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Editorial

## Social Justice in the Green City

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### Abstract

The Covid-19 pandemic and energy, climate, and demographic crises have shown how cities are vulnerable to these impacts and how the access to green and blue spaces has become highly relevant to people. One strategy that we can observe is the strong focus on the resilience discourse, meaning implementing more green and blue spaces in urban areas, such as at previous brownfield quarters. However, social justice implications of urban greening have been overlooked for a long time. The implementation of strategies to improve the quality and availability of the green and blue infrastructures may indeed have negative outcomes as far as housing accessibility is concerned by triggering gentrification processes. Issues related to environmental justice and socio-spatial justice are increasing in contemporary cities and call for a better understanding of the global and local mechanisms of production and reproduction of environmental and spatial inequalities. This thematic issue includes eleven articles with different methodologies, with examples from Europe and North America as well as different lenses of green gentrification. Some articles focus more on the question of costs, benefits, and distributional consequences of various infrastructural options for urban greening. Others, instead, discuss how the strategic urban planning tools and policy processes take into account distributional consequences, with specific attention on participatory processes.

### Keywords

climate gentrification; environmental justice; green gentrification; urban justice

### Issue

This editorial is part of the issue “Social Justice in the Green City” edited by Roberta Cucca (Norwegian University of Life Sciences) and Thomas Thaler (University of Natural Resources and Life Sciences).

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### 1. Introduction

The impact of the current multiple crises has greatly influenced cities across the globe. The Covid-19 pandemic and energy, climate, and demographic crises have shown how cities are vulnerable to these impacts and how the access to green and blue spaces has become highly relevant to people (Labib et al., 2022; Pröbstl-Haider et al., in press). At the same time, the globalisation and implementation of new policy directions enabled industrial complexes to move from cities in the Global North towards the Global South. One key result has been the development of large, abandoned brownfield quarters within the cities (Rigolon & Németh, 2020), which represent an important asset for municipalities.

These two different processes open the debate about how post-industrial cities should be developed further across the globe. One strategy that we can observe is the strong focus on the resilience discourse, meaning implementing more green and blue spaces in urban areas, such as at previous brownfield quarters. The creation of such green and blue spaces can reduce the negative impacts of a warmer climate to improve individual well-being, and it can, of course, attract international investors (as the different articles within our thematic issue show). Cities are today at the forefront of such initiatives and strategies since they are simultaneously contexts where most of the environmental problems originate and are visible and are where ecological and social innovation can more successfully take place. Indeed,

municipal and metropolitan governments have a substantial impact on land use, public education, and economic development, and cities are contexts where civil society is often more established. However, social justice implications of urban greening have been overlooked for a long time (Planas-Carbonell et al., 2023). In particular, the implementation of strategies to improve the quality and availability of the green and blue infrastructures may have negative outcomes as far as housing accessibility is concerned by triggering gentrification processes. Issues related to environmental justice and socio-spatial justice are increasing in contemporary cities and call for a better understanding of the global and local mechanisms of production and reproduction of environmental and spatial inequalities. This results in demands for intersectional and relational approaches to justice in urban greening strategies and suggestions for strategies avoiding undesired social effects, such as displacement or an increase in housing costs. The current urban planning thematic issue focuses on how planning processes and policy responses can alternatively act as mechanisms limiting or increasing new social and spatial green inequalities in contemporary cities. Contributions dealing with case studies from different continents focus mainly on two dimensions, which are explained below.

## 2. Overview of the Thematic Issue

The thematic issue includes eleven articles with different methodologies (qualitative, quantitative, and bibliometric assessment), with examples from Europe and North America as well as different lenses of green gentrification, like food justice or green spaces. Overall, the eleven articles can be distinguished between two main groups. The first group focuses more on the question of costs, benefits, and distributional consequences of various infrastructural options for urban greening. These contributions mainly deal with gentrification processes linked with urban greening practices, processes of spatial segregation connected with the environmental quality of the local environment, and sustainability strategies. The second group discusses how the strategic urban planning tools and policy processes take into account distributional consequences, with specific attention on participatory processes.

The first article, “Green gentrification, social justice, and climate change in the literature: Conceptual origins and future directions” by Cucca et al. (2023), presents the findings of a bibliometric analysis of the current literature about green gentrification in urban areas. The review shows the roots of the term “green gentrification” in the scientific debate and how it evolves over the time, which type of methods were used, as well as how green gentrification manifests itself within the literature. In addition, the article also shows the challenges and conflicts connected with implementing green measures and how to avoid them as well as how to provide potential countermeasures to respond to them.

The second article, written by Klaus Geiselhart and David Spenger (2023) and entitled “Environmental microsegregation: Urban renewal and the political ecology of health,” focuses on environmental health inequities in urban areas, using the example of Erlangen in Germany. The article shows how disadvantaged groups are negatively affected by various environmental burdens within different urban developments, such as urban renewal, where low-income households are less privileged in terms of the distribution of environmental goods and bads. This distribution often occurs on a very fine micro-scale level, with the outcome that high-income households are gaining from these new developments more than low-income households.

The third article, “‘Passive’ ecological gentrification triggered by the Covid-19 pandemic” published by Dani Broitman (2023), focuses on the current urban challenge of the impact of the Covid-19 pandemic on urban dynamics and green gentrification processes. In particular, the pandemic resulted in a stronger need for more accessible green spaces, and the article assesses if this situation actually influenced housing prices within the Netherlands. Broitman introduced the concept of “passive ecological gentrification” as an event such as Covid-19 acts as momentum for gentrification processes. This concept actually helps to assess the potential threats of post-Covid policies for urban areas.

The fourth article, “A new phase of just urban climate action in the Rocky Mountain West” by Clara Stein and Corina McKendry (2023), assesses the potential green gentrification processes between Denver and Salt Lake City, which are planning to implement measures to reduce carbon emissions. In particular, both urban spaces are lacking affordable housing, but, at the same time, both cities are planning to implement various climate-mitigation measures. The article shows the historical development of both policy strategies and how they might come together to provide a more sustainable and fairer city.

The fifth article, written by Willi Bauer (2023) and entitled “Reframing urban nature-based solutions through perspectives of environmental justice and privilege,” assesses the importance of linking the realisation of green spaces and providing a fair city. The qualitative literature review actually shows the linkages and importance of understanding nature-based solutions, environmental privilege, and potential green gentrification and how to provide a just green nature-based solutions strategy.

The next article, published by Maria Karagianni (2023) and entitled “Making Thessaloniki resilient? The enclosing process of the urban green commons,” addresses the challenge of reaching the goal of resilience and its unintended effects. The article shows how the resilience concept is driven by the current neoliberalism discourse and its impact on the urban planning decision-making process of the Greek city of Thessaloniki.

The seventh and last article from the first group, written by Hendrik Sander and Soren Weißermel

(2023) and entitled “Urban heat transition in Berlin: Corporate strategies, political conflicts, and just solutions,” addresses the topic of the urban heat transition in the German capital. The city of Berlin is actually planning to implement various strategies to provide a transformative process, but, at the same time, this planning strategy might encourage the existing social inequality within the city. The article shows how the policy strategies of Berlin try to reduce the negative consequences but fail, to some extent, to address this new potential threat.

The eight article and the first from the second group, published by Crilly et al. (2023) and entitled “Building equality: A ‘Litmus test’ for recognising and evidencing inequalities and segregation in the built environment,” focuses on the challenge of multi-dimensional and spatial inequalities in urban areas. Crilly et al. (2023) used different primary and secondary data sources and a novel methodology to understand the different aspect of urban inequalities and how to improve the current planning decision-making process to reduce the spatial inequalities.

The ninth article, “Food and governmentality in the green city: The case of German food policy councils” by Alena Birnbaum and Petra Lütke (2023), shows within a multi-level assessment the challenges of food councils based on the Milan Urban Food Policy Pact and their local implementation and implications for inhabitants.

The tenth article, by Ahn et al. (2023) and entitled “How context matters: Challenges of localizing participatory budgeting for climate change adaptation in Vienna,” addresses the challenges of implementing a participatory budget to select and implement climate mitigation actions in several Viennese districts. The idea of the participatory budget was implemented in 2017 with the goal to engage and to encourage citizens to take an active role in climate urban planning policy. The article uses a mixed-method approach to show the motivation and constraints of using such a concept within a multi-level perspective.

The last article, “Fiduciary activism from below: Green gentrification, pension finance, and the possibility of just urban futures” by Jessica Parish (2023), opens the debate on climate urbanism. The objective of climate urbanism is, on the one hand, to reduce the vulnerability of the critical infrastructure within urban areas and, on the other hand, to reduce the strong negative impacts on already marginalised individuals and households. This development is extensively driven by the current financial and economic crises, where different pension funds, like Canadian pension funds, encourage this social inequality within cities. The article shows how different groups tried to act to address this problem.

### 3. Conclusions

A well-established literature shows that in the face of climate change challenges, the creation of and access to green and blue spaces are crucial for the improvement of

our cities. However, often low-income householders are excluded from such access, and the implementation of green and blue spaces can create an additional threat of displacement from uplifted urban areas for low-income households. Green gentrification has become a major threat to our cities that needs to be addressed by public policy and planning processes. Overall, the thematic issue shows how important it is to include both sides of the coin (provide green and blue spaces and avoid potential negative trade-offs) by addressing and including in the process the voice and needs of marginalised communities, through the provision of affordable housing and participation in decision-making processes.

### Conflict of Interests

The authors declare no conflict of interests.

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Article

# Green Gentrification, Social Justice, and Climate Change in the Literature: Conceptual Origins and Future Directions

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## Abstract

While global urban development is increasingly oriented towards strategies to facilitate green urbanism, potential community trade-offs are largely overlooked. This article presents the findings of a quantitative and qualitative meta-analysis of the current literature on green gentrification (the process leading the implementation of an environmental planning agenda displacing or excluding the most economically vulnerable population) in connection with climate change adaptation and mitigation across the globe. Based on specific keywords, we selected the recorded entry of 212 articles from Scopus covering the period 1977–2021. Our review focused on the historical and geographical development of the literature on urban greening and gentrification. The analysis shows that the concept of green gentrification has strong roots within the environmental justice debate in the US. In terms of intervention, most studies focused on urban parks and trees and were primarily oriented towards restoration. However, debates around the role of green facades, green roofs, or blue infrastructure (such as ponds and rivers) and other nature-based solutions as a driver for green gentrification are few and far between. Finally, we also identified a strong gap between the observation of green gentrification and potential countermeasures that respond to it. Most studies suggest that the existence of a stronger collaborative planning process within the affected communities may overcome the challenge of green gentrification. Based on our results, we identify several gaps and new research directions to design a green and just city.

## Keywords

climate change adaptation; climate justice; mitigation; social justice; urban design; urban planning

## Issue

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## 1. Introduction

Climate change adaptation and mitigation policies have become more important in urban areas in recent years since these areas are more vulnerable to the negative impacts of climate change in terms of severe flooding or heat-wave events (Intergovernmental Panel on Climate Change [IPCC], 2022). Warmer climates will change the current urban thermal environment, especially as urban areas lack green and blue spaces (Grimm et al., 2008). Consequently, urban areas will face a drastic rise in temperature during the day (average temper-

ature > 30 °C) and at night (tropical nights) in the coming decades (IPCC, 2021). The lack of green and blue spaces is mainly driven by the extensive past, current, and future urbanisation, resulting in an increase in urban impervious surfaces (Tian et al., 2021). Additionally, post-industrial cities underlie a socio-economic transformation process, culminating in large vacant spaces within the city boundaries (Rigolon & Németh, 2020). As a result, the (re-)creation of nature-based solutions (NbS) or ecosystem services, such as parks, lakes, rivers, green lines, and trees, has become highly relevant (Haase et al., 2014; Nesshöver et al., 2017; Pesola et al., 2017;

Raymond et al., 2017). Following Raymond et al. (2017), NbS can be understood as using nature to solve the current and future challenges within our societies, like climate change adaptation and the mitigation of the loss of biodiversity.

Many policymakers and stakeholders encourage the implementation of NbS to improve cities' liveability and resilience towards extreme weather events associated with climate change (Rahman et al., 2022; Shokry et al., 2022). Moreover, NbS are attractive as they can encourage new people and businesses to settle their centre of life and business activities in these new green urban centres. Furthermore, NbS can act as cooling areas to adapt against urban heat waves or store water in the case of flooding (Green et al., 2022; Huang et al., 2020; Pallathadka et al., 2022; Zuvella-Aloise et al., 2016). Accordingly, we observe a shift within most urban strategies from grey (classical focus on technical-engineering solutions) to green programmes. Green programmes include a stronger focus on green infrastructure to implement NbS across the city. The aim is to improve economic resilience and individual well-being, or restore ecosystem services (Rigolon & Németh, 2020; Rigolon et al., 2020). In other words, the goal is to deliver a liveable city. As various trade-offs within "new" green policies also exist, the key challenge is how to provide a resilient city without encouraging the risk of displacement within the cities (Rigolon & Németh, 2020; Rigolon et al., 2020; Xu et al., 2022). One of the potential trade-offs is the risk of displacing vulnerable householders who have usually already been negatively affected by past urban policies. One example is the redlining housing policy in the US back in the 1930s, which created large spatial inequalities in the cities. Today, the consequences of the redlining policy can still be observed in different US cities (Lane et al., 2022; Li & Yuan, 2022; Nowak et al., 2022). So-called green or environmental gentrification is a serious threat in different urban regions across the globe (Anguelovski, 2015; Anguelovski et al., 2018, 2019; Checker, 2011; Meishar, 2018). Within this article, we define green gentrification as the process of 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" (Dooling, 2009, p. 621).

This article presents the findings of a critical review of the literature dealing with the socio-spatial justice implications of NbS implementation across the globe. We focus on how climate change adaptation and mitigation policies can encourage gentrification and how both of these aspects are reflected and linked in the literature. We define climate change adaptation based on the current understanding of the European Commission (2022), i.e., "taking action to prepare for and adjust to both the current effects of climate change [and] the predicted impacts in the future." Moreover, we understand climate change mitigation based on the United Nations Environment Programme (2022) definition, i.e.,

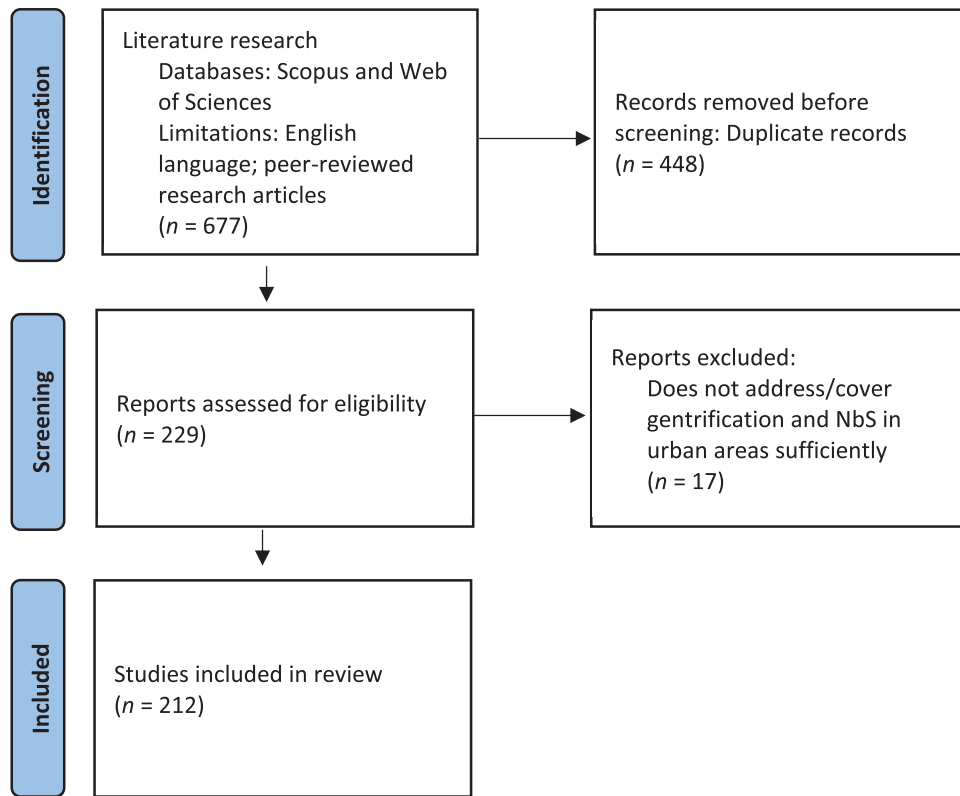
"efforts to reduce or prevent [the] emission of greenhouse gases." The selected articles were published in international (English-speaking) academic journals over the past 40 years. Firstly, the critical review focused on the historical development of the literature, exploring how it started in the framework of studies and investigations in the environmental justice literature and gradually shifting towards a more defined focus on green gentrification studies. Secondly, it analyses the topics, methodologies, and trends in recent studies. Finally, it discusses the research gaps and future agendas in light of the current climate and social justice crisis.

The article is structured as follows: Section 2 shows the methodology used based on the PRISMA format within the article. In Section 3, we analyse the conceptual origins of gentrification studies, including the type of climate change adaptation and mitigation measures, specifically focusing on NbS. First, we will describe the historic and geographic evolution of all the articles in our database ( $N = 212$ ), especially taking into consideration the motivations and types of NbS-interventions (Section 4), as well as the applied dimensions of socio-spatial justice (Section 5). Section 6 focuses on articles that explicitly deal with "greening" as the causal triggers and their differing impacts in terms of green gentrification ( $n = 112$ ). We identified these limited sets of studies when coding the articles in more detail and will present them by describing the literature, delineating trends and addressing research gaps. Finally, Section 7 includes the conclusive remarks, including new research directions.

## 2. Methodology

The results of the article are based on the review of 212 peer-reviewed research articles. All the articles were published on the topic of gentrification in relation to the creation of green and blue spaces in urban regions. The selection was restricted to (a) articles published in the English language, (b) peer-reviewed academic articles, and (c) selected search strings in the titles, abstracts, and keywords. The sampling size was selected from the Web of Science and Scopus databases and included articles from 1977 until April 2021. Our aim is to see how the terms evolved over time. Therefore, we followed an open-date approach, during which we discovered that the first article was published back in 1977. The search started in July 2021 and lasted until August 2021. The review was conducted from October 2021 to February 2022. The process as a whole was based on the PRISMA format (Moher et al., 2009; see Figure 1).

The search query included two main aspects: (a) gentrification and (b) the synonyms for NbS used in the literature. For our general Boolean search query, we selected the following strings: TITLE, ABSTRACT (climate AND gentrification OR eco AND gentrification OR ecological AND gentrification OR environmental AND gentrification OR green AND gentrification OR resilience AND gentrification). Overall, we found 677 articles. The total



**Figure 1.** Flow chart of review process based on the PRISMA format.

number of articles for each search string can be found in Table 1.

After excluding duplicates, our database contained 229 articles for review. A first screening of the titles, abstracts, and keywords narrowed the database to 212 articles for our full-text review. The inclusion of the articles had to follow three main characteristics: (a) urban, (b) NbS and its synonyms, and (c) gentrification.

The assessment was based on a structured exploratory research analysis. The exploratory assessment was organised quantitatively based on the assessment of the full text. First, we used Microsoft Excel to classify and quantify our results based on several key themes: (a) year; (b) geography/location of the study sites (three variables: name of the city, country, and continent); (c) methodology; (d) typology of interventions (five variables: parks/urban green, trees, lakes/rivers, green facade/green terrace, and other types of interventions); (e) motivation for using NbS (five variables: climate mitigation, climate adaptation, degraded

ecosystem, risk management, resilience, and other motivations for implementing interventions); (f) general dimension of justice reflected in the article (three variables: distributional, representation, and recognition); (g) assessment of impacts (four variables: change of home sale values/rents/housing prize, change of social housing/affordability housing, change of population in terms of income, age, immigration, education, and displacement), and (h) policies and tools to avoid green gentrification (three variables: planning tools to avoid green gentrification, housing policies, and community groups against green gentrification).

### 3. Article Characteristics

In recent decades, geographers, planners, and sociologists with an interest in environmental justice and privilege have shown that green interventions can create enclaves for privileged social groups, while low-income and minority residents are often excluded from the

**Table 1.** Number of articles per search string.

Search dimension	Total number of articles
Climate gentrification	60
Eco gentrification	19
Ecological gentrification	83
Environmental gentrification	289
Green gentrification	161
Resilience gentrification	56

neighbourhoods in which new environmental goods are created. However, more recently they have started to show how green interventions can serve as the primary drivers of new socio-spatial inequalities by moving from an interest in the unequal distribution of environmental advantages and disadvantages (historically associated with the environmental justice scholarship) to an assessment of gentrification-related mechanisms such as displacement and rising housing costs following NbS interventions. Before moving to the justice-related and gentrification-related characteristics, in this section, we describe the evolution of such literature by presenting an overview of the main characteristics of the articles collected. First, we describe the geographical and methodological trends of our dataset; secondly, we focus on the interrelation of types of interventions and motivations related to climate change.

### 3.1. Historical and Geographical Trends

The overall literature analysed in our review is marked by a clear trend concerning the popularity of issues related to the implementation of NbS and their (un-)intended consequences in urban contexts. Whilst before 2010 the subject was mostly unexplored, in 2020 more than 50 publications on the potential effects of green gentrification, socio-spatial justice, and housing market dynamics were published. Until 2010, almost all studies focused on the UK, the US, and Canada (Bunce, 2009; Dooling, 2009; Phillips et al., 2008). The literature's focus on the US became even stronger after 2010, while a limited number of studies were conducted in Asia (Chen et al., 2020; Kwon et al., 2017) and Europe (Anguelovski, 2015; Anguelovski et al., 2018). Figure 1 suggests that in 2015 the concept gained further popularity as approximately two-thirds ( $n = 167$  of  $N = 212$ ) of all studies were published in the last five years (2016–2021). While North American and British studies continued to dominate the field, an increasing number of articles based in South America, Europe, Asia, and Oceania were published.

In terms of location, the case studies broadly focus on the central areas of cities, while the attention towards suburban or peripheral areas is less developed (Figure 1). In sum, it is no surprise that the majority of current case studies focus solely or in part on cities in North America ( $n = 112$ ), mainly in the US ( $n = 94$ ), with a high concentration investigating New York City (e.g., Black & Richards, 2020; Gould & Lewis, 2018; Pearsall, 2010). This is quite easy to justify due to the long history and tradition of environmental justice research in this context. However, we also noticed an increasing number of studies focusing on European cities ( $n = 40$ ), especially in the UK and Spain, where active research groups on urban green justice research have recently been established, including a focus on Barcelona and the implementation of green measures originating from the 1992 Olympics (Anguelovski, 2015; Anguelovski et al., 2018). In the rest of the world, instead, gentrification processes con-

nected with the implementation of NbS are still an under-investigated topic, with 24 articles published in Asia, four in Oceania, and zero in Africa (as seen in Figure 2).

### 3.2. Methodological Trends

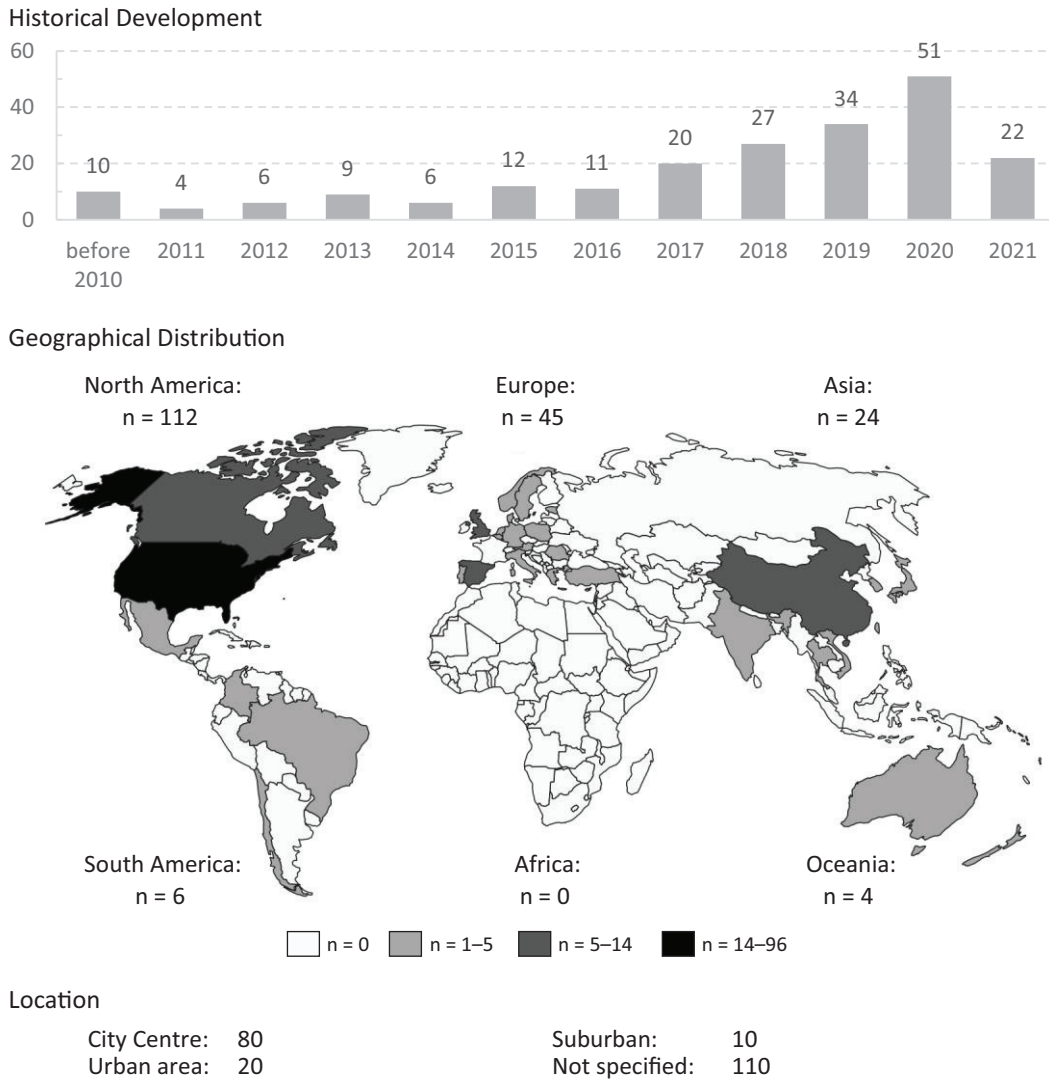
From a methodological perspective, most of the articles focus on case studies ( $n = 177$ ), while only  $n = 35$  are theoretical/conceptual/opinion articles. Early articles in the latter category focus on how gentrification research conceptionally underestimated the impact of nature (e.g., Bryson, 2013), whereas recently more conceptual work of a wide range has been published. These accounts discuss the connections between green gentrification and environmental justice perspectives, how environmental activists, planners, and other actors might resist green gentrification and the relationship between greening and health effects (Cole et al., 2017; Pearsall & Anguelovski, 2016).

The methodologies used by case study settings mostly rely on qualitative ( $n = 90$ ) designs, followed by quantitative designs ( $n = 63$ ). Mixed method approaches ( $n = 24$ ) are less frequently applied (see also Table 2). Qualitative studies focus to a large degree on the role of social movements and environmental activism, rooted in the environmental justice movement in the US (see Checker, 2011; Curran & Hamilton, 2012). Another strand deals with the impacts and outcomes of policy-making, planning processes, and implementation associated with green interventions, while a third strand focuses on the experiences and practices of residents (Kern, 2015; Pearsall, 2012; Rosol, 2015).

Quantitative studies stem mostly from North America as a result of the good availability of census data and the growing popularity of environmental justice issues in human geography studies, followed by Europe and Asia (Anguelovski et al., 2018; Rigolon & Németh, 2020; Rigolon et al., 2020). Broadly speaking, these studies either focus on assessing the distribution or access to green infrastructure or on the implications of greening measures on the socio-demographic makeup, housing affordability, or particular groups. Historically, these studies focus on how the renovation of urban green or the design of new parks affected the socio-demographic landscape of the cities or neighbourhoods, specifically examining the housing and population trends (education, age, migration background, income levels) of the surrounding districts in relation to park creation. Mixed-method approaches are more marginal and usually combine a socio-spatial analysis with interviews, observations, and/or (planning) document analysis (Shokry et al., 2022).

## 4. Climate Policy Measures and Green Gentrification: NbS-Types and Motivations

Before having a closer look at the relationship between types of NbS and motivations to cope with climate



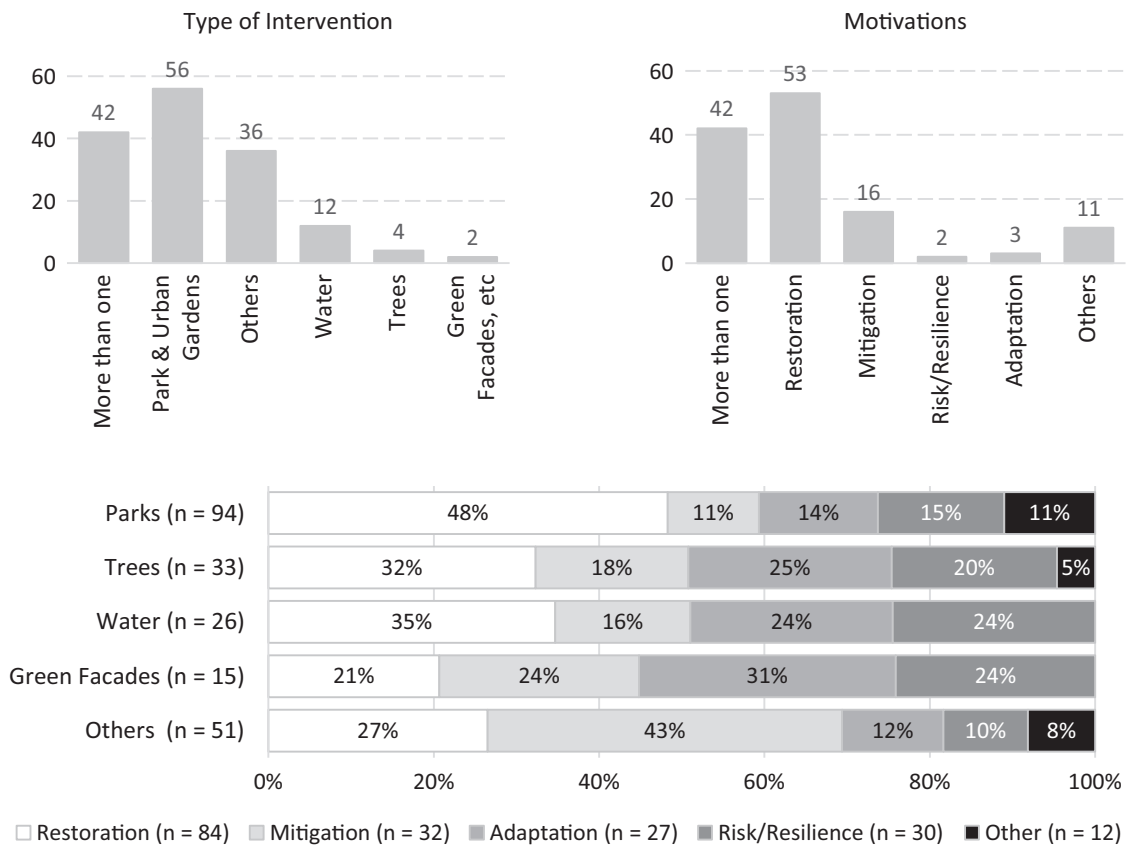
**Figure 2.** Article characteristics from the selected articles.

change, it should be noted that the implementation of different types of interventions and motivations overlap in many cases. Figure 3 indicates that 42 studies investigate the implementation of more than one type of intervention, while parks and urban gardens are the most significant of the interventions that have been investigated. The second most significant group of interventions comprises a diverse set of “other” interventions that, strictly speaking, are not NbS ( $n = 36$ ). This includes the ener-

getic retrofitting of buildings, eco-food provision, clean-up of toxic sites or brownfields, and interventions promoting environmentally friendly modes of transport (walking, cycling and railways, often along greenbelts). We have also grouped green corridors into this category because they have often been presented as distinct from parks as they include bike lanes or other transport infrastructure. Waterfront developments ( $n = 12$ ), trees ( $n = 4$ ), and green facades or roofs ( $n = 2$ ) have

**Table 2.** Methodology of articles by geographical focus.

	Conceptual/review/opinion	Mixed	Qualitative	Quantitative
Total	35	24	90	63
America	11	14	52	37
Asia	1	1	11	9
Europe	7	3	21	14
Oceania	1	0	1	2
Comparative			3	1
Not specified	22		3	3



**Figure 3.** Typology and motivation of interventions.

been the focus of few studies as single interventions. With regard to motivations, 42 studies in our database report multiple motivations for the implementation of NbS. Despite this, the restoration of degraded ecosystems is by far the most important single motivation. Climate change mitigation ( $n = 16$ ) and other motivation types ( $n = 11$ ) are more frequently mentioned, while motivations for climate change adaptation ( $n = 3$ ) and risk management and improving resiliency ( $n = 2$ ) are clearly underrepresented.

Focusing on the interrelations between types and motivations, we begin with interventions regarding urban parks and/or gardens, which have been the prime focus of the case studies ( $n = 94$ ). When it comes to the motivations behind this type of intervention, the restoration of degraded ecosystems is the most critical. In practice, the cleaning up of former industrial sites through the creation of urban parks and gardens, for instance, is often undermined by the fact that projects are oriented towards the interests of private developers rather than focusing on the needs of local residents or ecosystems (Anguelovski et al., 2018; Checker, 2011). This broadly resonates with our finding that urban parks and gardens are more often motivated by rationales not directly related to climate change, such as urban revitalisation for example (11% other motivations in Figure 2). As Figure 3 also demonstrates, climate change mitigation, adaptation, or risk management via enhancing the resiliency

of urban infrastructure are less important motivations, especially when compared to other types of interventions, such as green buildings or water-related interventions. Nevertheless, these responses to climate change face similar challenges. Risk management and the establishment of resilient infrastructures to climate change impacts, for instance, without a social justice lens seems to heighten social risks for already vulnerable residents (Shokry et al., 2022; Tubridy, 2021). It should be once more noted, however, that the motivations and different types of interventions are in many cases overlapping.

In the second most important group of (quantitative) interventions, we have grouped a high number of articles that focus on other kinds of interventions—that are not strictly NbS ( $n = 51$ ). This category is diverse, including the energetic retrofitting of buildings, interventions promoting environmentally friendly modes of transport (walking, cycling, railways), eco-food provision, and the clean-up of toxic sites or brownfields. Accordingly, green corridors, which are often presented as being distinct from parks as they include bike lanes or other transport infrastructure, are categorised under this label. It is, therefore, not surprising that underlying motivations are either the restoration of degraded ecosystems or to a large extent climate mitigation aiming at reducing emissions in transport and housing.

Concerning NbS, the second most important type of intervention is planting new trees ( $n = 33$ ). Compared

to urban parks, studies on trees are still rather marginal. But, as Figure 3 shows, tree planting is much more commonly associated with climate adaptation, mitigation, and risk management. With regard to these motivations, studies in our database rarely focus explicitly on tree planting policies, but rather highlight its important functions, such as the general benefits of better air quality and temperature regulating functions as responses to heat waves or intense pollution (Donovan et al., 2021; Saverino et al., 2021). Still, the restoration of degraded ecosystems is the most vital motivation and tree planting usually accompanies park creation.

More recently, another key focus in the literature has been given to new urban developments along the waterfront (lakes, rivers, and seashores). Mainly motivated by the restoration of degraded ecosystems, cities have been redefining their relationship with water infrastructure, such as the renewal of obsolete urban industrial harbour locations (Avni & Teschner, 2019). Nevertheless, redevelopments are to a large extent also motivated by rationales associated with climate change adaptation and risk management through improved resiliency to the rise in flood events (Shokry et al., 2020; Taguchi et al., 2020). Given the increasing number of studies, well-intended protection measures may tend to indicate unintended negative socio-spatial consequences.

Another outcome of recent developments is a range of new approaches to implementing NbS into residential buildings, such as using green facades and green roofs. Indeed, a small number of articles in our database deal with the possible trade-offs and negative outcomes of greening buildings, such as increasing housing attractiveness and associated rising housing costs ( $n = 15$ ). Unsurprisingly, these measures are dominated by an adaptation rationale and signal an increased response to reduce the effects of urban heat and to improve the quality of life in residential buildings. Rationales and interventions presented in our literature analysis often overlap with others, and green facades and green roofs, among others, are usually not the core focus of analysis but rather appear as supportive measures in greening strategies.

## 5. Climate Policy Measures and Dimensions of Justice: A Prelude to Green Gentrification?

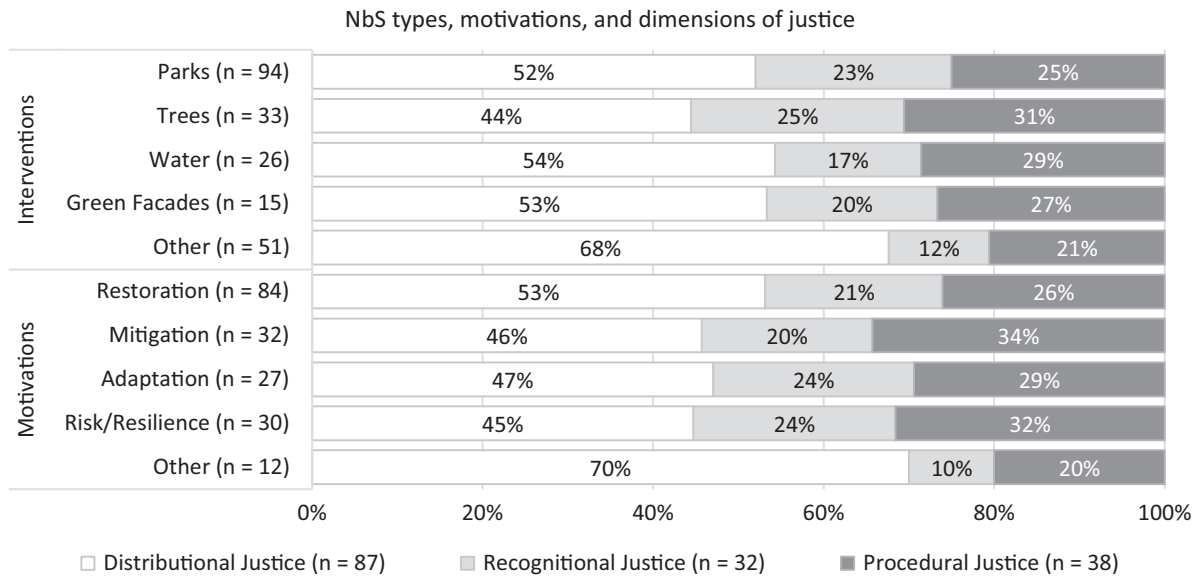
An interesting aspect to evaluate is the specific dimension of justice considered in relation to the types and motivations of climate change-related interventions. Fraser (1995, 2008) argues that groups in society may suffer three distinct types of injustices: cultural/symbolic, socioeconomic, and political injustices. Cultural-symbolic injustices, which Fraser calls “recognition,” are associated with “interpretation, communication, [and manifest in] cultural domination, non-recognition, and disrespect” (Fraser, 1995, p. 71). Socioeconomic injustices, on the other hand, are associated with the unequal distribution of material resources

between groups in society, which Fraser (2008) often refers to as unequal “redistribution.” Some of the examples include income inequality, capitalist exploitation (displacement and housing speculation), and substandard living conditions arising from inadequate material resources. The third pillar, which she calls “representation,” is related to “political voicelessness.” This is becoming increasingly important to consider in struggles for justice and democracy in a globalising world.

A majority of the articles frame their analysis specifically within environmental justice dynamics ( $n = 114$ ). Over the years, numerous studies have used this lens to report that minorities or socio-economically disadvantaged people are exposed to greater environmental harm, being concentrated in areas affected by high levels of pollution (poor air quality, unavailability of green areas, high levels of noise, etc.). More comprehensively, about two-thirds of the articles in our database use one of the three aforementioned justice dimensions, while the rest fail to explicitly specify the dimensions of environmental justice. Half of the studies focus solely on the spatial distribution of environmental risks and amenities and the resulting disparities among socio-economic (different income, gender, educational level) and minority groups ( $n = 35$ ). About one-quarter of our studies integrate all the justice dimensions ( $n = 19$ ), while another quarter considers at least two justice dimensions ( $n = 18$ ). These results show that procedural mechanisms and justice implications in terms of recognition, such as a decreased sense of belonging to the local contexts and new green amenities created in the process, are studied mostly in relation to the distributional question of justice. Only two studies focused solely on procedural mechanisms related to access and participation in decision-making processes and procedures (López et al., 2020; Rigolon & Németh, 2018).

Most of the articles in our database analysed social justice issues related to the implementation of NbS with a specific focus on redistributive aspects ( $n = 87$ ). These studies often investigate forms of socio-spatial injustice, such as the unequal distribution of green amenities and environmental threats among the population and the effect of proximity to green(ed) or brownfield sites and which sites are greened first (Ali et al., 2020; Maantay & Maroko, 2019). Another strand focuses on analysing the spatial associations of demographic changes, rising housing costs, and (forced) greening (Anguelovski et al., 2018; Schinasi et al., 2021). This general focus is not surprising since redistributive aspects are a fundamental topic both in the environmental justice literature and in gentrification studies. With about half of all studies (see Figure 4), distributional justice is by far the main focus among all types and motivations that have been investigated in the studies included in our database.

The weak representation of vulnerable groups in the decision-making process is also the focus of attention in several articles ( $n = 38$ ). Indeed, Figure 4 illustrates that there is also no substantial variation between types and



**Figure 4.** Types, motivations, and dimensions of justice.

motivations with about 30% of all studies considering procedural justice issues. One literature strand is much more rooted in the North-American context and its environmental justice activism. Studies show, for instance, how consensual-oriented planning processes neglect activists’ “alternative” ideas about how to develop green spaces, including the needs of (poor) residents and homeless people for green spaces (Checker, 2011). Other literature focusing on procedural justice identifies exclusionary tendencies caused by practical problems in planning processes, e.g., language barriers or inconvenient scheduling of public meetings, as potential drivers for green gentrification (Miller, 2016).

Finally, recognitional issues related to social diversity are also a fundamental topic of interest, comprising 20% ( $n = 32$ ) of the articles in our database. Again, our analysis shows no substantial differences based on motivations and interventions (Figure 4). However, related to the representational aspects presented previously, for example, few articles focus on how changes in the functions of green spaces may advantage a specific social group and disadvantage another, subsequently decreasing the sense of belonging of the local community to the green areas after their renovation (Miller, 2016). Other studies, mostly situated within the North-American context, emphasise the role of racialised histories and geographies as formative elements for green gentrification (Abel et al., 2015; Williams, 2021).

### 6. Interrelations Between Climate Policy Measures and Effects

Similar to the literature on greening and (in)justice, the number of articles that identified a (causal) relationship between greening and gentrification (112 out of 212 studies) increased. While in 2008 only one article reported the impact of greening as green gentrification

(Phillips et al., 2008), 27 articles stated this relationship in 2020. Following the general literature, we have classified the unintended (or in some cases intended) effects of implementing different NbS or climate change adaptation and mitigation measures into four interrelated categories: displacement, social impacts such as changing socio-demographic compositions, rising housing or rental prizes, and the qualitative upgrading of the housing stock.

