



This is the **accepted version** of the journal article:

Anguelovski, Isabelle; Connolly, James J. T. «Segregating by greening : what do we mean by green gentrification?». Journal of Planning Literature, First published online March 6, 2024. DOI 10.1177/08854122241227804

This version is available at https://ddd.uab.cat/record/290370 under the terms of the $\bigcirc^{\mbox{\footnotesize{IN}}}$ license

<u>Title:</u> Segregating by greening: What do we mean by green gentrification?

Authors:

Isabelle Anguelovski

James Connolly

Isabelle Anguelovski is ICREA research professor and co-leader of the BCNUEJ lab at the Institute for Environmental Science and Technology (ICTA) at the Universitat Autònoma de Barcelona, Spain. She is an urban planner whose research examines the extent to which urban plans and policy decisions contribute to more just, resilient, healthy, and sustainable cities, and how community groups in distressed neighborhoods contest environmental inequities as a result of urban (re)development processes and policies.

James JT Connolly is an associate professor in the School of Community and Regional Planning, University of British Columbia (Vancouver, Canada). He is also research affiliate and former codirector of the Barcelona Laboratory for Urban Environmental Justice and Sustainability (BCNUEJ). His research is focused on the intersections of urban greening and social equity.

Abstract: (100 words)

We clarify the relationship between greening and gentrification by examining the socio-spatial dynamics that characterize and drive "green gentrification". Through a conversation with the growing literature on green gentrification, we show that this relationship is nuanced and contingent upon contextual factors and depict the exclusions at stake. In short, green gentrification is a process that generates urban green sacrifice zones, by which historically marginalized residents are forced away from greener neighborhoods, often segregated to greyer and climate-insecure areas, and which includes feedback loops of accelerated greening and exclusive investments. We conclude with future policy directions to address these green inequalities.

This paper was accepted for publication in the Journal of Planning Literature First published online March 6, 2024.

Urban green infrastructure and greenspace interventions, often simply called urban greening or renaturing interventions, refer to municipal, private, or civic investments in parks, gardens, playgrounds, greenways, or climate resilient infrastructure (Angelo, 2019; Kabisch & Haase, 2014; Meerow & Newell, 2019). Many of those projects have both a climate mitigation (e..g through reforestation) and adaptation (e.g. through flood or heat island effect protection) function. Reflecting on many funded green projects, over the last decade the planning, policy, and scholarly interest around green gentrification has exploded. Much of the interest stems from the realization that greening is not a neutral intervention – its effects are necessarily shaped by a historically uneven "playing field" between neighborhoods and cities that were historically greener (and wealthier and white) and those that were greyer, more contaminated, and underinvested (and poorer and inhabited by residents of color) (Connolly and Anguelovski, 2021). Empirical evidence is also growing on the nature and scope of the relationship between urban greening and gentrification, the directionality of the relationship, and the drivers and dynamics that characterize the interaction. However, the way scholars – and more often planners and practitionners – portray or examine green gentrification often assumes that greening as an intervention necessarily produces or contributes to gentrification and that this is the relationship of primary concern. In this article, we aim at engaging with this oversimplification of how the phenomenon is described and portrayed. We examine here the multiple socio-spatial dynamics involved in green gentrification as well as the feedback loops that complexify the production of green gentrification, and thus of new green inequalities.

Nuancing current understandings of green gentrification

In the urban planning, geography, and environmental studies literature on green gentrification, progress has been made with understanding the spatial relationship between new urban greening and gentrification; dissecting whether, how, under which circumstance, and where greening as an intervention explains, contributes to, and/or exacerbates gentrification; and pinpointing the unique role of greening vis-à-vis other drivers of unequal urban development and displacement. But, there

remains lingering questions about underlying root processes: How is green gentrification different from any other processes of gentrification? Where does racial injustice and other racialized forms of unequal development fit into the picture of green gentrification? What are the long-term spatial implications of the process and what are the feedback loops involved?

With empirical evidence pointing toward green gentrification as a rising phenomenon, but some work still to do in terms of contextualizing this phenomenon, green gentrification findings have generated conflicted reactions within planning practice and related public media. From affordable housing groups fighting against more "acute" or "rapid" drivers of gentrification than greening; to working-class residents wavering between welcoming green projects and fearing displacement by new parks, gardens, or greenways perceived as GreenLULUs (Anguelovski, 2016); to planners reifying a development-driven discourse on the primacy of greening as a win-win benefit, despite witnessing residential displacement pressures; it is clear that some growing critique about greening as "good" (Angelo, 2021) is structuring practice and public discourse – a public discourse even recently dissected by national programs such as the Public Broadcast Service (PBS) NewsHour or National Public Radio (NPR) 1a in the United States¹ or Bloomberg and Al Jazeera news networks internationally².

