, J. (2010). Urban sustainability and environmental justice: evaluating the linkages in public planning/policy discourse. *Local Environment*, 15(6), 569-580.

Quastel, N. (2009). Political ecologies of gentrification. *Urban Geography*, 30(7), 694-725.

Sandberg, L. A. (2014). Environmental gentrification in a post-industrial landscape: the case of the Limhamn quarry, Malmö, Sweden. *Local Environment*, 19(10), 1068-1085.

Saurí, D., Parés, M., & Domene, E. (2009). Changing conceptions of sustainability in Barcelona's public parks. *Geographical Review*, 99(1), 23–36.

Smith, N. (1996). *The new urban frontier: gentrification and the revanchist city*. London New York: Routledge.

Steil, J., & Connolly, J. (2009). Can the Just City be built from below? Brownfields, planning, and power in the South Bronx. In *Searching for the just city: Debates in urban theory and practice*. London: Routledge, pp. 173–193.

Swyngedouw, E. (2007). Impossible 'Sustainability' and the Postpolitical Condition. In Krueger R and Gibbs D (eds) *The Sustainable Development Paradox: Urban Political Economy in the United States and Europe*. New York: Guilford Press, 13-40.

Triguero-Mas, M., Dadvand, P., Cirach, M., Martínez, D., Medina, A., Mompert, A., ... & Nieuwenhuijsen, M. J. (2015). Natural outdoor environments and mental and physical health: relationships and mechanisms. *Environment international*, 77, 35-41.

Wolch, J. & Byrne, J. (2006) Nature, Race, and Parks: Past Research and Future Directions for Geographic Research. *Progress in Human Geography*, 33(6): 743-765.

Wolch, J., Byrne, J., & Newell, J. P. (2014). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'. *Landscape and Urban Planning*, 125, 234–244.

Wolch, J., Wilson, J. P., & Fehrenbach, J. (2005). Parks and park funding in Los Angeles: An equity-mapping analysis. *Urban geography*, 26(1), 4-35.