About one-third of studies ( $n = 41$ ) reported more than one impact associated with green gentrification. Within this category, a vast majority of those studies tied displacement to effects on the housing market and socio-demographic impacts. Most of the studies related displacement to changes in housing, specifically to the upgrading of the housing stock ( $n = 19$ ), while an integrated perspective of rising housing prices, changes in the stock and socio-demographic upgrading were reported by 14 studies. The empirical study from Anguelovski et al. (2018) exploring how newly established parks in underprivileged neighbourhoods in Barcelona affected the socio-demographic landscape of the city, for instance, largely examined housing trends and population changes (education, age, migration background, and income levels) of the surroundings in relation to park creation. Another empirical study considering housing changes and socio-demographic changes emphasised the risk of “exclusionary displacement pressures” for vulnerable groups in accessing homeownership in urban areas with a marginal rental market (Cavicchia, 2022).

Our analysis shows that 24 studies focus only on displacement or displacement pressures, without going into too much detail about socio-demographic changes or changes in housing prices. This strand of literature connects displacement trends to various other factors such as social, political, and cultural changes. Goossens



et al. (2020), for instance, argue that displacement pressures—a loss of sense of place—for long-term residents stem from socio-political hierarchies and place identities. The last strand of literature focuses on greening initiatives and their effects on housing prices without embedding them in a displacement framework ( $n = 14$ ). Black and Richards (2020), for instance, investigated the influence of New York City’s High Line on the housing market in terms of who benefits from increasing rents and house prices.

Turning to the interrelations of the types and motivations of NbS interventions and effects, our analysis shows no substantial differences (see Figure 5). Between 40%–44% of the studies that investigated the impacts of parks, trees, water, and green facades reported issues of displacement and another 22%–30% reported housing price increases as the core drivers of green gentrification. However, the planting of trees ( $n = 26$ ) and waterfront developments ( $n = 23$ ) seem to be slightly more strongly associated with changes in the housing stock. This resonates with the fact that many cities develop defunct harbour sites into new, high-quality urban districts that are affected by the processes of self-segregation of affluent groups into brand-new neighbourhoods to gain direct access to the water and creative, cultural, and entertainment spaces (Bunce, 2009). In contrast, studies that focus on other types of interventions, such as green corridors, transportation, and eco-retrofitting are increasing ( $n = 29$ ), appearing to have a stronger focus on the effects of housing prices, with about 38% of the studies focusing on this type of effect.

The interrelations between motivations and effects in terms of green gentrification also present no substantial differences. Displacement remains the key effect of green gentrification along all motivations, ranging from 39%–45%. However, the restoration of the deprived

natural environment, as the main reported motivation ( $n = 68$ ), seems to be slightly more strongly associated with rising housing costs (32% vs. 21%/24% for the other motivations). This is unsurprising as restoring ecosystems has been portrayed as the main motivation behind the creation or renovation of new parks and waterfront developments. Adaptation, on the contrary, seems to be more strongly associated with reported impacts on housing costs and changes in the housing stock. This is probably related to green facades and waterfront developments that are more often motivated by an adaptation rationale (Shokry et al., 2020; Tubridy, 2021).

Finally, very few articles focus on tools and policies dealing with green gentrification. Most of them analyse case studies of community engagement against increasing housing costs or displacement following green renewal ( $n = 21$ ) and only a very limited number analyse or at least discuss planning tools ( $n = 13$ ) such as the “just green enough” approach or housing policy ( $n = 4$ ) interventions (rent control or social housing implementation in greening strategies).

### 7. Concluding Remarks

The analysis of the database has revealed urban scholars’ increasing interest in social justice issues associated with NbS interventions. In particular, over the last couple of years, we have observed an increasing interest in discussing the potential trade-offs of green interventions. The literature review highlights interesting differences and current trends developed surrounding the process. The first is related to the main differentiation in the analytical framework adopted in the investigations and analysis. We are able to distinguish two main specific approaches connected with different research traditions: In the North American milieu, social scientists and

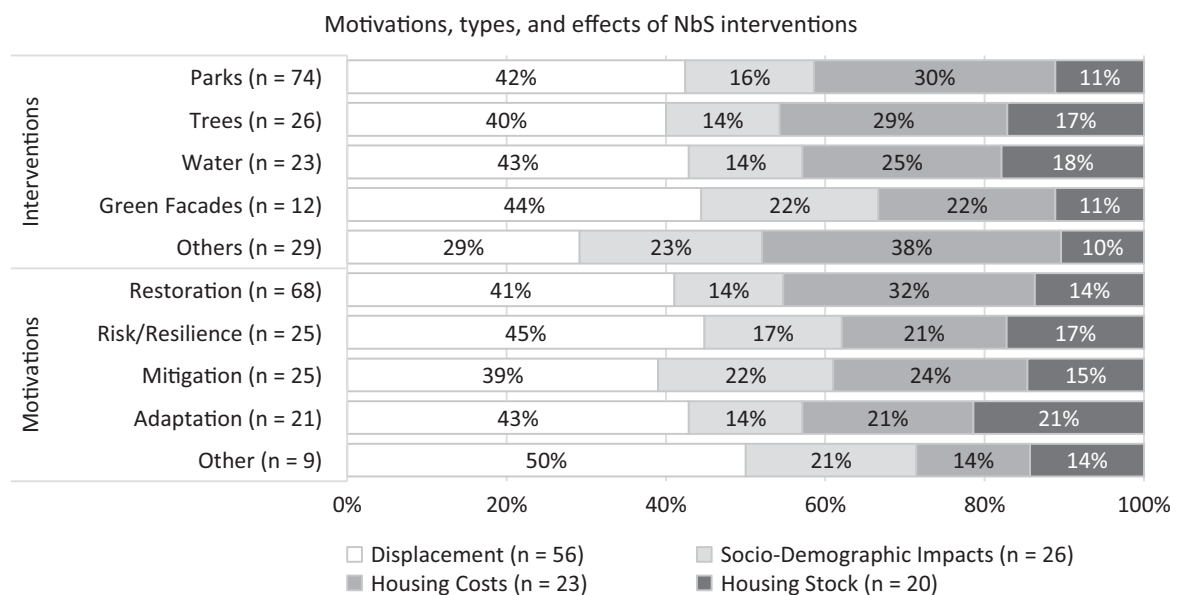


Figure 5. Motivations, types, and effects of NbS interventions.

environmental justice scholars have used classifications based on income and race, while the European context has preferred to use the relational concept of social class. Although distributional and procedural aspects are distinguished in both cases, Europeans highlight the social conditions producing injustices, whereas Americans insist on the racial dimension of discrimination and exclusion from decision-making processes that are detrimental to minority groups. This likely relates to the first studies investigating environmental injustices being carried out in ethnic minority communities, which are strongly characterised by pollution. It is noteworthy that green gentrification has now overturned the perspective and is instead exploring whether discrimination processes have occurred in “standard” communities resulting from green measures. Starting from an interest in urban farming, transportation, and the renewal and design of urban parks, today the debate surrounding green gentrification has evolved, discussing the implications of climate change adaptation and mitigation in cities.

Within this framework, the literature review has highlighted some research gaps. The first concerns the geographical representation of the case studies, with an over-representation of case studies in the Global North, especially due to the legacy of the EJ movement and scholarship in the US. Additionally, comparative research designs taking into consideration different context variables (residential patterns, housing regimes, and greening strategies) are quite uncommon.

The second research gap is related to the over-representation of case studies located in large urban areas, mostly investigating dynamics at the neighbourhood scale. By comparison, investigations covering medium-sized cities, suburban, and rural areas are quite rare, although the implications of greening could be different according to diverse settings.

The third is related to the methodology implemented in the case studies, with a prevalence of qualitative analysis over quantitative, and a lower number of cases of mixed method analysis, which may be helpful to define trends and unpack the mechanisms underlying these processes.

The fourth research gap is associated with the fact that most of the case studies still focus on the restoration of deprived green areas, while the attention towards interventions targeting the adaptation of mitigation is still limited. In the coming years, instead, the latter could start to play a huge role in planning and urban design practices, especially related to flooding risk and heat-wave adaptation, with huge implications as far as housing prices and displacement dynamics are concerned.

A fifth aspect reflects the impact of climate change adaptation and mitigation policies. So far, most studies have focused on the impact of vegetative greening and the potential negative consequences in the communities. There is little information about how we can implement the needed actions against climate change and how to

avoid the risk of displacement for vulnerable householders. This is especially vital as these vulnerable groups are highly prone to the negative consequences of a warmer climate. In particular, studies investigating the implication of selective incentives (e.g., aid to low-income families for the insulation of the building) are still very rare, although they represent a potentially crucial mechanism.

A sixth research gap is related to the mechanism behind green gentrification and displacement. The open question reflects the aspect of what triggers the initial displacement process: (a) gentrification or (b) the realisation of green spaces. Most of the selected research studies focus on green spaces triggering the displacement of vulnerable groups. However, the literature needs to assess if the gentrification process started before the greening of the city. The research needs to understand if the early “gentrifying” encouraged a greener surrounding, which could have triggered further gentrification processes.

Finally, there is an urgent need for investigations taking into consideration the multidimensional aspects of justice related to climate change (redistribution, recognition, and representation), especially with the aim of designing policies and strategies able to combine environmental justice with climate change adaptation and mitigation, as well as a general “right to the city” for the most vulnerable groups.

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### Conflict of Interests

The authors declare no conflict of interests.

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Article

# Environmental Microsegregation: Urban Renewal and the Political Ecology of Health

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## Abstract

In recent years, multiple-burden maps were developed as a tool for assessing environmental health inequities in cities. Maps of this kind are particularly useful in identifying disadvantaged neighbourhoods. In the case of Erlangen (Germany), the historical development of poorer neighbourhoods may mean that their situation as regards environmental assets is relatively favourable. However, urban renewal often precipitates the redistribution of environmental “goods” and “bads” in such a way as to place a disproportionate burden on socio-economically deprived people and privilege the better-off. This type of environmental microsegregation occurs on a scale below that of neighbourhoods, which means that newly developed approaches in urban geography may fail to identify it. This article details the roots of these processes in changes in the structure of ownership and the respective administration of housing and considers possible methods for monitoring these tendencies.

## Keywords

environmental justice; Germany; microsegregation; political ecology; public health; urban renewal

## Issue

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## 1. Introduction

In many cities, processes of reurbanisation, such as gentrification, redensification, and upgrading of inner-city areas, are making urban space increasingly scarce and intensifying competition for urban resources (Brake, 2011). In the course of socio-economic polarisation, segregation is becoming ambiguous, increasingly dynamic, and smaller scale. In Germany, city administrations seek purposely to promote socio-economically mixed neighbourhoods in order to reduce the negative impacts of social segregation (neighbourhood effects) and to prevent social hotspots from developing (Häußermann, 2012) to add to those currently in evidence in some large urban housing estates (Brailich et al., 2008). However, spatial proximity of diverse groups on its own does not create a genuinely mixed neighbourhood. Architecture

can set out to create social segregation within relatively small spaces; one example might be the “poor doors” observed in Manhattan, Brooklyn, and London (NYU Furman Center, 2015), which are separate entrances to affordable flats on the lower floors of luxury apartment blocks. Behind these doors, there is a strict separation of the thoroughfares and communal areas assigned to affordable housing tenants and those belonging to the exclusive upper floors; the lower floors are less attractive and less well-equipped. As well as attracting severe criticism, such small-scale instances of segregation have sparked debates around whether the number of entrances is more important than the quality of the housing itself (NYU Furman Center, 2015). Do less advantaged population groups benefit from the ability to move into a wealthy neighbourhood, and is it not the case that such mixed areas ultimately make cities more equitable

places? In our view, the answers to such questions are dependent on the effects of housing quality differences on tenants, especially on their health.

We take this topic as a question of political ecology of health, which we see as consisting of a combination of ecological considerations with political economy. There is criticism that newer political ecology often misses to engage with scientific evidence relating to ecology, and on occasion may give the “impression that the answer to any given research question is known in advance” (Gandy, 2022, p. 35). We intend to avoid falling into this trap by refraining from presupposing specific power relations and instead placing an empirical focus on processes of housing management and urban planning that inscribe inequality and injustice into cities. We will commence by explaining the impact of environmental indicators on human health, proceeding from an understanding of health as arising from salutogenic factors and from the biopsychosocial model of disease. We then discuss the use of multiple-burden maps as means of monitoring environmental inequalities within cities and propose a framework in this context, using the core indicators of urban green space and noise pollution. On the ground, we observe that the historical development of less wealthy neighbourhoods in our research site of Erlangen means they often have a relatively favourable situation as regards environmental assets. However, by selecting two specific neighbourhoods with a medium level of burden, we find that urban renewal appears to redistribute environmental “goods” and “bads” to the detriment of financially disadvantaged people. We trace these effects back to deliberate acts on the part of housing agencies and real estate investors to the end of maximising rental revenues or profits. This does not mean that authorities are subservient to capital. German cities have general planning authority (*Planungshoheit*), which means that the city administration designs development plans (*Bebauungspläne*) as well as land use plans (*Landnutzungspläne*), which the city council ultimately has to decide on. City development thus relies on political majorities in the city council.

## 2. Setting the Scene: The Role of Health in Evaluating Environmental Conditions

Environmental justice being primarily concerned with disadvantaged environmental living conditions has become a vibrant field for not only activism but also research offering a vast array of case studies, analysis, methodological reflections, and theoretical approaches (e.g., Coolsaet, 2021; Holfield et al., 2018). At its centre, there are questions of distributive justice with regard to expositions to toxins, air pollution, degraded water resources, or biodiversity. Environmental justice is not restricted to a single discipline but involves social and natural sciences as well as critical and humanist academics. It is dealt with by professionals from public health, city planning, and the judiciary. This “horizontal” expansion

of the agenda was acquainted with a “vertical” expansion opening up the debates to larger transregional, state, or global concerns—for example, issues of climate change (Agyeman et al., 2016). The scope was broadened also by ideas of ecological justice (Low & Gleeson, 1998), multispecies justice (Haraway, 2016), just sustainabilities (Agyeman et al., 2016) and “green” environmental justice, unwanted land use, and questions of privilege (Anguelovski, 2016), ultimately expanding the urban justice debate to an “emancipatory, antisubordination, intersectional, and relational approach” (Anguelovski et al., 2020). In this article, we address distributions of health-relevant environmental factors with regard to less financially potent dwellers. To do so, a holistic understanding of health is crucial, which takes actual living conditions into account.

The conventional pathogenesis model of disease states that a person becomes ill when a pathogen, i.e., a microorganism or a toxin, enters the body and precipitates harmful processes. In this context, behaviour-centred disease prevention aims to encourage individuals to take responsibility for their lifestyles, with exercise, healthy nutrition, and health literacy programmes regarded as health-promoting. Medical research, however, has now shown that this understanding of pathogenesis may be less helpful than more holistic approaches. In this vein, Antonovsky’s (1996) concept of salutogenesis seeks to identify how individuals stay healthy despite their exposure to various stressors. It replaces the “sick”/“healthy” dichotomy with a continuum of constant maintenance of health issuing from resources of resilience strengthened primarily by the experience of life as meaningful and of self-efficacy, an experience termed a “sense of coherence.” Alongside this, numerous medical research approaches, such as psychoneuroimmunology and neurosciences, have validated the complex theoretical idea, first proposed in the 1970s, of disease as a biopsychosocial phenomenon (Engel, 1977). This model asserts that stress is the most significant psychosocial factor. Precarious living conditions and low socio-economic status reduce self-efficacy and are thus detrimental to health (Trabert, 2021). Most recently, the discipline of environmental medicine has begun to explore the environmental factors that are harmful to health, marking a transition to a conditions-centred approach to prevention that incorporates the consideration of local living conditions and social status.

In terms of environmental factors, we can divide them into environmental “bads” and environmental “goods.” The first category includes, for example, noise pollution, which is omnipresent in cities and whose negative effects on health are well known. Noise has many sources, from leisure activities to industrial operations. However, the most harmful source of noise is transport, such as road, rail, and air traffic (cf. European Environment Agency, 2020). Noise can cause damage to the auditory system, such as tinnitus or hearing loss, and psychological stress, which can precipitate sleep

disorders, metabolic or cardiovascular diseases, and even cognitive impairment in children (World Health Organization Regional Office for Europe, 2018). Urban green space is the most relevant environmental factor on the “goods” side. In addition to its general ecological benefits, it has positive mental and physical effects on people. Proximity to urban green space can enable people to maintain the ability to concentrate for longer (Bringslimark et al., 2007; Hartig et al., 2003; Matsuoka, 2010), has a stress-reducing effect (World Health Organization Regional Office for Europe, 2016), and can ameliorate feelings of loneliness (Maas et al., 2009). Further, proximity to a natural environment can encourage people to engage in physical activity, promote relaxation and recreation, and strengthen social cohesion (European Environment Agency, 2020). There is also evidence that people who spend time in green environments improve the functioning of their immune systems (European Environment Agency, 2020) and experience substantial reductions in diastolic blood pressure, salivary cortisol, and pulse rate (Twohig-Bennett & Jones, 2018), a reduced incidence of type 2 diabetes, reduced cardiovascular morbidity, and reduced mortality (World Health Organization Regional Office for Europe, 2016). As significant socio-spatial systems, large-scale urban green spaces (as well as urban bodies of water) have the potential to “promote urban quality of life and neighbourhood identity and thus contribute to increasing community resilience” (Claßen, 2017, p. 200). Ward Thompson et al. (2016) found a statistically significant correlation between the closeness of green spaces to people’s homes and their well-being; this appears of particular importance to lower-income and disadvantaged urban and suburban residents, as poverty is known to constitute a threat to health. We, therefore, see that those environmental factors with the greatest proximity to housing have the most marked impact on residents’ health, which appears to us to be a matter of small-scale environmental justice.

### 3. Methodological Combination of Geographic Information Systems and Ground-Truthing

Research in the field of environmental justice examines the spatially unequal distribution of environmental factors of relevance to health in relation to specific social groups. There is a strong link between the view of something as “unjust” and matters of the distribution of environmental “goods” and “bads”; this makes identifying areas that bear disproportionate burdens a key task of the discipline. The use of geographic information systems (GIS) in environmental justice research, commencing with their emergence in the 1990s, has proved a highly useful tool, featuring in a number of studies (e.g., Chakraborty & Armstrong, 1997; Glickman & Hersh, 1995; Haklay & Francis, 2018; Jerrett et al., 2001; Maantay, 2002; Maantay & McLafferty, 2011). GIS techniques enable the integration of differ-

ent datasets into one map via processing at different scales and these datasets’ direct visualisation in a cartographic format (Sheppard et al., 1999). Nevertheless, researchers have repeatedly highlighted two major shortcomings of the method in the context of environmental justice research. First, practical and technical limitations currently impair the comparability of results (McMaster et al., 1997; Sheppard et al., 1999). Maantay and McLafferty (2011) argue that these limitations can be traced back to deficiencies in data, data aggregation issues, inaccuracies in location data, technological limitations, a lack of temporal data on residential mobility, and constraints in the use of exposure proxies. These shortcomings apply, for instance, to the most frequently used method of spatial-proximity analysis, which often works via “buffering.” This method rarely takes topographical differences within the terrain or the influence of wind speeds into account, and there is no agreement on the distance from the residential area at which an environmental factor can be considered relevant to health (cf. Sheppard et al., 1999). Second, most studies focus on exposures of socio-economically deprived groups to only one environmental factor, such as noise (e.g., Verbeek, 2019), air pollution (e.g., Havard et al., 2009; Jerrett et al., 2001; Laurent et al., 2008), and green spaces (e.g., Barbosa et al., 2007). Some authors advance the view that assessing the complexity of environmental influences on human health and adequately addressing the unequal distribution of environmental factors in relation to lower-income population groups requires the inclusion of multiple environmental indicators (Jerrett, 2009) in such studies. In recent years, in response to these critiques, researchers have used multiple-burden maps to display various environmental factors cumulatively within spatial units and to intersect them with socio-economic data (Flacke et al., 2016; Hölzl et al., 2021; Honold et al., 2012; Klimeczek, 2014; Pearce et al., 2010). These maps have proven particularly powerful for identifying small-scale areas in need of prioritised action, information that can then serve to target policy interventions. In many respects, the environmental justice concept of the German Federal State of Berlin, developed between 2010 and 2019, represents a pioneering model at the national and international levels (cf. Klimeczek, 2021). The project has entailed the compilation of data from government departments covering the environment, health, urban development, urban planning, and social affairs, for 447 small-scale planning areas (termed *lebensweltlich orientierte Räume*), followed by a two-stage monitoring procedure working with five core indicators (noise pollution, air pollutants, availability of green space, bioclimatic pollution, and social problems) and underpinned by several supplementary health indicators. This methodology, however, has only limited applicability to other cities, as many municipalities do not have the data required. In this context, Böhme et al. (2015, 2019), for example, point out that health and social data are subject to special protection



and very little in the way of such data is available at a small-scale level. Most recently, remote sensing has become a valuable tool both in environmental justice research and in urban health as it facilitates the displaying of micro-level environmental conditions (Walker et al., 2022; Weigand et al., 2019). However, following Moretti's (2013) distinction between "distant reading" and "close reading," critical GIS studies have emphasised the necessity of ground-truthing and triangulation of data, avoiding the positivist notion and epistemological shortcomings of GIS (e.g., Burns, 2021; Schuurman & Pratt, 2002; Schuurman et al., 2020). Thus, we design our GIS methodology accordingly and supplement it with qualitative in-depth assessments of the research sites.

#### 4. Research Design

This study, using the example of the Bavarian city of Erlangen, sought to present a simpler methodology for capturing the distribution of two important environmental factors within the city and identifying areas of low, medium, and high stress for analysis with regard to their socio-economic characteristics. We took special care to ensure that the data used were easily accessible and retrievable by municipalities. The procedure entailed three stages. First, we used GIS to map the core indicators "noise pollution" and "urban green space" across the urban area of Erlangen. The data relate to the smallest area classification level, that of housing blocks. Germany has various legal requirements on noise pollution and methods for determining levels. For reasons of comparability, we used the EU's Environmental Noise Directive, which has also been adopted, for example, by authorities at European and German national and federal state levels. We used the 2017 noise mapping conducted by the Bavarian Environment Agency, which is carried out every five years, as the basis for our data. For further processing, we used the Lden (day–evening–night) noise index and intersected the corresponding grid data with housing blocks in Erlangen.

We drew on satellite data to assess the distribution of urban green space throughout Erlangen. We used the normalised difference vegetation index to represent the quality and distribution of these spaces within the urban area, selecting a scenario based on a date in a vegetation-rich season of the year (4 September 2019). In order to reflect local conditions, we developed a site-specific classification rather than using a pre-defined one (see Table 1 in the Supplementary Material). The classification boundaries were determined based on specific locations of urban green spaces visited by the authors—in other words, by ground-truthing. Thereby, urban green was divided into three categories, with high normalised difference vegetation index values in parks and areas of high tree coverage, medium values in areas with lower tree cover, such as courtyards, and low values in spaces with only isolated occurrences of trees and/or shrubs. The second stage of the analysis entailed evalu-

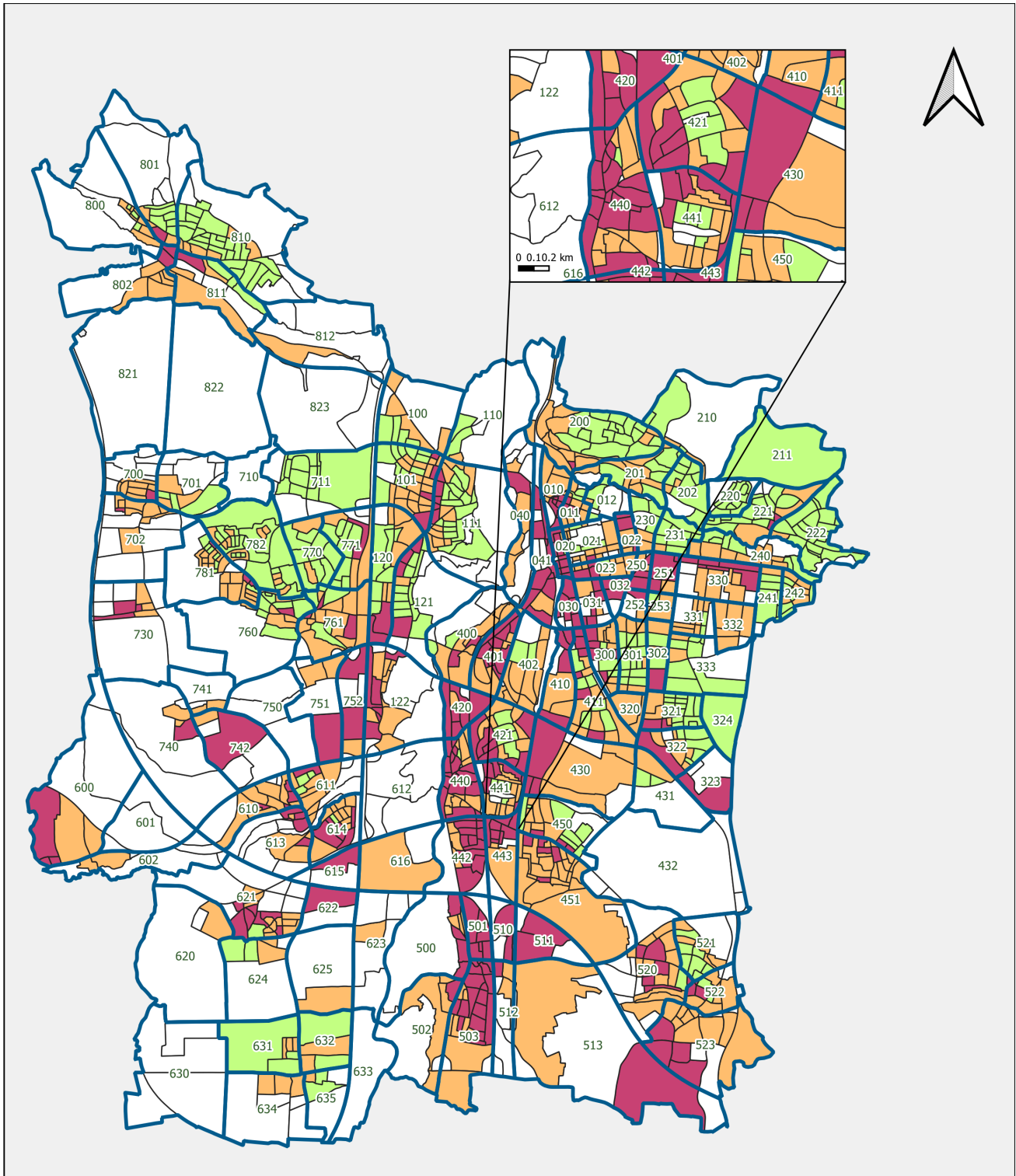
ating these categories for the supplementary indicators "heat stress" (data provided by the City of Erlangen in 2019) and "proximity to bodies of water" (data source: OpenStreetMap). We selected all the indicators used on the basis of their relevance to health and for reasons of data availability. For each core indicator, we formed three classes and aggregated them in a burden map (Figure 1), enabling us to identify areas with a high need for action. Unfortunately, data protection concerns meant we could not carry out our original plan to run a calculation with the third core indicator, "socio-economic data," at the level of housing blocks. We were able to take these data into account at the district level.

For in-depth assessment, we investigated two processes of urban renewal. We selected neighbourhoods in which environmental factors were not the worst and where some environmental assets could be distributed or redistributed. These were the area of redensification in the Rathenausiedlung (part of district 411) and a newly built, privileged residential area at Röthelheimpark (part of district 332). The multiple-burden map shows that both these areas have a single exposure. Walking these neighbourhoods, we documented our routes with photographs, notes, and sketches. As we are interested in the housing situation of less affluent people, one relevant indicator is the housing cubature and its condition. In Germany, detached houses mark the pinnacle of the real estate market followed by terraced houses, and both, due to high land prices, especially in growing cities—of which Erlangen is one—have become hardly affordable even for people of average income. Apartment blocks indicate more affordable rents with especially older structures from workers' estates or flats from the 1970s and 1980s, especially the modernist satellite estates on the outskirts, which have become unpopular and today often provide low-quality flats and affordable housing. As we are especially interested in how urban space is restructured with regard to financially underprivileged people, we also regard housing subsidy programs as an indicator for less affluent tenants, especially since there are often income caps for eligibility. We further conducted 12 interviews with residents and experts such as urban planners working in Erlangen, politicians, and representatives of civil society organisations such as a tenants' association and a church. Each interview was individually designed for the person addressed. We supplemented these activities with information gained from attending public participatory events and a review of local newspapers and the internet.

#### 5. Results

##### *5.1. Heterogeneity of Public Health-Related Conditions Within the Urban Area of Erlangen*

Analysis of the two core indicators as set out above shows substantial variance in the public health status

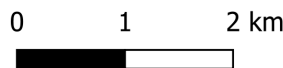


**Differences in burdens within statistical districts**

Burdens by noise level and availability of urban green spaces

- no burden (374 blocks; 41,341 residents)
- single burden (505 blocks; 58,616 residents)
- double burden (293 blocks; 27,844 residents)
- uninhabited housing blocks
- district boundaries

Cartography: David Spenger



Data sources:

- urban green space (NDVI, Date: 4 Sept. 2019): Sentinel Hub ([www.sentinel-hub.com](http://www.sentinel-hub.com))
- noise pollution (noise mapping 2017): Bavarian Environment Agency
- housing blocks: City of Erlangen
- statistical districts: City of Erlangen

**Figure 1.** Multiple-burden map of Erlangen.

of housing blocks within small areas in Erlangen. While some districts are relatively internally homogeneous in this regard, there are others within which all levels of stress occur, and some show diversity of conditions at the block level (see Figure 1). The 115 inhabited districts in the Erlangen urban area can be compared according to the differences in burden and internal heterogeneity which they evidence (see Table 2 in the Supplementary Material). Of these 115 inhabited districts, we can characterise 29 as having a low level of stress. These include 14 districts with relatively homogeneous levels of burden, eight with medium heterogeneity, and seven with marked heterogeneity. Thirty-five of the 115 districts evince a double burden; of these, 17 have low, 14 have medium, and four have high internal heterogeneity. The 17 low-heterogeneity districts have a double burden almost throughout their entire area, with a corresponding impact on public health; this identifies them as areas with a priority need for action (such areas include 030, 041, 250, 251, 420, 440, 442, 501, and 503). When combining this information with socio-economic data (number of social welfare recipients), we found only a few areas where poor environmental conditions coincide with low socio-economic status. At the same time, the comparison with the spatial distribution of the social index of the city of Erlangen, a multi-layered indicator displaying socio-economic status (City of Erlangen, 2021), shows that socio-economically worse-off areas actually often have quite good environmental conditions. This is the case, for example, in areas of districts 421, 450, and 771 (Figure 1). These neighbourhoods contain older multi-storey blocks or/and workers' housing, especially in those parts displayed as not burdened. This reflects general tendencies in the housing structure of Erlangen that are related to historical

developments. In Erlangen, more socio-economically disadvantaged population groups often live in older housing estates once built for factory workers or in storey blocks from the 1970s and 1980s. Such estates have open spaces which are relatively expansive when compared to today's planning standards, and now some of them feature valuable tree populations which have evolved over the years (Figure 2). The living conditions they offer are therefore relatively healthy in terms of environmental factors. In the following, we present qualitative results of the neighbourhoods of Rathenausiedlung and Röthelheim, which are both single-burdened and thus competition for favourable locations can be expected.

### 5.2. Redensification in the Rathenausiedlung

The Rathenausiedlung came into being in the 1960s as a workers' housing estate typical of the period, dominated by three-storey apartment houses with gable roofs. Figure 2 shows parts of the district that are still owned by a housing cooperative and have not yet undergone renovation. The site features wide open spaces between the buildings, loosely studded by relatively old trees. In addition to several playgrounds, the extensive open spaces also provide niches for various groups of residents to take over space for specific needs, ranging from seating areas to low-level urban gardening (Figure 3; interview 1 with Rathenau residents, 27 June 2018). In the redensification area, more than 1,000 trees fell victim with the building work starting in 2018. The newly densified urban ensemble now follows the idea of an urban park (Figure 4) and has accordingly been renamed "Jaminpark." Some areas are now dedicated to specific activities (such as seating, play equipment, monkey bars, etc.), while others have been fenced off due to environmental protection.



**Figure 2.** Typical workers' housing estate as it still exists in the not-yet-redensified parts of the Rathenausiedlung.



**Figure 3.** Residents’ creative use of a niche of green space.

Information boards entitled “nature in the Jaminpark” supply explanations of these areas’ specific purposes in relation to the ecosystem; an example appears in Figure 5, illustrating a site of habitat trees of special ecological value that had been felled elsewhere and set in concrete in this place.

These findings are in contradiction to ideas often raised in discussions around “just green enough” strategies (Curran & Hamilton, 2017; Wolch et al., 2014)

and “green gentrification” (Marcuse, 1985). In the case of the Jaminpark, rent rises and displacement of less well-off groups occur despite environmental degradation. The Jaminpark is built to attract wealthier urban groups. The idea of what a “green” neighbourhood should look like corresponds more with the aesthetics of urban design than ecological value. This fundamental ecological degradation is especially important with regard to climate change.



**Figure 4.** Newly arranged area of the Rathenausiedlung, now renamed Jaminpark.



**Figure 5.** Replantation site of valuable habitat trees felled elsewhere in the area.

### 5.3. The New Housing Ensemble of Jaminpark

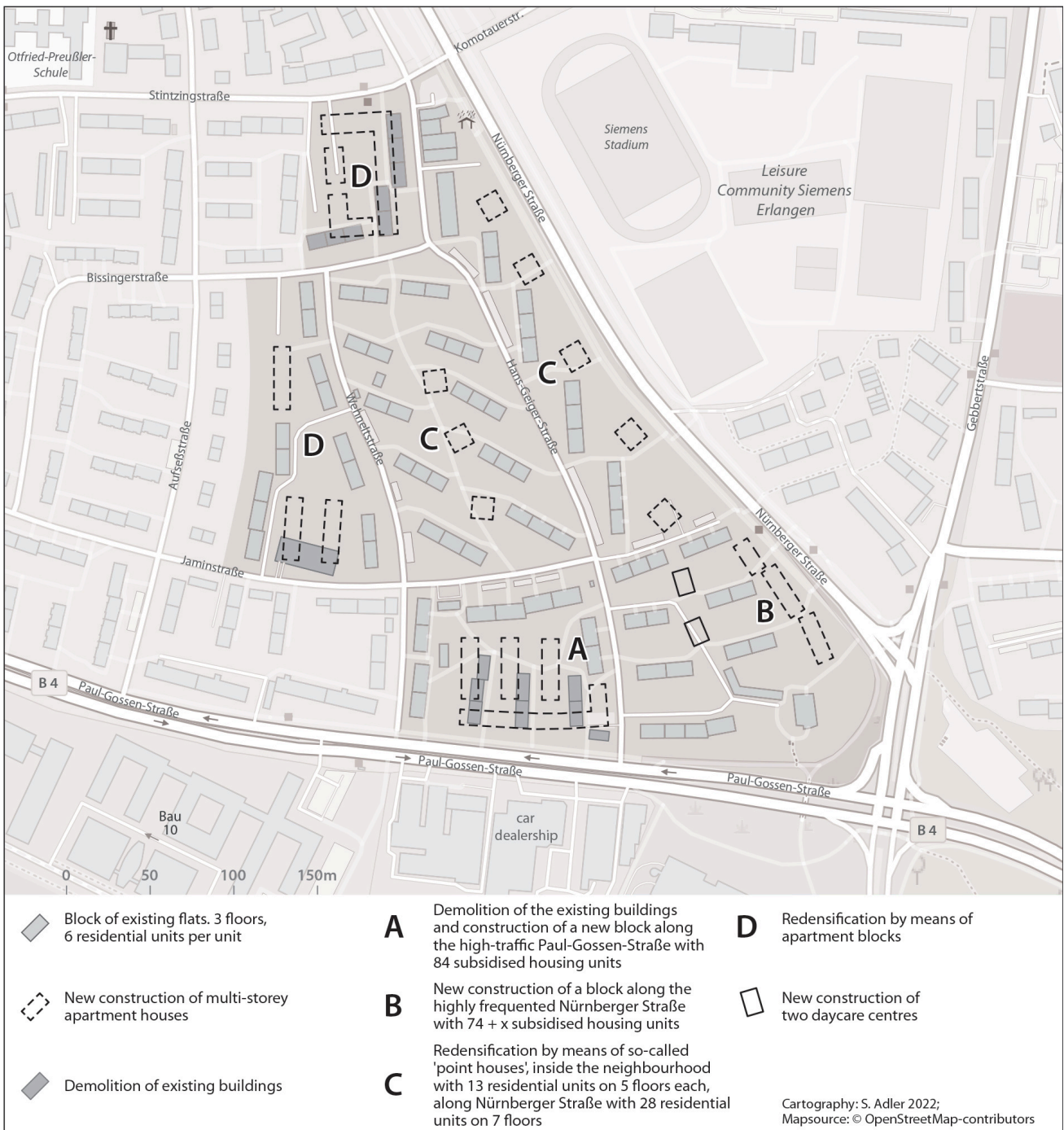
The GBW Group (now Dawonia) acquired this neighbourhood in the spring of 2009 and planned its redensification, putting out a tender for architects in 2015; initial building works commenced in 2018. The project's completion is scheduled for 2023. The GBW Group promised to modernise the existing flats for energy efficiency and create homes suitable for elderly residents, but also stated its intention to upgrade the neighbourhood; initially, there was mention of creating approximately 300 to 400 new residential units by adding further storeys to existing buildings and constructing new ones. A tenant information event in April 2018 gave a figure almost double these initial estimates, at 640 planned new residential units (GBW Group, 2018, p. 6); a newspaper article indeed quoted the former head of project development at the GBW Group as referring to 950 planned flats (Reinhold, 2018). These new flats will be located in seven "point buildings," three of which are to be five-storey buildings in the centre of the area (Figure 4; Figure 6, signature C), each with 13 units, alongside five seven-storey buildings along Nürnberger Straße, each containing 28 flats. Further flats are being built in additional linear buildings (Figure 6, signatures A, B, and D), some of which are planned as barriers to noise.

### 5.4. Residential Blocks as Noise Mitigation Measures

The housing company GBW Group refers to "noise mitigation measures in some areas by means of additional buildings as part of its plans for upgrading the neighbourhood" (GBW Group, n.d.-a). The development plan

(*Bebauungsplan*) terms the buildings to be constructed along the two busy roads (Figure 6, signatures A and B) "noise protection blocks"; there is an express stipulation on the part of the city authorities that residents may only move into the flats behind these buildings after their completion, including the installation of all windows (Development Plan 345 of the City of Erlangen). As with all major development projects, the city authorities require 25% of the new housing stock to be affordable/social housing. With a planned total of 650 new flats, this would mean the construction of about 162 affordable units. Seventy-four of these, plus an unspecified additional number, will be located in the block along Nürnberger Straße (Dawonia, 2022). To better shield non-affordable apartments from the four-lane Paul-Gossen-Strasse with its high volume of traffic, three gabled apartment blocks were demolished and rebuilt somewhat further north to make room for a street-side eaved apartment block with 84 subsidised housing units. The "point buildings" in the centre of the neighbourhood, away from noise and dirt, will be realised to a higher specification (Figure 4), generating greater rental revenue.

The GBW Group had promised: "We are planning social modernisation that avoids causing social hardship. Among other things, this means that no tenants will have to leave their familiar living environment because they cannot afford to pay rent increases subsequent to modernisation" (GBW Group, n.d.-b). After renovation for energy efficiency, however, the company will be permitted to increase rents by €2.60 per square metre, meaning tenants may need to expect rent increases of 60% (interview with GBW Group Tenants' Association, 27 June 2018; interview 2 with Rathenau resident, 29 June 2018).



**Figure 6.** Changes in the housing stock in the course of redensification on the Rathenau estate.

Indeed, there are indications that rents could rise by as much as €4.10 “per square metre after renovation is complete” (Kettler, 2019). Residents had achieved the withdrawal, in part, of some previous rent increases after turning to the German Tenants’ Association for assistance; the GBW Group cited system errors, although failed to correct the rents for all tenants. “The GBW,” asserted a representative of the Tenants’ Association, “is of the opinion that it only has to take rent increases back if tenants complain and seek help” (interview with GBW Group Tenants’ Association, 27 June 2018). The GBW

Group has a strong interest in increasing rental income; it appears that the site’s selectively appointed redevelopment measures pursue the intent of attaining higher rents in its more privileged areas.

### 5.5. The Creation of Privileged Residential Areas in Röthelheimpark

As a second example, we studied a neighbourhood in Erlangen’s Röthelheimpark district that underwent fundamental redevelopment from 1997 to 2014 on the

151-hectare site of a former US military base which had been abandoned in 1993. The city of Erlangen acquired the area in 1994 and initially declared it a 25-hectare nature reserve. For the remaining part of the site, the city launched an urban planning competition, won in 1995 by a Munich-based planning company. When work commenced in 1997, its stated aim was to provide “urban living close to the city centre in a family- and child-friendly environment at short distances from green spaces, infrastructure and workplaces” (City of Erlangen, 2011, p. 30); among the associated ambitions were the creation of a “city of short distances,” a “compact city” (with mixed uses of land, including housing, community facilities, commerce, offices, services, trade, and university facilities), and a “car-free city” (featuring underground car parks; City of Erlangen, 2011, pp. 30–40). The original plan envisioned housing for approximately 9,000 inhabitants, a figure significantly reduced during the planning process to 6,000 and later to 3,500 (City of Erlangen, 2011). The fundamental structure of the plan remained, with reductions in the heights of the planned buildings; an area in the northwest of the district was made available to Siemens AG, and, in the southeast, the focal area of our study, terraced or detached houses, a building supplies store, and a clothing shop replaced large swathes of the originally envisaged multi-storey apartment housing.

According to a representative of Erlangen’s urban planning department and a coordinator of the Röthelheimpark project group commissioned to carry out the work, there was no alternative to this reduction in space for housing. Investors showed barely any interest in building multi-storey housing, “not as owner-occupied flats, and certainly not as rented flats” (interview with city planning staff member 2, 19 April 2018). The project group argued that there was no need for housing for so many people in almost exclusively multi-

storey apartment buildings (interview with project group Röthelheimpark member, 28 April 2018). Contradicting this assertion, a member of the city council claimed that there was in fact high demand and accused the council of “building to suit investors,” considering that the city “always backed down when an investor wanted something different” (interview with a city council member, 26 June 2018). In this interviewee’s account, the city council had not centred the needs of the future residents, but rather those of the investors. It can be confirmed that the need for housing had certainly been high, as there had never been enough housing in Erlangen since the end of the 1970s. A 1990 report by the Office of Statistics of the City of Erlangen (1990, p. 1) points to a lack of housing development in the late 1980s and predicts an increase in the number of jobs in the city in the coming years, with a corresponding need for housing. In addition to this, Erlangen had very high rents long before this tendency emerged in the region’s other large cities (Nürnberg, Fürth).