Given these voices and the information emerging rapidly, it is an opportune time to refocus on the fundamental purpose of the inquiry around green gentrification and to clarify the broader sociospatial dynamics involved in producing green gentrification. Thus, this *Perspective* resurfaces the conceptual foundations of green gentrification studies, while building on our own empirical and theoretical scholarship on the topic. Primarily, we counter the tendency to simplify depictions of green gentrification, which now goes beyond practice and public discourse into scholarly literatures

_

¹ https://www.pbs.org/newshour/show/how-green-gentrification-is-pricing-out-longtime-east-boston-residents https://the1a.org/segments/can-cities-go-green-without-driving-gentrification/;

² https://www.bloomberg.com/news/features/2022-11-10/a-challenge-for-cities-going-green-without-the-gentrification'; https://www.aljazeera.com/program/all-hail/2022/12/15/theres-a-mega-climate-problem-with-our-megacities-all-hail

that have picked up the concept, including those in urban ecology, public health, and urban economics. Last, we reflect on the deeper form of practice for urban greening professionals toward which the current set of findings linked with their theoretical foundations points.

To be clear, we agree with the argument that has animated much of the green gentrification literature to which we have contributed -- greening often, but not always, accelerates, contributes to or produces gentrification. However, we disagree with the scholarly or practitionners' simplification that this is the main argument. It is too simple to argue that the topic is primarily about whether green interventions create or predict gentrification as an outcome. Our main purpose here is to explicitly highlight the systemic, multi-directional, exclusionary dynamics that cause greening and gentrification to operate in tandem. We point away from a one dimensional call and response notion of the topic and point instead toward greening and gentrification as a messy entanglement. We make this intervention in order to point toward a mode of practice that begins to disentangle urban renaturing and environmental (in)justice in the context of new greening agendas.

Disentangling greening and gentrification is not simple. Urban greening is a process that makes urban space greener than it was prior, often through renewing or adding green infrastructure to previously industrial, grey, vacant, underused or climate-insecure areas that is frequently and irrevocably linked with processes that generate an increasingly divisive access to nature. This is the case because it plays a role in catalyzing social, cultural, and market forces that lead to the removal and (re)segregation of historically marginalized residents, that is working class, immigrant, and people of color communities, often to more toxic, grey, and/or climate insecure neighborhoods. It sends a signal and an incentive to developers, investors, and more privileged residents (CITATION REMOVED FOR REVIEW). As cities continue to grow within a green urban planning orthodoxy (Connolly, 2018), combined processes of unequal redevelopment, competitive urbanism, and land speculation produce green gentrification as an increasingly normalized result. It may be that this

trend is becoming so ubiquitous, so embedded in the orthodoxy of planning cities, that many people cannot see why it might be questioned.

In the next three subsections, we detail our analysis of what is meant by green gentrification, highlighting what greening exactly does as an actor producing social effects in gentrifying neighborhoods. Figure 1 illustrates how we believe green gentrification works: It is a both a direct and indirect driver of displacement of historically marginalized residents (section 1). It also includes a process by which gentrifiers are able to attract or lobby for new greening and in return trigger more investment (section 2). Taken together, the figure shows how green gentrification is about greening by (re)segregating neighborhoods between more privileged residents benefiting, over time, from an increased access to greening and historically marginalized residents being (re)segregated into greyer and/more climate insecure areas through the production of urban green sacrifice zones (section 3). The color scheme in Figure 1 illustrates this division.

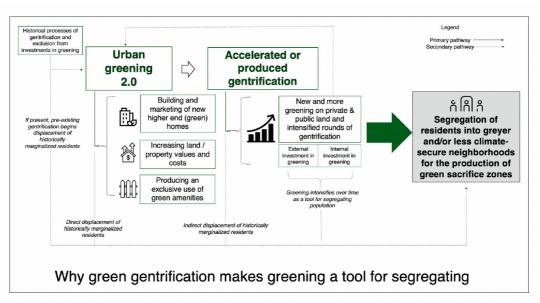


Figure 1. What do we mean by green gentrification? The underlying motivation for studying green gentrification is to understand why, when, and where greening becomes a tool for segregating according to environmental conditions and what sociospatial processes are at stake to produce exclusion and segregation.

Figure 1: What do we mean by green gentrification?

Caption: Figure 1 demonstrates the underlying motivation for studying green gentrification: to understand why, when and where greening becomes a tool for segregating according to environmental conditions and what socio-spatial processes are at stake to produce exclusion and segregation.

What do we mean by green gentrification?

1. Greening directly or indirectly displaces residents

When viewed in terms of the direct spatial relationship between new green spaces and changes in neighborhood makeup as outcome, green gentrification is not a universal phenomenon, but rather one that is becoming increasingly common. A recent study that examines 28 North American and European cities between 1990-2016 finds that in 17 of the cities, citywide greening trends from at least one given time period is relevant for explaining citywide occurrences of gentrification in the period immediately following. In other words, the majority of sampled cities experience a citywide occurrence of green gentrification. Some cities like Barcelona exhibit a slowly accelerating intensification of green gentrification trends, while others such as Seattle or Atlanta show steady and continuous green gentrification trends over at least two decades (2000s and 2010s) and still others such as Nantes or Detroit demonstrate only a recent development of green gentrification, that is where greening did not predict gentrification in the 2000s but it did for the 2010s. In some other cases such as San Francisco, Washington, or Vancouver where green gentrification occurred, greening is reported, at the citywide scale, as having a diminishing impact over time on gentrification in comparison with other factors. (Anguelovski et al., 2022). In general, this finding reflects research showing that green gentrification is an uneven phenomenon occurring in different ways in different places, but certain types of interventions such as high profile parks and greenways nearly always spark gentrification (CITATION SUPPRESSED FOR REVIEW). Meanwhile, a more diffuse set of green initiatives may or may not become wrapped up in processes of gentrification depending on other urban growth dynamics (Connolly, 2018; Shokry et al. 2020). As greening increasingly is either a primary or combined driver together with other factors fueling gentrification, and the closer this circumstance gets to the norm, the more green agendas reflect and maintain existing unsustainable aspects of urban environments.

When green gentrification occurs, it embodies a process wherein urban greening can divide, replace, and displace historically marginalized residents, as Figure 1 summarizes. This tends to affect mostly working class and racial groups living in long under-valued or -invested neighborhoods (Checker, 2011; Dooling, 2009; Gould & Lewis, 2017). Specific indicators of demographic replacement linked with green gentrification include those related to race and ethnicity, such as increase of percentage of white residents (Pearsall & Eller, 2020), decrease of African American residents (Kim & Wu, 2021), of Hispanic residents (Schinasi et al., 2021), or residents from the Global South (Anguelovski, Connolly, Masip, et al., 2018); increased housing prices (Immergluck & Balan, 2018; Rigolon & Németh, 2020); and socio-economic indicators such as increases in median household income and residents with a college degree or higher (Kim & Wu, 2021; Rigolon & Németh, 2020).

In addition to this more recent process of displacement and exclusion, green gentrification is also reflective of and preceded by deep historical divides within cities along race lines related to who has had access to nature and benefited from earlier public and private investment in the 1930s-1980s in public amenities, and green space in particular (Connolly & Anguelovski, 2021; Walker et al., 2022), which the left side of Figure 1 illustrates. This historic legacy is different from the current process of greening investments. We call the new round which largely began in the 1990s a form of greening 2.0, with greening being deployed, marketed, and branded for its multi-functionality, universal benefits, and positive trickle-down effects on urban real estate markets (Angelo, 2021; Garcia Lamarca et al. 2021).

An important contribution of the recent literature is to bring nuance to our understanding of the role played by certain green spaces and of the different types of neighborhoods and cities in which greening is contributing to gentrification. For example, studies on US cities find that neighborhoods hosting new greenspaces in proximity to recently gentrified neighborhoods are more susceptible to gentrification (Pearsall and Eller 2020; Shokry et al 2020), indicating that greening alone can be a force for extending the socio-cultural boundaries of gentrified space in cities. Others show that

critical mass matters, with findings that the number and percent area of greenspaces in a census tract have a strong positive impact on property values (Du and Xiaoling 2020) and are positively correlated with intense gentrification that has been verified across several sources and methods (Connolly 2018). Meanwhile, others find that new parks around US city centers tend to trigger gentrification independent of their size and whether they offer active transportation infrastructure (Rigolon and Németh 2020), indicating that greening can push an area with other desirable traits that had not previously gentrified toward gentrification. Last, some studies find that greenspaces linked with gentrification processes tend to have specific aesthetic and design values oriented toward social and cultural events and are surrounded by higher quality housing stock (Anguelovski, Connolly, Masip, et al., 2018; Maia et al., 2020), showing again how greening can push an area with other desirable traits into a process of gentrification.

This role for greening as an intervention in neighborhoods that exposes the existing benefits of areas while opening space for pushing aside longstanding social and cultural norms points toward the reasons why a potential for extraction-oriented real estate investment and growth exists when there is what some have called a "green gap" in an a neighborhood (Anguelovski, Connolly, & Brand, 2018). When conditions are right, filling this gap can literally provide a bridge across which new residents carry the norms of the gentry as they move in. When developers and public officials use this process as a cynically overt means of increasing property values, it becomes "urban green grabbing" (Anguelovski, Connolly, & Brand, 2018; Anguelovski et al., 2019; García-Lamarca, Anguelovski, Cole, et al., 2022) through effects that we detail briefly in the next subsections. Put differently, as greening contributes to, accelerates, or directly produces gentrification, it is clear that it is enmeshed in other processes of unequal urban development and change. If we do not understand, acknowledge and intervene – if we pretend that "green is good" is the whole story (Angelo, 2021) – then green gaps will be leveraged for processes of green grabbing and those who are vulnerable will be pushed aside.