Purposely designed for a wealthy clientele, this neighbourhood shows a differentiated distribution of environmental burdens and resources that correlates with the presumed financial resources of its various groups of residents (Figures 7 and 8). There is a particularly noticeable selective distribution of burdens from road traffic. The road Allee am Röthelheimpark serves as the only thoroughfare through the district and is correspondingly busy. Along this avenue and Kurt-Schumacher-Strasse, which borders the neighbourhood to the east, there is considerable traffic congestion due to commuter flows, especially where the two roads meet. An L-shaped building with affordable flats stands at this intersection, effectively reducing the associated burden for the buildings behind it (Figure 8, signature D). Similarly, the construction of multi-storey buildings along



**Figure 7.** Aerial photo of the studied neighbourhood in Röthelheimpark. Source: Photo courtesy of Jan Gemeinholzer.



**Figure 8.** Residential building structure of a neighbourhood in Röthelheimpark.



the Allee am Röthelheimpark provides shielding from noise and exhaust fumes for the neighbourhood to the south (Figure 8, signature B). The multi-storey apartment houses continue along the streets that accommodate the neighbourhood's access traffic (Figure 8, signature B). Both Willy-Brandt-Strasse to the west and Ludwig-Erhard-Strasse to the east border what is called the "Kanzlerkarree," a space with very little exposure to environmental "bads": "They breathe away the exhaust fumes for us" (group interview with Röthelheimpark residents, 26 June 2018). The Kanzlerkarree provides an artificially created niche as a privileged area for terraced houses and exclusive modern urban home architecture (Figure 8, signature Ak). A special feature of the neighbourhood is the broad green axis that extends into the Röthelheimpark district in the form of a wedge in a north-south direction and leads into a nature reserve (Figure 8, signature C). It offers residents opportunities for recreation close to their homes and serves as a corridor for air exchange. Further rows of terraced houses were created to its west and east (Figure 8, signature A). It is a safe assumption that an influx of people using the space for leisure arrives here from the north. Accordingly, the size of the residential units increases as the load of noise produced by leisure activities decreases towards the south, enhancing the residential location's exclusivity.

The location of the detached houses south of the Kanzlerkarree is especially privileged (Figure 8, signature E). At the planning stage, it was evident that these spaces would be reserved for particularly affluent residents, given the size of the plots, land prices in Erlangen, and the area's planned development structure. This area is shielded from the access traffic on Thomas-Dehler-Strasse to the north by an additional row of terraced houses (signature A) and from the traffic on Kurt-Schumacher-Strasse to the east by an artificial hill (signature F) raised for this purpose. The building supplies store and the clothing shop serve the same purpose. There will be very little noise from the conservation area in the south. Nevertheless, a strip of old trees has been left in a natural state to provide privacy for the southernmost properties.

## 6. Conclusion: Environmental Microsegregation, Justice, and Health

Taking the city of Erlangen as an example, this article has illuminated the inherence of environment-related microsegregation to processes of urban renewal such as redensification and the design of new neighbourhoods. With regard to the noise mitigation buildings of the Rathenausiedlung, the city planning department confirms: "For economic reasons, affordable housing is often built along streets with heavy traffic. This [housing] must not exceed a certain cost, as land also has its price" (interview with Erlangen urban planning staff member, 24 May 2018). It appears that planning author-

ities tolerate or indeed actively envisage the resulting health burden on social housing residents. The way how unequal distribution of burden is meticulously orchestrated in the Röthelheimpark is justified by an idea of "performance justice," according to which someone who "achieves more" (economically) has a right to earn and own more. An ecological understanding of health, however, would point out that this is not a matter of luxury and convenience, but rather one of fundamental well-being and severe threats to health; not only due to exposure to environmental toxins but also with regard to psycho-social factors. Contrary to the not yet modernised part of the Rathenausiedlung, which still provides affordable housing, the new subsidised flats in the Jaminpark are not available to social welfare recipients. The new flats are subject to an income-oriented subsidy scheme (*einkommensorientierte Förderung*) which means that not the poorest but working people with low wages are eligible to rent the environmentally underprivileged units. Welfare indigence intrudes into the midst of society. Inequality in the Jaminpark is cemented in the building structure as tenants with unfavourable flats can no longer apply for better-situated ones as these now are of higher standard and rents. The height of income now determines deprived living conditions in proximity to better-situated people. The impact on health-related factors such as self-efficacy or demotivation through social injustice is hardly assessed. This insight, in our view, demonstrates the importance of an ecologically informed perspective on health promotion for countering current tendencies towards injustice in urban development.

The processes of distribution of environmental "goods" and "bads" that our study recorded take place at a scale far below any statistical unit in common use. They happen within neighbourhoods, at the level of individual blocks of houses, and they are of such a small scale that conventional analyses of social space or multiple-burden maps cannot identify them. On the contrary, as inequality increases, a levelling statistical effect occurs. When the social mix is achieved in areas with residents with high socio-economic status, the statistical key figures are depressed; in areas of greater socio-economic deprivation, they are raised. We need higher-resolution survey instruments if we are to counter this effect and the concomitant invisibility of micro-scale processes. The root cause of the effects observed can be traced back to the profit orientation of actors in the housing and real estate sectors; it is therefore possible, we argue, to anticipate these effects and observe areas of urban development accordingly.

A perspective on urban renewal that draws on the political ecology of health, in concert with a holistic understanding of health, can serve as a means for the evaluation of ongoing urban renewal projects in terms of their impact on the health of various population groups. Health-related environmental burdens and benefits are important factors for objectively assessing the quality

of living conditions and refuting meritocratic arguments that ultimately suggest that economic “achievement” entitles individuals to better well-being. Further, it is imperative to challenge local actors’ conceptions and valuation of health. Multiple-burden maps can serve as a preparatory tool for identifying areas with priority needs for action. Exploratory techniques such as observations, site visits, interviews, and analysis of local media can subsequently capture specific social configurations and environmental benefits and burdens at a scale smaller than the neighbourhood level. We recommend the use of this methodological mix in future studies on local environmental injustice and microsegregation.

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### Conflict of Interests

The authors declare no conflict of interests.

### Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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Article

## “Passive” Ecological Gentrification Triggered by the Covid-19 Pandemic

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### Abstract

Urban areas can be conceptualized as large and ever-changing playgrounds in which many diverse agents (households, businesses, developers, municipalities, etc.) are active. The interactions between the playground qualities and the players' preferences are not unidirectional. However, sometimes, external events may change the perception of the playground qualities in the player's eyes. The recent Covid-19 pandemic and its associated precautionary measures are a clear example. During the pandemic, the value of existing urban green infrastructures has increased, as lockdowns were imposed, and distance working became widespread. The concept of “passive” ecological gentrification is developed in order to characterize this type of process. In contrast with “active” ecological gentrification, caused by purposeful intervention in the urban arena, “passive” ecological gentrification is triggered by a change of context, such as the pandemic impacts. This article focuses on the appreciation of green urban infrastructures by urbanites during the pandemic, showing that the willingness to pay to live near green and open spaces has increased in general, but with significant spatial differences. The main research questions are: (a) How does the player's perception of the playground's value change in times of pandemic? (b) Do these changes support the emergence of “passive” ecological gentrification? The methodology is based on the analysis of changes in property values over time as an indirect measure of a location's appeal, looking specifically at areas near green urban infrastructures, both in the inner city and in the peripheral areas. Relatively large changes in property value over time are a possible indicator of ongoing gentrification processes: When they are observed near existing green infrastructures, and not related to redevelopment initiatives, “passive” ecological gentrification may be the result. Using detailed spatial data on land use and property prices from the Netherlands, we find evidence that supports the hypothesis of a “passive” ecological gentrification drift towards areas around urban parks and green infrastructures in general.

### Keywords

Covid-19; ecological gentrification; residential prices; residential rank; urban areas

### Issue

This article is part of the issue “Social Justice in the Green City” edited by Roberta Cucca (Norwegian University of Life Sciences) and Thomas Thaler (University of Natural Resources and Life Sciences).

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### 1. Introduction

The pandemic outbreak seems to have triggered changes in the spatial structure and morphology of urban areas. It is perhaps too early to discern whether these changes are short-term and reversible, or long-lasting (Florida et al., 2021). There is evidence of a shift from dense city centers to the suburbs in US cities (Ramani & Bloom, 2021), albeit a moderate one compared with some initial predictions concerning the massive migration out of urban cores (Gallent, 2020; Nathan & Overman, 2020). Others argue that in the long term the agglomeration forces that had shaped cities since their beginning will

ultimately prevail (Reades & Crookston, 2021). In any case, crowd-avoiding behaviors, the possibility of teleworking, and the search for nearby amenities, seem to have impacted the locational choices of certain population segments (Florida et al., 2021). Thoughts and reconsiderations about the most appropriate residential area seem to have been widespread during the successive Covid-19 waves (Kang et al., 2021). For example, the locational preferences of graduate students shifted, after the first year of the pandemic, to the neighborhoods located further away from city centers in US cities (Ferreira & Wong, 2022). Besides these first and limited empirical case studies, theoretical urban growth models predict

significant changes in the future spatial structure if the impact of the pandemic turns out to be long-lasting (Buda et al., 2022).

The importance of available and nearby green and open areas in times of restricted mobility cannot be underestimated (Bherwani et al., 2021; Day, 2020). This is true for physical (Fagerholm et al., 2021), as good for mental health (Maury-Mora et al., 2022). Health decision-makers were aware of the beneficial influence when entire populations of many countries were summoned to implement social distancing measures for preventive purposes during the Covid-19 virus outbreak (Slater et al., 2020). Indeed, in some places, physical exercise in these areas was explicitly encouraged, even during lockdowns (Spencer et al., 2020), despite potential infection risks (Pan & Bardhan, 2022).

More importantly, the perceptions of green areas near places of residence changed markedly during the pandemic. Evidence shows that the interest and the value assigned to them increased among the population, particularly during periods of compulsive social distancing in several parts of the world (Larcher et al., 2021; Uchiyama & Kohsaka, 2020). Even in the aftermath of the pandemic, there are good reasons to believe that the attraction to green areas will continue to increase consistently (Venter et al., 2021). In parallel, inequality, both regarding the accessibility to green areas and their use, was more evident during the Covid-19 pandemic than beforehand (Spotswood et al., 2021; Uchiyama & Kohsaka, 2020). Both trends suggest that a new type of ecological gentrification, which can be denominated “passive,” is arising in urban areas, triggered by the recent experience of the Covid-19 pandemic.

Ecological gentrification is the process by which the benefits of the transition to more sustainable cities are appropriated by affluent social sectors at the expense of low-income residents (Checker, 2011). As such, ecological gentrification is a consequence of “active” interventions performed in the urban arena, such as brown-field redevelopment (Bryson, 2013) or urban greening initiatives (Anguelovski, Connolly, Garcia-Lamarca, et al., 2019). In contrast with “active” ecological gentrification, a “passive” version of it can arise if the urban context changes, without any purposeful interventions.

This article suggests that the perception of the urban green infrastructures during the Covid-19 pandemic was a change of context strong enough to trigger a “passive” ecological gentrification process in cities. The main goal of this study is to demonstrate this hypothesis, showing that residential values in the surroundings of sensitive green infrastructures have increased during the pandemic, both compared with residences located elsewhere, and with pre-pandemic values.

## 2. Literature Review

This article is part of a research framework aimed at developing a set of methodologies able to describe

and explain the spatiotemporal dynamics of neighborhoods and households. This framework conceptualizes the neighborhoods that compose an urban system as an ever-changing playground: Although neighborhoods are fixed in space, their characteristics change over time (Buda et al., 2021). The households living in the urban system are mobile players in the playground: Their behavior, either modifying their preferences over time or perhaps moving to another neighborhood, continuously modifies the playground itself (Buda et al., 2022). This is an inherently out-of-equilibrium setting.

On one hand, households sort themselves in the urban area, considering the differences in spatial amenities. This approach is applicable to unique amenities like proximity to the city center (Ahlfeldt, 2011; Chen & Hao, 2008) as well as to diverse amenities spread throughout the cityscape (Glaesener & Caruso, 2015). On the other hand, changes in households’ preferences are among the most powerful drivers of the socioeconomic changes observed in neighborhoods. For example, changes in the preferences of wealthy households in the urban arena are at the heart of the burgeoning literature on gentrification (Butler, 2007; Lees, 2000). An influential variable related to these preferences’ dynamics is the distance from desirable amenities such as coasts, parks, and open spaces in general (Gibbons et al., 2014).

The term “ecological gentrification” was coined to describe the process by which, appealing to environmental values and ethics, the development of green infrastructures leads to a more ecologically sustainable city but also triggers social displacement and the exclusion of vulnerable local populations (Dooling, 2009). One of the arguments is that discourses related to urban ecology and environmental awareness are additional tools in the profit-making toolbox of planners and real-estate developers, provoking inequalities and ending ultimately in gentrification processes (Quastel, 2009). The great paradox of ecological gentrification is that, although environmentally friendly planning can provide many benefits for the general population of an area, it may also create novel vulnerabilities for some specific groups (Anguelovski et al., 2018). However, there are several open research avenues on ecological gentrification and its related social, economic, and spatial dynamics. Although the development of green infrastructure projects in cities seems to raise spatial inequities (Anguelovski, Connolly, Pearsall, et al., 2019), it is argued that this is not a necessary corollary of these interventions. Therefore, it is important to understand where ecological gentrification is likely to emerge and in which situations it can be prevented (Anguelovski, Connolly, Garcia-Lamarca, et al., 2019).

Several seemingly related concepts were developed in this field over the last few years, such as ecological, environmental, and green gentrification. Some scholars refer to these concepts interchangeably, treating them almost as synonyms (Anguelovski, 2016; Pearsall, 2018). In other studies, there is an effort to stress the specific

particularities of each concept, whether based on contextual grounds (Cucca, 2019) or their evolution over time (Yu & Sun, 2021). There is a wide range of cases regarding the severity of the situations addressed using the ecological gentrification concept. There are places with blatant inequalities in access to urban green infrastructures closely related to the ethnicity of the dwellers (Connolly & Anguelovski, 2021; Venter et al., 2020), and others in which the quest for environmental justice leads to social struggles (Baumgartner, 2021; Gould & Lewis, 2016).

Within the broad scope of ecological gentrification case studies, this analysis is positioned in the mild range for two reasons. First, in the chosen test case (the Netherlands), the availability and accessibility of urban green infrastructures are high and relatively well distributed. Second, the present study focuses on “passive” ecological gentrification, caused by a change of perception concerning already existing green assets, instead of by the redevelopment of environmentally degraded places. Both aspects are discussed in this section.

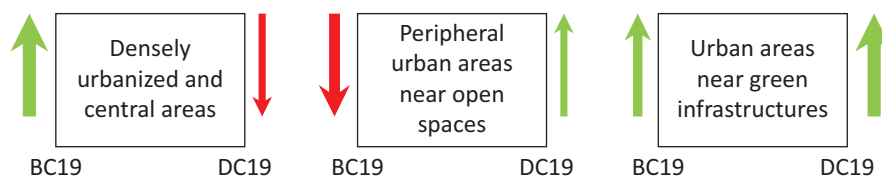
The recent Covid-19 pandemic boosted a renewed interest in the role of green infrastructures in the environmental and social sustainability of cities (Ferrini & Gori, 2021). This interest is evident not only in professional and academic circles but also regarding the perceptions of urban green spaces in the eyes of the general public. There are good reasons to believe that the relationship of urbanites with green spaces (whether emotional or physical) is undergoing a fundamental change following the recent pandemic (Honey-Rosés et al., 2020). However, the inequalities described previously are also observed in the accessibility to green areas during the pandemic period (Pallathadka et al., 2021).

Despite the relatively short time that elapsed since urban areas returned to seemingly normal functioning in the aftermath of Covid-19 (Florida et al., 2021), there are already first visible signals of changes in perceptions regarding the quality of urban areas. A metropolitan-level view of urban real estate prices indicates that, at least during the pandemic, real estate prices declined in urban centers and increased towards the suburbs (Gupta et al., 2021). Some authors argue that these trends, partially influenced by changes in working and commuting patterns, have the potential to hollow out dense city cores (Ramani & Bloom, 2021). These ongoing trends may cause fundamental shifts in the way local services and transportation are approached (Nathan, 2021). More focused analyses that are relevant to the topic

of this article indicate that preference for residences in low-population-density areas with outdoor facilities seems to be on the rise (Guglielminetti et al., 2021). These observations are in line with increasing preference for locations away from dense urban centers (Ferreira & Wong, 2022). In particular, there is evidence of a willingness to pay premium prices for locations adjacent to open spaces and beaches, and also a drift toward places further away from the city center, compared with pre-Covid-19 observations (Cheung & Fernandez, 2021).

The first assumption of this article is that the Covid-19 outbreak and the implemented preventive measures during the pandemic have suddenly changed the perception of urban spaces, location, and particularly the value of urban green infrastructures. In other words, and following the playground and player analogy, the main hypothesis is that, although the physical and real playground has not changed significantly since the Covid-19 outbreak, the emerging perception of the players modified the urban landscape. The immediate effect of these changing perceptions is not visible from the outside and belongs to the mental and psychological realm of urban dwellers. But three years after the outbreak, and despite the relatively slow reaction of the real estate markets, there are already observable traces of “passive” ecological gentrification. The emphasis on the passive nature of the phenomenon aims to stress that it is caused by changing perceptions of existing physical infrastructures, instead of the development of new ones, as in the case of traditional (“active”) ecological gentrification. The first aim of this article is to prove that the changing perceptions of the players regarding urban green infrastructures are evident in the spatial distribution of residential prices. The second aim is to show that the observed spatial and temporal patterns of residential prices support the hypothesis of an emergent process of “passive” ecological gentrification.

Before Covid-19, urban centers were among the most appealing locations, while urban areas near green infrastructures were also appreciated. In comparison, peripheral areas, regardless of their location relative to green infrastructures, were less appealing. The changing perception caused a preferential shift in the post-Covid-19 period: While the preference for urban cores declined, the preference for urban locations near open and green spaces is rising. In this context, urban places near urban green infrastructures, such as parks, are particularly appealing. Figure 1 summarizes the research hypotheses.



**Figure 1.** Hypothesized changes in the attractiveness of different types of urban areas before Covid-19 (BC19) and during Covid-19 (DC19). Note: Green arrows symbolize appreciation, red arrows depreciation, and the thickness of the arrows is their expected strength.



The Netherlands makes an interesting case study to analyze “passive” ecological gentrification during the Covid-19 period because of several reasons. First, it has a long tradition of successful urban planning that managed to allow residential development while protecting open areas (Alterman, 1997; Faludi & van der Valk, 1994). Parts of these open areas are located within the urban fabric and constitute lively and popular urban parks that contribute to the well-being of city dwellers (Chiesura, 2004). Finally, the Netherlands is blessed with time series of very detailed spatial data, including residential values at small scales that allow for the tracking of changing dwelling prices over more than a decade. In the next section, we set up the scene by describing the data sources on which this research is built.

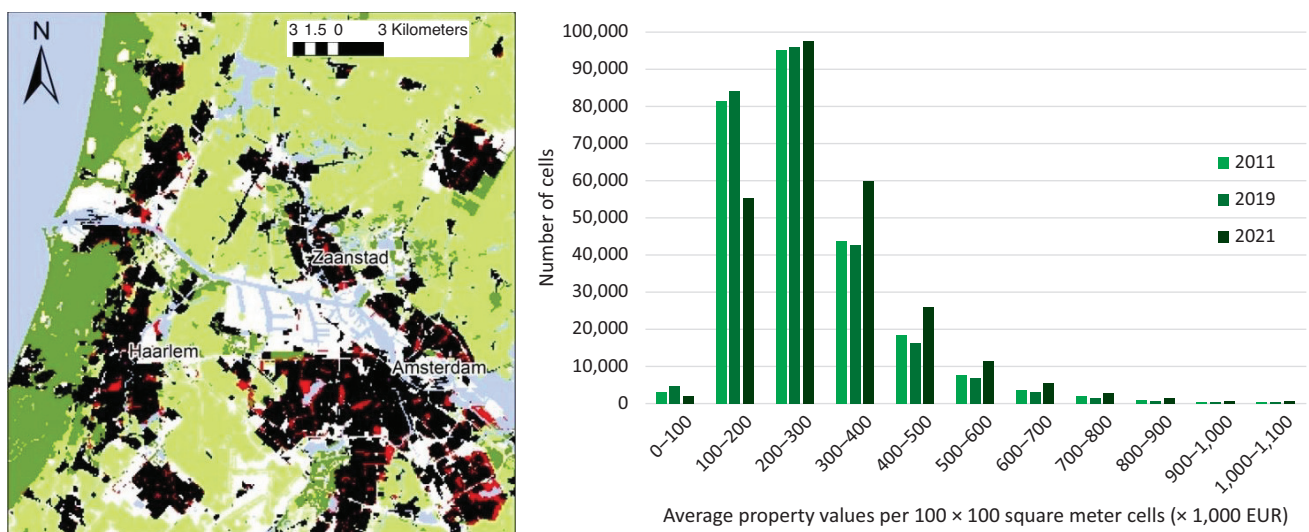
### 3. Data and Methods

The data sources used for this research were provided by the Dutch Central Bureau of Statistics. The spatial data covering the whole territory of the Netherlands using a grid of cells of 100 m<sup>2</sup> is consistently available for several years. The first type of data is the predominant land use at each cell: This was calculated using spatially explicit vectorial data (Central Bureau of Statistics, 2015), converted to raster, and aggregated into 38 predominant land use types. We restricted the classified land uses to four different and mutually exclusive categories: residential, parks, agricultural and natural. All other land uses were excluded from this research. Only open-field agriculture is considered agricultural land use, excluding greenhouses or other built agricultural infrastructures. Wetlands and forests are considered collectively as natural land uses. Parks are green and open lots, squares, playgrounds, and recreational

areas in general within the urban fabric. The second type of data is the property valuation, calculated by the Central Bureau of Statistics as the average of the property value of all the residences included in the cell (Central Bureau of Statistics, 2017, 2022a, 2022b). The data is derived from the statistics of real-estate valuation and includes exclusively residential properties. From these datasets, we retrieve the residential values of 2011, 2019, and 2021. The data is expressed in units of €1,000. Figure 2 shows part of the spatial data in Amsterdam and its surroundings, along with a histogram that describes the residential property data collected in the country.

From Figure 2 (right), the distribution of the average residential values per cell is skewed to the right, with a long tail of high values. Therefore, to constrain the distribution around each year’s average value, we selected a range from one standard deviation from the left of the distribution’s mean to three standard deviations to its right. These values were defined as the minimum and maximum of the modified distribution, respectively, summarized in Table 1.

The main goal of this study is to test whether residential values in certain places, such as near urban parks, had changed their relative values compared with residences located elsewhere, in each of the tested years. In other words, a snapshot of the relative residential values in 2011, 2019, and 2021 is required. Therefore, the distribution of the average residential values in each one of the studied years can be normalized. This was performed by adjusting each one of the distributions to a 0–100 scale, creating an annual rank for each residential cell. As a result, the relative price position of a residential cell compared with all the others in 2011, 2019, and 2021 is calculated.



**Figure 2.** On the left are the main categories of land use in the Amsterdam area (residential areas in black, urban parks in red, nature in dark green, and agriculture in light green); on the right is a histogram with the distribution of the residential values per cell in the country. Note: The graph is trimmed to the right since the distribution has a long tail, with few cells that have extremely high residential values, beyond €1,100,000.

**Table 1.** Modified distributions of average residential values per cell ( $\times \text{€}1,000$ ).

	2011	2019	2021
Average	276	268	310
Standard deviation	153	146	164
Minimum	123	122	147
Maximum	736	707	801

Distance is the main aspect that defines the accessibility of open areas to urban residents since beyond a certain threshold, their use declines sharply (Ekkel & de Vries, 2017). Therefore, accessibility to open areas (whether to parks, nature, or agriculture) is operationalized using the effective distance of 300 m (Nielsen & Hansen, 2007). Figure 3 below shows an example of the calculated buffer areas around each of the green areas' typologies.

Based on the defined buffers, the residential cells were categorized according to the open areas that are located nearby. For example, residential cells located within the 300-m buffers around parks are considered influenced by them. The same definition applies to the other green areas (agriculture and nature). The influence of green areas on a residential cell is not mutually exclusive: There are residential cells that are influenced by any possible combination of green areas (for example, agriculture, nature, and parks, or two of these uses). But there are also residential cells that are influenced exclusively by one type of green area. Finally, there are also residential cells not influenced by green areas at all. For the residents in these cells, the distance from any type of green area is more than 300 m.

#### 4. Results

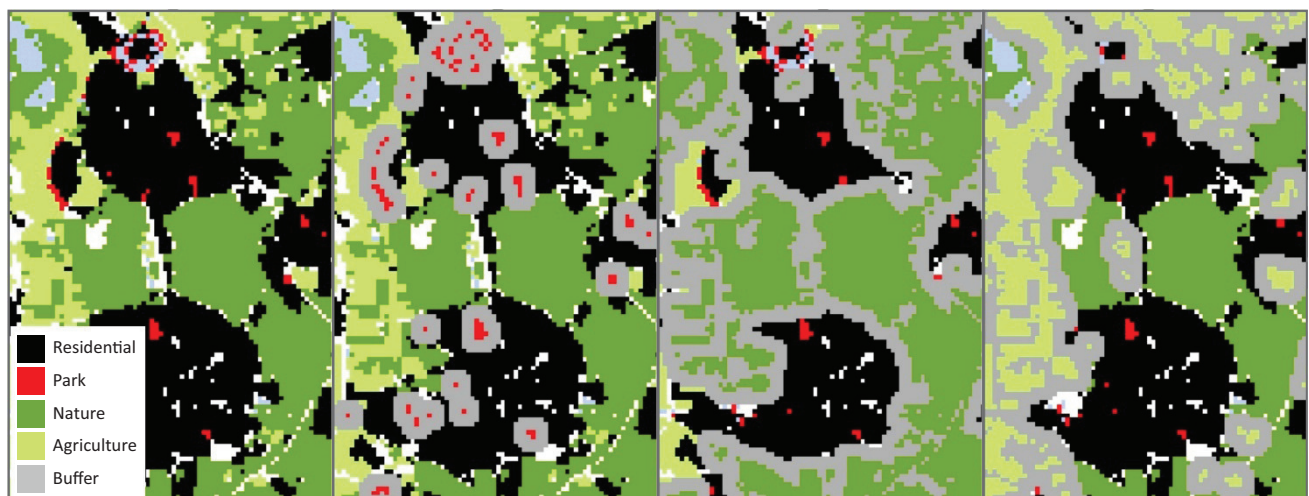
There are 223,014 residential cells in the country for which the annual ranking of residential prices for 2011, 2019, and 2021 is available. These cells are distributed

according to their location relative to green areas as described in Figure 4.

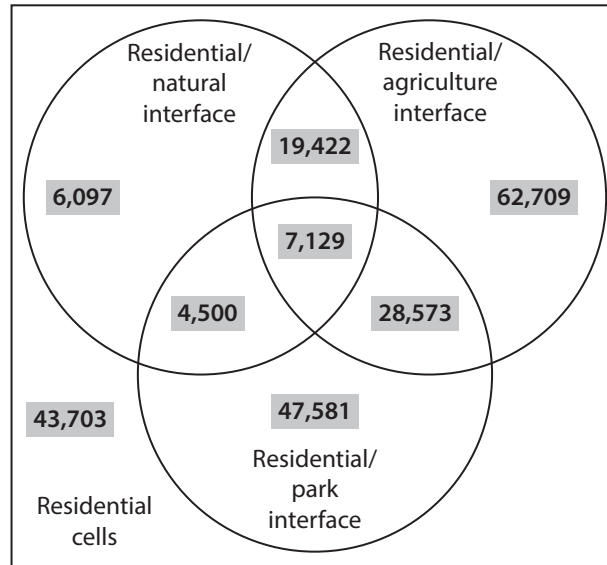
From Figure 4, we see that there are 43,703 residential cells from which green areas are not accessible according to the considered distance. The dwellers of these cells need to walk or travel more than 300 m to reach a green area of any type. In contrast, 176,011 residential cells have at least one type of green area at less than 300 m distance. Among these, the dwellers of 7,129 cells can access natural areas, agricultural fields, or parks that are located within walking distance.

The dissection of resident cells, according to the type of green area that may influence their residential price rank over time is the key feature of this study. By analyzing and comparing the ranking of each subset of the residential cells during each one of the studied years, it is possible to track the attractiveness of these subsets over time. Concretely, for each residential cell, the difference between its price rank in 2011 and 2019, and between 2019 and 2021, is calculated. Then, the average differences of all the residential cells that belong to each of the subsets shown in Figure 4 are computed. Table 2 summarizes the results.

The results shown in Table 2 summarize the findings of this study. The average residential rank of cells located near agricultural areas only decreased steadily during both periods. For cells located near natural areas exclusively, the average residential rank rose during the first period but decreased during the second. In contrast,



**Figure 3.** An example of a residential area surrounded by agricultural and natural open spaces and parks. Notes: On the left, are the main categories of land use; the three figures to the right show the 300-m buffers around parks, nature, and agriculture, respectively.



**Figure 4.** The universe of the residential cells considered in this study, distributed according to their location respective to green areas. Note: The word “interface” means “located within a buffer of 300 m.”

residential cells located near parks, on one hand, or far away from any green areas, on the other, experienced a steady increase in their average residential rank during both periods. However, the rate of the rank’s increase, in both periods, is much higher for residential cells located near parks exclusively.

**5. Discussion**

The relatively large increase of residential rank in cells located near urban parks, compared with all the others, demonstrates the main hypothesis of this work: In times of pandemic, the playground is valued differently by the players living in it. More specifically, residential values near urban parks increased enough to raise the rank of the cells where they are located. This measurement shows that open green areas within cities are more highly valued than other types of land use in cities during the pandemic. In other words, these results support the hypothesis of a “passive” ecological gentrification emergence. On one hand, there are no traces of significant urban green infrastructure improvements during the analyzed period. Therefore, the observed higher residential values near those green infrastructures were caused by their increasing appeal in the context of the Covid-19 pandemic. On the other hand, higher residential values increase the risk of social and physical displace-

ment of low-income residents. This outcome is similar to the risk caused by “active” ecological gentrification in which redevelopment initiatives, instead of changes of context, are the triggers of the process.

Locations near parks steadily increased their ranking also in the period before the Covid-19 outbreak, as shown in the first column of Table 2. However, there are several significant differences between both periods. First, closeness to agricultural areas seems to be more of a disadvantage than an asset, as evidenced by the negative figures in both periods (Table 2, first row). One possible explanation is that, despite the beneficial effects that agricultural areas may have as open and green spaces, there are potential negative impacts through exposure to chemical substances (Farenhorst et al., 2015), supposed to be linked to detrimental effects on health (Brouwer et al., 2018). The differences between both periods regarding residential locations near natural areas are more difficult to explain (Table 2, second row). During the first period, the residential rank of these places increased but plummeted during the Covid-19 pandemic. In this case, there also may be some negative influences of nature on nearby dwellers. According to a recent study, reduced human activity triggered an abundance of problematic wildlife, potentially leading to increased risks of injuries for people living in suburban areas (Soga et al., 2021).

**Table 2.** Average changes in the residential price rank for subsets of residential cells.

	2019 compared to 2011	2021 compared to 2019
Influenced by agriculture exclusively	-0.502	-0.790
Influenced by nature exclusively	1.941	-0.187
Influenced by parks exclusive	2.999	0.265
Not influenced by green areas	2.760	0.097

The last row of Table 2 shows the changes in the cells that are far away from any type of open and green area. Since this subset of the urban cells excludes most of the peripheral locations (near natural or agricultural areas), it is constituted by cells located in the city centers or central residential areas. The observation that the ranking of this subset also increases consistently during both periods is related to the fact that the Covid-19 pandemic did not change the fundamental urban development trends. In simple words, despite all the observed urban dynamic changes (described extensively in Section 2), the attraction of urban cores is still one of the most influential forces in the city (Broitman & Koomen, 2020).

Despite the relevance of the results for the posited research questions, there are several limitations to this study that are worthy of discussion. The first and most obvious limitation is the short time elapsed since the Covid-19 outbreak. Moreover, although it seems that we have already passed the most acute waves, the pandemic is still here (World Health Organization, 2022). This makes it difficult to discern whether the described processes will be long-lasting or momentary changes caused by an unexpected event that will be corrected once things return to their normal path. The spatial spreading of the described results is a second limitation. The study was performed at the level of all the residential cells in the Netherlands. There are large regional variations, among big cities, smaller towns, and rural areas, but also within each of these subsets, caused by their inherent heterogeneity. However, the results represent the average trends observed during both periods.

A third limitation is related to the data available and used in the study. As explained in Section 3, the residential value data is calculated as the average of the property value of all the residences included in the cell. This may not be the most accurate measurement, since data about the distribution of values within each cell is unknown (for example, we can consider a case of a cell with a mix of small apartments and a few larger and more expensive detached houses). If the relevant data could be obtained in the future, a better option for this type of analysis will be a detailed dataset of real estate transactions, from which both the residents and the land price per square meter could be derived.

Finally, as is clear from Section 3, the present study is not a statistical analysis, but a descriptive approach aimed at providing initial answers to the research questions. Usually, statistical analysis related to changing land use patterns and location choices includes variables such as distances to transport hubs, job locations, and facilities (as examples relevant to the Netherlands, see Broitman & Koomen, 2015; Jacobs-Crisioni et al., 2014). The use of these types of variables in the present case is problematic: A large part of the observed behavioral changes during the pandemic is related to working, shopping, and leisure consumption. Therefore, it is not clear the extent to which these distance-related parameters will continue to be relevant in the post-Covid-19

urban world. This is not to say that they will be meaningless in the future, but probably that their use will need to be recalibrated once new post-Covid-19 normality is achieved.

## 6. Conclusions

Urban areas can be conceptualized as large and ever-changing playgrounds in which many and diverse agents play. Sometimes, the playground itself changes, as in redevelopment interventions that provoke “active” ecological gentrification. In these cases, diverse players react differently to the new playground features, but it may also be that external events suddenly modify the perception of the playground qualities in the player’s eyes, even if the playground remains static. In that case, other processes, such as “passive” ecological gentrification may arise. The recent Covid-19 pandemic and its associated precautionary measures, particularly lockdowns and distance working, is one example. Green urban infrastructures have been more appreciated by urbanites since the outbreak of the pandemic: The willingness to pay to live near green and open spaces has increased in general, but with significant spatial differences. Using detailed Dutch spatial data about land use and property prices, we uncover initial signs of increasing property values in areas around urban parks and green infrastructures in general, even if these infrastructures were not upgraded significantly over the last few years. These residential value increases are an indicator of ongoing “passive” ecological gentrification processes.

The concept of “passive” ecological gentrification, in which a change of context is the triggering event, has the potential to contribute to future analysis of socio-economic location processes around urban green infrastructures. Traditional (“active”) ecological gentrification will continue to be the most important conceptual tool for cases where redevelopment initiatives take place. However, ongoing processes such as climate change and urban population growth may cause a sharp appreciation of actual green infrastructure assets, without the need for upgrades or redevelopments, but causing similar socio-economic effects. In these cases, “passive” ecological gentrification can be a useful conceptual analysis tool.

Finally, this study is a potential contribution to the understanding of future post-Covid-19 urban areas. In particular, regarding the changing dwelling preferences (and their associated willingness to pay) triggered by the recent pandemic experience. However, in light of the limited short-term evidence available, it will be necessary to wait until data from a larger period is available. This refers both to real estate data, and to behavioral data, and it is not clear yet how, and to what extent, it will be different from the pre-pandemic period. A solid spatial statistical analysis based on these expected available data will be a natural following step of this study.

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## Conflict of Interests

The author declares no conflict of interests.

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Article

## A New Phase of Just Urban Climate Action in the Rocky Mountain West

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### Abstract

The imperative of climate change has inspired hundreds of cities across the United States to act to reduce greenhouse gas emissions. Yet in some contexts, urban greening and climate action have exacerbated social injustices, spawning green gentrification or increasing the cost of living. In response, cities are beginning to shift their governing institutions to foster collaboration between departments and build local capacities while leaning into the interconnected nature of climate change mitigation, housing affordability, and social justice. Through a cross-case comparison of Denver, Colorado and Salt Lake City, Utah, two cities committed to climate action while facing severe housing crises, this study argues that cities are entering a new phase of urban climate action, one that can build a more sustainable and equitable urban environment for all.

### Keywords

climate justice; green gentrification; housing affordability; intersectional planning; urban climate policies

### Issue

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### 1. Introduction

Climate change is an issue of social justice. It is an issue of intergenerational injustice in that future generations will have to pay for past generations’ profligate emission of greenhouse gases (Page, 2006). Climate change raises issues of global distributive justice because those countries that have benefited the least from fossil fuel use are facing the most severe impacts of climate change (Okereke & Coventry, 2016), and it is a matter of environmental justice wherein the production of fossil fuels contaminate fenceline communities (Johnson & Cushing, 2020). Indeed, the justice implications of climate change are myriad, intersecting larger issues of racism, colonialism, sovereignty, and the functioning of the global economy (Ranganathan & Bratman, 2019; Schlosberg & Collins, 2014; Sultana, 2022).

This article focuses on a small slice of these much broader issues of climate justice, namely, the growing efforts of US cities to reduce carbon emissions in a way

that also addresses the local injustices of displacement and a lack of affordable housing. Many cities in the US have been acting to reduce emissions for decades, thereby contributing to global climate justice. Yet some city efforts to lower carbon emissions have been criticized for exacerbating displacement and raising the cost of living, thereby intensifying local injustices and raising tensions between different scales of climate justice (McKendry, 2015). This, however, may be changing. Examining the cities of Salt Lake City, Utah and Denver, Colorado, we find that they are beginning to restructure their institutions and work across departmental silos in order to build a lower-carbon urban environment that also addresses parallel crises of gentrification, displacement, and escalating costs of living.

Denver and Salt Lake City offer interesting cases for examining the incorporation of social justice into city climate plans. Both are relatively young, mid-sized, Western cities whose cultures and economies have been shaped by the mountains and nature that surround them.



The cities are similarly vulnerable to the impacts of climate change, particularly drought but also increasing heat and regional forest fires (Flavelle, 2022). Furthermore, Denver and Salt Lake City are both in the top 20 fastest-growing cities in the country, with the population of Denver growing by 19.2 percent between 2010 and 2020 and Salt Lake City by 7.1 percent (U.S. Census Bureau, n.d.). This growth has led to housing affordability challenges, with 35 percent of renters in Denver and 49 percent of renters in Salt Lake City cost burdened (spending more than 30 percent of their income on housing; City of Denver, 2022a; Salt Lake City, 2018). In addition, these cities are both relative newcomers to climate action, with neither having the decades-long commitment to climate mitigation as the more well-known coastal leaders in climate action or, closer by, the famously green Boulder, Colorado. This makes them more reflective of average American cities, most of which have come to adopt climate action recently. Finally, these cities make interesting cases because in the last few years Denver and Salt Lake City have adopted both ambitious greenhouse gas reduction plans and equitable growth plans. This article examines the beginning of their efforts to build the new institutions and cross-department collaboration necessary to connect their climate and equitable growth goals. It offers early insights into how municipal governments can foster a more livable future for all residents but also highlights the challenges they are encountering. We argue that although the climate crisis and housing crisis have often been thought about separately, by changing the ways city departments communicate and collaborate, Denver and Salt Lake City are seeking more affordable, sustainable, and socially just futures.

## 2. Urban Climate Governance and Social (In)Justice

When US cities began adopting carbon emission reduction goals around the turn of the 21st century, this was a new policy arena, outside the scope of the existing capacities of even large and well-resourced municipalities (Hughes, 2019). This forced planners and sustainability managers to be “building the plane while flying the plane” (Hughes & Hoffmann, 2020, p. 2), figuring out as they went ways to make the institutional and policy changes necessary to achieve their climate goals. As they focused on the challenge of emission reductions, questions of social and environmental justice were often ignored, seen as separate from reducing carbon emissions. Illustrative of this, a decade ago, Portney’s (2013) extensive study of US cities’ sustainability plans found that while some incorporated social justice and equity, most did not. Likewise, a large global survey by Castán Broto and Bulkeley (2013) found that city governments rarely included any explicit consideration of environmental justice in their major climate change policy experiments. This lacuna was reflected in academic analyses as well, with little of the growing literature on

cities and climate governance addressing local, rather than global, climate justice (Bulkeley et al., 2014; but see McKendry, 2015).

Around this same time, a growing body of research began to examine the injustices of urban greening. Though limited by methodological gaps (Quinton et al., 2022), cumulative evidence strongly suggests green amenities such as parks can exacerbate gentrification and displacement (e.g., Anguelovski et al., 2018; Checker, 2011; Gould & Lewis, 2017; McKendry, 2018; Wolch et al., 2014). Scholarship on green gentrification highlights how environmental amenities contribute to broader processes of urban transformation focused on increasing city center property values and attracting tourists and higher-income residents to the urban core. When successful, demand from these new, wealthier residents drives up housing costs, spawning gentrification and involuntary displacement (Florida, 2017). That environmental amenities could contribute to growing urban inequality has raised concerns about who the green city is for.

Building on the green gentrification literature, some have argued that city climate initiatives can also exacerbate urban inequalities. There are two major strands in this literature. The first, which is beyond the scope of this article, focuses on unjust urban adaptations to a changing climate. This scholarship examines the ways that adaptations can funnel resources into already privileged communities at the expense of the lower-income and BIPOC neighborhoods that are often most vulnerable to the impacts of climate change (e.g., Anguelovski et al., 2016; Keenan et al., 2018). The second strand, which is relevant here, investigates the intersection of climate mitigation and urban planning, with a focus on involuntary displacement and gentrification associated with low-carbon urban development, densification, and the cost of decarbonizing buildings.

Rice et al. (2019, p. 6) define this climate or “carbon” gentrification as “middle- and upper-income residents’ preference for neighborhoods that offer the opportunity to walk, bike and ride transit in a mixed-use, dense urban environment, as a means to lower their carbon footprint...leading to a rise in housing prices for those areas.” Analyses of climate gentrification note that sometimes the new high-end, mixed-use housing developments that are a common part of downtown urban revitalization are marketed as low-carbon, hoping to add to the appeal of city-center living (Quastel, 2009; Rice et al., 2019). This can also be the case for accompanying low-carbon “gray” amenities such as public transportation and bike lanes (Bardaka et al., 2018; Hoffmann, 2016). For scholars of climate gentrification, a lower carbon lifestyle for the well-to-do means increased housing costs, longer commutes, and accompanying higher transportation costs and carbon emissions for lower-income residents.

Nearly every urban climate plan in the US focuses on density, transit, and walkability, all of which intersect with rebuilding city centers for consumer-based,

low-carbon lifestyles (Rice et al., 2019). Yet, a limitation to research on climate gentrification is that it is not clear people choose to move to a redeveloped city center because of the carbon benefits of walkability, transit, and green amenities. Rather, it is “largely assumed that gentrifiers move in because of greening, but this has rarely been directly confirmed, and there could be a wide variety of factors motivating individuals to move” (Quinton et al., 2022, p. 17). Nevertheless, in many cities, a low-carbon lifestyle is at least one among many marketing strategies undertaken to promote in-movement of the elite to a gentrifying city center.

If the US is going to come anywhere close to achieving necessary carbon emission reductions, we need to reshape the built environment of American cities, including through densification, low-carbon buildings, and significantly enhanced public transportation. The problem is not these changes in themselves, as some of the climate gentrification literature seems to suggest. Rather, the problem is that there has been a failure on the part of planners to adequately consider these developments in conjunction with affordable housing and a lack of proactive measures to prevent displacement when low-carbon interventions are made (Jennings et al., 2019; Oscilowicz et al., 2022).

As urban inequality continues to intersect with the climate crisis, it is becoming ever-more apparent that “there is no climate justice without a clear and central focus on housing justice” (Rice et al., 2019, p. 160), and that urban planners and communities must reimagine what a low-carbon, socially just city can be (Curran & Hamilton, 2018; Langemeyer & Connolly, 2020). In order to promote just and sustainable cities, housing justice must be prioritized in urban climate initiatives. Without ensuring safe and affordable housing, urban climate action may continue to disenfranchise marginalized communities, exacerbate displacement, and increase the costs of living. Alternatively, responses to the imperative of climate change can reshape urban areas in ways that address historic and current urban injustices while undertaking more widely embraced, and therefore ambitious, climate actions (Méndez, 2020). The causes of displacement vary depending on local context, and therefore, what strategies are most effective at preventing it must be context-specific (Chapple & Loukaitou-Sideris, 2021). But what is vital across local contexts is that climate action and housing justice are considered in tandem.

Most existing research on the intersection of urban climate policy and social justice is retrospective and critical. Important justice critiques of urban climate policies are raised but little is offered as to how to move forward to build socially just, low-carbon cities (Hughes & Hoffmann, 2020). Only recently has a small body of work begun looking at ways cities are successfully incorporating justice into climate planning and, in so doing, helping to establish pathways for others to follow. Fitzgerald (2022), for example, examines five US cities that have recently rewritten their climate plans to prioritize climate

justice and equity. Her analysis focuses on how planners in these cities incorporate procedural equity into the creation of climate plans. Fitzgerald points to the necessity of taking time to establish trust between frontline communities and planners, and of including clear metrics for determining equity outcomes in city climate policies.

Here we highlight another vital piece of the movement toward more equitable city climate plans: institution and capacity building in city governments, particularly through cooperation between offices of housing and sustainability. Oscilowicz et al. (2022, p. 2) argue that:

In order to build greener and healthier cities for all, urban policy developments and planning strategies should move beyond traditional silo, uni-sectoral thinking and reactive equity planning to provide more proactive equitable and inclusive greening in cities while prioritizing anti-gentrification and anti-displacement practice for communities most socio-economically vulnerable.

Though inchoate, this is beginning to occur.

### **3. Institution Building for Low-Carbon Affordable Housing in Denver and Salt Lake City**

To analyze the emerging intersection of climate action and housing justice, we draw on Hughes’ (2019) evaluation of the governing strategies cities use in implementing their climate policies. Hughes argues that in order to successfully address this new issue area, cities had to build new institutions, coalitions, and capacities. Cities built new coalitions in order to facilitate greater trust in government, increase political support for climate plans and policies, and foster a network of advocates for the policies. They built new capacities to collect, analyze, and organize the data necessary to understand the effectiveness of their climate policies. Finally, new institutions were constructed to coordinate climate action across various divisions of city government and to maintain climate projects over multiple political terms.

Hughes’ analysis of the major governing strategies for urban climate action is useful for understanding the new, more holistic approaches to addressing climate change, social equity, and housing affordability that Salt Lake City and Denver are undertaking, as all three strategies can be seen in these cities. Though coalition and capacity building are important, here we are particularly interested in institution building, as this most directly speaks to Oscilowicz et al.’s (2022) call for planners to think beyond silos in their approaches to greening and affordability. In both cities, new institutions have been built through the creation of entirely new municipal departments, by shifting the priorities of existing departments, and through building new relationships between departments. These institutional shifts allow for a sharing of resources, funding, and expertise that is leading

to a reshaping of how municipal divisions operate and thereby creating a greater opportunity to achieve intertwined goals of sustainability, affordability, and equity. While still in the early stages and limited by the common barriers of time and money, in both cities, there is a sense of silos breaking down as staff from different departments recognize they are “playing in the same sandbox” (personal communication, July 9, 2021). It is to this that we now turn.

### 3.1. Methodologies

This study is based on document analysis of the following city documents: *Housing an Inclusive Denver* (City of Denver, 2018b), *Blueprint Denver* (City of Denver, 2019a), *Comprehensive Plan 2040* (City of Denver, 2019b), *Plan Salt Lake* (Salt Lake City, 2015), and *Growing SLC* (Salt Lake City, 2018), as well as the cities’ climate action plans, such as *Denver 80X50 Climate Action Plan* (City of Denver, 2018a) and *SLC Climate Positive 2040* (Salt Lake City, 2017). These documents represent the large-scale visioning for the city planning, sustainability, and housing stability departments in each city. Documents were analyzed using in-vivo coding to understand how equity and justice are incorporated into each plan, as well as to evaluate how each department articulates its relationship with other departments. Supplemental documents including the *Expanding Housing Affordability Recommended Policy Approach* (City of Denver, 2021c), the *Climate Protection Fund Five Year Plan* (City of Denver, 2022c), and the *Phase One Summary Report: Thriving in Place* (Salt Lake City, 2022) were also analyzed as cities progressed in policy development over the period of the study. Document analysis is appropriate for this study because we seek to offer a rich description of the developing recognition of connections between housing and climate change across departments, as officially articulated by these departments (see Bowen, 2009). Document analysis was complemented by six semi-structured interviews with city officials across the Office of Climate Action, Sustainability, and Resiliency (CASR; Denver); the Office of Housing Stability (Denver); the Denver Office of Community Planning and Development; the Salt Lake City Sustainability Department (SLCgreen); the Office of Housing and Neighborhood Development (HAND; Salt Lake City); and the Salt Lake City Planning Department during the summer of 2021. Because of the limited number of interviews, in the following discussion, they are used as supplemental to the primary method of document analysis.

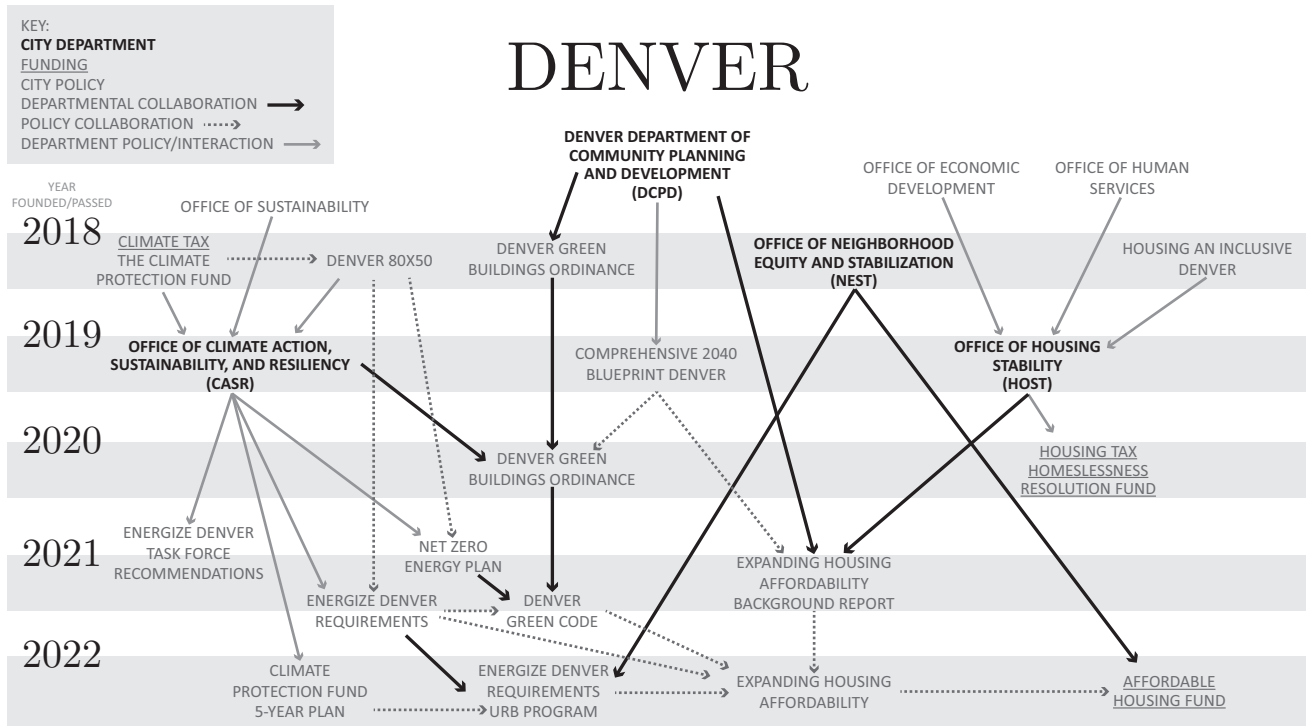
Though their climate plans are multifaceted, this study focuses on the slice of urban climate action in Denver and Salt Lake City that most closely intersects with housing affordability, namely, reducing the carbon intensity of buildings through electrification, weatherization and retrofitting, and urban densification. This allows us to focus on the cities’ recently passed climate

action plans alongside the issue of housing affordability, which both cities recognize as a crisis. Though a similar analysis of climate mitigation and social equity could be conducted for transportation, green space, or other elements of city climate policies, buildings offer the most immediate and legible intersection between housing affordability and environmental sustainability, key concerns for rapidly expanding cities struggling with the tensions of development. While energy-efficient and electric buildings create clear environmental benefits, they also reduce utility costs for residents. Ensuring that transitions to low-carbon buildings, both in existing structures and new developments, are distributed equitably across the lines of race and class is critical for economic and climate justice.

### 3.2. Denver

Since 2018, Denver has substantially reorganized and recalibrated municipal departments in the branches of sustainability, housing development, and anti-displacement intervention (see Figure 1). Key to this shift was the creation of the Office of CASR by Mayor Michael Hancock in 2019, shortly after the adoption of Denver’s *80X50 Climate Action Plan* (2018). The *80X50 Climate Action Plan* pledges to cut greenhouse gas emissions by 80 percent of 2005 levels by 2050 through energy efficiency in buildings, decarbonization of the electric grid, enabling next-generation mobility, and improving waste management (City of Denver, 2018a, p. 4). CASR replaced the former Office of Sustainability, and its mission is to urgently and proactively mitigate climate change through science-based methods while cultivating resiliency against potential climate-related disasters (City of Denver, n.d.-a). In alignment with Denver’s broader vision for the future, CASR seeks to “secure an economically, socially, and environmentally sustainable city for generations to come; and ensure that the setting of goals and metrics and monitoring of results *considers equity*” (City of Denver, n.d.-a, emphasis added).

Vital to the effectiveness of CASR, Mayor Hancock sponsored a 0.25 percent increase in the local sales tax, passed in 2020, to create the Climate Protection Fund (Brasch, 2020). This Fund sustains CASR’s in-house projects and funds work by local partner organizations (Brasch & Minor, 2020). Notably, at least 50 percent of revenue from the tax is required to be allocated to historically marginalized communities, with the explicit goal of combating economic disparities along with climate change (City of Denver, 2021b). In 2022, CASR released a five-year plan for the Climate Protection Fund, designating six areas of spending including “neighborhood based environmental and climate justice programs,” adaptation and resiliency programs “that help vulnerable communities prepare for climate change,” and energy efficiency building programs “to reduce their carbon footprint, utility bills and indoor air pollution” (City of Denver, 2022c, p. 5). CASR is beginning to pull



**Figure 1.** Institution building has created growing collaborations between municipal departments in Denver.

these threads together through the Healthy Affordable Home Electrification Program which will work with community partners to decarbonize 200 low- to moderate-income households over the next three years (City of Denver, 2022b). Electrification funding will be prioritized for under-resourced families living with chronic respiratory illness, with the goal of creating healthier, more sustainable, and more affordable homes (City of Denver, 2022b, 2022c). The creation of CASR as a new institution, and the sustained funding achieved through the Climate Protection Fund, refocuses climate efforts on neighborhood residents who have been disproportionately impacted by environmental injustices and who are most likely to be housing cost burdened.

Further illustrating institution building, to reduce the carbon intensity of buildings, CASR has begun working closely with the Denver Community Planning and Development Office (DCPD) to promote sustainable urban design and development through the Green Code and Energize Denver Hub. The Denver Green Code lives predominantly with the DCPD, impacting the energy efficiency and electrification of new buildings, while the Energize Denver Hub, which benchmarks energy efficiency for existing buildings, is controlled by CASR (City of Denver, n.d.-a, 2022). Denver began phasing in its Green Code in 2021 with the adoption of the *Net Zero Energy (NZE) Plan*, outlining goals to require net zero energy through all-electric new homes in the 2024 building code, all-electric new buildings in the 2027 building code, and performance verifications in the 2030 building code (City of Denver, 2021a, p. 1). The Denver Green Code is currently voluntary, offering incentives for developers who choose to construct buildings with high energy efficiency

and/or net zero energy standards. The Green Code will become more stringent with each iteration, eventually requiring all new developments to be highly efficient in alignment with Denver’s *NZE Plan* (personal communication, July 23, 2021).

Though the movement towards zero carbon new developments is important, as stricter codes and requirements for new build prevents the lock-in of carbon infrastructure or the expense of transitioning the building later, most of a city’s building stock is already built, and the majority of naturally occurring affordable housing is in existing, older buildings (Chapple & Loukaitou-Sideris, 2021). Denver is therefore reaching beyond new buildings with the 2021 Energize Denver Requirements which institute benchmarking, performance, and electrification requirements in existing buildings over 25,000 square feet (City of Denver, n.d.-d). Importantly, as of this writing, CASR is in the process of crafting an equity plan in conjunction with the Energize Denver Requirements. This plan will provide city funding for under-resourced buildings to alleviate the cost burden of reducing the carbon intensity of buildings serving vulnerable populations (City of Denver, n.d.-d). Under-resourced buildings include buildings containing affordable housing units or serving frontline communities, as well as market-rate units located in Office of Neighborhood Equity and Stabilization (NEST) priority neighborhoods (City of Denver, n.d.-b). Further collaboration between CASR and NEST through the Energize Denver Requirements seeks to reduce the risk of climate gentrification and to promote environmental justice.

NEST was created in 2018 for the express purpose of combatting gentrification and helping long-term

residents and businesses stay in place amid a stark rise in the cost of living (City of Denver, n.d.-c). New policies within the DCPD and CASR seek to build capacity for NEST-identified vulnerable neighborhoods, ensuring building decarbonization programs support affordable housing. The collaboration between DCPD and the Department of Housing Stability (HOST) will establish new funds and opportunities for NEST to facilitate aid for neighborhood residents to stay housed, while the Climate Protection Fund will allocate resources to weatherize affordable housing, thereby lowering utility bills and decreasing carbon emissions.

In addition to the newly institutionalized relationship between CASR and DCPD around the Green Code, DCPD has also begun collaborating with HOST to design new frameworks for incentivizing and sustaining affordability within Denver, serving as partners in the Expanding Housing Affordability Project. The creation of HOST in 2019 was another of Mayor Hancock's explicit efforts at institution building, merging affordable housing efforts in the Department of Economic Development with housing stabilization and homelessness prevention in the Department of Human Services (personal communication, July 1, 2021). An institutional shift of this caliber increased the capacity of each department, establishing a higher level of permanent funding through the Affordable Housing Fund and the Homelessness Resolution Fund, supported by a local sales tax of 0.25 percent (this tax is separate from the tax to support The Climate Protection Fund; personal communication, July 1, 2021; City of Denver, 2020). The Expanding Housing Affordability Project institutionalizes funding for the Affordable Housing Fund, which will allocate resources to procure and protect deeply affordable housing (Toomer, 2022).

In line with affordability priorities institutionalized through *Comprehensive Plan 2040* and *Blueprint Denver*, DCPD and HOST have partnered to create Denver's Expanding Housing Affordability Project, the guidelines of which were given final approval by the Denver City Council in June 2022. Their passage instituted a long-awaited inclusionary zoning policy that requires all new developments to contribute to the city's affordable housing stock either through constructing a percentage of affordable units, offsetting city expenses for constructing affordable units, or paying a linkage fee that contributes to the Affordable Housing Fund (Toomer, 2022; see also Keep-Barnes, 2017). There are criticisms that the program does not reach far enough, and staff members in the CPD recognize that this policy will not solve all of Denver's affordable housing issues. But the policies will provide important support for acquiring and constructing deeply affordable housing options for the city's most vulnerable populations while continuing to expand moderately affordable options (Toomer, 2022).

Examining the work of HOST, NEST, DCPD, and CASR illustrates how offices dedicated to climate change and housing justice have begun working together to estab-

lish the groundwork for more sustainable and equitable development in Denver. People working in these departments recognize the significance of this shift, with a representative from the DCPD stating that "if anything, it's more about how we show that these are important [issues] and need to work together, rather than what they're often perceived to be, as in conflict with one another" (personal communication, July 13, 2021). Another noted that now is "the first time I think we, and many other cities across the country, are trying to acknowledge the impacts that we play in housing costs and displacement" (personal communication, July 13, 2021). Although the *80X50 Climate Action Plan* (2018) only briefly touches on climate justice, equity, and affordability, the policies and programs that have emerged from the plan make these issues of social justice focal points for municipal climate action. Through a two-pronged approach to sustainable and affordable housing, with inclusionary zoning in the Expanding Housing Affordability Plan mandating affordability and the Denver Green Code and Energize Denver Requirements mandating low-carbon transitions, Denver has set housing development on a new trajectory. This forward momentum is made possible by the institutional shifts promoted by Mayor Hancock, the growing collaboration between departments, and the capacity built through restructuring and acquiring sustained funding sources. In Denver, the building blocks of transformation are already visible, with the creation of policies that weave together sustainability and affordability, drawing a potential new path for city-wide development.

### 3.3. Salt Lake City

While the intentions within Salt Lake City are similar to those in Denver, with goals of uniting municipal departments along the priorities of creating a more affordable, lower carbon city, the scope of action within Salt Lake City is thus far more limited. Building codes are established at the state level in Utah, and the statewide political landscape is far more conservative than that of Colorado, making progress on sustainability and affordability more difficult (personal communication, July 14, 2021). In addition, while Denver has established independent funding sources in the Climate Protection Fund, the Affordable Housing Fund, and the Resolving Homelessness Fund, Salt Lake City continues to work within the confines of a limited city budget. Despite this more challenging political and fiscal context, the beginnings of institution-building for affordability and sustainability can be seen.

SLCgreen, the colloquial name for the Salt Lake City Sustainability Department created in 2016, serves as the city's sustainability and climate leader. SLCgreen's climate policies are driven by their *Climate Positive 2040* plan which commits the city to reduce carbon emissions to 80 percent of 2009 levels by 2040, primarily by transitioning community electricity to renewable sources

by 2032, reducing on-site fossil-fuel burning in buildings, and minimizing transportation emissions (Salt Lake City, 2017). However, until the election of Mayor Erin Mendenhall in 2020, SLCgreen's focus was mainly limited to air pollution and consumer-based greenhouse gas reduction goals rather than institution-building for broader policy changes.

The election of Mayor Mendenhall was an important turning point, with her priorities of sustainability, affordability, and equity shifting the trajectory of policy within the city and leading to the incorporation of sustainability into other branches of the city government beyond SLCgreen. Mayor Mendenhall tasked "each of the [city] departments and divisions with creating their own sustainability plan that directly impacts their programming and work," fostering "stronger connections" along the lines of sustainability between SLC departments (personal communication, August 3, 2021). In response to the new mayor's priorities, in 2021 the Redevelopment Agency (RDA), the department responsible for distributing city funding for development projects, began mandating energy efficiency and electrification preparedness standards for city-funded projects (Building Electrification Institute, n.d.; Emerson, 2021; Salt Lake City, 2021).

As the RDA had begun mandating affordable housing production in RDA developments in 2016, the new energy-focused requirements for RDA-funded buildings necessitated new collaborations between SLCgreen, HAND, and the RDA to ensure that green standards "align and aren't detrimental to aspects such as affordable housing" (personal communication, August 3, 2021; personal communication July 9, 2021). While Salt Lake City has yet to pass an inclusionary housing ordinance and linkage fees are prohibited by state law, the RDA has shifted its focus to ensure that at least a portion of all units constructed with city funding contributes to the affordable housing stock, while maintaining the flexibility to negotiate affordability proportions with developers (Salt Lake City, 2016). The relationship that the RDA is building with developers through this collaborative process has altered the conversation regarding inclusionary zoning in Salt Lake City, with the city council now seeking further details on what a city-wide inclusionary zoning ordinance may entail (Salt Lake City, 2018; personal communication, July 9, 2021).

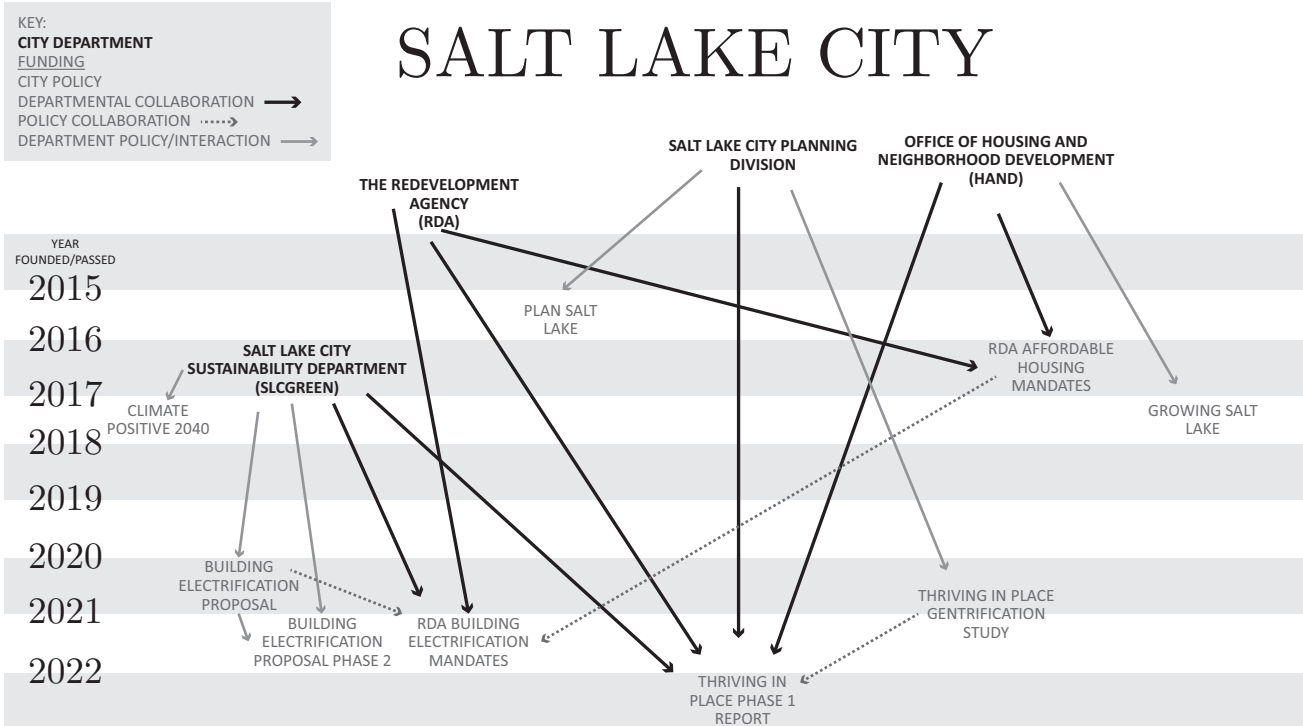
The RDA only has control over developments receiving city funds, and since building codes are established at the state level, the ability of the municipal government to mandate building efficiency and electrification standards is limited (Salt Lake City, 2021). To navigate this constraint, Salt Lake City is working to shift the practices of the development community through incentive programs and education (Building Electrification Institute, n.d.; Salt Lake City, 2017). Salt Lake City is pursuing a green buildings agenda similar to Denver's Green Code through its Building Electrification Proposal, a project brought to fruition through the partnerships of SLCgreen,

the RDA, and the Building Electrification Institute. In late 2020, together with the Building Electrification Institute, Salt Lake City conducted an intensive round of interviews with local stakeholders to design the proposal. The city is now completing phase two of their community outreach program, an economic analysis of what energy efficiency standards may cost developers, with the intention to "publish this publicly and inspire some of the local developers [to see] that this is something that's economical and that people want" (personal communication, August 3, 2021; see also Building Electrification Institute, n.d.). Because of the city's legal constraints, phase two is meant to incentivize greening measures without the tool of government mandates.

While the RDA's position within the government structure has remained unchanged, here institution-building for more socially and environmentally sustainable growth has been marked by deeper collaboration and an evolving departmental mission. SLCgreen, HAND, and the RDA are collaborating with the SLC Planning Department to promote a growth and development plan that fosters a more sustainable and affordable Salt Lake. A representative from the SLC Planning Department stated, "affordability and public health have always been important priorities...so where we can make those connections with sustainability, especially in reducing emissions, but also in improving air quality and general comfort and livability of homes, is really important" (personal communication, July 14, 2021). As in Denver, cross-departmental collaboration is facilitating institutional shifts that allow municipal departments to expand historically limited capacities, building knowledge and motivation to pursue low-carbon, affordable urban development (see Figure 2).

Institutional building through greater departmental collaboration is also beginning to address wider questions of affordability. In the wake of a growing crisis of affordability, Salt Lake City concluded a gentrification study in the summer of 2022 (Salt Lake City, 2022). This study was designed to inform the Thriving In Place project, a community-focused process to study the impacts of gentrification, driven by a steering committee made up of sixteen city departments including the RDA, SLCgreen, HAND, and the SLC Planning Department (Salt Lake City, n.d.). The *Phase 1 Summary Report* for the Thriving in Place project was released in July 2022 and presents community feedback, gentrification and displacement data, and an introduction to the next steps. The report details the severity of Salt Lake City's current housing situation, finding that there are no longer any "more affordable" neighborhoods in Salt Lake City, that displacement is an active worry for residents across race, class, and ownership status, and that residents see the city as prioritizing growth and economic development over the community (Salt Lake City, 2022). As an introductory report, there is still much work to be done, both in policy development and government recognition of the depth of the challenge. However, the breadth

# SALT LAKE CITY



**Figure 2.** Growing interactions between municipal departments in Salt Lake City are beginning to institutionalize the connection between climate and housing affordability.

of departments involved in the project, including those working across housing and environmental sustainability, illustrates the potential intersection of these issues in the next steps of the project.

In Salt Lake City, the urgency of action has shifted drastically in the last five years. *Growing SLC* (2018) mentions “displacement” a mere four times, with one use of the word “gentrification,” and *Plan Salt Lake* (2015) mentions neither issue. Yet at the time of this writing, wider government action regarding housing affordability seems imminent given the recent *Phase 1 Thriving in Place* report, which focused almost entirely on mitigating the risk of displacement for Salt Lake City residents. Whether such interventions will be paired with sustainability efforts in future city-wide growth plans, as they already are through the RDA, remains to be seen. However, the growth of action on the issues of affordability, sustainability, and equity in recent years is notable. In Salt Lake City, the RDA requirement that city-funded housing projects include sustainable design while contributing to the affordable housing stock achieves a similar goal to Denver, though with a more limited scope. In the past, development projects have been promoted with at best a superficial component of social, racial, and environmental justice. Now we see both Salt Lake City and Denver working to achieve the carbon benefits of higher density and low-carbon development while striving to minimize the climate gentrification that can accompany such projects.

#### 4. The Intersection of Urban Greening and Housing Justice

As cities grow and change, a long-posed question resurfaces: “For whom?” Sustainable for whom? Affordable for whom? Development for whom (Bulkeley & Betsill, 2013)? For decades, cities have largely avoided reckoning with these questions, neglecting the larger impacts of capital investment, unsustainable growth models, and skyrocketing housing markets on low-income communities and people of color. Investments in greening measures and redevelopment projects have too often exacerbated these problems, contributing to gentrification and involuntary displacement.

But the solution to environmental and climate gentrification is not to halt greening efforts or stop work to reduce urban carbon emissions; it is to think critically and creatively about the interconnected nature of two seemingly disparate crises. This starts with cities recognizing their responsibility to aid in mitigating involuntary displacement while taking ambitious steps to reduce carbon emissions. By shifting the way that city departments interact, institutions can be reshaped to build capacity and plan for more inclusive, low-carbon development.

Denver and Salt Lake City are taking important early steps to ensure new and existing developments are contributing to a more sustainable and equitable future. While much work remains to be done, and Salt Lake City makes it clear that larger legal barriers need to be addressed for cities to be as effective as possible, the goals and emerging practices of these cities reflect a

new possibility of what climate action can entail. Both cities are beginning to recognize that development must change. Denver is crafting new policies to grow in a more sustainable and affordable way. Salt Lake City is building knowledge of the situation at hand while acting on the development it directly controls. Although Salt Lake City appears ready to prioritize affordability (Salt Lake City, 2022), the question remains as to whether policymakers will follow Denver's lead and pair those efforts with low-carbon incentives.

This is a preliminary study observing initial policy trends and interesting shifts in institutional structures in these two cities. Additional study of the emerging trend toward a synthesizing of justice and sustainability would further this analysis and potentially lead to more conclusive results on the effectiveness and replicability of the institution building that is occurring. Though further analysis is needed, it is already apparent that the ways Denver and Salt Lake City are utilizing institution building to establish interdepartmental collaboration and build capacity for sustainability and affordability reflect an important shift in how cities are approaching climate change mitigation and equity. While the impacts of these cities' policies are not yet measurable, their recognition of the need for more just and sustainable futures, and willingness to reshape governing institutions to achieve this change, are clear.

## 5. Conclusion: A New Phase of Urban Climate Governance

This study illustrates how institutional shifts toward equitable urban climate action are beginning to occur in Denver and Salt Lake City. However, Salt Lake City and Denver are not alone in incorporating social justice into their climate efforts. Boston, Massachusetts; Baltimore, Maryland; Oakland, California; Austin, Texas; Portland, Oregon, and others are making justice an explicit focus of their climate action plans (Jennings et al., 2019; Méndez, 2020; Murray-Cooper, 2021). Yet, Salt Lake City and Denver do not have the decades-long history of climate action that defines Portland and Boston, nor Oakland's long history of social justice organizing. That these two cities are also thinking about the intersection of climate action and social equity speaks to the extent to which this shift may be occurring more broadly.

Future research on cities and climate change should continue to examine the intersection of climate mitigation and housing justice. Analysis of green gentrification is important and has raised vital questions about who benefits from the green or low-carbon city. Our research suggests that city officials are starting to take these critiques seriously. This, therefore, opens up important research questions that have been missed by much of the green and climate gentrification research: What has inspired this emerging, more holistic understanding of the intersection of climate mitigation and social justice among city planners and officials? To what extent

have grassroots mobilization and participatory justice reshaped city climate efforts toward equity? What more needs to be done to wed the imperatives of rapid decarbonization and social justice at the urban scale? This next phase of municipal climate action calls for research that recognizes the genuine efforts being undertaken by city governments on the intersection of climate change and social justice while maintaining the pressure of critique.

Cities across the country are seeing that the path forward on climate action is dependent on reckoning with the racism and classism that produced current urban planning practices and embedded inequality into urban environments. As cities face a myriad of crises, including climate change, housing insecurity, and social inequality, merely having ambitious goals no longer suffices. Transformative action through institution-building and collaboration is essential to craft a livable future for all.

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## Conflict of Interests

The authors declare no conflict of interests.

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Review

## Reframing Urban Nature-Based Solutions Through Perspectives of Environmental Justice and Privilege

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### Abstract

Since its introduction, the concept of “nature-based solutions” has gained much attention, drawing public funds and private investments. Nature-based solutions conceptualise the use of nature in planning as a cost-efficient and sustainable means to address societal, economic, and ecological challenges. However, this “triple win” premise tends to conceal potentially resulting injustices, such as displacement through green gentrification. While these injustices have attracted the attention of environmental justice scholars, as exemplified by the “just green enough” approach, links to the “nature-based solutions” concept are mostly implicit. Further, the concept of environmental privilege, questioning who benefits from created natural amenities, has rarely been taken up. This article, therefore, argues that environmental justice should be linked closely to nature-based solutions. Supported by a theoretical perspective, the article aims at exploring who benefits from, and who loses out on, urban nature-based solutions processes. It builds on a qualitative literature review of the scholarly landscape on environmental justice and urban greening while linking to nature-based solutions, adding perspectives of environmental privilege. In this, it attempts to offer three important contributions to the current academic discussion. First, the article provides an overview of the debate on urban greening, (in)justice, and environmental privilege. Second, it relates the concept of nature-based solutions to the debate on environmental justice, opening nature-based solutions up for critique and conceptual refinements. Third, it outlines a way forward for reframing nature-based solutions through the lens of environmental justice and privilege. Thus, this article provides a starting point for further discussions on the implementation of just nature-based solutions in cities.

### Keywords

environmental justice; environmental privilege; Global North; green gentrification; just cities; nature-based solutions

### Issue

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### 1. Introduction

Since its introduction in 2015, the concept of nature-based solutions (NbS) has rapidly grown in popularity. Defined by the European Commission (Directorate-General for Research and Innovation, 2015) and IUCN (Cohen-Shacham et al., 2016) as cost-efficient and multi-functional tools to address societal, ecological, and economic challenges through nature, NbS seem to be ideal strategies for municipalities adapting to climate and environmental change. The NbS umbrella concept includes previous greening terminologies, such as green infrastructure and ecosystem-based adaptation, and attempts

to integrate natural elements within urban planning. Some examples of NbS include floodplain restoration projects, street greenery, and parks aiming to improve well-being and offer space for recreation. NbS are holistic in their approach and frame nature as a tool to address broader challenges of scope and scale (Mell & Clement, 2019). Despite overlaps, NbS expand upon other greening terminologies in several ways. As formulated by a Nature Editorial (2017, pp. 133–134), NbS “dump” further greening terminologies into a “policy-relevant pot, where sustainable practices that harness the natural world...can be devised, analysed and then be pulled out for use by politicians, scholars and researchers.” In their

broad formulation and holistic approach, NbS have the potential to overcome sectoral planning silos (Sekulova & Anguelovski, 2017, p. 18). Their placement as an umbrella concept also boasts the potential to simplify navigating existing greening terminologies by offering a “common language” (Dorst et al., 2019, p. 5). In addition, NbS have attracted public sector interest, thus unlocking new modes of funding. This is not overly surprising, given the appeal of a supposedly sustainable solution offering various benefits simultaneously and cost-efficiently. Connolly (2019) describes this acclaim and often apolitical notion of unquestioned benefits as the “green planning orthodoxy.”

However, the benefits created are neither universal nor without trade-offs. Possible trade-offs entail ecosystem disservices, ranging from natural hazards such as allergic reactions to social hazards such as increased criminality (Shackleton et al., 2016). These trade-offs may vary over time and may not affect all stakeholders equally (IUCN, 2020, p. 16). Further, Bush and Doyon (2019) categorise five types of trade-offs especially relevant for NbS: temporal, spatial, functional, species, and social equity. Hence, NbS may even trigger or aggravate inequalities (Haase, 2017; Sekulova et al., 2021). Therefore, scholars of environmental justice (EJ) have criticised urban green interventions due to their effect on housing prices, their often-unequal distribution, and their tendency to primarily serve the already well-off (Anguelovski, 2016; Anguelovski & Connolly, 2022). This critique relates to NbS and helps in questioning NbS’ implications for justice issues. This is especially relevant due to the overarching scope, growing prominence and solution orientation of NbS. In a sense, NbS can bear the risk of restoring the uncontested assumption of urban green being an “unqualified good” that critical scholars have battled for over a decade (Bentsen et al., 2010). The usage of the terminology by private actors adds another challenge, as NbS are being employed as profit-oriented marketing and retail strategies; by maximising profitability, questions of social justice are commonly externalised or ignored. Hence, NbS might become private solutions, causing wider social challenges. This issue is related to the broad formulation of NbS, also offering opportunities for the appropriation of the concept. Hence, Kotsila et al. (2020) questioned NbS as the latest tool in nature’s neoliberalisation processes, while the Third World Network (2020) alluded to possible “nature-based seductions,” linking NbS to greenwashing and companies like Shell or BP trying to avoid cutting emissions by simply offsetting them. Against this background, it is essential to question who decides upon the alleged “solution,” whose problems are addressed, and who becomes excluded (Brink et al., 2016). O’Sullivan et al. (2020, p. 11) underline that “concepts such as NBS are not politically inane concepts that are brought into existence solely for their practical merit; they are ‘signifiers’ that embody, privilege, and elevate a certain type of knowledge and ‘expertise’ over others.” However,

despite significant interest in the intersection of greening and justice, there are only few articles explicitly connecting NbS to justice or privilege. Further, critique of NbS is mainly oriented towards gentrification and uneven distribution while rarely questioning other ways green injustice is produced.

To address these questions in the context of cities in the Global North, I first present a brief overview of the contemporary EJ debate related to urban greening as a theoretical grounding. Second, I give a detailed overview of the connections between urban applications of NbS and EJ in the scientific literature to show dominant themes and missing links. Lastly, I advance the concept of environmental privilege (EP) as a tool to further examine the interdependence of injustice and greening efforts. Through this approach, the article connects the existing EJ literature to the trending concept of NbS, while problematising its intertwinement with green capitalism and power imbalances. Further, it offers starting points for theoretical advancements to promote socially *just* NbS.

## 2. Environmental Justice: From “Brown” to “Green” Injustice

Claims for EJ entered the scientific debate in the early 1980s amidst the protest from mostly African American activists against the uneven distribution of environmental harm. Pioneer studies showed, for example, that landfills are often located near African American communities, exposing residents to the ill effects of toxic waste (Bullard, 1993; Chavis & Lee, 1987). Anguelovski (2013, p. 1) refers to this as “brown cases of injustice.” Hence, early claims for EJ called for equal protection and thus distributional justice. Since then, this focus has broadened in both scope and scale towards the “global nature of environmental justice” (Schlosberg, 2013, p. 37). Concurrently, the conception of justice has expanded too. Alongside distributional justice, recognition justice—accounting for diverse needs and subjectivity—as well as procedural justice—calling for inclusive processes—are now commonly mentioned (Agyeman et al., 2016; Mohai et al., 2009). Further, more recent studies started to investigate the influence of, for example, gender, sexuality, race, and intersectionality on struggles for EJ (Pellow, 2016). As part of this expansion, “green” cases of environmental injustice, manifested in unequal access to coveted natural amenities, gained attention (Anguelovski, 2013, p. 1). These forms of injustice are increasingly relevant in the current paradigm of green urban transformations in the Global North, illustrated by NbS. Focusing on green injustice raises the question of who is addressed by or benefits from greening efforts (García-Lamarca et al., 2021; Immergluck & Balan, 2018). It also points to the relationship of greening and social justice signified by environmental or green gentrification (Checker, 2011; Gould & Lewis, 2016), wherein greening leads to rising rents and thus “exclusionary

displacement” (Marcuse, 1985), limiting access to the created benefits to wealthy and often white populations. The relation between greening and social exclusion led to substantial critique from EJ scholars, as shown by concepts such as “just green enough” (Curran & Hamilton, 2017; Wolch et al., 2014) and “just sustainabilities” (Agyeman, 2013; Agyeman et al., 2003). These approaches illustrate a complicated situation for EJ advocates. As pointed out by Maantay and Maroko (2018, p. 13), planning and scholarship “must acknowledge and never lose sight of the fact that these greening actions tend to pit the goals of environmental justice against the effects of environmental gentrification.” Broadly speaking, EJ scholars highlight the intertwining of greening efforts and “green capitalism” or “racial capitalism” (Brand, 2012; Pulido, 2017) as possibly resulting in aggravated injustices. Problematising this linkage is even more essential for NbS, since their appeal transcends the public sector and crosses into the private sector, turning them both into marketable strategies for profit-oriented businesses. Additionally, sticking to the broad definition of the European Commission allows us to frame almost every nature-including form of investment or planning as an NbS. Hence, Maes and Jacobs (2015, p. 3) “define nature-based solutions as any transition to a use of ecosystem services with decreased input of non-renewable natural capital and increased investment in renewable natural processes.” This conception, while depicting any form of increased investment in renewable natural processes as problem-solving, does not specify nature, nor does it explicitly mention any addressed problem. This opens room for the exploitation of the concept and the undermining of its ambitions through individual or private interests. Therefore, “just nature-based solutions [must] examine how the planning, design, and management of urban ecologies intersect with the raced and classed politics of urban natures to influence who is enabled, repressed, or dispossessed through green development” (Cousins, 2021, p. 6).

Using EJ as a reference illustrates two central aspects of NbS planning and implementation. First, it problematises greening efforts and questions the uneven distribution and accessibility of offered benefits and trade-offs. Second, it points out the effects of NbS on market values and thus a linkage to gentrification, exclusion, and displacement. While much research recently focussed on this interconnection, there is still a need for more insights into causal linkages and gentrifier preferences and their interrelation with the production of injustice (Quinton et al., 2022, p. 18). Thus, this article forwards the concept of EP for further examination, since environmental injustice cannot exist without privilege (Park & Pellow, 2011, p. 4). Therefore, Section 4 first details the connections between EJ and NbS in the literature before I advance the concept of EP in the subsequent section. But first, the underlying methodological approach is presented.

### 3. Methods

The articles considered for this integrative review were selected in a four-step process (see Figure 1). The keyword search run on 11 January 2022 on Web of Science and Scopus included three criteria, namely an urban focus, an explicit consideration of justice, equity, or equality, and a reference to NbS or urban greening more generally. Besides NbS, urban forests were considered due to long-standing linkages to justice-related research from the urban political ecology that is often cited (e.g., Heynen, 2003). Ecosystem services and green infrastructure are terms, now partly falling under the NbS umbrella, which were selected as prominently featured in the debate. Urban greening as a general term was included to avoid missing publications discussing questions of greening and justice detached from the above-mentioned terms. After removing duplicates and screening the abstracts for relevance, 104 full-text articles and chapters were qualitatively assessed for their discussion of the linkage between justice and urban greening efforts. After removing 28 articles that not explicitly discuss issues related to justice, and the late addition of 12 overlooked or newly published articles of relevance to the author, 88 articles were reviewed.

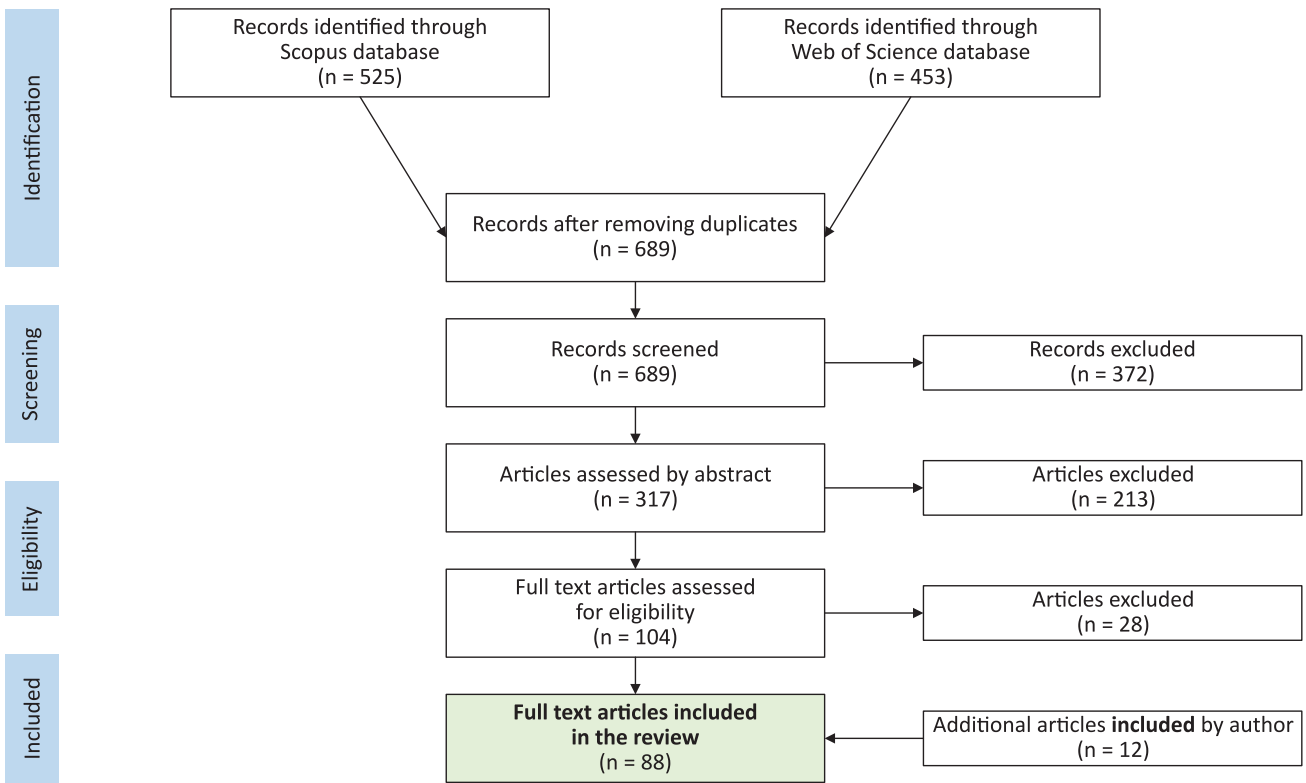
Analysis of the selected articles revolved around two main interests. First, the general conception of justice related to greening efforts was analysed to allow for an overview of the debate. Second, explicit and implicit linkages to NbS were reviewed. Starting from the assumption that justice is still rarely explicitly considered when focussing on NbS, this step aimed to map out related or missing EJ considerations. The following section presents the results of the review process along referred dimensions of justice. Through this, it presents the possible pitfalls of NbS through perspectives of EJ. Subsequently, I put forward the concept of EP as a complementary concept to question the reproduction of environmental injustice.