Direct Displacement:

First, as we show in the center, bottom part of Figure 1, in some cases, greening interventions directly displace residents when municipalities or public agencies more generally illegalize their homes to build new green amenities and "create" land for green spaces, by bulldozing them, or by inequitably enforcing land use regulations in such ways that lower-income homes in ecologically fragile or newly green areas are rendered illegal while high end residential development gets to remain in place. Such dynamics have been particularly identified in resilience gentrification or climate gentrification studies and in cities in the global South (Torres et al., 2022), including places such as Jakarta or Medellin (Anguelovski et al., 2019). The construction of new projects removes socially and ecologically vulnerable residents pre- or -post disaster to give space for climate resilient green or grey infrastructure (Anguelovski et al., 2016; Gould & Lewis, 2021) or for planned retreat followed by greening and rewilding and protection of coastline ecosystems (Ajibade, 2019; Gould & Lewis, 2021).

In the US, recent research shows that buy-out programs tend to use criteria and processes that tend to be unfair and poorly-transparent, resulting in homes with lower property values, which often tend to be those of lower-income and racial minorities. Municipalities or federal agencies label them as "substantially-damaged" and facing non remediable risk, thus becoming part of a buyout and displacing their residents (Siders, 2019). Beyond the US, green climate financing has been shown to deepen climate insecurities and reinforce elite capture of the benefits of greening for climate protection (García-Lamarca, Anguelovski, & Venner, 2022). Another example of direct displacement includes Fujia village of Chengdu, China – a green car-free city for 80,000 residents – where planners have earmarked part of the district for demolition to create space for a new greenway, and some residents reported eviction and the destruction of informal gardens to make space for sports grounds, skyscrapers, and parks.³ This process might also be said to apply to

³ See: https://www.theguardian.com/cities/2019/feb/04/if-we-have-to-leave-we-leave-the-downside-of-life-in-chinas-park-city

densification schemes in Global North cities that largely justify themselves through greening arguments (Rice et al., 2020).

Indirect Displacement

Building and marketing new higher-end (green) homes

As the top center of Figure 1 illustrates, in processes of indirect displacement greening first attracts new higher-end housing investment through the direct construction of large-scale luxury housing or through condo conversions. Research indeed shows that developers are able to contract better loans for new constructions if they are able to market the property itself as green or benefit from it being located in the vicinity of a newly greened neighborhood. They are also able to sell or rent such new units for higher prices, thus directing those new units to higher income, often gentrifying residents (Anguelovski & Connolly, 2021; García-Lamarca, Anguelovski, Cole, et al., 2022). Unless those new properties include a substantial proportion of social, affordable housing, they will mostly remain elite (green) units.

This process is best illustrated through an "urban green grabbing" lens, which illustrates the speculative nature of greening for developers and investors: Those are able to extract material and symbolic rent from the construction of new green infrastructure or green buildings (García-Lamarca, Anguelovski, Cole, et al., 2022). The city becomes here what Knuth calls "a resource frontier" (Knuth, 2016) by helping corporations enclose and speculate upon "green" value and the value of certification programs, including those used in green building construction.

Increasing nearby land and property value and costs

Second, greening through the new aesthetic, ecological, climate, social, and commercial values it creates contributes to increased land and property values measured through housing and land costs (Figure 1) (Kim and Wu 2021; Rigolon and Németh 2020; Maantay and Maroko 2018; Donovan et al. 2021; Du and Xiaoling, 2020; Immergluck and Balan 2018). As a result, those costs can be prohibitively high for working class residents, who are eventually faced with the decision to move to more affordable neighborhoods or to sacrifice on other daily expenses. In contrast, higher income investors, developers, and residents are able to buy or rent more expensive homes and thus invest in and/or move into newly greened areas.

Producing an exclusive use of green amenities

Third, the availability of new green amenities does not necessarily translate into improved access for all and inclusive greening but rather produces an exclusive use of amenities (Figure 1). Much of the green gentrification literature demonstrates that many new parks, greenways, restored shorelines and waterfronts are becoming elite, white-coded and -used spaces for the preferred recreational, sports, and environmental activities of temporary visitors and/or privileged residents. Such trends have been identified in European cities such as Berlin with the Tempelhof park (Kabisch & Haase, 2014), Barcelona in the Sant Pere/Santa Caterina new green spaces (Oscilowicz et al., 2020) as well as in American cities, including San Francisco, Atlanta, or Boston (Anguelovski & Connolly, 2021). Rather than supporting the long-term uses and the practices of working-class residents and racial minorities, they become "disruptive green landscapes" (Triguero-Mas et al., 2021) appropriated by a new white elite, and thus end up segregating users of green infrastructure by race and class and undermining their sense of place and community.