### 4. The Dimensions of Nature-Based Solutions and Environmental Justice

The subsequent analysis is focused on social justice and is thereby inherently human-centric, despite calls for multispecies justice (Haraway, 2016) and socio-ecological justice (Low & Gleeson, 1998), with the latter recently being linked to NbS by Pineda-Pinto et al. (2022). However, there is still a need for an overview of the relationship between urban NbS and social justice. Here, I address this gap following the dimensions of justice named in the literature, which identifies the aforementioned distributional, recognitional, and procedural justice as well as spatial and temporal justice. Although discussed separately for structuring purposes, these dimensions are not fully exclusive and are closely interlinked (Langemeyer & Connolly, 2020). Further, it must be noted that only comparatively few articles explicitly

**Search Terms:**

“Nature-based Solution\*” OR “Green Infrastructure\*” OR “Ecosystem Service\*” OR “Urban Green\*” OR “Urban Forest\*”  
 AND “Urban\*” OR “City\*” OR “Cities\*”  
 AND “Justice\*” OR “Equity\*” OR “Equality\*”



**Figure 1.** Four-step selection process of articles to be reviewed.

link EJ to NbS (Anguelovski & Corbera, 2022; Cousins, 2021; Mabon et al., 2022; Pineda-Pinto et al., 2022; Sekulova et al., 2021). However, relevant research has been done on greening terminologies such as ecosystem services and green infrastructure (Calderón-Argelich et al., 2021; Langemeyer & Connolly, 2020) that are subsumed under NbS. The following sections therefore outline both explicit linkages to NbS as well as links to other greening concepts to offer a substantial overview of the debate on EJ and urban greening.

**4.1. Distributional Justice**

Distributional justice is the most prominent justice dimension in urban greening research. John Rawls’ (1971) *A Theory of Justice* is the central reference point, approaching justice through equal distribution of and access to resources. Distributional injustice thus occurs when uneven access hinders or harms a societal group (Langemeyer & Connolly, 2020, p. 7). For distributional justice regarding green amenities, availability and attractiveness must be considered alongside accessibility (Biernacka & Kronenberg, 2018).

Availability is the most-researched named aspect, with predominantly quantitative studies depicting the location, size, and other metrics of urban greening and

NbS (Calderón-Argelich et al., 2021; Zuniga-Teran et al., 2021). The availability of, for example, parks or green retention areas determines the availability of offered ecosystem services, such as health support or floodwater regulation (Jennings et al., 2019). However, especially for “active use” greenspaces such as parks, accessibility and the closely related aspect of attractiveness are as important. Accessibility is also determined in part by “thick injustices,” the social preconditions influencing whether groups feel welcomed (Rigolon & Németh, 2021), as well as public/private boundaries (Armstrong et al., 2022). Whether NbS are attractive to specific groups depends on many variables. Enssle and Kabisch (2020), for example, demonstrate different perceptions and needs regarding greenspaces according to different age groups and argue to include various perspectives in planning to ensure diverse usage. However, achieving distributional justice through NbS is highly challenging. As Sekulova et al. (2021, p. 3) argue:

The mass and large-scale development of genuine, inclusive, diverse and evenly distributed forms or representations of nature would generate more economic “losses” than direct economic benefits. Stated differently, financial markets are unable to provide a return on large-scale investment in urban greening

without tying it to a form of real estate development or commercial retail industry.

The quote underlines the interrelation between financial feasibility and the design and distribution of NbS, conceding that luxury greening often offers the best financial returns. Yet such greening, similar to patterns of green gentrification, deepens existing green injustices and contradicts efforts towards distributional justice (Anguelovski & Connolly, 2022). Anguelovski and Corbera (2022, p. 5) thus advocate for decoupling NbS from “speculative and profit-oriented dynamics.” Beyond financial feasibility, promoting distributional justice is also a challenging task for planning processes, requiring considerations of procedural and recognition justice.

#### 4.2. Procedural and Recognition Justice

Recognition justice refers to the equal recognition and treatment of diverse values, preferences, abilities, and identities, as well as of specific histories (Fraser, 1995). Procedural justice requests fair and equitable institutional processes from state and local authorities, as well as spaces for engagement. They are jointly discussed here because they are often indivisible, since participation can strengthen recognition, while recognition can be prerequisite for inclusion and thus procedural justice (Schlosberg, 2007, p. 26).

Only a small handful of studies explicitly mention procedural or recognition justice and NbS (Carmichael et al., 2019; Pineda-Pinto et al., 2022; Toxopeus et al., 2020). Even when broadening the scope, a “procedural justice deficit” is obvious (Olsson et al., 2020, p. 3). This is caused by the lack of consideration of procedural justice in the first place, and by overly simplistic understandings of it, often equating procedural justice with participation. Yet participation is neither inherently equal nor just. For example, Tozer et al. (2020) problematise stewardship governance of NbS in Sofia as a time-consuming task, limiting who can participate. More generally, Verheij and Corrêa Nunes (2021) criticise tokenistic participation in their analysis of Lisbon’s greening strategy, observing that participation is mostly limited to the initial planning phase. By contrast, Rigolon and Németh (2018) observe justice issues related to the participatory inclusion of NGOs, showing how, on the greenway project Chicago 606, shared responsibilities facilitated green gentrification since the responsible organisation was solely involved in greenspace planning and “not in the business of housing,” thus lacking both expertise in and a mandate to enact gentrification-preventing measures.

Missing or tokenistic participation in NbS planning is a key example of procedural injustice, also delimiting the recognition of diverse perspectives and thus producing recognition injustice. This relation is illustrated by Kotsila et al. (2020) in their analysis of the greening of the Passeig de Sant Joan in Barcelona. The authors show via interviews how the project was both for greening and

urban renovation, with a secondary aim being to tacitly “upgrade” mostly Chinese-owned retail stores which, in the eyes of a local official, were a symptom of neighbourhood degradation (Kotsila et al., 2020, p. 11). This conception was reflected in the planning process, which was dominated by non-Chinese shop owners, ultimately leading to the decision for a gastronomy-oriented boulevard design despite reservations from the neighbourhood association and potentially fewer offered ecosystem services. The redesign fuelled changes to both the surrounding demography and usage of the Passeig de Sant Joan. Within a few years, over 50 Chinese-owned stores had to close, giving way to high-profile gastronomy. This restructuring process was accompanied by an openly racialised rebranding strategy that saw real estate agencies marketing the district as “free of ‘textile Chinatown’” (Kotsila et al., 2020, p. 12). This example illustrates the entanglement of procedural and recognition justice, as well as the ways powerful groups employ NbS to pursue individual or collective interests.

#### 4.3. Spatial and Temporal Justice

Spatial and temporal justice are neither explicitly linked to NbS nor common in the general literature on urban greening. However, Langemeyer and Connolly (2020), in their account on justice and ecosystem services, frame them as layers influencing the interplay of other dimensions of justice. Spatial justice adds a geographical component to distributional justice, conceptualising the fair and equitable distribution of valued resources in space (Soja, 2009, p. 2). Spatial justice addresses small- and large-scale linkages or, in the words of Langemeyer and Connolly (2020), down- and interscale. Downscale refers to small-scale segregation or local differences in, for instance, exposure to risks felt at the local level, while interscalar relations are, for example, linkages between city and hinterland. While spatial justice is only rarely mentioned in urban greening literature (Jian et al., 2020; Sharifi et al., 2021), its consideration seems important for NbS, as both concepts attempt to address broad societal challenges while also having deliberate local effects. Temporal justice, on the other hand, points out the influence of historical legacies on greening, while sensitising for future justice implications. Similarly, Anguelovski et al. (2020, 2022) advocate for preventive justice to ensure urban greening causes no future harm. These dimensions have only recently been taken up. Kabisch et al. (2022), for example, position long-term inclusivity as a guiding principle for urban NbS. This includes lifecycle assessments, as both benefits and trade-offs might vary over time. Exemplifying this is a community garden in the Lene-Voigt Park, Leipzig (Kabisch, 2019): While designed in a participatory process and initially well used, most plots have been abandoned in recent years. Now, the poorly maintained area is vacated due to its lack of appeal and increasing safety concerns, undermining the intended benefits. It must thus be questioned whether this change left



certain groups who initially benefitted from the garden under-served or worse off. In their principles for the design of *just* NbS, Anguelovski and Corbera (2022) state that NbS must tackle long-term green inequalities to fulfil their potential of addressing social and economic challenges. Long-term green inequalities hence refer to historically uneven opportunities and capacities to benefit from NbS. However, concepts on how to operationalise temporal justice are mostly absent. Looking at EP might aid in understanding historical inequalities and their influence on contemporary developments. Similarly, all previously mentioned dimensions of EJ link to EP, underlining the importance of considering privileges in urban greening scholarship. The next section addresses this topic by outlining the EP concept before reviewing its linkages to NbS and identifying theoretical gaps.

### 5. Environmental Privilege and Questioning the Naturalisation of Injustice

EP was framed by Park and Pellow (2011), building on Pulido's (2000, 2017) concept of "white privilege" as an obscured and naturalised form of power possessed by certain, mostly "white," groups in racially stratified societies. Safeguarding these privileges, even without racist intent, can thus reproduce inequality (Pulido, 2000, p. 15). Relating this conception to the environment, Park and Pellow (2011, p. 4) argue that:

Environmental privilege results from the exercise of economic, political, and cultural power that some groups enjoy, which enables them exclusive access to coveted environmental amenities such as forests, parks, mountains, rivers, coastal property, open lands, and elite neighborhoods. Environmental privilege is embodied in the fact that some groups can access spaces and resources, which are protected from the kinds of ecological harm that other groups are forced to contend with.

EP is as much about protection from harm as it is about exclusionary access to benefits. It works through power asymmetries that enable certain groups to enjoy positive environmental conditions whilst being free from adverse ones. In this sense, EP is a manifestation of inequality through environmental conditions and within the oftentimes uncontested "green planning orthodoxy." As Argüelles (2021, p. 6) points out, "those with EP are setting the terms in which environmental problems and solutions are constructed, deployed, and interrogated." This is especially relevant given that the solution-oriented design of NbS tends to assume problems are agreed upon (Nesshöver et al., 2017, p. 1220). However, NbS implementation in cities is always embedded in complex and conflicting landscapes of interests and needs, alongside mediating factors and constraints, such as infrastructures, institutions, and perceptions of value (Andersson et al., 2021; Kronenberg et al., 2021). Thus,

implementing NbS is always about "finding the right trade-off" (Ernstson, 2013, p. 12). This decision-making, however, is often dominated by privileged groups or knowledge systems. For instance, "green city branding" (García-Lamarca et al., 2021) through NbS might benefit ruling parties or real estate owners but exacerbate green gentrification. Likewise, eco-efficiency or green growth are commonly championed over other understandings of sustainability like "the environmentalism of the poor" (Martínez-Alier, 2002). Transferring this to NbS, Mabon et al. (2022) ask "whose knowledge counts in NbS." The authors argue that it is "precisely because NbS draw on such a breadth of knowledge systems that it is vital we remain attuned to the potential for epistemic injustice and the implications of excluding some ways of knowing" (Mabon et al., 2022, p. 662). Focussing on EP can complement this approach through actor-analysis focussed on power imbalances and situated instead of normative justice-claims.

Despite these important considerations, EP has yet to enter the discourse around NbS. However, some studies mention EP in relation to urban greening efforts more generally (Anguelovski et al., 2022; Argüelles, 2021), while others refer to privilege implicitly (Anguelovski et al., 2016; Gould & Lewis, 2021; Shokry et al., 2020). One prominent concept is the differentiation between sites or acts of commission and omission (Anguelovski et al., 2016). Acts of commission are intentional and benefit-oriented whilst acts of omission reproduce injustice through leaving out stakeholders or interests by design or mistake. As Anguelovski et al. (2016, p. 334), in an analysis of climate adaptation strategies, phrased it, "acts of omission refer to plans that protect valuable areas over low-income or minority neighbourhoods, frame adaptation as a private responsibility rather than a public good, or fail to involve affected communities in the process." Drawing on that notion, Shokry et al. (2020) analysed green storm water adaptation strategies in Philadelphia, determining that economically valued and wealthy areas were disproportionately more greened, consequently diverting investment and funds from more vulnerable areas and communities. This led to protected enclaves, on one side, and to further insecurities for the omitted, on the other (Shokry et al., 2020, p. 17). These processes of inclusion and exclusion, protection and vulnerability were magnified by concurring processes of green gentrification, displacing disadvantaged groups from greened and thus more flood-protected areas. Importantly, this study assessed both the strategies employed by privileged groups and the related ill effects affecting already-disadvantaged groups. This tacit aggravation of environmental injustice derives from often-overlooked imbalances, for example, the power to strategically influence decision-making processes. The result, however, is an appropriation and protection of EP and an extension of green injustices.

Gould and Lewis (2021) identify similar processes in their analysis of post-disaster recovery in Brooklyn

after Hurricane Sandy in 2012, and on Barbuda after Hurricane Irma in 2017. On both occasions, reconstruction focused on improving the resilience of luxury buildings, attracting wealthy renters, and rising construction costs were covered through increased prices. This resilient reconstruction thus aimed at a new demographic, thereby mostly excluding the actual disaster victims. While termed “resilience gentrification” by the authors, the process also evidently depicts EP, the protection from risk. Hence, similar to the Philadelphia case, the displacement of former inhabitants due to exclusive reconstruction represents an act of commission, while leaving the affected previous residents to adapt on their own is as an act of omission. These empirical accounts underline the necessity to critically assess who benefits from and set the implementation terms for NbS. They also uncover the influence of power asymmetries on resilient planning and disaster recovery forces. However, empirical accounts examining the rationales and motives of the planners and residents are missing; these viewpoints are essential to understanding whether resulting injustices are considered and tolerated as consequences of economic disparities or simply overseen. They would enrich the debate around planning a just NbS since, on the one hand, economic realities cannot simply be ignored, while, on the other hand, the non-recognition of green injustices tasks planners to raise their own awareness or to proactively plan around social justice. Actor analysis focussed on EP should incorporate stakeholders and groups often barely considered in research on green injustice: the well-off. Understanding voiced claims and strategies employed by privileged groups is essential to take into account or to counteract in cases where they undermine EJ.

## **6. Solutions for Whom? Challenging Nature-Based Solutions Through Perspectives of Environmental Justice and Environmental Privilege**

This review underlines the necessity to question NbS in terms of EJ. Although literature examining greening and EJ is increasing, links to NbS are still rare. However, I argue it is imperative to explicitly connect NbS and justice issues to avoid adverse effects or greening measures that only serve the well-off. The analysis of several dimensions of justice shows how complex this endeavour is, especially in dense urban environments with numerous stakeholders. I, therefore, agree with Anguelovski et al. (2020) that the planning of just NbS must reach beyond the aforementioned dimensions and include further frequently hidden drivers of injustice. Extending concepts of EJ through EP can be a helpful entry point to do so. It is essential that NbS are supported by all stakeholders in order to be sustainable. Thus, questioning who truly benefits from NbS can foster more inclusive approaches, even though further research is necessary. As this article shows, justice issues related to NbS are multidimensional and require

balancing trade-offs. The recent “Global Standard for Nature-Based Solutions” published by IUCN (2020, p. 16) acknowledges this, stating that possible trade-offs must be addressed in fair and transparent negotiations as a baseline for “successful” NbS in the long term. The report further illustrates the potentially unequal affectedness by trade-offs, underlining the importance to safeguard that “trade-offs do not negatively impact the most disadvantaged elements of society.” However, the report does not clarify how to approach fair and transparent negotiations. The apparent question is, how can we ensure that NbS reconcile diverse problems and prioritise the least well-off to close the apparent equity gap? Centring EJ and EP in green urban planning is a first step. For decades, EJ scholars offered empirical evidence of the uneven distribution of green benefits and environmental burdens, while recently also pointing to underlying deficits of procedural and recognition justice. EP can thus broaden our view of the diverse ways injustice is reproduced through the appropriation or defence of green privileges. It can shed light on which and whose expertise is considered in the implementation of NbS. For instance, Anguelovski and Connolly (2022) challenged “the social cost of glitzy-green urbanism,” as prestigious projects are often linked to green gentrification. Understanding the underlying motives of similar forms of NbS, as well as the perceptions of which problems are addressed and which trade-offs are considered, can help provide a more comprehensive view on the (re)production of green injustice. It can also inform theoretical understandings of the “political ecologies of gentrification” (Quastel, 2009) and relational understandings of green (in)justice.

Findings from this review call for further research in several areas. First, there is a need for practical strategies on how to implement *just* NbS. The recent call by Anguelovski et al. (2020) for “emancipatory, antisubordination, intersectional and relational” greening might thus be a starting point. Additionally, critical mediation as suggested by Geiselhart (2021) could be a useful strategy to account for the procedural justice deficit and recognise diverse needs by offering a platform enabling the perspectives of absent groups to be considered in negotiation processes. However, this approach must still be tested, especially when broadening EJ beyond the human perspective (Maller, 2021). Also, this article argued on a conceptual level without differentiating between different forms of NbS. NbS, however, vary in scale, aim, and use, and can thus offer ecosystem services and disservices alike. Testing varying justice implications of differently scaled NbS may provide crucial insights. Drawing on the existing literature on ecosystem services and justice appears to be helpful in doing so (Baró et al., 2021; Langemeyer & Connolly, 2020). Lastly, further work must extend beyond the Global North. This will require localised conceptualisations and further empirical evidence. However, examining EJ and EP can also be helpful in different geographical contexts. For example, the persistence of unequal green

legacies in South Africa, termed by Venter et al. (2020) as “green apartheid,” can be framed through EP. Likewise, Unnikrishnan and Nagendra’s (2015) account of the privatisation of green commons in Bangalore might be understood as an appropriation of privileges. Critically examining EP in similar cases might help to uncover underlying motives and relations, and thus ways of the production of green injustice.

## 7. Conclusion

NbS and their premise of multifunctional benefits have recently attracted much attention from academics, politicians, and the private sector. This article does not evaluate whether NbS can be useful in general. Indeed, green spaces can serve diverse needs and assist climate change goals, as well as support adaptation and mitigation (Intergovernmental Panel on Climate Change, 2022). However, an insensitively designed NbS can also create new or aggravate existing social injustices. I argue that focusing on EJ and EP can help mitigate adverse social effects. These perspectives help to consider the power-laden nature of NbS whilst drawing attention to the diversity of needs and perceptions regarding urban greening. Further, questioning privileges can be helpful to better understand the persistence of green injustice, as it is partly reproduced through the unintentional defence of one’s own position. Also, examining EJ and EP sheds light on uneven power structures and their influence on the design, location, and aims of NbS. This is ever more necessary for NbS due to their rising prominence in both the public and private sectors and because their ostensibly solution-oriented, holistic design carries the risk of concealed trade-offs and caused injustices. While accounting for EJ and EP cannot *guarantee* just NbS, doing so may offer ways to challenge their exclusivity and thus also become a solution for often disadvantaged groups.

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## Conflict of Interests

The author declares no conflict of interests.

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Article

# Making Thessaloniki Resilient? The Enclosing Process of the Urban Green Commons

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## Abstract

In the global hegemonic resilience discourse, green infrastructure is projected as a “win-win” approach to urban planning. Following the trend of adopting resilience as the new silver bullet for urban development, and in the midst of the recent financial crisis, Thessaloniki, Greece, joined the 100 Resilient Cities network of the Rockefeller Foundation in 2014. This event marked a shift in the city’s public space production and governance programme, introducing new private actors in decision-making processes, an emphasis on green space economic benefits, and an extensive regeneration programme heavily focused on the city centre. The article scrutinises these changes to uncover the policy implications of the turn to resilience in green public space production. Based on data on green public space spatial distribution; semi-structured interviews with municipal representatives and senior employees and representatives of the government, civil society, and local professional associations; policy document analysis; and comparative analysis of all relevant development and planning documents, and drawing on Brenner and Theodore’s (2005) conceptualisation of neoliberalism, the article argues that greening policies in Thessaloniki form an ongoing enclosing process of the urban green commons that articulates in a threefold manner: their discursive construction as “natural assets,” the implementation of spatially selective policies, and the post-politicisation of decision-making processes.

## Keywords

Greece; green infrastructure; green public spaces; neoliberalisation; spatial justice; Thessaloniki; urban greening; urban resilience

## Issue

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## 1. Introduction

Thessaloniki, the second largest city in Greece, joined the 100 Resilient Cities network (100RCn) of the Rockefeller Foundation in 2014. The 100RCn was inaugurated to facilitate the resilience-building process of cities around the globe (Berkowitz & Kramer, 2018) and was embraced by international organisations like the World Bank and the UN. At the same time, the network projected resilience as the “new green” (Quirk, 2013, p. 1) and a major business opportunity for the private sector (Rodin, 2013). In fact, resilience arose as the new “one size fits all” model for urban environmental development during the past 20 years. Within this discourse, “green infrastructure” (GI) is projected as a “win-win” approach to urban

planning, or, as Matthews et al. (2015, p. 157) argue, “an economic case for greening.” However, critical accounts of resilience and the role of GI projects underscore their economistic character, since they pay little attention to ecological and socio-political issues related to green public space production (Matthews et al., 2015; Webber et al., 2021). But how does this process unfold in urban settings with regard to green spaces?

This article answers the above question by shedding light on how urban greening policies in the context of resilience, often framed as a simultaneous enhancement of GI and the green commons (Frantzeskaki, 2019; Simić et al., 2017), can in fact result in the shrinkage of the latter. In doing so, it examines the cumulative effects of successive urban greening interventions, promoted in the



context of a market-oriented urban development programme, as a process of enclosing the urban green commons. Building on an understanding of enclosures as part of broader neoliberalisation processes, the article draws upon the threefold framing of neoliberalism in the literature, as described by Brenner and Theodore (2005, pp. 103–106), as “a modality of urban governance...a spatially selective political strategy...[and] a form of discourse, ideology, and representation.” All three dimensions support “a politically guided intensification of market rule and commodification” (Brenner et al., 2010, p. 3). In more detail, on the governance level, neoliberalism tends to shrink democratic participation, alter governance mechanisms to open them up to market representatives, and build an urban development vision based on individual responsibility and competitiveness (Brenner & Theodore, 2005; Cook & Swyngedouw, 2012; Keil & Boudreau, 2004). The spatial selectiveness of neoliberalism refers to the spatial reference of related policies and the unequal distribution of their positive and negative impacts throughout cities and scales (Brenner & Theodore, 2005; Heynen et al., 2006). Finally, neoliberal discourses are articulated around competitiveness, entrepreneurialism, individual responsibility, and efficiency, rather than around urban justice, equality, or democratic governance (Brenner & Theodore, 2005). Regarding the environment, neoliberal discourses tend to naturalise the roots, causes, and effects of resource depletion, climate change, and the climate crisis, promoting ecological modernisation (for an account of ecological modernisation discourses see Apostolopoulou et al., 2012; Bäckstrand & Lövbrand, 2006; Bettini & Karaliotas, 2013).

Building on the above understanding of neoliberalisation, the concept of “enclosing” as a verb, instead of “enclosures” as a noun, is coined to progress our understanding of such processes that are increasingly fluctuating and unfold on multiple levels. The article demonstrates that the inclusion of Thessaloniki in the 100RCn marked a shift in the city’s public space production and governance programme, introducing new private actors in decision-making processes, an emphasis on green space economic benefits, and a regeneration programme heavily focused on the city centre. The article argues that greening policies in Thessaloniki form an ongoing enclosing process of the urban green commons that is articulated in a threefold manner: their discursive construction as “natural assets,” the implementation of spatially selective policies, and the postpoliticisation of decision-making processes.

In studying the implications of this policy shift for green public space production in the years 2010–2018 in Thessaloniki, three main methods were used for the collection of data: (1) qualitative document analysis, including official policy and planning documents, i.e., strategies, urban plans, municipal council meetings’ minutes, reports, and press releases from the municipality, the World Bank, and the 100RCn pro-

gramme; (2) semi-structured elite interviews with two vice-mayors of the Municipality of Thessaloniki (MoTh), one with a central government representative, one with a high-ranking employee of the Department of Urban Green, one with a representative of the local Architects’ Association, and one with a representative of a citizen-led initiative involved in the Resilient Thessaloniki programme; and (3) participant observation in meetings and working groups of the Resilient Thessaloniki office.

The article sets off with a review of the literature on GI and continues with the documentation of the need to examine urban regeneration projects linked to green gentrification processes as a process of enclosing the urban green commons. It moves on with the case study of Thessaloniki, starting with a brief overview of the context and continuing with the inclusion of the city in the 100RCn. This section discusses separately the governance mechanisms employed by the programme and its policies. The article concludes with an overview of the three trends observed in the case of Thessaloniki, advocating that they all feed into a process of enclosure of the urban green commons.

## 2. Green Public Spaces: Green Infrastructure, Urban Green Commons, or Both?

For resilience, urban green comes to the forefront of planning processes and projects. “Urban greening” is “intended to address urban impacts and to make cities more healthy, attractive and biodiverse” (Ahern, 2013, p. 1206). The introduction of “nature-based” solutions to urban problems is implemented—among others—through the creation and reinforcement of urban GI (Frantzeskaki, 2019). GI is a “connected network of multifunctional, predominately unbuilt space that supports both ecological and social activities and processes” (Kambites & Owen, 2006, p. 484). It includes landscapes, water bodies, parks, and gardens (Connop et al., 2016); greenways, treelines, and rain gardens (Meerow & Newell, 2017); forests and roadside zones (Lovell & Taylor, 2013), but also cemeteries, golf courses, and brownfields (Andersson et al., 2014). Thus, GI can promote several resilience planning principles, namely “diversity, flexibility, redundancy, modularization, and decentralization” (Meerow & Newell, 2017, p. 63) without necessarily referring to a network of exclusively public and/or accessible spaces.

In the GI literature, urban green spaces are considered ecological and natural assets (Schäffler & Swilling, 2013), an approach intended to “elevat[e] [them] in mainstream planning” (Cowling et al., 2008, as cited in Schäffler & Swilling, 2013, p. 248). Green spaces provide, according to the same literature, a series of “ecosystem” services to cities (Table 1), that can be categorised as environmental (improving urban climate, controlling noise pollution, and flooding control, waste management and biodiversity), social (leisure, health, food security, and community reinforcement), and economic

**Table 1.** Functions provided by GI according to the resilience literature.

Functions of green spaces for resilience	Indicative reference
<b>ENVIRONMENTAL</b>	
<ul style="list-style-type: none"> <li>• Waste management and sewage treatment</li> <li>• Hydrological cycle—Rainwater and flood management</li> <li>• Noise insulation</li> <li>• Urban climate improvement</li> <li>• Biodiversity</li> <li>• (Air) Pollution control</li> </ul>	Schäffler and Swilling (2013) Connop et al. (2016) Connop et al. (2016) Norton et al. (2015) Andersson et al. (2014) Norton et al. (2015)
<b>SOCIAL</b>	
<ul style="list-style-type: none"> <li>• Health and quality of life</li> <li>• Production (urban agriculture)—Food security</li> <li>• Recreation, education and sports</li> <li>• Community reinforcement—Identity</li> </ul>	Wang and Banzhaf (2018) De Zeeuw et al. (2011) Ernstson et al. (2010) Kambites and Owen (2006)
<b>ECONOMIC</b>	
<ul style="list-style-type: none"> <li>• Economic growth and property values</li> <li>• City marketing/tourism</li> </ul>	Kambites and Owen (2006) Kambites and Owen (2006)

(marketing, tourism, and economic growth through increased property values). While it is evident that the GI literature essentially builds on sustainability's approach regarding urban green benefits, without adding any innovative or new approaches to greening, it also makes the discursive shift from the "role" of green spaces, as framed in the sustainability discourse, to their "function" as parts of a city's infrastructure (Wang & Banzhaf, 2018).

This emphasis on the function of green spaces has been criticised by scholars as technocratic and managerial, often built on economic premises by underlining the material benefits they can deliver (Matthews et al., 2015). This is the case even when appraising benefits that do not have an obvious material substance. For instance, the contribution of urban green availability to the health of urban dwellers is appraised by evaluating the expected estimated reduction in healthcare costs (Matthews et al., 2015). Thus, there the aforementioned categorical shift of focus from the sustainability to the resilience literature on green spaces (Matthews et al., 2015) is located in the move from an ecological approach to an economic one (Horwood, 2011). Exemplary of this move is the methodology proposed by the 100RCn of the Rockefeller Foundation for the appraisal of the value of GI. According to a report published in 2018, nature, like any other type of infrastructure, "needs to be strategically planned and managed" (Chadsey & Grenfell, 2018, p. 13). To this end, the market value of natural infrastructure is appraised based on its selling value, the amount of money that individuals would be willing to spend to visit the infrastructure, and the cost that replacing the natural with man-made infrastructure would have for a city (Chadsey & Grenfell, 2018).

At the same time, the creation of GI is celebrated as an enhancement of the green urban commons

(Frantzeskaki, 2019; Simić et al., 2017). In the context of resilience policies, the term "urban green commons" refers to:

Physical green spaces in urban settings of diverse ownership that depend on the collective organization and management and to which individuals and interest groups participating in management hold a rich set of bundles of rights, including rights to craft their institutions and to decide whom they want to include in management schemes. (Colding & Barthel, 2013, p. 1043)

The resilience model adopts a resource-oriented understanding of the urban commons that derives from the economic framing of green public spaces and GI in general as assets. This can be traced back to the very concept of resilience, since, as MacKinnon and Derickson (2013) argue, it can be a very conservative tool when applied to the social sphere. In this framework, existing systems, drenched with unequal power relations and inequalities, are not challenged but, in fact, reinforced (MacKinnon & Derickson, 2013), while the term itself is defined in a strictly top-down manner that excludes local communities (Kaika, 2017). The commons are described in this literature strand with references to management issues, natural resources, property rights, and so on. Within this framework, their socio-political dimensions can be silenced and the urban green commons become mere resources, that can be developed through extensive regeneration projects and shared management schemes, without necessarily remaining open to all urban dwellers, or addressing issues of urban inequalities and distributional and other injustices.

Notwithstanding the significant positive impacts of regeneration projects on urban areas, such projects

can also have negative effects that, although well-documented in the literature, are often downplayed within the resilience discourse. For instance, Athanassiou (2017; see also Athanassiou et al., 2018) demonstrates how the regeneration of a park in Thessaloniki by a private company led to the displacement of homeless people and drug addicts. Cucca (2017) studies the relationship between green urban renewal projects—in the inner city, on the waterfront, and in new eco-districts—and socio-spatial inequalities in Vienna and Copenhagen. Combining ecological modernisation with neoliberal growth (Cucca, 2017), green urban renewal projects often lead to the displacement of vulnerable populations (Millington, 2018), the reproduction of urban socio-environmental inequalities (changes in rents due to increased real estate values, privatisation of social housing and urban infrastructure, unequal access to quality public space), and segregation (Cucca, 2017). Finally, discussing the production of green public spaces in cities, Heynen (2006, as cited in Parés et al., 2013, p. 331) asserts that urban parks are often produced as “built environments of consumption” in the context of broader urban neoliberalisation processes. Thus, green urban renewal and green gentrification policies are, oftentimes, part of larger—intended or unintended—ecological gentrification projects and neoliberalisation agendas (Checker, 2011; Gould & Lewis, 2016).

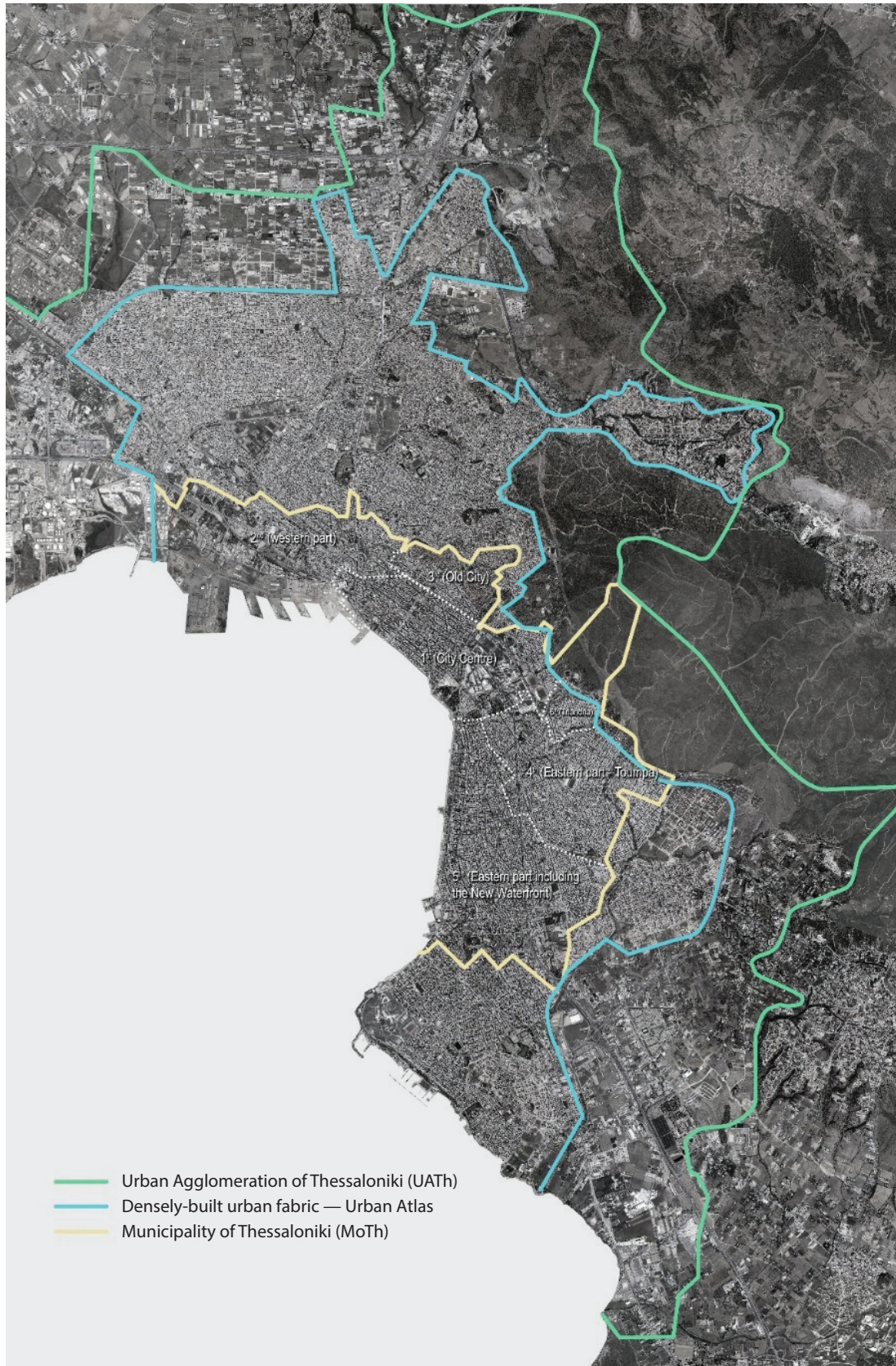
Building on the work of several other scholars who have distanced themselves from resource-oriented conceptualisations of the commons (Chatterton et al., 2013; Linebaugh, 2008; Stavrides, 2016) and the literature on the possible adverse effects of urban green regeneration projects, this article proposes that we examine greening policies in the context of resilience as part of a broader, enclosing process of the urban green commons. Although the increasing incorporation of the urban green commons in neoliberalisation processes does not always entail their straightforward enclosure, it can lead to what is described in the literature as “softer” enclosures. Softer enclosures can be the combined result of two processes: governance and planning. First, enclosures can derive from the collective management of common spaces by private actors or closed communities (Newman, 2013), or by the incorporation of a market logic that promotes the shrinking of state and local government services and the rise of civil sector and private actors in decision-making processes, that is the development of what Perkins (2009) refers to as “shared governance.” Second, softer enclosures can also be reinforced by urban planning regulations and interventions, including an increased focus on small-scale projects outside holistic urban development visions, prioritisation of revenue-generating activities over social infrastructure in urban settings, and public-private partnerships (Sundaram, 2004). Murray et al. (2010, p. 367) use the term “creeping enclosures” to underline the cumulative character of exclusionary policies and practices that, as a sum, result in enclosures.

As Jeffrey et al. (2012, p. 1249) demonstrate, enclosure takes “porous, sociomaterial and distanced forms” that entail new exclusionary spatialities and subjectivities. In this sense, enclosure does not only refer to land grabbing or displacement, but the sum of exclusions, boundaries, regulations, and surveillance mechanisms (Jeffrey et al., 2012). Hence, a more processual and dialectical analysis of enclosures is needed to shed light on their drivers and associated processes and consider their role in broader urban neoliberalisation processes. Notwithstanding the aforementioned important contributions, the way this enclosing process unfolds in the case of the urban green commons in the context of resilience policies remains a question. To this end, the rest of this article closely scrutinises the resilience-related, planning processes, governance mechanisms, and discourses that come together to reinforce the enclosing process of the urban green commons in Thessaloniki.

### 3. Thessaloniki in the 100 Resilient Cities Network

Thessaloniki is a second-tier port city in northern Greece on the shores of the Thermaikos Gulf (Figure 1), known, among others, for its rich architectural Byzantine and Islamic heritage. It is one of the two metropolitan cities in the country (along with Athens) and has approximately one million inhabitants (ELSTAT, 2022). Its form follows that of Mediterranean cities (Leontidou, 2009), significantly distinguishing it from that of central and northern European cities. It has popular suburbs and spontaneous urban sprawl in its periphery and along large road networks, while the city itself is compact and multi-centred, with mixed uses. Administratively, Thessaloniki comprises seven municipalities, with the central and larger, in terms of population, being that of the MoTh. The majority of the municipality has multiple-storey buildings (4–7 floors) that in the 1st and 3rd municipal boroughs were mostly built before the 1970s. In general, the population residing in the western and northern parts of the municipality has a lower educational level, is occupied mostly in low-skilled jobs and has a lower income, while this changes as we move towards the city’s southern and eastern parts (Hatziprokopiou et al., 2021).

Thessaloniki as a whole has one of the lowest ratios of green space/resident in Europe, 2.6 m<sup>2</sup>/inhabitant (Latinopoulos et al., 2016). Indicative of the lack of related policies and projects is that this indicator has remained unchanged since the 1980s. Furthermore, green public spaces are unequally distributed within MoTh. While, for example, the city centre (1st municipal borough) has 129 parks and 3.53 m<sup>2</sup> of green space/resident, the 4th borough has only 0.77 (Table 2). The lack of—and unequal access to—open green space for urban dwellers is exacerbated by the high residential densities, especially in the third, fourth and fifth municipal boroughs (Figure 2).

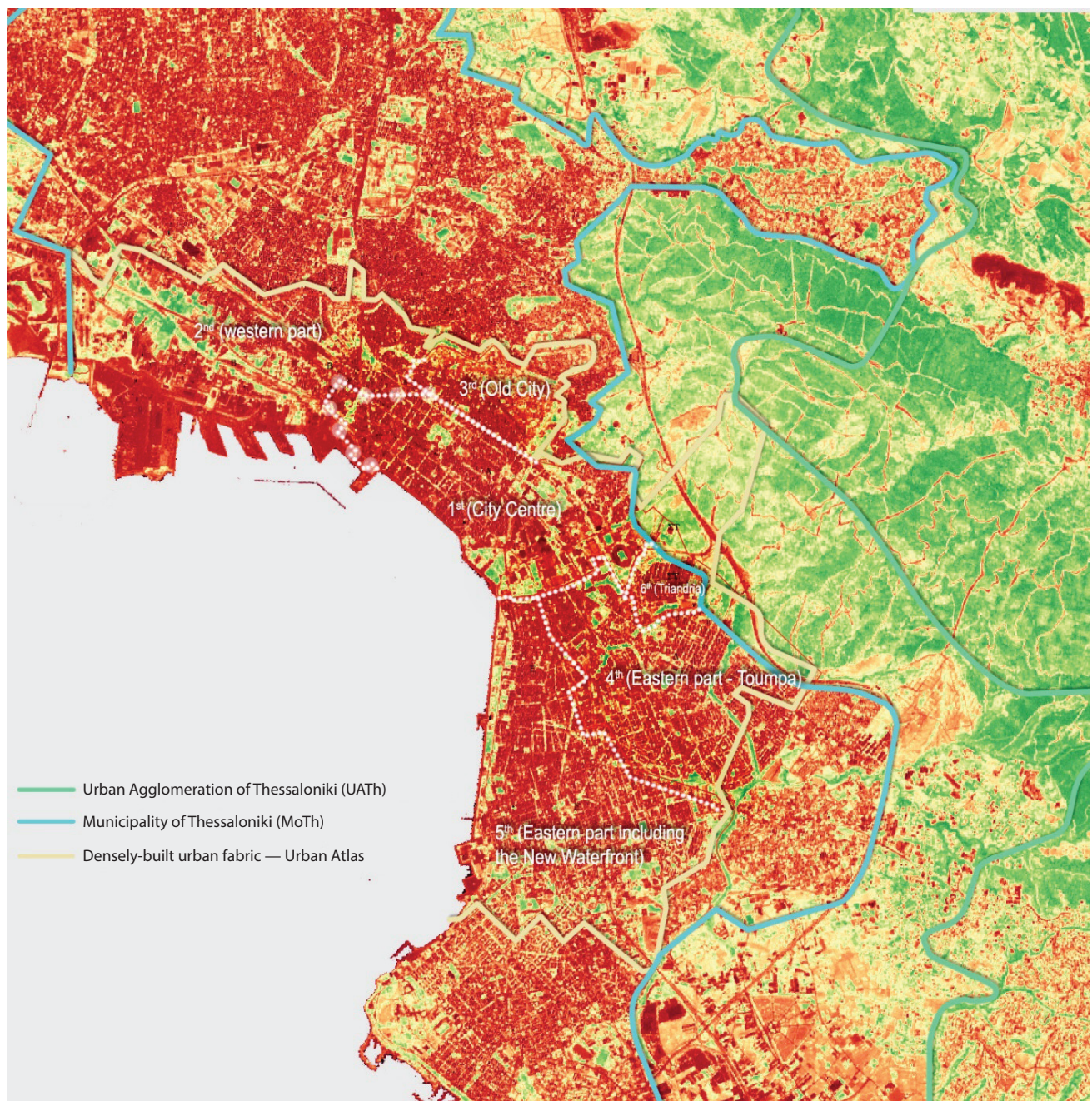


**Figure 1.** The Urban Agglomeration of Thessaloniki, the densely built urban fabric, and the MoTh with its six municipal boroughs. Source: Created by the author with images from Google Earth and the Greek National Cadastre and Mapping Agency S. A. (2018).