2. Gentrification attracts new and more greening and intensified rounds of gentrification

Green gentrification is also about how gentrified neighborhoods and their higher-income residents—which may generate greater social and economic power — are able to attract new greening, a relationship that has so far received less scholarly attention (for an exception, see (Sharifi et al., 2021)). In this reverse or follow-up feedback process, summarized on the right side of Figure 1 and in the feedback loop on the top, compared to the one we outline above, gentrification itself attracts new greening on private and public land through the incoming green capture by wealthier groups of new green public or private investments and concentrated green infrastructure in those neighborhoods. Those in turn trigger further rounds of development, accelerating displacement. Politically or economically, those residents are able to mobilize their own "internal" resources or access external ones from municipal programs or private investors to harness more greening in their neighborhoods. For example, a study on climate resilient infrastructure in Philadelphia shows that where census tracts gentrified the most between 2000 and 2010, those areas received the most green infrastructure in the subsequent years (2011 to 2016) (Shokry et al., 2020).

2.1.Internal Investment in Greening

On the one hand, as the very right side of figure 1 illustrates, wealthier residents moving into gentrifying neighborhoods often have the internal means to upgrade their homes against the impacts of climate change or simply beautify their neighborhood via self-organized and self-funded greening projects with a primarily aesthetic motivation. This dynamic is demonstrated well within urban environmental stewardship literature that finds a persistent, race, gender and class divide among those who engage in formal stewardship (Fisher et al., 2015; Tozer et al., 2020). In climate-insecure neighborhoods, the home upgrading capacity of higher income earners translates into the construction of green resilient infrastructure, including rain gardens, berms, permeable pavement, and SUDS (sustainable drainage systems) by residents themselves. In formerly greyer areas,

residents also mobilize neighborhoods to self-green their own streets, front yards, and other neighborhood or private spaces by pooling resources or simply greening the neighborhood on their own (Shandas, 2015). Often, this mode occurs during transition times and raises some of the greatest challenges for residents in terms of the desirable path forward. Last, those residents tend to demonstrate a greater ability or receptiveness to green infrastructure that requires maintenance, which, in contrast, lower income groups might see with an eye of concern. For example, in Detroit, 24% of residents approached as part of a street tree planting program between 2011 and 2014 – mostly from working class, racial minority backgrounds – formulated a "no-tree request". Their refusal to host new trees reflected concerns over differential power in regard to species selection and maintenance protocols between them and the nonprofit group in charge of urban reforestation as well as concerns over long-term stewardship (especially tree care and property management) (Carmichael & McDonough, 2018). Similar dynamics have been observed in New York City and San Francisco (Checker, 2011; Connolly, 2021).

2.2. External Investment in Greening

On the other hand, gentrifiers also have the political capacity to attract new external public or private green investments by mobilizing networks within municipal governments and local elected officials as well as financial leverage to attract new investors (see Figure 1 on the right). In Montreal for example, new residents in the gentrifying Saint Henri neighborhood have been able to attract C\$1.5M funding from the Quebec Public Health Agency to transform an unused back alley into a Dutch "living street" and public green space, the St-Pierre Woonerf, which promotes pedestrians, cyclists, children's use as well more general green living and communal growing space. Yet, this space remains mostly used for the recreational and sports activities of white middle class condo owners, especially the outdoor gym equipment (Garcia Lamarca & Vantsintjan, 2021) – a familiar dynamic for high profile green initiatives.

3. Displaced residents will be segregated away from the benefits of greening into greyer and less climate secure neighborhoods: Urban green sacrifice zones

Finally, green gentrification eventually refers to a clear overall outcome: The removal of workingclass residents displaced by higher living costs in gentrifying neighborhoods from the multiple health, economic, ecological, and social benefits of the new green amenities that those neighborhoods received. Unable to remain in a neighborhood that gentrified and became green, they tend to be displaced and segregated away into greyer and less climate secure areas (Gould & Lewis, 2017; Shokry et al., 2020) because those are the only places they can afford, thus producing a new form of segregation, as the center bottom of Figure 1 illustrates. Zografos et al. talk about "green sacrifice zones" in the context of green energy transitions and the resource extraction needed in affected communities to produce green energy infrastructure (Zografos & Robbins, 2020). Here, we see a similar dynamic of urban green sacrifice zones where certain communities and neighborhoods are able to be sacrificed and be deprived of nature (or lose a new access to nature) for others to thrive in them. Most concretely, in the same study of Philadelphia, the census tracts that most received new Hispanic and African American residents between 2000 and 2016 are those that were least protected by green resilient infrastructure. The result is that, when residents are displaced, they will likely be living with less access to nature and greater climate risk, reproducing or worsening historic "green divides" between higher-income, whiter neighborhoods with greater access to nature and lowerincome neighborhoods with a high percentage of racial minorities with lower access to nature (Connolly & Anguelovski, 2021; Rigolon et al., 2018; Wolch et al., 2014).

In these circumstances, people with relatively higher exposure to residential vulnerability may very well perceive higher climate risk than the population in general because they expect to be pushed into higher risk areas and thus perceive a greater potential impact from climate change. Yet, despite

this more acute sense of climate risk, their priority may not be to address the climate risk directly through new greening investments, but rather to first address housing precarity as the more acute issue – thus fueling a "risk perception paradox:" Residents who perceive the highest risks are not willing or able to prepare themselves for disasters because they have to focus on more immediate needs (Wachinger et al., 2013). This dynamic generates an unsolvable political conundrum that returns us to the fundamental purpose of green gentrification literature – to focus on addressing the underlying processes that threaten to undo the potential for urban greening to serve as an actual solution to climate vulnerability and environmental degradation.

Concluding remarks

In this *Perspectives* article, our goal was to clarify green gentrification as a multi-faceted, multi-directional socio-spatial process by which greening divides access to nature by removing and segregating, with complex temporalities and feedback loops. In other words we draw green gentrification as a messy entanglement captured in Figure 1, rather than a simple cause and effect dynamic. We also clarified what is unique in green gentrification research and what justifies the use of a specific concept that differs from gentrification itself. Our goal was not to relate green gentrification to other types of gentrification, nor to argue what counts as greening (or not) but rather to identify what original dynamics of exclusion and division take place within green gentrification processes in order to highlight its inherent connection to deeper processes that employ spatial interventions as a means of segregating populations.

We are in some ways returning the focus to the original motivations of the literature. Green gentrification is about (re)segregating residents within a hierarchical greening process by which certain neighborhoods, more generally those located close to historic centers, downtowns, business (improvement) districts, waterfront, or tourist areas will likely exhibit expansive and iconic new green spaces and infrastructure while more underinvested, less visited, less coveted areas will

continue to host grey infrastructure, toxic sites, and climate-insecure homes and public spaces as well as low-quality greening – if any at all. While working-class, immigrant, and people of color residents might at first, in the short term, get greater access to proximate green spaces, when this benefit is the precursor to green gentrification, that effect is short-lived and those communities become urban green sacrifice zones.

The ways that people actually experience green infrastructure is as part of the cacophony of forces shaping their urban environments, wrapped up in the dynamics that impart gentrification onto neighborhoods. This potentially leads to a political impasse, wherein the people most meant to benefit from greening might become those most opposed or most vocal about concerns related to social impacts and environmental justice. In turn, any resistance can be weaponized against residents or civic groups by accusing those stakeholders of "not caring" about the environment, "not wanting" green infrastructure in neighborhood, and/or by justifying less green investment in historically marginalized and greyer areas.

This state of affairs crucially impacts the future of urban planning action, including climate action. If a focus is not retained on addressing the underlying processes generating inequity and vulnerability relative to access to nature and to secure, affordable housing, then every city in the world could become greener in order to become more resilient or mitigate emissions and still the global population of those vulnerable to ecological threats would grow. Climate challenges would, in this circumstance, be far from resolved. Rather, climate urbanism risks leading to a situation wherein the negative impacts of climate change would be felt in a delayed manner for some and exacerbated for many. In one sense, the main target of scholarship on green gentrification is and should be to expose occasions where urban growth leans toward this pathway of avoidance, leaving the true challenges unaddressed in the name of short-term opportunistic wins that, in aggregate, leave the effect of planning practice rather far from the intent of many practitioners.

Ultimately green gentrification research is trying to give urban planners a wake up call and the tools to respond before it is too late. The call for practice is to seek a deeper mode of greening strategies that recognizes continued inequities in direct access, but also sees the secondary effects. Primarily, this means shifting away from an opportunistic mode of greening, wherein new green projects are placed where planners are given opportunity to place them (often because development creates those opportunities). The shift needs to go toward an integrated mode of greening, wherein the strategy is linked with equity-centered and community-driven housing, land use, and transportation planning. In other words, toward transversal urban green planning. Green urban planning is not, in this mode, carried out by a stand-alone agency waiting for chances to act, but rather is an element of unified action premised on the principles of social-ecological justice (Grossman et al., 2022).