**Table 2.** Data on existing green public spaces in Thessaloniki.

Municipal Borough	Population (in 2011)	Density (residents/km <sup>2</sup> )	No. of parks	Green area/resident (m <sup>2</sup> )
1st (City Centre)	46,715	12,100	129	3.53
2nd (Western part)	30,164	5,860	55	2.5
3rd (Old City)	26,567	22,010	81	3.4
4th (Eastern part—Toumpa)	80,717	21,280	98	0.77
5th (Eastern part including the waterfront)	131,033	23,220	151	1.43
6th (Triandria)	9,986	17,860	32	1.47
MoTh	325,182	16,200	546	1.83

Sources: Edited by the author, based on MoTh (2018b) and ELSTAT (2022).



**Figure 2.** Thessaloniki’s vegetation index based on Sentinel-2 data. Source: Edited by the author based on MoTh (2022).

#### 4. Governing Resilience

Thessaloniki's urgent need for environmental upgrading formed the basis for the articulation of the resilience discourse in the city. In this direction, MoTh joined, in 2014, 99 other cities in forming the 100RCn, a global initiative championed by the Rockefeller Foundation (Athanassiou et al., 2015). The Foundation defines urban resilience as "the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience" (Chambers & Berman, 2017, p. 6). Compared to the definitions other organisations have given to resilience, the definition provided by the Rockefeller Foundation can be described as a narrow one. Indicatively, the OECD defines resilient "cities [as those] that have the ability to absorb, recover and prepare for future shocks (economic, environmental, social & institutional)...[They] promote sustainable development, well-being and inclusive growth" (OECD, 2018). The focus in the case of the OECD is on the city rather than on individuals, stakeholders, and systems within it, like in the definition of the Rockefeller Foundation. Furthermore, the definition of OECD includes references to sustainability and inclusion, whereas that of the Rockefeller Foundation does not.

The 100RCn supports participating cities for funding for staff compensation and networking with stakeholders, and experts for knowledge sharing, service delivery, funding, and policy mobility. Policies and policy-making processes are based on best practices (see for example the organisation of the CRO Network Exchange Program in Nelson, 2015) and public-private collaborations and partnerships. To this end, each city has access to a large network of partners, mostly multinational corporations, with interests spanning from governance and development to disaster risk management and culture (MoTh & Resilient Thessaloniki, 2016). Although the programme's website is not in operation anymore, the articles on it were an important source of information on the network's policy strategy. As Armstrong (2017, p. 1) wrote, for instance, the partner network served the programme's objective to "alter existing city government structures" and "create a city-level marketplace for resilience services, supplied by specialised private and not-for-profit organisations with cities as their main clients." In Thessaloniki, the inclusion in 100RCn was celebrated as a major opportunity for funding acquisition and networking, especially with the private sector. As the mayor stated, "the participation in the network is representative of the logic of the municipal authority, [that is] searching for alternative funding sources during the crisis, to simplify and accelerate the implementation of necessary projects" (MoTh, 2017, p. 5). Or, as a Vice-Mayor stated during an interview, "you cannot be the 'gallic village.' If the others are talking about climate change adaptation...[and] you don't include this [in your policies] you won't have

funding for anything" (interview, MoTh Vice-Mayor 1, July 13, 2016).

Furthermore, joining the 100RCn led to the alteration of municipal governance mechanisms by replacing pre-existing governance schemes to simplify and expedite decision-making processes. The first step of the Municipality was to create an Office for Urban Resilience, Resilient Thessaloniki, under the supervision of a newly established Vice-Mayor of Urban Resilience and Development position (MoTh & Resilient Thessaloniki, 2016). This political choice affected the governance mechanisms of the municipality, resulting in the concentration of a significant amount of power to only a few people. Specifically, after the creation of the Urban Resilience Department and the appointment of the Chief Resilience Officer in 2014, the latter was also appointed Director of the Thessaloniki Metropolitan Agency S.A., the local development company that officially supervised the programme, and, later, Vice Mayor of Urban Resilience and Development, holding all three positions simultaneously (Figure 3).

During its participation in 100RCn, MoTh issued two reports, the *Thessaloniki Preliminary Resilience Assessment* (ThPRA; MoTh & Resilient Thessaloniki, 2016) and the *Thessaloniki Resilience Strategy 2030* (ThRS-2030; MoTh & Resilient Thessaloniki, 2017); organised workshops with local and global actors on urban development issues; and acquired funding from the World Bank to draft in collaboration with Deloitte a real-estate development plan for the waterfront (Deloitte et al., 2019). The vision for the city, as it was framed in ThRS-2030, is to turn Thessaloniki into "an inspiring, dynamic coastal city that ensures the well-being of its people and nurtures its human talent, while strengthening its urban economy and respecting its natural resources" (MoTh & Resilient Thessaloniki, 2017, p. 14).

For the development of the strategy, Resilient Thessaloniki collaborated with several stakeholders. The strategy itself is projected as the product of a broad participation and deliberation process through the conduction of workshops and other events. Indeed, during the development of the ThPRA report (MoTh & Resilient Thessaloniki, 2016), MoTh consulted with 94 local, regional, national, and supranational stakeholders—excluding those that were part of the Rockefeller Foundation support network for the 100RCn, the majority of which were from the private sector (Figure 4). Specifically, 34 belonged to the private sector and were companies and business associations. Only 10 of the stakeholders were from the public sector (local municipalities and the regional government), 10 were NGOs of different types and interests, and four were citizen initiatives. The rest of the participants were from other organisations (institutes, foundations, associations, etc.), academics, media representatives, and high-ranking employees of the EU and the UN. The category of NGOs and non-profit organisations includes organisations of both public and private interests, spanning from

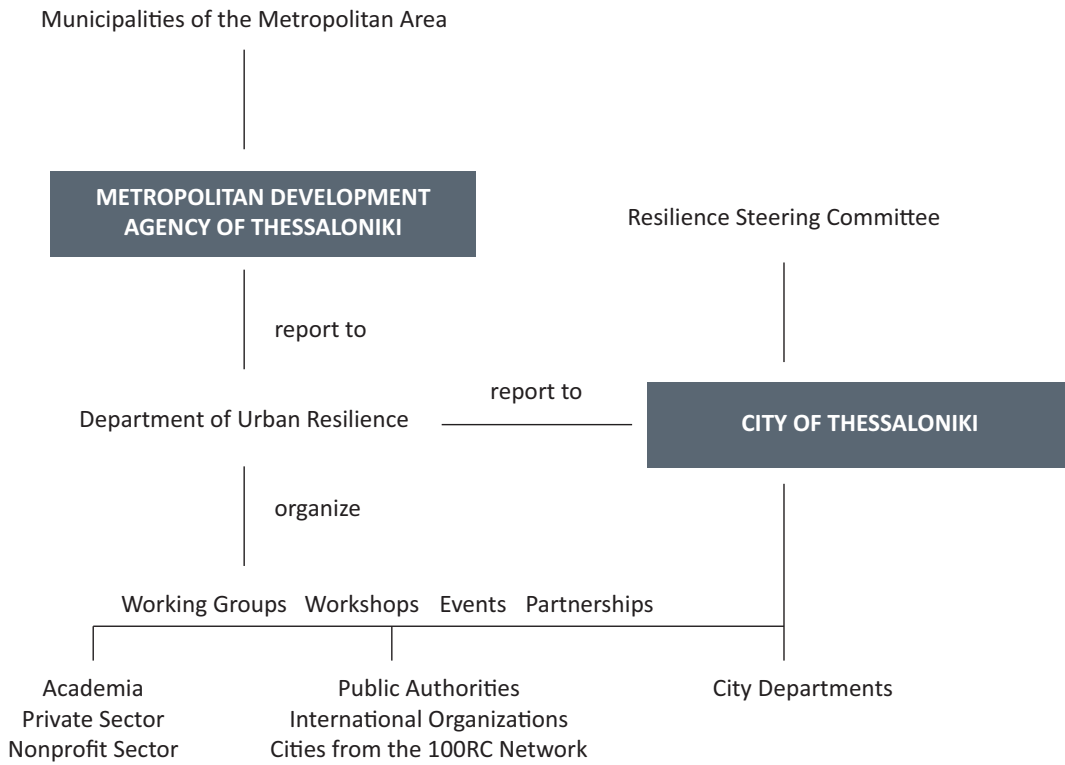


Figure 3. The organisational structure of Resilient Thessaloniki. Source: MoTh and Resilient Thessaloniki (2017, p. 24).

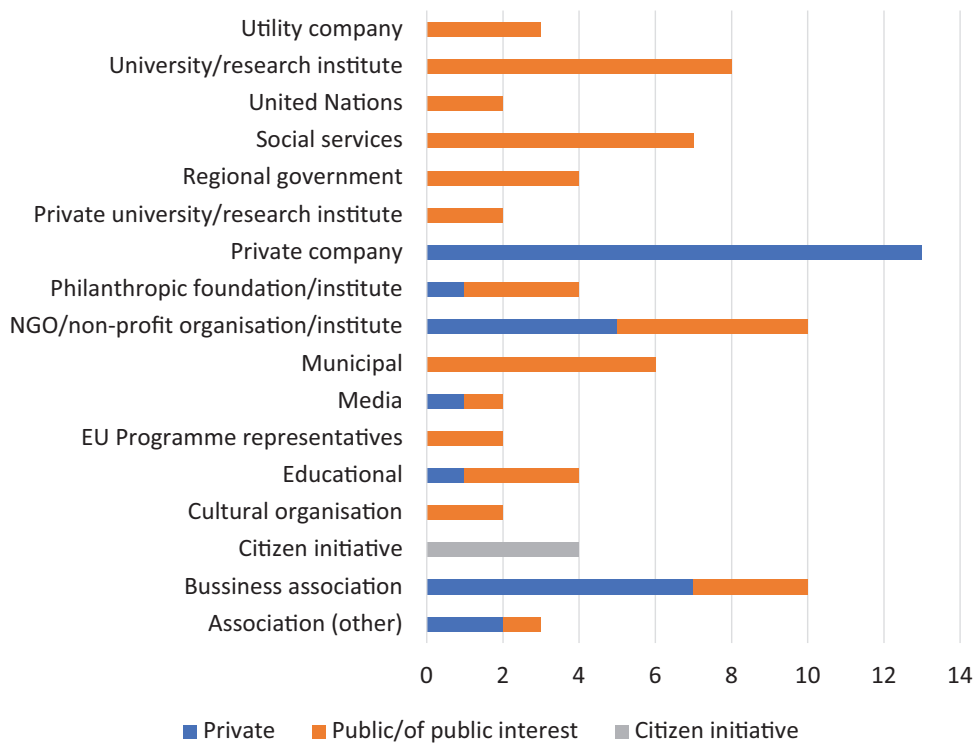


Figure 4. Types of stakeholders involved in the development of the Preliminary Resilience Assessment of MoTh according to Resilient Thessaloniki. Source: Created by the author based on MoTh and Resilient Thessaloniki (2016, p. 29).

the Thessaloniki Convention Bureau and the Centre for Entrepreneurial and Cultural Development (operating under the Federation of Industries of Northern Greece) to PRAKSIS, an NGO providing social services, and is, thus, hard to define. Indicatively, it is worth mentioning that out of the 10 NGOs in total, only half could be considered of public interest.

Resilient Thessaloniki, benefitting from Rockefeller's network of stakeholders, established, since the publication of the ThPRA report (2016), various collaborations with multinational companies and organisations (MoTh, 2018c). ARUP acted as a technical consultant in the resilience assessment process and the development of the resilience strategy (ARUP, 2018). Additionally, ARUP with CBR Ellis (a real estate firm), and its local collaborator, Atria Property Services S.A., AT-Osborne (a company working in governance and transport infrastructure), Cisco (a multinational company working in IT), and Frog Design (a global design firm that undertakes mobility projects), participated in a municipally-led task force, called the "CoLab Thessaloniki" (MoTh, 2018a). The CoLab was a think tank for the development and regeneration of Egnatia St., a major commercial axis in the city's historic centre, adversely affected by ongoing works for the creation of the city's metro (MoTh, 2018a). Commenting on the inclusion of several private actors in project development processes, MoTh Vice-Mayor argued:

These are several million [investment] projects, a metabolism of the function of the coastal area. It cannot be done with public land, that is, to make a public green space...the public sector cannot do these....[T]he Municipality...needs to collaborate with experts...to attract private investments....[T]his is how it is done around the world. (interview, MoTh Vice-Mayor 2, January 24, 2018)

Overall, although it might appear that decision-making processes opened up to include more actors and stakeholders, this was only the case for a select few. Private enterprises, business associations, and multinational corporations were included in working groups and consultation meetings, while the participation of locals and bottom-up initiatives was limited.

## 5. Resilience Policies for Urban Green Spaces in Thessaloniki

In the reports published by Resilient Thessaloniki, green public spaces are projected as a "natural" fix to Thessaloniki's environmental problems. The term natural, combined with terms like "resources," "solutions," or "assets" is very common throughout the texts. For instance, the ThPRA and ThRS-2030 refer 12 times to natural resources to highlight the need to "respect their limits" and "protect" them (MoTh & Resilient Thessaloniki, 2017, pp. 31, 124). Natural resources are also linked

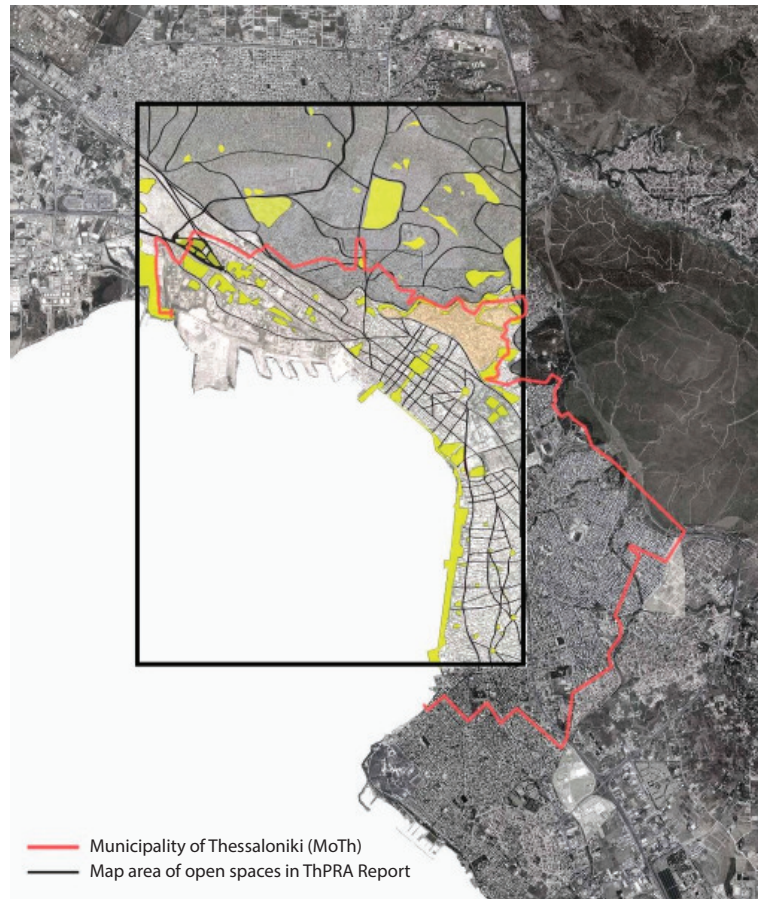
to "natural assets," which are always mentioned as the opposite of "man-made assets" (MoTh & Resilient Thessaloniki, 2016, p. 30). The third most common nature-related term in the strategy is that of "nature-based solutions." They are mentioned as non-traditional, "efficient and cost-effective solutions" for the creation of "green neighbourhoods" (MoTh & Resilient Thessaloniki, 2017, p. 83). Furthermore, nature-based solutions are seen by Resilient Thessaloniki as a means that can:

Help to harness the power and sophistication of nature to turn environmental, social and economic challenges into opportunities. These solutions will contribute to creating green growth and "future-proofing" our society, as well as enhancing citizen well-being, and providing business opportunities. (MoTh & Resilient Thessaloniki, 2017, p. 83)

The ThPRA report describes open spaces in Thessaloniki as the city's "priority assets" and the need for their redevelopment as "one of the top priorities in the agenda for creating a more resilient city" (MoTh & Resilient Thessaloniki, 2016, pp. 38, 16). Although it underlines the severe quantitative deficit in green public spaces in the city, the report fails to account for their qualitative characteristics, distribution, and types. The ThPRA only includes one map on which all "open spaces" in Thessaloniki are highlighted in green colour. Among the highlighted spaces are archaeological sites (e.g., the Roman Forum), squares (e.g., Aristotelous sq., Eleftherias sq. which is used as a parking space), pedestrianized streets (e.g., the Aristotelous axis), the waterfront promenades, and buildings (the two buildings of the Thessaloniki Music Hall complex, the Rotunda). Thus, it provides a distorted image of the context, especially in the densely built residential areas outside the city centre. What is more, a large part of the Municipality is not shown on the map at all. The map of "open spaces" in the ThPRA report misrepresents the municipal boundaries and leaves out a part of the first, all of the fourth, and almost half of the fifth municipal boroughs. The fourth and fifth boroughs, which are not represented on the map, have two of the lowest ratios of green spaces/resident in Thessaloniki (Table 2; Figure 5).

As shown in Table 3, the resilience strategy includes in total 12 actions directly or indirectly related to green public spaces. These span from neighbourhood-level interventions for the creation of pocket parks and urban gardens, or the "adoption" and "co-creation" of spaces by citizen-led initiatives, to green routes linking cultural and leisure sites for "identity-building" and the reinforcement of their attractiveness; Transit-Oriented-Development projects around the metro stations; the aforementioned real estate portfolio strategy developed by Deloitte; and recreational/leisure infrastructure development along the waterfront parks to increase their "socio-economic value" (MoTh & Resilient Thessaloniki, 2017, p. 119).





**Figure 5.** Open spaces in Thessaloniki as presented in the ThPRA policy document, compared with the official boundaries of MoTh. Source: Edited by the author based on MoTh and Resilient Thessaloniki (2016).

These projects are expected to have a significant financial impact on the city, manifested not only by their description of the strategy but also by their spatial distribution within the municipality. For instance, the regeneration of the areas around Metro stations is expected to “contribute to a new identity in these areas and create economic development opportunities for existing residents and businesses” (MoTh & Resilient Thessaloniki, 2017, p. 41). This project refers to the planned regeneration around a central Metro Station (Venizelou) that includes an archaeological site (Via Egnatia), uncovered during construction, and the Byzantine and Ottoman Monuments in the surrounding area (Panagia Chalkeon Church and Hamza Bey Mosque; MoTh & Resilient Thessaloniki, 2017, p. 41).

The link between open space policies and touristic development through an envisioned “win-win” capitalisation on the city’s historic and cultural sites is also found in two more measures proposed by the ThRS-2030. First, in the action related to the creation of green routes within the city and its waterfront. A network of green spaces is planned to connect the city’s Heptapyrgion Fortress, in the Old City, with the sea. The reinforcement of the network between cultural sites in Thessaloniki is expected, according to the Resilient Thessaloniki reports, to “[h]ighlight the cultural and his-

torical wealth and the city’s touristic image” (MoTh & Resilient Thessaloniki, 2016, p. 25), and enhance “the spatial quality of the city while increasing the local sense of identity and...the attractiveness of cultural heritage sites” (MoTh & Resilient Thessaloniki, 2017, p. 83). Second, the same link is observed in the activities related to the Kapani district, a traditional urban market in the historic centre. The strategy plans the designation of the areas of Kapani and other nearby markets as a Business Improvement District and suggests the development of a branding strategy to foster economic growth (MoTh & Resilient Thessaloniki, 2016, p. 25). A network of green public spaces will connect the district to other significant public sites and buildings such as the waterfront, which is considered the “most important natural resource” and a “landmark offering unique development opportunities” (MoTh & Resilient Thessaloniki, 2017, p. 20).

The strategy’s policy recommendations appear to be more specific, in terms of their spatial reference, operation, and implementation process, when projects are related to the economic functions of GI, and much vaguer when it comes to its environmental functions—which appear to be considered a given, and in this case, they are not tailored to the city’s context-specific, socio-environmental issues. As a result, most interventions regarding urban green spaces are scheduled in the city

**Table 3.** Actions related to (green) public spaces in the ThRS-2030 policy document.

ThRS-2030 Action (Action Code)	Description
<b>Neighbourhood-level projects</b>	
1. Adopt a public space co-creation policy (2.G.01)	“Public Space Co-Creation Program Guide”
2. Deliver a public space pilot project (2.G.02)	Pilot project for the “co-creation” manual
3. Install green roofs and green walls on schools and municipal buildings (2.H.02)	GI
4. Create a pocket community gardens (2.H.03)	Urban agriculture, integration of refugees
5. Creating a Metropolitan Land Bank (3.D.04)	Land rights management for the development of open spaces
<b>City centre/waterfront-related projects</b>	
6. Create a new natural landscape within the built environment (2.H.01)	Green routes linking cultural and leisure sites, mentions of identity building and attractiveness of sites
7. Prepare sustainable, area-wide plans according to TOD2 Standards (1.B.03)	Pedestrianisation of areas around Metro stations, link to place identity and economic development
8. Create a Real-Estate Portfolio Strategy (3.F.02)	Identify asset monetisation and development opportunities
9. Develop “Adopt your Green Spot” (2.H.04)	Volunteerism, sustainability of GI, education
10. Integrated Market Redevelopment Strategy for Kapani Markets (3.B.02)	Green routes connecting markets with “key” traffic nodes and urban spaces
11. Develop recreational infrastructure (4.A.02)	Increase the “socio-economic value” of the waterfront, create leisure infrastructure (e.g., floating pools, artificial beaches; Municipality of Thessaloniki & Resilient Thessaloniki, 2017, p. 119)
12. Restore the natural beaches (4.C.01)	Aims to restore the “recreational and aesthetic value” of beaches on the waterfront (Municipality of Thessaloniki & Resilient Thessaloniki, 2017, p. 124)

Source: Created by the author based on MoTh and Resilient Thessaloniki (2017).

centre and mainly in the surrounding areas of cultural heritage sites, the waterfront and the city’s historic markets (MoTh & Resilient Thessaloniki, 2017).

Overall, ThRS-2030 constructs a direct link between green public spaces, citizen well-being, and urban growth, in line with the resilience literature. GI and other “nature-based” solutions aim to “harness the power and sophistication of nature to turn environmental, social and economic challenges into opportunities...[and] create green growth...enhance citizen well-being, and provid[e] business opportunities” (MoTh & Resilient Thessaloniki, 2017, p. 83). No questions are posed on who benefits and who loses from the implementation of relevant policies. As Davoudi (2013, p. 4) puts it, in this case too, resilience becomes “the ‘be-all and end-all’ remedy for coping with the current state of flux and the heightened uncertainties of our times.” GI is planned based on cost-benefit analyses, stakeholder preferences, supply-and-demand principles, synergies, and trade-offs (Hansen & Pauleit, 2014). In Thessaloniki, the economic approach to green spaces found in the resilience paradigm (Matthews et al., 2015, pp. 157–158) not only does not challenge neoliberalisation processes but supplements them. Green spaces are meant to generate material benefits and profits and operate primarily as one more form of urban assets of capital.

## 6. Conclusions

Thessaloniki’s development model, as it is shaped by the city’s resilience strategy, appears to focus more on economic development, resilience, and growth with policies especially targeted to the city centre, and less on the amelioration of living conditions for citizens or even building the resilience of the city in general. To sum up, three trends arise as important from the study of Thessaloniki’s participation in the 100RCn.

The first is the post-politicisation of decision-making processes. A plethora of private stakeholders and multinational corporations got involved in the governance of large infrastructural projects in MoTh. Decisions over urban interventions were mostly taken behind closed doors, in working groups, task forces, and private meetings between public and private stakeholders. Participants were not necessarily democratically (s)elected, and did not necessarily represent the local public, or even private, interests. In the case of Thessaloniki, then, instead of broadening urban governance towards more inclusive methods, we can observe, as Cook and Swyngedouw (2012, p. 1970) phrase it, a “selective pluralisation of policy circles.” These findings match those of the Urban Institute on the results of the 100RCn programme in general. The institute, a US-based

non-profit research organisation tasked with the evaluation of the programme, found that the inclusion of cities in the Network helped them to mainstream and institutionalise resilience in urban planning processes (Urban Institute, 2018). It also stated that municipal departments became better coordinated, while cities managed to foster collaboration between different levels of government and various stakeholders and to “reduc[e] the strength of the government silos” (Urban Institute, 2018, p. 4). The same report, however, found that the Network has not managed to increase community participation levels or to decrease the vulnerable—to shocks and stresses—population (Urban Institute, 2018).

The second trend observed is the discursive construction of green public spaces as assets. This is not only indicated by direct references to green public spaces as assets found in city resilience strategies. The production of regenerated spaces as “built environments of consumption” (Heynen, 2006, as cited in Parés et al., 2013, p. 331) by the Resilient Thessaloniki programme is evident in the prioritisation of their economic functions, that is their role in supporting economic growth, rising property values, and contributing to city marketing and the development of the tourist sector.

Third, there appears to be a spatially selective strategy in the promotion of regeneration projects that is dialectically linked to the second trend. Most of the proposals refer to spaces adjacent or close to architectural/cultural heritage sites and/or the waterfront, i.e., spaces in areas with high real estate values or high concentrations of touristic uses, a tendency observed in several other cities globally (Cucca, 2017). At the same time, the prioritisation of the economic functions of green spaces, over their social and environmental benefits, hinders their potential contribution to the reinforcement of urban resilience, at least for the city as a whole.

All three aforementioned trends form a process, not a state or an *ad hoc* intervention, that leads to ever-shrinking access to the green public commons for citizens, and, hence, an enclosing process. Thessaloniki might be on a resilience-building track, but the question remains: Resilient for whom? The proposed policies tend to benefit certain financial sectors, namely the real-estate and tourist ones, gradually altering the character of the city centre and pushing locals outside of it. Prioritisation of projects in the city centre might accelerate urban growth and even enhance the resilience of the area. However, this occurs at the expense of urban dwellers who reside outside the city centre and already have disproportionately unequal access to green public spaces. In the case of Thessaloniki, like in other cities, “urban greening,” as planned in the context of Resilient Thessaloniki, reinforces processes of unjust urban development (Wolch et al., 2014). As Birge-Liberman (2010, p. 1936) suggests, fixing capital in place through regeneration projects allows its accumulation by property owners and the stakeholders involved in the implementation and management of the project.

Moving forward, the city could benefit from a series of measures that seek to address the above issues. First, it is of the utmost importance to address the severe deficiency in the accessibility of green spaces faced by citizens residing outside the 1st municipal borough, through an extensive programme that aims not only at the regeneration of existing spaces but at the creation of new smaller ones in peripheral neighbourhoods. Second, these projects should be combined with policies for securing affordable housing, in order to prevent the possible rise in real-estate values. Third, citizen initiatives and common practices in green public spaces should be reinforced in a manner that moves beyond consensual planning objectives and processes, towards meaningful participation that does not shy away from dissent. Overall, it is necessary to make a priority shift on the policy-making level from the city centre and growth-oriented development, to its neighbourhoods and interventions planned on the basis of spatial justice.

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### Conflict of Interests

The author declares no conflict of interests.

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Article

# Urban Heat Transition in Berlin: Corporate Strategies, Political Conflicts, and Just Solutions

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## Abstract

In the field of urban climate policy, heat production and demand are key sectors for achieving a sustainable city. Heat production has to shift from fossil to renewable energies, and the heat demand of most buildings has to be reduced significantly via building retrofits. However, analyses of heat transition still lack its contextualization within entangled urban politico-economic processes and materialities and require critical socio-theoretical examination. Asking about the embeddedness of heat transition within social relations and its implications for social justice issues, this article discusses the challenges and opportunities of heat transition, taking Berlin as an example. It uses an urban political ecology perspective to analyze the materialities of Berlin's heating-housing nexus, its politico-economic context, implications for relations of inequality and power, and its contested strategies. The empirical analysis identifies major disputes about the future trajectory of heat production and about the distribution of retrofit costs. Using our conceptual approach, we discuss these empirical findings against the idea of a more just heat transition. For this purpose, we discuss three policy proposals regarding cost distribution, urban heat planning, and remunicipalization of heat utilities. We argue that this conceptual approach provides huge benefits for debates around heat transition and, more generally, energy justice and just transitions.

## Keywords

Berlin; energy justice; energy retrofitting; green gentrification; heat transition; just transition; low-carbon policy; urban metabolism; urban political ecology

## Issue

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## 1. Introduction

Around 70% of the world's carbon emissions occur in cities. Simultaneously, cities could potentially be forerunners of sustainable transformation in the 21st century. Accordingly, a major focus of global climate mitigation efforts is on the decarbonization of urban areas. As the housing sector accounts for a significant proportion of cities' carbon emissions, principally due to hot water and heating, the heat transition is crucial for the urban transition towards carbon neutrality (Van der Schoor & Sanders, 2022; Weiß et al., 2018). Not only must heat production be changed from fossil to renewable ener-

gies but the heating needs of most buildings must be decreased significantly (see Ruhnau et al., 2019).

However, advocates of green urbanism often ignore the fact that sustainability policies are embedded in neoliberalized urban structures, which facilitate corporate interests and aggravate socio-spatial injustices within the city (Gould & Lewis, 2016; Kohl & Andersen, 2022). Hence, the heating transition is also shaped by the strategies of energy and real-estate enterprises, often resulting in ecologically questionable outcomes, increased heating costs due to expensive technologies, and building renovations that lead to higher rents. This is increasingly important in light of sharply rising energy

prices due to the geopolitical conflict surrounding the Russian invasion of Ukraine and the political will to decrease fossil dependencies. Social and ecological principles must therefore be reconciled in a just and sustainable transformation. Conceptual visions and concrete policy proposals are required to provide socially and ecologically just solutions and enable a democratically designed urban heat transition (see Agyeman, 2008).

This article deals with these challenges and opportunities, taking the contentious heat transition in Berlin, Germany, as a case study. We propose the heuristic concept of the heating-housing nexus to consider the multiple entanglements between the heating and the housing sectors. Our central questions are: In which social relations is the heat transition embedded and what does this mean for social justice issues? How should a social and ecological heat transition therefore be designed?

The growing body of research on heat transition (Abbasi et al., 2021; Herreras Martínez et al., 2022; Weiß et al., 2018) still lacks contextualization of heat transition within entangled urban politico-economic processes and materialities and requires critical theoretical examination. Our analysis thus adopts a power-sensitive analytical foundation to grasp the complex and interwoven urban processes and their actors and the political-economic strategies involved within the heating-housing nexus. We use urban political ecology (UPE) to understand this nexus as a socio-material metabolism that is mobilized to serve specific interests and needs. This draws attention to the constant (re-)production of the particular materialities of the heating and housing sector and corresponding social relations of power, injustices, and conflicts through these metabolic processes.

While various studies use UPE to examine urban infrastructures of, for instance, water, electricity, and food supply (for an overview, see Gandy, 2022), there are few articles exploring questions of urban heating from a UPE perspective (see Bouzarovski, 2022; Bridge et al., 2018; Moss et al., 2016). Such analyses have not yet connected the spheres of urban heating and housing. However, these two spheres must be considered in their interrelatedness. A UPE perspective on energy transitions has huge potential to benefit debates on just transition. Through analyzing and questioning the politico-economic foundation and context of transition policies, it challenges the potential co-optation of the concept by mainstream political discourse (see Stevis & Felli, 2020). Directing its profound and power-sensitive analytical lens onto the mobilization of urban metabolisms enables a holistic perspective on the sectors and parties involved and affected by the transition, as called for by critical transition literature (see Bouzarovski, 2022; Stevis & Felli, 2020).

To explore our research questions, the next section contextualizes the theoretical approach within critical sustainability and low-carbon policy research and then introduces our heuristic concept of the heating-housing nexus and operationalizes the UPE perspective to analyze the heat transition. This analytical framework is then

applied to the heating-housing nexus in Berlin and the debates and strategies surrounding its transition. Finally, we discuss our empirical findings and possible strategies towards a just transition and conclude with further research questions.

## 2. Analytical Framework

Heating and housing are based on materialized infrastructure, which comprises systems of heating production and supply and residential heating units. This historically evolved fossil-based structure has mostly remained untouched by urban sustainability policies, which focus largely on urban greening, smart growth, and technology-oriented efficiency policies (Long & Rice, 2018). Some scholars criticize how recent urban climate policy efforts and carbon neutrality programs have become integrated into capitalist production and consumption patterns (see Castán Broto & Robin, 2021; Kohl & Andersen, 2022; Long & Rice, 2018). Yet, ambitious multilateral emissions reduction targets and growing climate activism are increasingly challenging common technical approaches. It is important here to pay attention to evolved structures, materializations, and ownership patterns in key infrastructures like heat and housing and the respective constellations of actors. Such constellations influence how ambitious urban climate policy is, whether it is coopted by capitalist dynamics, and whether it tries to integrate social justice aspects or reproduce established power geometries (see Kohl & Andersen, 2022; Long & Rice, 2018).

To capture these complex phenomena in an analytically meaningful way, we need a concept that can analyze their materialities, dynamics, and actor constellations in a power-sensitive, interrelated manner. In the following, we explain and apply UPE as a suitable analytical perspective. Using the concept of the socio-natural metabolism of cities, it examines the myriad forms of the societal transformation of nature and the circulation of natural resources and its products as a driver for the production of urban environments, so-called “socio-natures” (Rice, 2014, p. 82). In particular, UPE explores how these metabolisms are mobilized to sustain capitalist urbanization and particular actors and interests, how urban inequalities and injustices are thus (re)produced and how corporate and political strategies become contested and challenged (Heynen et al., 2006).

Hence, UPE represents a useful approach to investigating the persistence and transition possibilities of materialized energy systems and their consequences for urban inequalities in terms of their underlying power structures. It enables a focus on energy production facilities and networks but also widens the analytical perspective to include the transformation of energy and its consumption in private households. We capture these interwoven segments as the heating-housing nexus. We understand this nexus as a heuristic analytical approach to connect research on energy systems and their management with energy-related questions of housing and residential retrofitting.



To operationalize UPE for our analysis, we divide this perspective into four analytical categories: (a) materiality of the heating-housing nexus, (b) its political economy, (c) its implications for inequality and power relations, and (d) its disputed strategies and conflicts. We explain these categories below and apply them to our case study in the subsequent section.

### 2.1. Materiality

Urban heat supply is based on and functions through built infrastructure, which itself depends on the resource (e.g., coal, gas) enabling heat production, the form of transportation, and transformation into space or water heat. These materialized infrastructures result from past societal strategies and conflicts that have historically coagulated into socio-material structures (see Heynen et al., 2006). These specific structures, in turn, form the material basis for their contested transformation. Urban heat supply cannot be regarded in isolation but only in dialogue with residential building complexes, their heating systems, and structural heat demands. Heat supply emerged from the energetic demands of residential construction, as one key recipient besides industrial demand, and co-evolved in a reciprocal process. Coagulated socio-natures like fossil-based heating with its massive built infrastructure of heat production (e.g., nearby gas- or coal-fired plants) and supply (e.g., district heating networks) and residential buildings can create path dependencies and impede the realization of, for instance, decentralized renewable heat production and supply.

### 2.2. Political Economy

The energy system, which evolves through the production and transformation of resources and its supply management, is substantially influenced by the structural capitalist context and the concrete interests and business models of involved companies (see Bouzarovski, 2022). It reflects past economic policies and socio-political disputes and negotiations, which determined the resource path (e.g., fossil-based heat supply) and property and management structures (e.g., public utilities or privatized heating production and networks). Integrating housing into this perspective involves considering ownership structures in the residential sector and corporate strategies of (non)investment in the energetic condition of buildings. This, again, depends on the market, i.e., demand/shortage of housing in a city and availability and price of energy sources. The legal frame is also relevant, including legal limits on rent increases (allocation of costs), state subsidies, etc.

### 2.3. Inequality and Power Relations

The emergence of a specific energy system is based on structures of power relations and affects urban inequalities (see Heynen et al., 2006). A privatized heat sup-

ply needs to produce profit for the operating company, generating this from consumer fees. Low-income consumers spend a higher proportion of their income on heating, and since they are more likely to live in poorly insulated buildings, this proportion increases further, as does their vulnerability to increased heating costs. However, while building retrofits reduce energy demand and thus energy costs for tenants, if cost shifting of investments to tenants is permitted, they can lead to sharp rent increases and, ultimately, displacement (see Grossmann, 2019; Weißermel, in press). Moreover, to maintain market power, companies tend to stick with existing (centralized) production and supply systems, thus possibly opposing alternative modes of production and supply that could be cheaper for consumers (in the long run). This perspective on the heating-housing nexus connects the debates of energy poverty and energy justice around power structures within the energy sector, cost distribution and access to energy (see Bickerstaff et al., 2013; Bouzarovski & Simcock, 2017) with debates around energy retrofitting and its socio-spatial consequences (Grossmann, 2019; see also Bouzarovski et al., 2018; Rice et al., 2020).

### 2.4. Disputed Strategies and Conflicts

These structures and constellations emerge from and form the basis for municipal and corporate strategies that are power-driven but potentially disputed among diverse urban actors. Conflicting interests and strategies are expressed in policy disputes and contested debates. However, this conflict is not simply derived from these structures; it has its own momentum and can, in turn, transform them (see Heynen et al., 2006). The question of de- and repoliticization of urban politics of resource management is central to UPE, which stresses the thoroughly political character of urban metabolism and its power-driven mobilization for particular interests. It is, thus, decidedly opposed to any consensus politics based on allegedly value-neutral technical solutions to environmental problems (Rice, 2014; While et al., 2004).

Applying a UPE perspective to the heating-housing nexus and its potential transition enables us to trace the metabolisms of heat energy through the urban landscape with an understanding of such a metabolism being embedded in the political architecture of power- and interest-infused materialities, networks, and concrete actors. This perspective connects to the just transition debate in general and the energy justice debate in particular, which increasingly focuses on the decarbonization of energy systems and the possibilities of just transitions (see Bickerstaff et al., 2013; Bouzarovski & Simcock, 2017). We argue that the holistic and power-sensitive lens of UPE on the mobilization of urban metabolisms has a huge potential to enrich these debates. Relating to our four analytical categories, we argue that a just heat transition is feasible if (a) the urban metabolism of the heating-housing nexus is politicized and challenged

to be organized/mobilized in a more sustainable manner, (b) corporate interests are pushed back, in order to (c) enable ecologically and socially more equal and just access to energy; however, a central precondition for such a process is (d) the existence and acceptance of (open) conflicts and the politicization of urban politics.

### 3. Contentious Heat Transition in Berlin

We now discuss these questions using the example of the urban heat transition in Berlin. We present the main findings and conclusions regarding the transition of heat generation and related conflicts about renovations and present three constructive policy approaches discussed in the literature and politics. We use the UPE perspective to analyze the case study through the lens of the four categories discussed above, focusing on the contested transformation of the heating-housing nexus.

#### 3.1. Methodology

The empirical data primarily stems from a recent report conducted for Friends of the Earth Berlin in 2021 (Sander & Wohlfahrt, 2021). At the beginning of the project the research questions and design were defined with the NGO. The partners from the organization are experts in the field and proposed a list of important studies to be read (cited in this Section 3) and a list of key representatives from relevant actor-groups covering the complete field (see Supplementary File). Complementary, further studies and policy papers were identified via (online) literature research. Furthermore, additional interview partners were pinpointed by a subsidiary mapping or recommended by other interviewees. Finally, 28 expert interviews were held with relevant stakeholders, including members of political parties and the administration, people from business, trade unions, tenant organizations, and initiatives, environmental NGOs, and academia. Most of the semi-structured, guided interviews were conducted in the first quarter of 2021 (online or in presence). All interviews were recorded and excerpted. The extracts were evaluated by means of a qualitative content analysis. Initial findings were drafted and discussed in two stakeholder workshops in June and November 2021. In the following, empirical sources are coded by the survey method (I = interview) and the abbreviation of the respective interviewed organization (for explanations see Supplementary File).

#### 3.2. Case Study Analysis

The transition of the socio-natural metabolism of the heating-housing nexus should be considered as a controversial politico-economic process shaped by the political economy of heat production and the real estate market. Moreover, different strategies and paths have substantial implications not only for ecological sustainability, but also for energy justice as they affect prospective heat-

ing and rental costs. Different actors pursue conflicting strategies to transform or sustain the current structures of provision and demand in the city's heat supply.

Within the heterogeneous spectrum of interviewed stakeholders, we identified three groups of actors with relatively similar interests and positions regarding the key questions. These are economic/corporate actors (private energy utilities, real estate companies, business associations, and chambers); environmental actors (NGOs, green research institutes, and green consulting and engineering companies), and social actors (tenants' associations and initiatives, consumer protection agencies, and some trade unions). Other actors are positioned in the field between these three poles.

##### 3.2.1. Materiality

In Berlin, the urban heat supply as well as the housing sector is based on fossil infrastructure. The built environment of heating plants, networks, and buildings was historically shaped by past capitalist and municipal strategies and balances of forces. Due to the path dependency of these built structures, the city's heat production and supply is still predominantly based upon fossil energies.

Natural gas dominates the capital's district heating as well as local heat supplies: This fossil fuel is still a major source of heating with 40% of Berlin's buildings directly supplied by the gas network. The second important heating infrastructure, district heating, accounts for over 30% of Berlin's heat demand and is predominantly based upon natural gas in the heating plants (74%) with a minor proportion using hard coal. Heating the building sector thus accounted for 47% of Berlin's carbon emissions in 2020 (Dunkelberg et al., 2021). Furthermore, the city's building stock is largely characterized by high energy demands met by the fossil heating system. According to the federal government's efficiency strategy for buildings (2015), heat demand in Berlin must be decreased from about 135 to about 80 kWh/m<sup>2</sup>a to allow full supply by renewable energies (Dunkelberg et al., 2020). However, neither the characteristic Wilhelminian-style buildings nor most of the recently renovated houses meet this target.

The built structures of Berlin's heating-housing nexus form the basis of a socio-natural metabolism characterized not only by a tremendous demand for fossil energy, which is converted into heat energy in dwellings, intensifying the climate crisis, but also by the political economy of the energy and real estate sector. The conditions for a green transition of Berlin's heat supply only become intelligible by analyzing this interrelation.

##### 3.2.2. Political Economy

In particular, the heat transition depends on the dominating utilities, their business models, and strategies. The urban heating infrastructure is largely controlled by two companies. A subsidiary of the Swedish

state company Vattenfall runs the district heating and the private utility GASAG owns the gas infrastructure. Together they control more than 70% of the heating market. Furthermore, they are closely linked with cross-ownership and a supply relationship (Vattenfall procures the gas for its heating plants from GASAG; Ritzau et al., 2019). Both companies favor gradual and controlled decarbonization. They are trying to conserve the centralist structures of heat production and supply (gas network, district heating, and heating plants) as well as the high demand from consumers as their business models depend on the conventional fossil heating-housing nexus.

Besides individual private owners and landlords, the real estate market is largely controlled by private equity, institutional investors, and return-orientated real-estate enterprises. Recently, large real-estate companies like Deutsche Wohnen or Vonovia (now merged) bought up many buildings in the German capital (I\_DWE; Wijburg et al., 2018). Municipal companies, housing cooperatives, and other non-profit proprietors own the remainder of the housing stock (Trautvetter, 2021). The most powerful association of private and public companies as well as cooperatives is the Verband Berlin-Brandenburgischer Wohnungsunternehmen (BBU).