- Ajibade, I. (2019). Planned retreat in Global South megacities: disentangling policy, practice, and environmental justice. *Climatic Change*, *157*(2), 299-317.
- Angelo, H. (2019). Added value? Denaturalizing the "good" of urban greening. *Geography Compass*, 13(8), e12459.
- Angelo, H. (2021). How green became good: Urbanized nature and the making of cities and citizens. University of Chicago Press.
- Anguelovski, I. (2016, October 23, 2015). From Toxic Sites to Parks as (Green) LULUs? New Challenges of Inequity, Privilege, Gentrification, and Exclusion for Urban Environmental Justice. *Journal of Planning Literature*, 1-14. https://doi.org/10.1177/0885412215610491
- Anguelovski, I., Connolly, J., & Brand, A. L. (2018). From landscapes of utopia to the margins of the green urban life: For whom is the new green city? *City*, *22*(3), 417-436.
- Anguelovski, I., Connolly, J., Masip, L., & Pearsall, H. (2018). Assessing green gentrification in historically disenfranchised neighborhoods: A longitudinal and spatial analysis of Barcelona. *Urban Geography, 39*(3), 458-491.
- Anguelovski, I., & Connolly, J. J. (Eds.). (2021). *The Green City and Social Injustice: 21 Tales from North America and Europe*. Routledge.
- Anguelovski, I., Connolly, J. J., H, C., Garcia Lamarca, M., Triguero-Mas, M., Baró, F., Martin, N., Conesa, D., Shokry, G., Pérez del Pulgar, C., Arguelles Ramos, L., Matheney, A., Gallez, E., Oscilowicz, E., López Máñez, J., Sarzo, B., Beltrán, M. A., & Martínez Minaya, J. (2022). Green gentrification in European and North American Cities *Nature Communications*, 13.
- Anguelovski, I., Irazábal-Zurita, C., & Connolly, J. J. (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., Shi, L., Chu, E., Gallagher, D., Goh, K., Lamb, Z., Reeve, K., & Teicher, H. (2016, May 11, 2016). Equity Impacts of Urban Land Use Planning for Climate Adaptation: Critical Perspectives from the Global North and South. *Journal of Planning Education and Research*, 36(3), 333-348. https://doi.org/10.1177/0739456x16645166
- Carmichael, C. E., & McDonough, M. H. (2018). The trouble with trees? Social and political dynamics of street tree-planting efforts in Detroit, Michigan, USA. *Urban Forestry & Urban Greening*, 31, 221-229.
- Checker, M. (2011). Wiped Out by the "Greenwave": Environmental Gentrification and the Paradoxical Politics of Urban Sustainability. *City & Society, 23*(2), 210-229. https://doi.org/10.1111/j.1548-744X.2011.01063.x

- Connolly, J. J. (2018). From Jacobs to the Just City: A foundation for challenging the green planning orthodoxy. *Cities*(91), 64-70.
- Connolly, J. J. (2021). A community fights for its health while battling impending gentrification: Bayview-Hunters Point, San Francisco. In I. Anguelovski & J. J. Connolly (Eds.). Routledge.
- Connolly, J. J., & Anguelovski, I. (2021). Three histories of greening and whiteness in American cities. *Frontiers in Ecology and Evolution, 9,* 101.
- Dooling, S. (2009). Ecological Gentrification: A Research Agenda Exploring Justice in the City. *International Journal of Urban and Regional Research*, 33(3), 621-639.
- Fisher, D. R., Svendsen, E. S., & Connolly, J. (2015). *Urban Environmental Stewardship and Civic Engagement: How planting trees strengthens the roots of democracy*. Routledge.
- Garcia Lamarca, M., & Vantsintjan, A. (2021). Ordinary and Extraordinary Greening: Tensions amidst Saint-Henri, Montréal's development boom. In I. Anguelovski & J. J. Connolly (Eds.), *The Green City and Social Injustice: 21 Tales from North America and Europe*. Routledge.
- García-Lamarca, M., Anguelovski, I., Cole, H. V., Connolly, J. J., Pérez-del-Pulgar, C., Shokry, G., & Triguero-Mas, M. (2022). Urban green grabbing: Residential real estate developers discourse and practice in gentrifying Global North neighborhoods. *Geoforum*, 128, 1-10.
- García-Lamarca, M., Anguelovski, I., & Venner, K. (2022). Challenging the financial capture of urban greening. *Nature Communications*, 13(1), 1-4.
- Gould, K. A., & Lewis, T. L. (2017). *Green Gentrification: Urban Sustainability and the Struggle for Environmental Justice*. Routledge.
- Gould, K. A., & Lewis, T. L. (2021). Resilience Gentrification: Environmental Privilege in an Age of Coastal Climate Disasters. *Frontiers in Sustainable Cities*, 85.
- Grossman, K., Connolly, J. J., Dereniowska, M., Mattioli, G., Nitschke, L., Thomas, N., & Varo, A. (2022). From sustainable development to social-ecological justice: Addressing taboos and naturalizations in order to shift perspective. *Environment and Planning E: Nature and Space,* 5(3), 1405-1427.
- Immergluck, D., & Balan, T. (2018). Sustainable for whom? Green urban development, environmental gentrification, and the Atlanta Beltline. *Urban Geography*, *39*(4), 546-562.
- Kabisch, N., & Haase, D. (2014). Green justice or just green? Provision of urban green spaces in Berlin, Germany. *Landscape and Urban Planning*, 122, 129-139.
- Kim, S. K., & Wu, L. (2021). Do the characteristics of new green space contribute to gentrification? *Urban studies*, 0042098021989951.
- Knuth, S. (2016). Seeing Green in San Francisco: City as Resource Frontier. *Antipode*, 48(3), 626-644.
- Maia, A. T. A., Calcagni, F., Connolly, J. J. T., Anguelovski, I., & Langemeyer, J. (2020). Hidden drivers of social injustice: uncovering unequal cultural ecosystem services behind green gentrification. *environmental science & policy, 112*, 254-263.

- Meerow, S., & Newell, J. P. (2019). Urban resilience for whom, what, when, where, and why? *Urban Geography, 40*(3), 309-329.
- Oscilowicz, E., Honey-Rosés, J., Anguelovski, I., Triguero-Mas, M., & Cole, H. (2020). Young families and children in gentrifying neighbourhoods: how gentrification reshapes use and perception of green play spaces. *Local Environment*, *25*(10), 765-786.
- Pearsall, H., & Eller, J. K. (2020). Locating the green space paradox: A study of gentrification and public green space accessibility in Philadelphia, Pennsylvania. *Landscape and Urban Planning*, 195, 103708.
- Rice, J. L., Cohen, D. A., Long, J., & Jurjevich, J. R. (2020). Contradictions of the climate-friendly city: new perspectives on eco-gentrification and housing justice. *International Journal of Urban and Regional Research*, 44(1), 145-165.
- Rigolon, A., Browning, M., & Jennings, V. (2018). Inequities in the quality of urban park systems: An environmental justice investigation of cities in the United States. *Landscape and Urban Planning*, 178, 156-169.
- Rigolon, A., & Németh, J. (2020). Green gentrification or 'just green enough': Do park location, size and function affect whether a place gentrifies or not? *Urban studies*, 0042098019849380.
- Schinasi, L. H., Cole, H. V., Hirsch, J. A., Hamra, G. B., Gullon, P., Bayer, F., Melly, S. J., Neckerman, K. M., Clougherty, J. E., & Lovasi, G. S. (2021). Associations between Greenspace and Gentrification-Related Sociodemographic and Housing Cost Changes in Major Metropolitan Areas across the United States. *International Journal of Environmental Research and Public Health*, 18(6), 3315.
- Shandas, V. (2015). Neighborhood change and the role of environmental stewardship: a case study of green infrastructure for stormwater in the City of Portland, Oregon, USA. *Ecology and Society*, 20(3).
- Sharifi, F., Nygaard, A., Stone, W. M., & Levin, I. (2021). Green gentrification or gentrified greening: Metropolitan Melbourne. *Land Use Policy*, *108*, 105577.
- Shokry, G., Connolly, J. J., & Anguelovski, I. (2020). Understanding climate gentrification and shifting landscapes of protection and vulnerability in green resilient Philadelphia. *Urban Climate*
- Siders, A. R. (2019). Social justice implications of US managed retreat buyout programs. *Climatic Change*, 152(2), 239-257.
- Torres, P. H. C., Jacobi, P. R., & Irazabal, C. (2022). *Urban Greening in the Global South: Green Gentrification and Beyond*. Frontiers Media SA.
- Tozer, L., Hörschelmann, K., Anguelovski, I., Bulkeley, H., & Lazova, Y. (2020). Whose city? whose nature? towards inclusive nature-based solution governance. *Cities*, *107*, 102892.
- Triguero-Mas, M., Anguelovski, I., García-Lamarca, M., Argüelles, L., del Pulgar, C. P., Shokry, G., Connolly, J. J., & Cole, H. V. (2021). Natural outdoor environments' health effects in

- gentrifying neighborhoods: disruptive green landscapes for underprivileged neighborhood residents. *Social science & medicine*, 113964.
- Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The risk perception paradox—implications for governance and communication of natural hazards. *Risk analysis*, *33*(6), 1049-1065.
- Walker, R. H., Ramer, H., Derickson, K., & Keeler, B. (2022). Making the City of Lakes: whiteness, nature, and urban development in Minneapolis. *Annals of the Association of American Geographers*.
- Wolch, J., Byrne, J., & Newell, J. (2014, 5//). Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'. *Landscape and Urban Planning*, 125(0), 234-244. https://doi.org/http://dx.doi.org/10.1016/j.landurbplan.2014.01.017
- Zografos, C., & Robbins, P. (2020). Green sacrifice zones, or why a green new deal cannot ignore the cost shifts of just transitions. *One Earth*, *3*(5), 543-546.