In recent years many proprietors used energy retrofitting to raise rental prices and, thereby, profits and revenues (I\_MV). Recently, they seem to have changed their strategies, focusing on production-side heat transition and refraining from energy-related modernizations. They rely here on the strategies and measures of the energy utilities (I\_IÖW, I\_BBU, I\_MS). These structures and interests mean that the political economy of Berlin's heating-housing nexus conserves centralist, energy-intensive heat production and supply and corporate housing strategies to the detriment of the tenants, as shown below.

### 3.2.3. Inequality and Power Relations

The heating-housing nexus is based upon asymmetrical power relations between capital factions and tenants or consumers. Due to this balance of forces and the organization of housing as a commodity, rental prices have risen significantly in the German capital, further aggravated by rising heating costs.

Hence, decisions about future heating technologies and sources (see Section 3.2.4) are important not only for climate protection but also for energy justice (I\_LI; see Sander, in press). The latest scenarios indicate that under current market conditions, renewable energies are indeed more expensive than gas boilers regarding installation and operation (I\_CW2, I\_BIM, I\_SW). However, heat pumps are expected to be more cost-efficient than gas heating for single-family homes by 2025 (I\_GR, I\_HI, I\_VDGN). By 2035, gas-fired systems will be twice as expensive as heat pumps (Braungardt, 2022). Furthermore, hydrogen-based heating systems are expected to be 50% more expensive than heat pumps

(Matthes, 2021, p. 28). An interviewee from the field of consumer protection predicts that district heating based on hydrogen or gas-fired heating plants will be significantly more expensive for households than that based on renewable energies or waste heat (I\_VZBV).

Demand-side strategies to enhance the energy efficiency of buildings are potentially the most sustainable way to reduce the social burdens of rising heating costs and the ecological impacts of high energy demands. However, energy retrofitting has been utilized by property owners to increase the market value of their assets and replace tenants (Grossmann, 2019). Consequently, many Berlin tenants suffer from rising rental prices and are often forced to move to less expensive and less energy-efficient flats (I\_SvU, I\_DWE). A 2017 study commissioned by an urban tenants' association (Berliner Mieterverein) revealed that energy-related modernizations raised rental prices by €2.5 euros per square meter on average. Many proprietors demanded considerably higher payments—sometimes €4–6 per square meter (I\_MV; Wild, 2017).

Consequently, in the Berlin heating-housing nexus, rising gas prices, inefficient green solutions (like hydrogen), and modernizations to enhance the energy-efficiency of buildings can inflate total rental prices, sharpening energy injustice as poor households suffer disproportionately.

### 3.2.4. Disputed Strategies and Conflicts

Policies and discourses around the urban heat transition are quite controversial in Berlin due to the ecological harmfulness of the built structures in the city's heating-housing nexus, the opposing corporate and social interests resulting from the political economy of that nexus, and the unequal power relations and energy injustices associated with it. This applies to the field of heat production as well as that of heat consumption and housing.

Beginning with heat production, we observe conflict between an electricity- and a gas-based trajectory of transition in district heating and in local supply. Current decarbonization strategies for heat generation in the European Union and in Germany either focus on electrification (via heat pumps; Abbasi et al., 2021; Kicherer et al., 2021) or green gases (Jensen et al., 2020; Ruhnau et al., 2019). Since both options are associated with conflicting business interests, different networks of actors try to advance their favored technological trajectory, which has substantial implications for the distribution of benefits and burdens.

In Berlin, many commercial actors also argue that *natural gas* is an important bridging technology and should be replaced by (green) *hydrogen* for local supply in the medium term. They refer to the narrative of “openness of technological solutions,” advocate a diverse and flexible energy mix, and suggest that the urban gas network should be made “hydrogen-ready” (I\_BBU, I\_MS, I\_HWK, I\_VF, I\_BEa, I\_WEB; see, e.g., Vattenfall, 2020; see also

Sander, in press). Especially GASAG pursues this strategy, as an interviewee from the company reports (I\_GSG). Environmentalists and politicians from left-wing parties criticize this as massive lobbying by a broad alliance of actors from industry and politics (I\_HI, I\_LI, I\_GR). Instead, they call for a gas phase-out to avoid a lock-in effect. Hydrogen should only be used where there is no other technological solution to decarbonize production processes (e.g., steel and chemical industry; ifeu et al., 2018). There should be a clear focus on the most efficient technologies, thus rejecting the narrative of a diversity of technological solutions, respectively the energy mix that would also include inefficient options like hydrogen (I\_HI, I\_BBK).

The crucial alternative to gas and hydrogen in local supply is *heat pumps* (I\_GR, I\_LI, I\_BIM, I\_HI). A recent study commissioned by environmental NGOs demonstrates that by 2035 the heat demand of most (residential and commercial) buildings can be covered by heat pumps combined with a heat store (I\_BBK). The advantage of this technology is that it can be run almost everywhere with green electricity from the grid, given appropriate legal and technical conditions. Only a small number of houses, especially unrenovated old buildings with high heat demands, will have to revert to biomass (6%) or hydrogen (3%; Egelkamp et al., 2021).

The technological conflict between the gas- and the electricity-based paths can also be witnessed in *district heating* (I\_WEB, I\_GR). A feasibility study commissioned by the Berlin government and the utility Vattenfall (Gonzalez-Salazar et al., 2020; Ritzau et al., 2019) concluded that coal-fired heating plants should be phased out by 2030 and substituted with low-carbon sources, aiming for climate-neutral district heating by 2050. Geothermal energy, biomass, and waste heat should contribute 40% and modern gas-fired cogeneration plants 60% to the replacement of the coal-fired plants (I\_WEB; I\_IHK).

However, environmental NGOs and left-wing parties criticize the study for adhering to gas-based generation and insist that district heating should be changed to renewable sources at pace (I\_BBK, I\_GR, I\_LI). A Fraunhofer Institute study concludes that Berlin and its hinterland have ample renewable and waste heat potential to shift district heating to climate-neutral generation by 2030. This would involve different low-temperature heat sources being opened up via large-scale heat pumps. Such sources include industrial waste heat and heat from river water. Further options are geothermal energy and solar heat (Egelkamp et al., 2021).

On the demand side, namely housing, the economic logic of the real estate market and state policies result in a praxis of retrofits, creating conflict between ecological and social purposes. In Germany, the modernization allocation scheme (*Modernisierungsumlage*) allows 8% of retrofit costs to be added to the “cold rent” (rent excluding heating costs; Grossmann, 2019). Generally, tenants must accept these measures. Even after amor-

tization, rents may remain on the higher level permanently, making modernization lucrative for real estate companies and investors in the long run. As the modernization allocation relies solely on total modernization costs and not on actual energy saving after modernization, it incentivizes proprietors to conduct retrofitting schemes even if their ecological effectiveness is questionable, as some scholars criticize (see Grossmann, 2019). Thus, under the current ownership structures and legal framework, ecologically reasonable solutions contradict principles of energy justice (I\_SvU).

In particular, private equity and real estate companies often invest in high-risk assets with a short-term valorization, treating houses as investment properties. Interviewees from tenant organizations argued that such companies often invested in energy-related retrofits to increase value and rental prices permanently and deliver on the promise of revenue vis-à-vis their shareholders (I\_MV). Unsurprisingly, most of Berlin’s tenants have reservations about retrofits. They worry that a new renovation offensive will lead to further rent increases (I\_MV, I\_SvU; Holm, 2021).

However, many proprietors seem to have changed their strategies recently, refraining from further investment in extensive renovations (I\_IÖW). Referring to Vattenfall’s decarbonization program, the real-estate industry organized in the association BBU argues that generation-side heat transition would be more cost-effective. Moreover, utilities and proprietors argue that a broad renovation strategy is too expensive (I\_BBU, I\_MS, I\_VDGN, I\_VF). BBU published a study which forecasts high costs for owners and tenants if Berlin’s entire housing stocks were retrofitted (Nymoer & Niemann, 2020).

However, relying only on a production-side strategy could lead to a techno-fix that sustains existing business models, infrastructures, and consumption patterns without substantially reducing heat demands and the need for resources and energy (I\_IÖW, I\_LI). New renovation policies—as promoted especially by environmental NGOs—need not only to meet ecological requirements but also to find solutions to distribution conflicts between tenants and landlords (I\_DWE, I\_SvU). The key question is about who bears which portion of the substantial costs of modernization. Interviewees from owner organizations argue they cannot cover most of the costs but have to allocate them (I\_BBU, I\_MS, I\_HWK). In contrast, tenants’ initiatives insist that tenants similarly cannot bear a large share of the costs, as the energy efficiency of building stock is a public challenge (I\_MV, I\_SvU, I\_LI).

### 3.3. Strategies for a Just Heat Transition

In our analysis of the heat transition in Berlin, we illuminate a socio-natural metabolism mobilized to reproduce and advance capitalist urbanization and necessitating strategies that promote a just transition. In explicating this, we contribute to the debate on how to avoid

green gentrification and reconcile social and ecological principles. In this endeavor, the democratic municipality must play a more active role with concrete policies and planning instruments in order to design the transformation of heat supplies in a socially and ecologically just manner. Yet, public solutions are characterized by some limitations, as discussed below, and need to be combined with a democratization of state institutions and public companies. We discuss three policies or strategies that address different levels of intervention, also referring to debates in science. We argue that these strategies have the potential to enable a more equitable design of heat supplies and a democratic repoliticization of the metabolism of the heating-housing nexus.

### 3.3.1. A Distributive Approach

The so-called “thirds model” (*Drittelmodell*) proposes a way to deal with distributional conflicts about building renovations. It suggests justly apportioning costs among the three parties—owners, tenants, and the public authority. First and foremost, the state or municipality should increase subsidies for energy retrofits, enabling proprietors to invest cost-effectively in modernization and simultaneously disburdening tenants from unacceptable rent increases (I\_LI, I\_CDU, I\_BAU, I\_MS, I\_BIM). Admittedly, the financial capabilities of the administration are limited as well. For instance, the previous center-left government of Berlin (2016–2021) established a program to support investments in building retrofits, providing 50 million euros (I\_WEB). However, this is a relatively small amount vis-à-vis the 3 billion euros per year that a study by the real estate industry’s association suggests is necessary (I\_BBU; Nymoen & Niemann, 2020).

This approach especially addresses the justice dimension of the transition of the heating-housing nexus. It takes the question of cost-sharing out of the market-led relationship between landlord and tenant. Instead, it treats the costs of heat transition as a public responsibility and could thereby mitigate energy injustices. Not least, it prevents a sole production-side strategy and could initiate a just modernization strategy.

### 3.3.2. Heat Planning

Heat planning is a relatively new strategic instrument in Germany, which the federal government recently introduced nationwide. Baden-Württemberg is the only state where municipalities are already obliged to establish urban heating planning. Recently, it has also been discussed with growing intensity in Berlin, which has begun to establish a heat register as a basis for the planning process. The aim is to provide a systematic, cost-effective, affordable, and climate-friendly heat supply with the municipality as the key actor in strategically and proactively organizing the heat transition (I\_CW1, I\_LI, I\_HI; Herreras Martínez et al., 2022). Heat planning comprises

long-term spatially coordinated and (often) binding strategies transferred into a cartographic presentation that gives an overview of the entire urban area. It connects heat potentials and heat consumers, approaches for renewable generation and demand reduction, generation sites and networks, and district heating-based areas and those with a local supply. It thus provides guidance for future investments and local potential in the districts (Riechel & Walter, 2022).

Urban heat planning in Berlin could organize the heat transition and, thereby, the socio-natural metabolism in a more democratic, comprehensive, and reasonable way, rolling back the logic of a market-driven transition and the protective interests of dominating companies. Furthermore, it could soundly combine production- and demand-side strategies. Yet, the legal and effective assertiveness of this instrument vis-à-vis proprietors and utilities is somewhat limited as it cannot force or prohibit certain investments by utilities. Moreover, it risks becoming a technocratic approach if civic actors and citizens are not substantially integrated into the process.

### 3.3.3. Public Companies as Pioneers

Another promising strategy could involve strengthening the economic role of the municipality by empowering public companies to pioneer a climate-neutral heating sector (I\_LI; I\_MV; I\_HI; I\_CW1). There is already close and productive cooperation between the public utility and municipal facility management administering the public properties in Berlin (I\_BIM; I\_SW). Recently, the grid was remunicipalized after persistent pressure from a broad civil society alliance, opening up new opportunities for collaboration with the aforementioned companies.

Furthermore, the new government in Berlin—formed of the same parties as the previous coalition in 2021—aspires to return district heating to public hands. There are even debates within Berlin’s coalition about remunicipalizing the gas network or the whole company GASAG. The public housing companies have expanded their building stocks with new residential construction and purchase in recent years. Furthermore, a broad leftist alliance called “Deutsche Wohnen&Co enteignen” (Expropriate Deutsche Wohnen&Co, DWE) won a public referendum in Berlin demanding that the assets of the city’s big real-estate companies be socialized (I\_DWE). The alliance keeps on pressing the new government to implement this (Kunkel, 2022).

## 4. Discussion

Following Heynen et al. (2006, p. 6), the specific material arrangements and ownership structures that mobilize metabolisms in a particular way benefit certain sectors of society and compromise others. This reproduces unequal social relations and power structures. However, recognizing the powerful entanglements of

urban metabolic processes can radically challenge social and politico-economic relations. Yet, we need to take into account that material arrangements and their stabilizing practices pre-structure and give a certain form to the conflicts around transformation.

The metabolism of the heating-housing nexus is embedded in and constantly reproduces the social relations, which are characterized by an unequal distribution of political and economic power and of the benefits (profits) and burdens (costs) of the heating and housing sector. Accordingly, low-income tenants living in poorly insulated buildings are affected by increased rents and rising heating expenses due to high demand and increased heating costs. Heating utilities, in contrast, benefit from the preservation of heating infrastructure and constant high demand, while real-estate companies profit from high rental payments without having to invest significantly in the energetic conditions of their housing or even achieve higher rents after modernization.

What do we learn from the Berlin case study? Historically created structures of heat generation and distribution, as well as the structural energy needs of buildings, create strong path dependencies that are difficult to change. These material structures are reinforced by the dominant companies in both subsectors, which perpetuate these structures due to their interest in profitability and maintaining power. While the strategy of energy modernization has reduced demand for the sales of heating utilities and created tension between these two capital groups, in recent years, a strong convergence of the strategies can be observed in the close cooperation between Vattenfall, GASAG, and BBU.

These material and economic structures suggest the continuation of a gas-based system. Furthermore, even with conversion to renewable generation, high energy demands must be met if efficiency cannot be substantially increased. This would reproduce the capital-driven, socially, and ecologically detrimental metabolism. Both a continuation of the gas-based pathway and energy retrofits (under the current regulatory framework) would further increase costs for tenants, thereby exacerbating energy injustices. Because of these unequal structures and interests, the project of heat transition is contested. Open conflict can be observed in relation to real estate rental and retrofit policy between owners, tenants, and the municipality. Conflict potential is inherent in the conversion of heat generation and, associated with this, the social question of future heating cost allocation.

How could a just transition be achieved? The empirical analysis demonstrates that a just transition requires both a focus on efficient technologies (especially decentralized heat pumps and, in dense populations, district heating based on waste heat and local renewables) and an efficiency revolution in buildings, the costs of which must be justly shared. Social and environmental goals, which are played off against each other in the capitalist model, would then become compatible. Looking through

the theoretical lens of UPE shows us that a key condition for this is the pushback of economic logic and the repoliticization and democratization of the metabolism.

Section 3.3 presented three major strategies for the realization of a socio-ecologically more just heat transition. All the strategies assign a more central role to the public domain. In combination, the distributive approach and heat planning could reform the mobilizations of the heating-housing metabolism, shifting the focus to some extent away from the logic of profit towards social and ecological criteria. However, this does not necessarily imply the democratization of the heating-housing nexus. As the key actors would remain largely the same, the power geometries of the nexus would not be radically transformed, nor would the nexus be detached from market logics.

In contrast, remunicipalizing the entire heat supply and socializing a relevant share of the building stock would dismantle corporate power in the sector and allow the municipality to design the heat transition in an ecologically and socially just manner, combining production- and demand-side measures (Sander, in press). Detaching the nexus from market logics would permit a more radical shift in the mobilization of the metabolism towards ecological and social ends and its materializations. The “Deutsche Wohnen & Co enteignen” alliance has already begun to publicly promote further arguments for expropriation (I\_SvU, I\_DWE). Relieved of the profit orientation of private companies, a socialized heating-housing nexus could pave the way for an urban commons beyond neoliberal constraints. However, formal nationalization should be combined with substantial democratization of public companies to enable a profound repoliticization and deliberate shaping of the socio-natural metabolism.

## 5. Conclusion and Outlook

In this article, we analyzed and discussed the challenges and opportunities of the urban heat transition, taking Berlin as an example. We used a UPE perspective that acknowledges the material, political, and organizational challenges of transforming a materialized and consolidated heating-housing metabolism. We direct attention towards the pivotal politicization and democratization of the project of heat transition and, consequently, the entire heating-housing nexus in order to consider and involve all affected parties and enable a socio-ecologically just transition.

The three approaches we presented towards a more just heat transition are currently being debated in policy and public discourse. All strengthen the public domain and shift away from a profit-driven logic towards ecological and social ends. However, only the strategy of municipalizing the heating and housing sector bears the potential of radically altering the mobilization of the heating-housing metabolism and detaching it from market logics. Such a socialized heating-housing nexus offers

a good foundation but must be organized in a democratic manner.

The findings from this article are conceptually important. The radical approach of a UPE perspective enriches debates around such complex multi-sector endeavors as heat transitions and, more generally, about energy justice and just transitions. We operationalized our concept by using four analytical categories to explore the interconnectedness of the heating-housing nexus and its metabolic processes. This approach can be transferred to other cities, as it responds to the complexity and political character of the urban organism. Further case studies are needed to challenge and extend our findings and to account for dynamic changes in (urban) energy production and supply. Moreover, as municipal actors only have a marginal role in our analysis, further research should investigate the importance of municipal policies and state institutions for the organization and transformation of metabolic processes within the heating-housing nexus. As cities and their heating and housing sectors are embedded within multiple scalar configurations, legislations, and politico-economic relations, multilevel analyses that include the translocal, national, and EU levels would be analytically fruitful.

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### Conflict of Interests

The authors declare no conflict of interests.

### Supplementary Material

Supplementary material for this article is available online in the format provided by the authors (unedited).

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Article

## Building Equality: A “Litmus Test” for Recognising and Evidencing Inequalities and Segregation in the Built Environment

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### Abstract

The current convergence of global challenges, particularly the climate change emergency, the Covid-19 pandemic, and the Black Lives Matter movement, have highlighted the need for a new lens to challenge and interrogate key urban planning assumptions related to spatial urban inequality. Yet urban inequality is often and invariably described from a limited economic perspective, commonly interpreted and measured as income inequality. This is an overtly statistical measure, or Gini-Type index, often giving limited and unsatisfactory results. Yet, in practice, the spatial distribution and concentration of income inequality is a multi-scalar, multi-variant, and multi-disciplinary issue and has links with other and wider dimensions of inequality and well-being. As such, this article argues for a holistic understanding of urban inequality that goes beyond narrow empirical and quantitative models. It presents collaborative research that aims to impact the actions of urban professionals, to accurately identify and adequately respond to urban inequalities. Through the establishment of an interdisciplinary expert panel, we have uncovered a series of provisional mechanisms and responses to aid practitioners to achieve more spatial equality. We introduce an integrated analytical method, the “litmus test,” that acts as a planning tool for understanding, evaluating, and responding to inequalities and segregation present in the built environment. This novel methodology and procedural framework will assist us in (a) identifying and defining different forms of inequality and segregation beyond the current scope of physical and agency-based forms; (b) measuring and demonstrating the latter with a combination of qualitative, empirical sources that are materially significant in supporting and evidencing planning strategies; and (c) setting out a series of planning and built environment specific responses.

### Keywords

inequality; levelling up; litmus test; spatial segregation; UN sustainable development goals; urban planning

### Issue

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### 1. Introduction

Rousseau (1754, p. 9) draws a distinction between two broad categories of “inequality among men”:

One which [he] call[s] natural, or physical inequality, because it is established by nature, and consists in the difference of age, health, bodily strength, and the qualities of the mind, or of the soul;...the other which

may be termed moral, or political inequality, because it depends on a kind of convention, and is established, or at least authorized, by the common consent of mankind. This species of inequality consists in the different privileges, which some men enjoy, to the prejudice of others, such as that of being richer, more honoured, more powerful, and even that of exacting obedience from them.

This paper principally engages with this later form, the recognition of it, and efforts to mitigate it.

Urban inequality is a multi-dimensional phenomenon, yet it is often narrowly described and measured purely in terms of economic inequality (Belfield et al., 2016). In turn, economic inequality is defined through a variety of overtly statistical measures and indices with a relationship to the Gini coefficient (Andreoli et al., 2021). In response, the research informing this article has been informed by a variety of mixed and multiple case studies of inequality from both advanced and developing economies that aims to demonstrate these multiple and complex dimensions. Despite the differences between individual case studies, there are commonalities which facilitate the construction of a common conceptual and analytical framework of inequalities manifested in the social sphere.

Addressing urban inequalities is a hugely topical challenge in the United Kingdom (UK), where the current government and its most recent predecessors have engaged with a social Levelling Up policy (Department for Levelling Up, Housing and Communities, 2022) that repeats the same empirical bias to understand inequality. This is a poorly defined concept within the policy context of the UK that relates to multiple forms of inequalities, whether they occur at local, regional, or national scales aimed at addressing historic social mobility and economic inequality issues affecting various regions in the UK, and yet which has become a flagship policy of the current administration. Here, much of the framework around equality is about it being predominantly an economic concern (Martin et al., 2022), with many of the wider social, health, and welfare metrics being aligned with the dominance of economic activity. And while the focus on economic inequality can clearly be useful for indicating spatial distributions at various scales, and longitudinal patterns based on census data, these different operational scales of policies addressing inequality still seem to be largely defined by such empirical measures even while it reminds us that social policy is not this simple in practice, or more accurately is not just about wealth redistribution between areas and communities (The Guardian Editorial Team, 2023).

Some commentators have suggested that urban inequalities are a result of ineffectual leadership (Sainsbury, 2021) for regional economic development, and that they can be addressed through increased planning and coordinating powers for services based in the underperforming regional urban centres (Swinney & Enekel, 2020). The policy responses in this context of inequality have often focused on economic strategies, investing in research and development within spatial clusters of high value and high skill jobs (Gruber & Johnson, 2019), or more recently in a competitive list of physical investment projects (Department for Levelling Up, Housing and Communities, 2023). Yet, in practice, the concentration of income inequality is also multi-dimensional and multi-variant (Koshevoy & Mosler,

1997) and has links with other dimensions of health and well-being. In addition to income levels, there are many other forms of inequality that, while they can be partly evidenced by looking at the underlying economic data sets, have impacts on different characteristics and sectors of the population which are treated separately when considering any response to urban inequality and segregation.

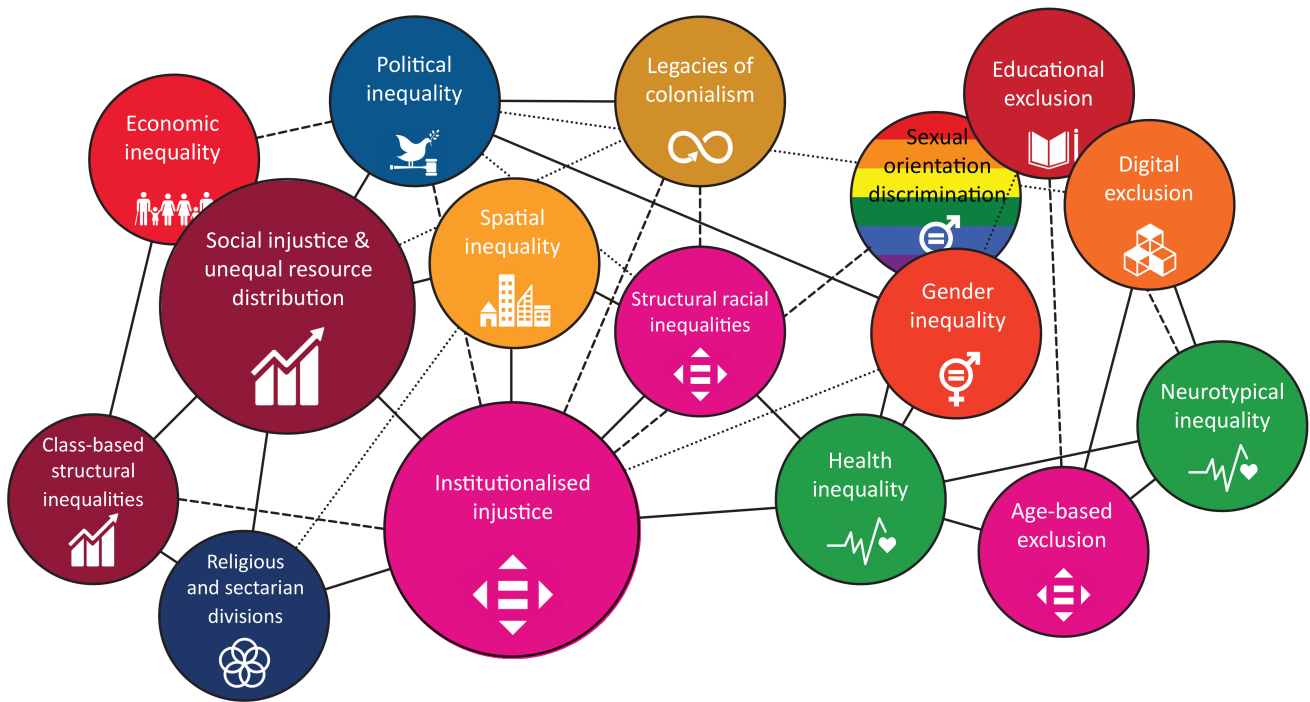
Research into societal bias suggests that institutional discrimination has taken on a new covert form (Ayton et al., 2020), with the effects often disregarded. Any solely statistical measure contains a level of structural bias (Brynin & Güveli, 2012) that is ultimately transferred into urban policy. Thus, there is a concern with how policy responses are based on evidence with this structural bias. The aim of this article is to clarify this multi-dimensional relationship between ethnicity, class, sexual orientation, gender, race, and other individual characteristics. This is achieved through a sequential approach to (a) recognising the broad scope of inequalities and segregation in the built environment, (b) defining and classify, and (c) applying a framework for assessment. These topical challenges have formed the basis for the ongoing research objectives, and the structure of this article.

We are aware that there is a requirement to put in place a disclaimer about the ambition of this sort of project at the outset. We are dealing with complex social systems and how they interact with policy. We are aware that as a research team we all carry our own cultural biases regarding weighting given to different forms of inequality. However, this ambition to identify and respond to multiple forms of urban inequality is similarly embedded within the relevant United Nations Sustainable Development Goals (UN SDGs) and is presented as part of an ongoing engagement with the academic and practitioner community.

## 2. Recognising the Scope of Spatial Inequalities

This section describes the themes and grounding literature relating to the scope of inequalities explicitly referred to within the SDGs. As the initial research stage, this grounding began with the collection of definitions for different forms of inequality and segregation as a collaborative overview of the scope of the literature. It is similarly acknowledged that the body of work on systemic inequalities is extensive regarding individual characteristics, and this section is limited to the most influential examples. The resulting output (Figure 1) summarises the scope of the work being considered and maps this against 11 discrete SDGs (UN, 2015). This goes beyond any narrow interpretation of inequality, highlighting the complexity of the different forms of observable inequalities and acting as a guide or signposting towards wider reading.

The relationship between social justice, inequalities, and sustainable development is complex and interrelated as demonstrated by the content of the SDGs.



**Figure 1.** Dimensions of inequality “mapped” against the UN SDGs.

However, one “fact that should be glaringly obvious: the environmental emergency is rooted in systemic racism” (Kapoor et al., 2022, p. 5) for both the historical causes and the unequal distribution of its effects. The plethora of forms of inequalities have impacts across most of the SDGs, with resulting environmental, economic, and social impacts of the climate crisis having disproportionate effects on the Global South, racial and ethnic minorities, women, disabled people, and indigenous communi-

ties. We present an initial mapping of these historical and contemporaneous effects as part of our initial research process (Stage 1 in Figure 2) in Table 1, where the sources were identified and summarised by the expert panel.

### 3. A Methodology for Recognising Spatial Inequality

The approach for this study was based on the Delphi method (Dalkey & Helmer, 1963), an innovative and

**Table 1.** Mapping the typologies of inequalities and segregation.

Typology of inequalities and segregation	Descriptor of key theory and grounding references
Social injustice & unequal resource distribution	John Rawls (1971) connects social justice to fairness in the distribution of resources, as an updated form of social contract (Hobbes, 1651; Rousseau, 1762). Central to this principle is the notion that all inequality is grounded in ideas of private property (Rousseau, 1754).
Health inequality	Famously reported by Chadwick (1842), who created one of the first evidenced account of spatial inequalities in health, linking life expectancy with social status; inspiring future research into health (Green et al., 2018) and their correlation with other “measurable” aspects of social inequality (Wilkinson & Pickett, 2009).
Economic inequality	Unequal income levels and income distributions as a variation of the Gini Index (1912) that is reflected in the “Spirit Level” (Wilkinson & Pickett, 2009).
Structural racial inequalities	Awareness of structural racism and forms of nationalism (Givens, 2022) and racial supremacy based on the control of power and resources leading to expectation and entitlement (Ansley, 1989).
Religious and sectarian divisions	Sectarianism is a collective characteristic of nationality or religion (Calame & Charlesworth, 2009). There are spatial implications for excluding groups from areas or spaces, where forms of religious markers are still used as signifiers (Naylor & Ryan, 2002).

**Table 1.** (Cont.) Mapping the typologies of inequalities and segregation.

Typology of inequalities and segregation	Descriptor of key theory and grounding references
Digital exclusion	The digital divide (Bynner & Heinz, 2021) is an emerging concern based on the lack of reliable, free, and open access to digital services, due to a mix of cost, skills, or locational issues. There are unequitable benefits (Bukht & Heeks, 2017) arising from the provision of digital technologies and services.
Age-based exclusion	Stereotyping based on the characteristic of age/ageism (Nelson et al., 2004) leading to stigmatisation, reduced status, and marginalisation, exacerbated by increasing urbanisation and the lessening of social ties.
Institutionalised injustice	Injustice as a by-product of the dominant capitalist system and according to Marxist political analysis (Castells, 1977; Harvey, 1973), requiring an end to capitalism and the ownership and distribution of goods.
Political inequality	Exclusion from the democratic decision-making process with mechanisms of voter suppression (Hainal et al., 2017). Lack of participation is often a result of other forms of structural inequalities (Gilens, 2012).
Gender inequality	Gender is a categorial and hierarchical form of inequality (Ridgeway, 2011) with material effects and dependencies due to control of resources and opportunities. Unequal control over employment, status, salaries, property, and other assets results in gender gaps that are perpetuated by prejudice, stereotypes, and assumptions (Fiske et al., 2002).
Sexual orientation discrimination	Discrimination in relation to sexual orientation (Bailey et al., 2013; Correia & Kleiner, 2001; Levine & Leonard, 1984) arising from “the complex and intersectional nature of queer marginalisation...and spatial oppression” (Goh, 2018, p. 463). Implications for the built environment impacting on movement, safety (Shelton, 2013), and activism (Browne & Bakshi, 2013).
Spatial inequality	Unequal distribution of public resources (Jones et al., 1980), leading to scarcity in the provision of or access to public services and infrastructure (Pahl, 1971). Fairness in spatial distribution of resources is embedded in the function of statutory planners (Krumholz & Forester, 1990) to deliver the “right to the city” (Lefebvre, 1968).
Class-based structural inequalities	An inevitable consequence of power accumulation. In his theses on the city, Lefebvre (1968, p. 17) states “the realization of urban society calls for a planning oriented towards social needs....The working class suffers the consequences of the rupture of ancient morphologies. It is victim of a segregation.”
Legacies of colonialism	Historical inequality arising from the deliberate exploitation by colonial regimes (Rodney, 1972) starting with the “Doctrine of Discovery” (UN, 2012) and the continuance of neo-colonial regimes maintaining this structural inequality. The didactic views of Rodney are a critique of globalism capitalist agents (Wallerstein, 1986) that exploited race and class.
Educational inequalities	Opportunities are restricted due to unequal access to quality education (Nurse & Melhuish, 2021) and exacerbated by a combination of household income and locational aspects (Lareau & Goyette, 2015), with explicit links to other characteristics, such as “Resident Status” (Barnes, 2007), limiting choices in real estate and education.

Note: This tabulation of the forms of inequalities is not definitive but a summary of the work in progress with the expert panel introduced below.

collaborative methodology for the application of research that requires multiple rounds of sequential scoping, questioning, workshops, and interviews targeted at expert practitioners (Linstone & Turoff, 1975). After each iterative stage, we summarised and aggre-

gated the collective responses to elicit controlled feedback with the aim of achieving consensus (Giannarou & Zervas, 2014) and adding case study detail and content. This Delphi method has been demonstrated to be well suited for many different business planning and product

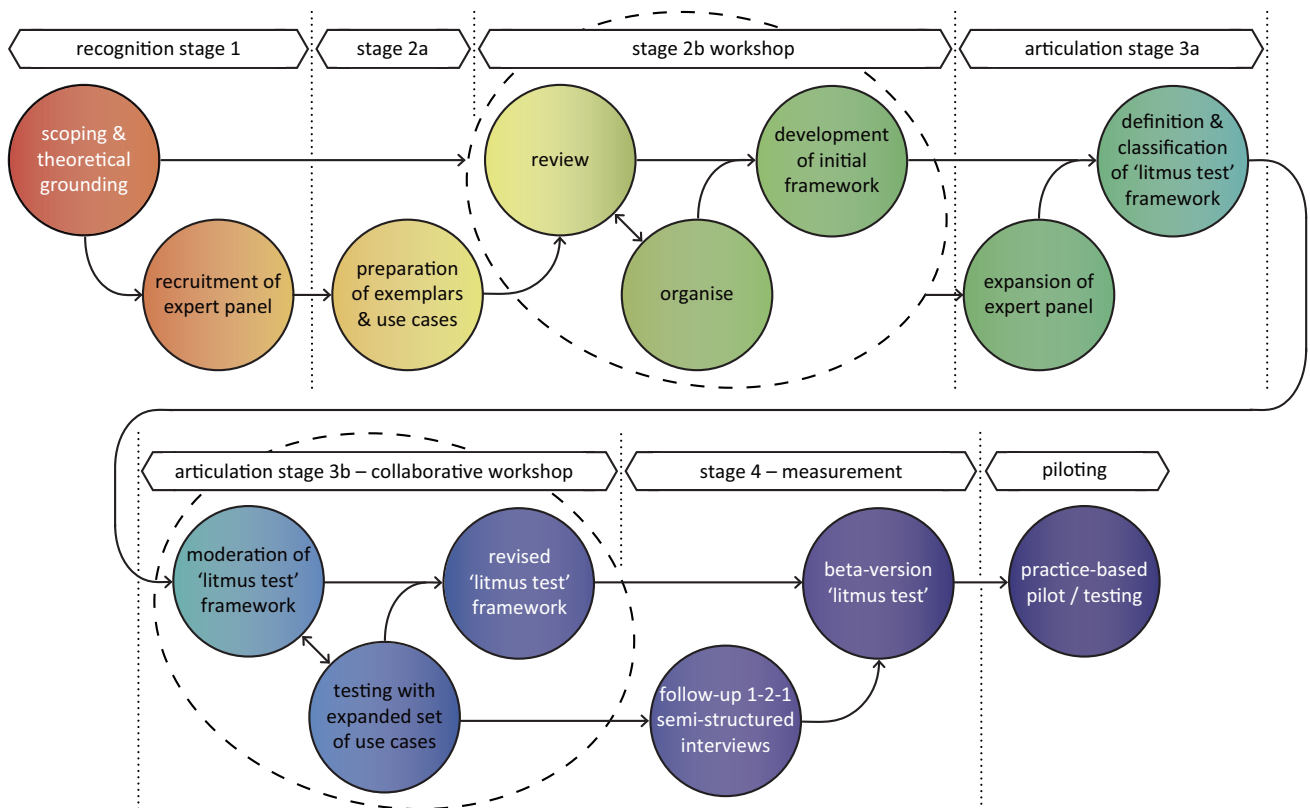
development applications. This choice of method is also one of the most appropriate for face-to-face meetings and when working with geographical limitations (Geist, 2010), and online applications (Gordon & Pease, 2006). Other heuristic research strategies were considered, including systematic literature and policy reviews and extensive quantitative data collection but were rejected on the grounds of pragmatism and opportunity. The Delphi method was considered the most effective as a collaborative process that could include multi professional disciplines, perspectives on urban inequalities and linking qualitative desk-based and primary data collection with case study work. A detailed breakdown of each of the stages undertaken as part of this Delphi research strategy is described in detail in Figure 2.

The Delphi methodology followed an initial scoping stage (Stage 1 in Figure 2) that included a review of work undertaken to inform policy responses and provide a theoretical underpinning to common definitions of inequality and segregation. The first collaborative stage responded to this scoping through the collection of case studies that fall within the architecture, planning and built environment disciplines and that highlight the variety of forms. This was organised as an expert panel workshop (with a mix of virtual and in-person attendees) where the scoping was presented, with attendees each preparing and identifying an exemplar as the basis for discussion. In total, over 50 detailed global case studies highlighting different forms of urban inequalities were

prepared, presented, and discussed as part of the expert panel workshops (Stages 2b and 3b in Figure 2). Extracts of selected case studies are included as examples in Figure 3 and Figure 4. The recruitment of this expert panel was undertaken through a snowballing sampling technique, using individual professional contacts based on stakeholders' interest in and knowledge of the subject area (Avella, 2016). The outcome of this initial workshop (Stage 2b in Figure 2) was the organisation of an operational framework for different forms of inequality (Stage 3a in Figure 2). This has initially been represented in the form of a "litmus test" for placing the forms of segregation and inequalities into a rank-able scale.

A second collaborative workshop (Stage 3b in Figure 2) with an expanded expert panel was presented with the draft "litmus test," alongside case study examples of positive interventions. This was followed by a series of one-to-one semi-structured interviews (Stage 4 in Figure 2) that explored individual case studies in more detail and reviewed and tested the emerging scalar definitions within the early versions of the "litmus test."

Overall, this Delphi process engaged with over 45 different academics and professionals working in the field of the built environment; each participant was directly engaged for at least one expert workshop (each lasting 2 to 2 ½ hours) or a 1–2–1 interview (each lasting ½ to 1 hour). The professional scope of the participants included quantity surveyors, property managers, urban planners, urban designers, structural engineers,



**Figure 2.** Summary of research methodology in the development of the "litmus test."

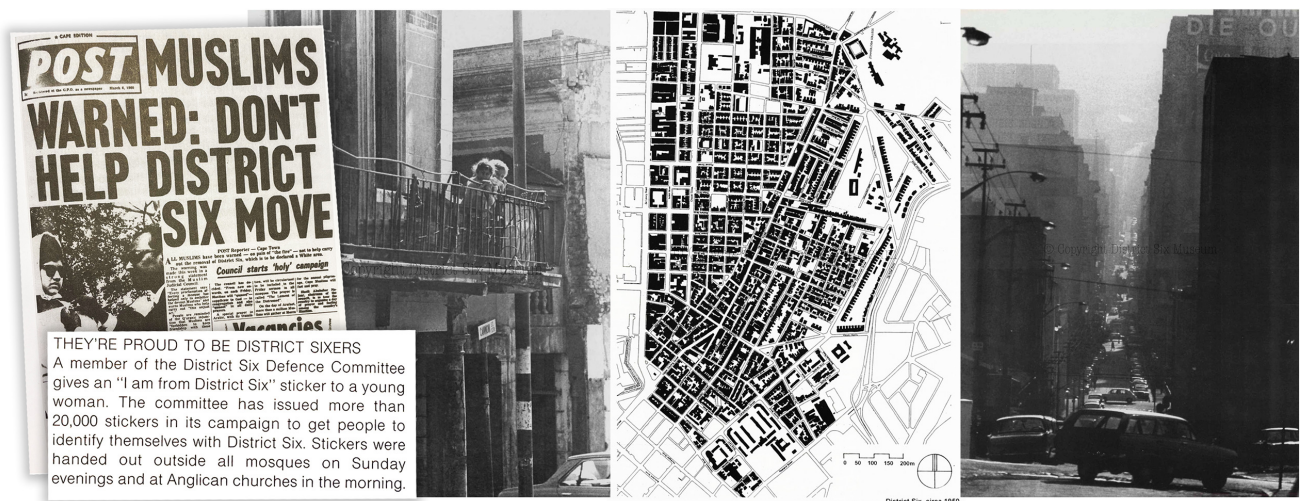


**Figure 3.** Example extract from a UK case study collected at Stage 2a (Figure 2) of the study. In 1933, the City of Oxford sold a site to a private developer who consequently constructed several brick walls that blocked any direct links with the adjacent public housing estate; this was reportedly in response to impacts ranging from “privacy” to the “protection of property values” (Organic, 1964, p. 112). It took post-war changes in compulsory purchase legislation of the land on which the walls stood and 11 years of legal challenges for the City Council to remove them, albeit the physiological barriers seemingly remained for a lot longer (Collison, 1963). Source: Photos and maps from Bowie (2018) and Hall (2018).

geographers, civil engineers, and architects drawn from diverse geographic and working backgrounds. At each stage, participant presentations and views expressed in discussion were digitally recorded and transcribed for the purposes of thematic analysis.

We are aware that it is ambitious to integrate all the dimensions of inequality into a single method or framework. The best-case outcome is that the proposed “lit-

mus test” described in section 4 is an abstraction of reality and is applied as a guiding tool to understand and explain the multiplicity and variety of types of inequalities embedded in the built environment. However, the expert panel considered it an innovative, pedagogical, and practical planning tool for expanding the current understanding of inequality and segregation, which gave us confidence in pursuing this further.



**Figure 4.** Example extract from an international case study (Stage 2a in Figure 2) of District Six, Cape Town. The district was one of the most historic and most architecturally impressive, as well as one of the most ethnically and racially diverse in the city, understood as “cosmopolitan, socially harmonious, culturally hybrid and heterogeneous” (Soudien, 2001, pp. 119–125), yet apartheid policy was the basis for forced relocation and demolition. District Six and its citizens became a symbol of diversity in the face of apartheid: “The razing of District Six in the late 1970s was a high-handed and dismissive act, the results of which were unbelievably cruel. In many ways its destruction is for us a local example not only of the wilful annihilation of an urban community but also of the loss of urban place, so much lamented by sociologists and urban planners” (Le Grange, 1996, p. 7). Source: Photos and maps from Greshoff and District Six Museum (1996).

#### 4. Creating the “Litmus Test”: Critical Findings From the Research Methodology

This section presents the revised output from the Delphi workshops. The design, based on the pH litmus scale used to measure levels of acidity, emerged from the initial expert workshop (Stage 2b in Figure 2) where the idea of a scalar framework that was suitable for assessing difference was debated. Some of the case studies presented appeared more symbolically diverse, locally specific, and with inequalities less implicit than others, and the expert panel felt there was need to express this in the way they were organised. While the initial workshop (Stage 2b in Figure 2) concentrated on case studies (extracts of case studies used are included in Figures 3 and 4) that demonstrated negative impacts of urban inequalities, the second workshop (Stage 3b in Figure 2) addressed the potential positive interventions that were underrepresented during the initial stage. The choice to represent this as a “litmus test” was linked to a desire to make this a relatively accessible way for recognising and measuring a complex set of social situations.

A central question from this collaborative research process concerned the potential benefit of another framework for assessing inequalities in our built environment. There was conviction among the expert panel members that our method is valuable because of its analytical “spyglass” qualities, helping to zoom in to see the detailed reality and zoom out to the more holistic picture. The panel members also recognised the empirical bias embedded within our urban policy making processes, and the need to address this as one of the key motivations for this research.

In many cases, current urban planning practice has a narrow evidence base that is influenced by the availability of numerical data sets. In consequence, a basic auditing is not possible because it prematurely forces a breakdown of complex phenomena into discrete issues, with information being lost in the process. Hence without addressing the current limitations of how we measure inequality, urban policy is in danger of being data-driven rather than being evidence-based. At the core of this research was the authors’ recognition of the multiplicity of dimensions of spatial inequality that were being left out of policy considerations. In effect, the ethos of “if you can’t count it in theory, it doesn’t count in practice.”

##### 4.1. The Value of An Innovative, Multi-Dimensional Descriptive Framework

The first high-level finding was how a descriptive framework mixing qualitative and empirical sources becomes useful to our understanding of inequality. This has value and:

[The expert panel participants] are interested in this project, because this is about underrepresented

groups, not just on [the] lines of race, or ethnicity or sexuality, but looking at society and asking, who is being severely disadvantaged and how is the way we design buildings and plan cities and build our infrastructure affecting the everyday lives of underrepresented groups. (Expert panel participant, 2022)

Regarding the need for a multi-disciplinary framework, “nobody’s really tried to bring it all together” (Expert panel participant, 2022) or been able to clearly recognise inequality with an ability “to point it out to people who may be blind or oblivious to it” (Expert panel participant, 2022). Indeed, it seems that “the word ‘framework’ gets bandied around quite a lot...to the point [where] I don’t even know really what it means anymore, but [we] know, [we] are looking at some kind of series of semiotics that suggest where segregation is happening” (Expert panel participant, 2022), and that the benefits of any such framework was dependent upon clarity in descriptions and semantic definitions attached to each of the different levels. So, “basically there’s a need to catch some attention [to] start to assess what we do as professionals” (Expert panel participant, 2022). Certainly, compared to other disciplines there are limitations “when it comes to social matters [and] politicians and civic infrastructure [we often] make sweeping generalisations with sometimes very little evidence” (Expert panel participant, 2022) and that professionals and politicians end up enacting policies “without understanding, without a true diagnosis” (Expert panel participant, 2022) of the underlying inequalities.

##### 4.2. Balancing Requirements Between Breadth and Depth of Information

The second high-level finding from the expert panel centred on the balancing of breadth in understanding the complex nature of inequalities, as opposed to depth of experience. The potential danger of strategic thinking was the loss of detail in the individual use cases and so to some extent there was the anticipation that there should be some collective views regarding a suitable way for optimisation. As one participant observed, “what we are trying to do [targets] this intersection of shared consensus and interests” (Expert panel participant, 2022) that occurs between different sectors and stakeholders as a shared professional or practical interest in this “agreed intersection.” This approach to optimisation has implications for the mix of supporting evidence and the associated methods used in its collection. The most popular statistical measures are “due in part to the overall simplicity as a single and easily interpreted figure” (Expert panel participant, 2022; see Sitthiyot & Holasut, 2020), yet “we’re kind of interested in the balance between empirical measurements...and how we can get a bit more understanding of the multi-dimensional aspects” (Expert panel participant, 2022):



Yes...[if we] were able to recognise and define it and be able to record it and...somebody mentioned the word “assess” it, [then this] assessment can actually sometimes just be photographs, it can be from talking to people....We can value the qualitative perceptions and rethink the kind of evidence that we should be gathering. (Expert panel participant, 2022)

Considering this ambition, “one way forward is to develop an analytic lens” (Expert panel participant, 2022) that can expand to evaluate the breadth of issues within and identify points of commonality across cases studies but can also focus to interrogate a single use case with the specific semiotics (de Jesus, 2016; Lorino et al., 2011). This is an initial attempt to develop a semiotic framework for recognising how segregation and inequality are expressed in planning policy. A detailed look at any specific case study facilitates a rich phonetic critique of how inequity and segregation operate and the particularity of any semiotic system. This ability to provide a detailed and specific analysis can unpack fresh discourses and perspectives (Deleuze, 1995, pp. 177–182). In effect, the “litmus test” is concerned not only with semantic words but with the signs and symbols of inequality and the semiotics or meanings attached to such symbols. In each case, using mixed and multiple sources of valid evidence. This insight was expressed by an expert panel participant who reflected that there are “many shades of grey [with inequalities] so it’s the same with the practical measures and measurements when looking at people’s perceptions and awareness and qualitative issues arising” (Expert panel participant, 2022). Taken in conjunction with another participant who observed “when I think that somehow, I understand all the complexity, not just think that I can grasp a bit of the complexity or the dynamics of what happens in public spaces and cities” (Expert panel participant, 2022), then it seems reasonable to propose adaptive methods with which to critically review planning policies.

#### 4.3. Requirements to Be Practical and Impactful

The expert panel raised the challenge of making any framework on inequality suitable for practice and ultimately go beyond theory to begin impacting on real situations:

The first [dimension of inequality] is “capability” and in judging your city on the idea of justice [see Sen, 2009]...we need to focus not only on who gets what, but also what people can do with what they get....I think that has a really good resonance with the issue of segregation. The question is whether they can convert the resources that they get into capability for functioning in a life they choose for themselves...and this is clearly a departure from concentrating on the means of living to the actual opportunities. (Expert panel participant, 2022)

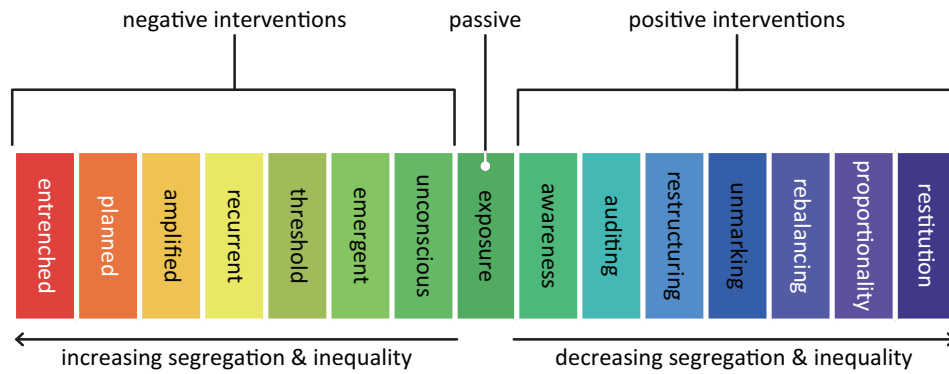
Having a framework or checklist from the outset could be considered a beneficial step towards better practice, where “for a ‘just city,’ well it’s more of a practical thing...to help planners and designers and so on, when they consider the built environment, to see beyond just economic inequality” (Expert panel participant, 2022) you benefit from a framework that maintains a broad description of the different forms of inequalities. Relating this semantic understanding to a series of case studies proved effective and has the benefit to grow into a larger set of co-produced examples at different scales of intervention: “The United Nations has an extensive amount of literature out there on social justice and if any single country implemented anything [from the] body of literature that’s available...then there wouldn’t be segregation” (Expert panel participant, 2022). Hence the challenge is to embed this evidence into practice.

One way to achieve this was around the exploitation of the educational resources within the framework: “It has quite good pedagogical potential...especially young planners interested in professional advocacy working with the system” (Expert panel participant, 2022). At one level, a way of achieving impact is through “teaching material...overtly [linked to] a framework...where we can actually help somebody trying to make an impact on the way they make better decisions” (Expert panel participant, 2022), educational material that can “rework theory...translate the theory into practice, into something that is going to support decision making” (Expert panel participant, 2022), or support “training...through a number of tools or techniques or methods” (Expert panel participant, 2022). Thus, one output has been pedagogical material suitable as a foundation for built environmental professional supported by rebalanced reading lists.

There was acceptance around the production of structured learning materials on the scope of equality that could provide a foundation for degree programmes or as a stand-alone short course or massive open online courses suitable for other modules and continuing professional development (CPD). The coproduction of learning materials and a co-curated reading list was considered one key output from this research. The emphasis within additional learning materials was to provide a structured and standardised way of recording case studies useful for recognising and benchmarking other local examples of interventions. Indeed, one participant thought that “exposure will also emerge out of embedding this approach and training into the planning profession” (Expert panel participant, 2022).

#### 4.4. Recognising and Labelling Inequalities in the Built Environment

The labelling of the “litmus test” (Figure 5) directly relates to keywords and associated descriptors found in the scoping examples presented and discussed during the expert workshops (Stages 2b and 3b in Figure 4). The authors chose this approach, for two reasons. Firstly,



**Figure 5.** Conceptual “litmus test” framework following expert panel workshops.

participants in the workshops agreed that a simple, yet illustrative way of organising the various keywords was appropriate. Secondly, that it had analytical rigour as a flexible tool for planning pedagogy and practice. We are aware that this is an artificial separation of the different forms of inequality used for the purposes of clarity, and that in practice these will inevitably have multiple points of connection and overlaps and be fuzzier.

**4.5. Defining and Exemplifying the Different Levels of the “Litmus Test” for Building Equality**

This framework describes an escalating scale of inequality. We have set out a systematic, and replicable

approach by including a short descriptor of each level on the “litmus test,” with an abbreviated case study to provide a specific built environment example relating to that level, together with other supporting semantic keywords (Tables 2 and 3). This has been collected, collated, and edited as part of the preparatory stages, during, and following the expert workshops (Stages 2b and 3b in Figure 2) and presented in Tables 2 and 3 in a systematic manner to support coding and digitisation. The ambition is to provide an example of what each specific level in the “litmus test” looks like and detailing which specific keywords may be present when considering it, and how it is evidenced with the different methodologies being used within each use case.

**Table 2.** Definitions of negative interventions to segregation and inequalities.

Litmus level	Description (keywords) and example case study associated
<b>entrenched</b>	Layered and complex forms of physical segregation, on grounds of race or religion, to the point of being outside the remit of any interventions within the built environment and made explicit in national or local legislation. For example, following repeated sectarian rioting in Ahmedabad, Gujarat, primary legislation (Government of Gujarat, 2021) was used by the state and weaponised the law to disincentivise property transactions with Muslims, causing spatial segregation (Nileena, 2019) as well as <i>entrenching</i> these property divisions (Gualdrini, 2021).  Keywords: Illegality, statutes, by-laws, disturbed areas. Methods: Content analysis, statistical mapping.
<b>planned</b>	<i>Planned</i> segregation and homogenisation based on individual characteristics are embedded in legislation within formal statutory documents; evident in the implementation of the Group Areas Act of 1950 (South Africa) and the “iconic removals of Sophiatown (Johannesburg) and District Six (Cape Town)” (Kentridge, 2013, p. 135) leading to a loss of inter-racial communities.  Keywords: Apartheid, planned segregation, forced removals, relocation, community fragmentation. Methods: Content analysis, interviews, mixed-method qualitative case studies.
<b>amplified</b>	Inequalities are <i>amplified</i> by a range of funding regimes (Birkner, 2002; Rothstein, 2017), and discriminatory practices (Pietila, 2010) that individually or collectively perpetuate social divisions. Typical mechanisms range from “redlining,” bad mortgages, racial steering, as well as evidence of intimidation when people migrate. Through a story of journalistic ethnography, Moore (2016, p. 1, our italics) highlights how such “segregation <i>amplifies</i> racial inequalities” in the city of Chicago, which is superficially diverse but with racial enclaves, and inward-looking “riot architecture” (Dickinson, 2015).  Keywords: “Redlining,” “Blockbusting,” restrictive covenants, defensive space, “riot architecture,” ghettoization. Methods: Content analysis, racial mapping.

**Table 2.** (Cont.) Definitions of negative interventions to segregation and inequalities.

Litmus level	Description (keywords) and example case study associated
<b>recurrent</b>	<p>Inequalities evidenced by a range of displacement, land dispossession, and gentrification, in part the legacy of colonialism, the behaviour of companies, and the flow of capital (Henrique &amp; Faletto, 1979; Piketty, 2014). This has the effect of <i>repeatedly</i> exceeding a threshold level where impacts escalate into physical manifestations and unrest, such as the North American urban riots of the late 1960s (McAdam, 1982; Spilerman, 1976) through to the Black Lives Matter protests of 2020.</p> <p>Keywords: Heterogeneity, “Right to Rent,” dependency theory. Methods: Content analysis, interviews, social network analysis, qualitative case studies.</p>
<b>threshold</b>	<p>Schelling (1971) suggested that patterns of segregation can be dynamically modelled from the perspective of agent-based rules, and that over time, exaggerated patterns of segregation emerge. This led to the concept of tipping points or <i>thresholds</i> (Gladwell, 1996, 2000; Granovetter, 1978) when one group collectively changes behaviour. Where two recognisable groups are based on racial definitions, this tipping has also become known as “white flight,” with reference to how “white and non-white citizens of the U. S. are being sorted out in a new pattern of segregation....The suburban towns have employed restrictive zoning, subdivision and building regulations to keep Negroes out” (Grodzins, 1957, pp. 33–47). Evidence suggests that this trend can be validated in most North American cities (Card et al., 2008).</p> <p>Keywords: Tipping point, critical mass, threshold model. Methods: Mathematical population modelling, statistical analysis, agent-based simulations.</p>
<b>emergent</b>	<p>New forms of inequality, such as digital exclusion, associated with developments in accessing technologies, <i>emerge</i> without an awareness of the implications for different social groups, that arise from a denial of the existence of unconscious or implicit bias.</p> <p>Keywords: Inequality in opportunities, obsolesce, skills deficiency, redundancy, requisite variety. Methods: Content/discourse analysis, interviews.</p>
<b>unconscious</b>	<p><i>Unconscious</i> bias results from psychological assumptions being made without realising their collective and disproportionate impacts on certain characteristics, or a hidden set of prejudices described as “a sort of implicit bias that has more to do with associations we’ve absorbed through history and culture” (Eberhardt, 2019, p. 160).</p> <p>Keywords: Implicit bias. Methods: Psychological testing, statistical analysis.</p>

The second stage of the “litmus test” summarised in Table 3 was the primary focus of the second expert workshops (Stage 3b of Figure 2) undertaken as part of the Delphi methodology, with a collation of positive interventions. The creation of this was undertaken through

invited expert panel members taking responsibility for preparing additional examples and built environment case studies as examples of an effective response to the different levels already identified (Table 2), as the basis for presentation, group discussion, and peer-review.

**Table 3.** Definitions of positive interventions to segregation and inequalities.

Litmus level	Description (keywords) and example case study associated
<b>exposure</b>	<p>Through media <i>exposure</i> to the wider debate on inequalities, six separate professional institutions (CIOB et al., 2022) have produced a memorandum of understanding around a shared “common language,” of expectations, and definitions. Initially this raises awareness based on monitoring of standardised data relating to membership(s).</p> <p>Keywords: Equality monitoring. Methods: Content analysis, compliance checking.</p>
<b>awareness</b>	<p>Training is one response to raising <i>awareness</i> about the importance of equitable places. One example is “Inclusive Environments,” an online course created in partnership with the Design Council (2018) as an explicit response to the UK Equality Act 2010 and how these rights have been embedded within the National Planning Policy Framework for England (Ministry of Housing, Communities &amp; Local Government, 2021).</p> <p>Keywords: Legislative/planning compliance, equality training. Methods: Training (CPD) records, institutional policy analysis.</p>

**Table 3.** (Cont.) Definitions of positive interventions to segregation and inequalities.

Litmus level	Description (keywords) and example case study associated
auditing	<p>The social integration toolkit (PRD et al., 2021) is a supporting <i>auditing</i> methodology for planning in London, as an explicit requirement to work with the <i>Social Integration Strategy</i> (Greater London Authority, 2018) for the city. Created through a co-design process (Mayor of London &amp; Design Council, 2020) to turn a set of principles on social integration into a set of specific project examples. The toolkit is about understanding the shared definition of social inclusion.</p> <p>Keywords: Social integration, measurement, auditing. Methods: Equalities monitoring.</p>
restructuring	<p><i>Restructuring</i> policies targeting characteristics and how these factors can be reflected in relative or unequal incomes. There are compositional effects for different genders and racial and ethnic groups (Khan, 2020) that may be demographically and educationally different when combined with cultural preferences for locations or employment choices. Architecture is male-dominated with a gender pay-gap (Nicholson, 2020) that is reflected in the professional culture. In response to this, the Matrix feminist design collective created a manifesto, highlighting multiple sexist assumptions about family life and the role of women (Matrix, 1984) and advocated <i>restructuring</i> through a mix of formal and informal education.</p> <p>Keywords: Restructuring policies, targeted characteristics, gender assumptions, de-gentrification. Methods: Policy analysis, content/discourse (media) analysis.</p>
unmarking	<p>Deliberate policy (Commission on Flags, Identity, Culture and Tradition, 2021) to create “neutral spaces” through removal of provocative signage. Increasingly understood through forms of demarking and the use of inclusive signage/dual naming. The treatment of the multiple Northern Irish peace walls, flags, and symbols are being addressed with uncontentious public art (Hill &amp; White, 2012), mixed social housing allocations, and a range of legal measures (covenants/transfer deeds) for the deliberate <i>unmarking</i> of territorial symbols (Hughes, 2022).</p> <p>Keywords: Shared spaces, neutral spaces, contested spaces. Methods: Policy analysis, participant observation, georeferencing, segregation mapping.</p>
rebalancing	<p>The location of services and allocation of resources based on compensatory (Krumholz, 1975) principles to <i>rebalance</i> any class, gender, and racial inequalities (Talen, 1998) with examples in Cleveland and Savannah (Toulmin, 1988). A specific policy response (Soja, 2010) to multiculturalism or mixed income communities (Bish, 1973).</p> <p>Keywords: Compensatory planning, mixed communities, “Right to the City Alliance,” National Neighbors/Neighbourhood Diversity. Methods: Planning policy analysis, spatial/diversity indicators.</p>
proportionality	<p>As a quasi-legal term, <i>proportionality</i> transferred to development is concerned with the local rights (Urbina, 2017) and control of property assets in an equitable and representative manner for stronger forms of legitimate neighbourhood planning. There are examples around the provision of affordability, and restrictions on second homes.</p> <p>Keywords: Positive discrimination, proportional representation. Methods: Policy analysis.</p>
restitution	<p>Land <i>restitution</i> is the unravelling of disputed historical ownership and reallocation of land and assets to former displaced owners, or alternatively placing it under community or state ownership for wider public interest benefits (Beyers, 2008). It is a deliberate reallocation backed by legislation. One ongoing example is the land restitution programme within District Six, Cape Town (Republic of South Africa, 1994).</p> <p>Keywords: Public interest, land rights. Methods: Policy analysis.</p>

The purpose of this outcome from the Delphi research process is a systematic approach to defining and recognising the scope of inequalities and their associated semiotic meanings. We are aware that this approach will need validation as a potential contribution to the practice and pedagogy of planning. However, having a multidimensional framework that has been established from the outset as a collaborative activity and with

broad consensus regarding definitions, descriptions, and methods used for collection does have the potential to address the empirical bias behind current policy work.

### 5. Discussion and Next Steps

This research has used collaborative processes, in the form of the Delphi method utilising multidisciplinary

expert panels, to explore, define, and describe the multi-faceted, inter-disciplinary, and complex nature of urban inequality, ranging from the physical embodiment of legal restrictions through to more subtle and implicit forms of inequality. This article presents definitions, examples or case studies, keywords, and references to relevant literature with respect to each of the 15 scales of the “litmus test.” The examples included are diverse and represent various kinds of inequalities manifested in advanced as well as developing economies. The “litmus test” proposed in this article is, therefore, holistic and can be used by readers and built environment professionals to categorise inequalities presented in the urban sphere. This categorisation shall serve as a precursor to formulating measures which redress or rebalance or rectify inequalities.

While the authors recognise the need to validate, test, and improve the “litmus test,” they believe it is a tool that can be readily applied to better understand and categorise or code inequalities. We recognise that the conceptual model presented is attempting to encapsulate complex and systemic issues affecting the experiences of individuals and communities. The specificity of the local conditions cannot be fully considered in a generalised framework such as the one presented. How this can be done in practice remains a task for the next stage of this research where we “need to validate this theoretical model, as it seems to be very sound and rigorous....It needs to be validated and tested out there in society, [because] without validation any impact will be limited” (Expert panel participant, 2022). Thus, part of the next phase of this research will be to undertake field studies and comparative case studies to test the application of this framework at different scales and legislative contexts for urban planning.

Built environment professionals can benefit from a clear systematic way, and in this case an accessible and highly visible mechanism of recognising the diversity of these forms of inequality. The reality is that different forms of inequality will require different perspectives to be recognised, different methods to record their presence and extent, and ultimately different practical responses. We feel therefore that one of the key challenges for built environment professionals is to embrace this broader scope and definition of inequality, and certainly to go beyond the normalised application of statistical coefficients of economic inequality. Statistical measures will never provide this complexity and in response we consider the “litmus test” as one way to address this shortcoming in a systematic, robust, iterative, and replicable manner.

One poignant example of *rebalancing* that emerged during this research was the recognition of the work of American abolitionist and reforming politician Frederick Douglass, when naming a new research and learning “Frederick Douglass Centre” for Newcastle University (2022), near to the location where Douglass stayed during his trip to the English city in 1846: “Where justice

is denied, where poverty is enforced, where ignorance prevails, and where any one class is made to feel that society is an organized conspiracy to oppress, rob, and degrade them, neither persons nor property will be safe” (Douglass, 1886).

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The authors declare no conflict of interests.

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Article

## Food and Governmentality in the Green City: The Case of German Food Policy Councils

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### Abstract

As an essential urban matter, food has always been highly relevant in issues of social and environmental justice. Current debates around food call for a better understanding of the relationship between global and local food production and social and environmental justice. Specifically, discussions on urban greening concepts are considering whether and how social justice and sustainability goals can be achieved. This has become a pressing issue due to a growing awareness of negative effects and social imbalances in the production, consumption, and disposal of food. The article explores the normative foundations and constructions of “good and just food” that are considered appropriate to a sustainable food system and the power techniques related to personal and environmental responsibility that feature in the work of the German food policy councils seeking to initiate a transformation process. Using a governmentality approach based on Foucault, this article seeks to fill gaps in the literature regarding food policy councils and, thereby, contribute to our understanding of the local manifestations of global policy projects that address environmental and social justice in green cities.

### Keywords

food; German Food Policy Councils; governmentality; green city; transformation

### Issue

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### 1. Introduction

Current trends towards good, healthy, and sustainable food are emerging as a blueprint for ongoing political, public, and academic debates on the consequences and causes of climate change and the associated perception that urgent action is required (German Advisory Council on Global Change, 2011; Intergovernmental Panel on Climate Change, 2014). In particular, increasing awareness of the negative impacts and social imbalances arising from the agricultural production, processing, consumption, and disposal of food is shaping a variety of discussions, policies, and guidelines that advocate for individual action (Federal Ministry of Food and Agriculture, 2020). One way to approach these challenges

is through the relocalisation of food (through policies) at the city and local levels. As suggested by Pothukuchi and Kaufman (1999), food is a “significant urban system” (Pothukuchi & Kaufman, 1999, p. 217) that should be brought (back) to the urban level and, thus, made governable through municipal politics. On this premise, more than 100 cities signed the Milan Urban Food Policy Pact (2015) after Expo 2015 in Milan as part of an international agreement to develop a more sustainable urban food system (Milan Urban Food Policy Pact, 2015). At the same time, numerous guidelines, cookbooks, and workshops reflect the enormous importance placed on individual contributions to and responsibility for “climate-friendly shopping, cooking and enjoyment” (Demrovski, 2021, translation by the authors; Pritz, 2018).

Food policy councils (FPCs), first established in the US, could be considered potential agents in relation to food as a political and private matter as outlined in the green city strategies for developing more sustainable cities (e.g., Andersson, 2016; Breuste et al., 2020; Hammelman, 2022; Roberts, 2010). The associated urban food strategies have the potential to bring people from very different socio-economic, cultural, and ethnic backgrounds together through shared visions of, for example, developing a sustainable food system or green city (e.g., Moragues et al., 2013, p. 20). Research has shown that the FPCs within the alternative food movement, by opposing the increasing commodification and industrialisation of agricultural systems and presenting alternatives to local food politics, have great potential to influence these transformation processes (Renting et al., 2012, p. 289). On account of their successes, long-standing FPCs in the US, Canada, and the UK have been informal guides for the growing number of FPCs in German cities. Nevertheless, to date, there has been no critical conceptualisation of social (in)justices, responsibilities, or guidance of “environmental subjects” (Agrawal, 2005, p. 178) by FPCs within the alternative food movement (Goodman et al., 2013).

This article explores the underlying power effects of political strategies and the invocation of sustainability-conscious subjects in the work of FPCs based on the following questions: What are the priorities of FPCs in their activism and political work and what are their motivations and objectives? What underlying understandings do FPCs have about what makes a food system sustainable? What ideals underpin the FPCs’ understandings of sustainable food systems and what, if any, contradictions are discernible among them? To what extent do forms of self and environmental responsibility become visible in the FPCs’ conceptions of sustainable food systems? To address these questions, the role of FPCs within the alternative food movement is clarified herein. Foucault’s concept of governmentality (Foucault, 1978, 1982) is then used to facilitate the analysis of the power relations and mechanisms for governing the self in the context of food. Applying this approach to an interpretative analysis of expert interviews with members of five German FPCs provides exemplary insight into their understanding of a sustainable food system and strategies for transforming local food policies. The results show how socio-ecological responsibility is (re-)produced in the transformation processes of the food system spearheaded by FPCs from within the alternative food movement.

## 2. Theoretical Approaches

### 2.1. Food Policy Councils in the Food System and Social Justice

Neoliberal urban regimes have compromised the ability of governments to meet people’s needs regarding food

and people have responded by organising on a local scale. In both Europe and the US, food activists have argued that local solutions resist the injustice that industrial capitalism produces (DuPuis & Goodman, 2005). However, there has also been some frustration with the lack of attention to social justice within the alternative agrifood movement itself. One of the reasons the local level has achieved such prominence in food politics is because of the failure of organic providers to address social justice issues (Guthman, 2008) and a socially just food system is generally considered “one in which power and material resources are shared equitably so that people and communities can meet their needs, and live with security and dignity, now and into the future” (Activist Researcher Consortium, 2004, as cited in Allen, 2010, p. 297). To effectively influence the struggle for social justice, the local food systems must:

- Increase our understanding of the economic, political, and cultural forces that have shaped the current agrifood system;
- Display a willingness to analyse and reflect upon which local food system priorities and activities work toward, rather than against, social justice;
- Establish periodically evaluated criteria for social justice (Allen, 2010, p. 297).

FPCs, organisations dedicated to these goals, have existed for several decades in the US and Canada. The first FPC was formed in 1982 in Knoxville, Tennessee, in response to limited access to healthy food resulting from poor food planning coordination (Harper et al., 2009, p. 17). In the last 10 years, the Johns Hopkins Center for a Livable Future has reported a steady increase in the number of FPCs in the US and Canada and there are now approximately 340 active FPCs registered; 71% of those are active in the county or/and city level (Bassarab et al., 2019, p. 3). Inspired by the activities in the US, the first European FPCs were formed in 2011 in Bristol, UK, while the first two German councils were founded in Berlin and Cologne in 2016. Now, there are almost 30 active councils in Germany, mostly in cities, including some that are still in the process of being founded. The fact that FPCs are a very recent phenomenon in Germany is reflected in Table 1.

In addition, FPCs are currently being founded in Austria, the Netherlands, and Switzerland. While some founding initiatives are being spearheaded by governments and political institutions, the majority of FPCs are being founded through civil society engagement (Netzwerk der Ernährungsräte, n.d.).

Although the term “food council” corresponds to the German *Ernährungsrat*, the more common English-language term “food policy council” is being used in this article to emphasise the political ambitions of the initiatives. Roberts (2010, p. 173) defines the basic concept of FPCs as follows:

**Table 1.** FPCs in Germany.

City/Region	Name	Foundation
Aachen	Ernährungsrat Aachen und Region	2019
Bayreuth	Ernährungsrat Oberfranken	2021
Berlin	Ernährungsrat Berlin	2016
Bergisch Gladbach	Ernährungsrat Bergisches Land e.V.	2022
Bielefeld	Ernährungsrat Bielefeld	2018
Bochum	Ernährungsrat Bochum	2020
Dortmund	Ernährungsrat Dortmund und Region e.V.	2022
Dresden	Ernährungsrat für Dresden und die Region	2017
Düsseldorf	Ernährungsrat Düsseldorf e.V.	2021
Essen	Ernährungsrat Essen	2019
Frankfurt am Main	Ernährungsrat Frankfurt	2017
Freiburg	Ernährungsrat Freiburg & Region e.V.	2019
Fürstfeldbruck	Ernährungsrat für den Landkreis Fürstfeldbruck	2018
Gießen	Ernährungsrat Gießen	2022
Hannover	Netzwerk Ernährungsrat Hannover und Region e.V.	2021
Kiel	Kieler Ernährungsrat	2018
Köln	Ernährungsrat für Köln und Umgebung	2016
Leipzig	Ernährungsrat Leipzig	2019
Lüneburg	Ernährungsrat Lüneburg	2019
Marburg	Ernährungsrat Marburg	2020
München	Münchner Ernährungsrat	2018
Münster	Ernährungsrat Münster	2021
Oldenburg	Ernährungsrat Oldenburg	2017
Prignitz-Ruppin	Ernährungsrat Prignitz-Ruppin	2018
Regensburg	Ernährungsrat Regensburg—Stadt und Land	2018
Saarland	Ernährungsrat Saarland e.V.	2018
Stuttgart	Ernährungsrat StadtRegion Stuttgart e.V.	2021
Tübingen	Ernährungsrat Region Tübingen und Rottenburg e.V.	2021

Source: Authors' work based on Netzwerk der Ernährungsräte (n.d.).

Food policy councils bring together people engaged in a wide variety of food organizations and activities to share ideas about and help initiate projects that advance community food security and food system sustainability and to develop public understanding that a sustainable and secure food system generates a wide mix of community benefits.

The core aspects of FPCs relate to access to food, hunger reduction, economic and health aspects of nutrition, and other particular socio-ecological criteria (Hodgson, 2019; Stierand, 2016). FPCs aim to develop a network structure through which stakeholders can generate influence and put pressure on the local food system. In turn, one of their significant goals is to establish socially and ecologically oriented agricultural production and processing. This includes, for example, land allocation procedures, community catering, or the establishment and promotion of regional value chains (Hamilton, 2002, p. 146). It is believed that these approaches will enable food system actors to create opportunities for co-determination over the local food supply and contribute solutions to issues related to the food system (Stierand, 2016, p. 314). Underlying understandings of responsible consumption,

self-care, and environmental care consistently emerge as drivers of the transformation process, as do the networks of the relevant and influential actors. The latter is particularly important because alternative food movements like FPCs do not act as autonomous entities detached from complex, powerful social processes. Instead, rationalities, regimes of truth and knowledge, and subjectivation processes are repeatedly (re-)produced (Foucault, 1978, 1982). In the following analysis, the governmentality perspective is used to shed light on the aspects of power relations related to the sustainability goals pursued by FPCs in the food context.

## 2.2. Governmentality and Food

According to Foucault's analysis of power and concept of governmentality, it is possible to uncover power relations that remain hidden from other theoretical approaches, in particular, those that emerge from discursive structures and, therefore, have repressive and productive effects (Doherty, 2007). Foucault's concept of governmentality was first introduced in his lecture series at the Collège de France on "Sécurité, Territoire et Population" ("Security, Territory, and Population,"

1977–1978) and “Naissance de la Biopolitique” (“The Birth of Biopolitics”; 1978–1979). In the lectures, Foucault (1982, p. 790) stated that:

“Government” did not refer only to political structures or to the management of states; rather, it designated the way in which the conduct of individuals or of groups might be directed....It did not only cover the legitimately constituted forms of political or economic subjection but also modes of action, more or less considered or calculated....To govern, in this sense, is to structure the possible field of action of others.

According to this view, a broader understanding of power is required, one in which power relations are not only seen as a relationship between those who govern and those who are governed as an exclusively state-institutionalised category, but more generally as subtle power relations that occur in all forms of social interactions “from innumerable points, in the interplay of non-galitarian and mobile relations” (Foucault, 1978, p. 94). Hence, power relations are mutable and fluidly “produced from one moment to the next, at every point, or rather in every relation from one point to another. Power is everywhere; not because it embraces everything, but because it comes from everywhere” (Foucault, 1978, p. 93). Here, Foucault is referring to the compounding moments of power that lead to the formation of governments as a “set of institutions and practices by which people are ‘led’” (Foucault, 1991, p. 176) through the production of knowledge, disciplined by institutions and processes of subjectivation. This directs the attention to practices where people do not obey laws or external constraints, but act on the basis of “the relations between truth, power, and subject without ever reducing each of them to the others” (Foucault, 2011, p. 9). In the context of food, this perspective allows one:

To see nutrition for what it is: a government of food choice which situates the individuals within a field of knowledge for explicit objectives, and, at the same time provides them with a way of constituting themselves as ethical subjects through a decipherment of their pleasures and fulfilments. (Convey, 2006, p. 161)

Recognising the subject’s position in contexts of knowledge and power in such a way allows “the consumer to make new value judgements about the relative desirability of foods [based on] their own knowledge, experience, or perceived imagery” (Renting et al., 2003, p. 398).

The study on ethical consumerism by Barnett et al. (2008, p. 643) underlines the importance of developing individualised strategies for targeting “choosy consumers” by making precise distinctions “between action, identity and subjectivity.” Subjectivation refers to “a form of power which makes individuals subjects” (Foucault, 1982, p. 781; see also Linnemann, 2018, p. 235; Reckwitz, 2017, p. 126; Strüver, 2009, p. 74):

This form of power applies itself to immediate everyday life which categorizes the individual, marks [them] by [their] own individuality, attaches [them] to [their] own identity, imposes law of truth in [them] which [they] must recognize and which others have to recognize in [them]. (Foucault, 1982, p. 781, gender inclusion added)

The ongoing process of identity formation as a subject is integrated into forms of power as “technologies of the self” (Foucault, 1988, p. 18). The power-analytical governmentality perspective enables us to include phenomena in the analysis “that have so far been assigned to the realm of individual preferences or free choices” (Füller & Marquardt, 2009, p. 90, translation by the authors; see also Linnemann, 2018, p. 237). In the context of food, in particular, both the material and the symbolic dimensions of governmentality become apparent. Thus, Hälterlein (2015) uses a governmentality perspective to situate eating beyond the fulfilment of basic needs. This allows forms of self-government to be considered as an interplay between subjectivation processes, care of the self, and the rationalities of everyday practices related to food. In turn, this shows which (historical) control mechanisms influence and steer ideas about consumption, associated discourses, institutions, and practices. As a result, it becomes clear how people eat or should eat is strongly influenced by social and environmental norms and cannot be explained by nutritional and physiological principles alone. This study explores the influence of social and environmental norms from a governmentality perspective through interviews with members of the FPCs.

### 3. Methodology

This qualitative research is based on semi-structured interviews with members of selected German FPCs that were conducted between September and November 2021. The sample FPCs for the analysis (FPC1, FPC2, FPC3, FPC4, FPC5a, and FPC5b) were chosen for two primary reasons. First, preference was given to FPCs that have been active for more than two years. However, as FPCs are a new phenomenon in Germany, younger councils were also included in the survey in order to obtain more data. Second, we created a balanced spatial representation of organisations from throughout Germany. In total, seven members of six FPCs were available for an interview. FPC5a and FPC5b refer to two interviewees from the same FPC. A pre-test was carried out with an additional FPC to check the interview guidelines. Most of the chosen interviewees were active board members or spokespeople and were also, often, the only contact listed on the FPCs’ websites. As leaders and administrators in the field, they provided the study with expert perspectives and further contextual information (Bogner & Menz, 2002, pp. 64–70). We have intentionally avoided identifying interviewees through personal characteristics to protect their confidentiality.

The pre-created interview guidelines consisted of thematic blocks with corresponding sub-questions. Initially, the interviews focused on gaining insights into the founding process, the structures, organisation, working methods, and composition of the councils. Subsequently, the arguments and narratives that occur within the food context were investigated through questions about the councils' (self-)understanding and their virulent ideas about how to create a transformation of the food system and associated policies. Finally, modes of food production and consumption were explored through questions about the FPCs' understandings of sustainable and healthy food.

As semi-structured interviews ensure great openness and flexibility, not all pre-formulated or follow-up questions were asked in every interview in accordance with the processual character of the qualitative research method (Mattisek et al., 2013, p. 168). A qualitative content analysis strategy was applied to the edited German transcripts following Mayring (2015) and using the software MAXQDA. The codes and sub-codes were deduced based on an earlier literature analysis and then applied to the supporting and explanatory statements extracted from the transcripts. The interviews and analyses were conducted by one researcher, who was supervised by a second throughout the process. All quotes from the interviews used in the article have been translated into English by the authors. In order to maintain confidentiality and facilitate coding and analysis, each FPC was assigned a number from one to five. It should be noted that the transferability of the results is limited due to the short research period and the small number of interviews. Nevertheless, a qualitative research method based on fewer data has provided profound insight into the inner structures, diverse content, and working methods of the FPCs. Furthermore, although the validity of qualitative research design has its limitations, a study designed to interpret and understand does not need to be statistically representative or provide as many case studies as possible. Such a study focuses, instead, on identifying and understanding the subjective patterns of the behaviour and perceptions of the interviewees.

## 4. Results

### 4.1. Motivations, Organisational Substructures, and Political Agendas of Food Policy Councils

The signing of the Milan Urban Food Policy Pact 2015 highlighted the recognition of the important role cities have to play in shaping a sustainable and just food system. However, from the FPCs' perspective, the political structures, regional value chains, and active city communities required to effectively implement changes that move the food system towards greater sustainability are lacking (Wiskerke, 2009, pp. 375–376). Networking with urban policymakers, other actors within the food system (e.g., farmers, restaurant owners, and retailers),

and initiatives from the alternative food movement (e.g., food sharing, community supported agriculture) are key elements of the FPCs' work and are seen as essential for the successful transformation of the food system (FPCs 1, 2, 3, 4, 5a, and 5b). These networking structures have already proven useful during the funding process. Furthermore, the majority of FPC members have the professional or technical expertise and prior knowledge within the food context (e.g., from science, food production, or retail) needed to facilitate and motivate engagement: "I have been active in climate protection for many years, especially in areas related to agriculture and agricultural transformation, and you can see how little has changed in the last twenty years" (FPC2). In this context, the importance of explicit knowledge, the resulting sense of individual responsibility, and the increasing importance placed on "governance-beyond-the-state" (Swyngedouw, 2005) have become evident. Thus, the idea driving the formation of FPC is that if the transformation of the food system "does not come from the city, then...we as civil society have to take over" (FPC1). A study by Schiff (2008) based on interviews with 13 FPCs in the US and Canada also concluded that the councils' self-image "relates strongly to that of acting as a citizen voice and facilitator for the advancement of public interest" (Schiff, 2008, p. 215).

This statement is underlined by the fact that all the councils studied were founded through civil society engagement and, partly, in cooperation with already existing associations. Nevertheless, all of them operate as registered associations that offer a certain degree of professionalisation, visibility, and increased legitimacy. In studies on the alternative food movement, their alterity is seen as particularly important to the transformation processes (Sage et al., 2021), but the somewhat precarious conditions of primarily voluntary structures have gone unnoticed. Institutionalisation makes it easier to apply for funding from city administrations, political ministries, and foundations and such funding can be used to finance projects or salaried positions. One interviewee considered this crucial if FPCs are "to be sustainable at all because if we preach sustainability but then can't pay our staff, it's super difficult" (FPC3). Funding for paid positions enables more efficient administration of funds, membership applications, and public relations work. It also testifies to the need for defined responsibilities and institutionalisation if the organisation is to become something more than just "an initiative" (FPC5a). A close and productive cooperation with the city administration is also advantageous "in contrast to those who, let's say, act purely as opposition or who always say that they deliberately do not cooperate with local politics" (FPC1). Moreover, developing a holistic food strategy is a strategic instrument that can be used to facilitate such cooperation, especially if it addresses various political and administrative sectors, the private sector, and civil actors as per the models found in the US and the UK. Despite its informal character, a food strategy generates

a declaration of intent and, thus, engenders a level of commitment from the city and an impetus to implement the formulated goals (Moragues et al., 2013, pp. 6–7).

The complexity of the food system means that a variety of key criteria are required for the transformation processes, a reality that is reflected in the broad content of the working groups. Workshops and programmes for food education, urban gardening, and communal catering occur in a similar form in all the FPCs interviewed. Furthermore, the councils strive for comprehensive public participation, for example, through plenary meetings. This practice reflects the FPCs' understanding of participation as "a network, a platform, a voice...where everyone can participate, in contrast to the current system that has no space for decision-making, no participation" (FPC1). From a governmentality perspective, this can be considered as an understanding of "participants' and 'knowing' citizens who become active, responsible and productive" (Junge, 2008, p. 299, translation by the authors). An essential component here is the transfer of knowledge about how to create a sustainable transformation of the food system by addressing the issues presented below.

#### 4.2. Organic, Regional, Seasonal, and Just = Good Food for All?

The foundation for the transformation of the food system is more sustainable food production and consumption, as was mentioned several times in the interviews. Over time, sustainability has become accepted as a universal concept leading social change. "In the course of this development, what is understood by sustainability in each case has been enriched with very different perspectives and interests" (Neckel et al., 2018, p. 12, translation by the authors). FPCs consider sustainability in the food context as primarily based on consensual assumptions, that is, they assume "that everyone knows what is meant by it because everyone has the background" (FPC5b). However, a common definition is often missing, for example, "issues like meat or no meat...I think that many of us have individual positions and opinions on this, but we have not taken a common statement as an FPC" (FPC3). Instead, the interviewees identified the central elements of sustainable food using the keywords "organic," "regional," "seasonal," and "just," as is discussed in more detail below.

One interviewee articulated the idea thus: "As an FPC, we would say sustainable food or sustainably produced food is, for us, food that is certified organic" (FPC1). Such statements reflect the fact that the FPCs interviewed are simultaneously advocating for more sustainable conventional agriculture as part of their overarching transformation process:

Now it's not necessarily organic by a long shot, but we have to look at how we can strengthen their [the food producers'] economic situation so that they are then

in a position...to say...now I'm going into sustainable production. (FPC1)

Aspects of justice are also a key challenge for agricultural production, for example, "when it comes to working conditions, when it comes to fair wages along the entire value chain" (FPC4). "How do we manage to pay the producers a fair price and at the same time offer food at a price that everyone can afford?" (FPC3). Interactive events are one way to involve farmers in the transformation process, to tell them "you are not alone in your responsibility...politics must step in and support you" (FPC4). This is important because "the farmers are not to blame, they are who we have to take along with us in order to change things" (FPC4). In the field of agricultural production, the limited opportunities for FPCs to exert actual political influence are evident, with the result that demands are only being made of local politics. This is partly due to the complex, entrenched structures within the food system and partly due to the newness, missing financial resources, instability, and inadequate visibility of the FPCs (Schiff, 2008, p. 211).

In the globalised food market, organic products often fall into disrepute and are considered non-sustainable because of the long transport routes and the anonymity of the producers (Wiskerke, 2009). Therefore, the local is often considered more desirable and preferable to processes operating on larger scales. What is considered desirable about it varies but often includes "ecological sustainability, social justice, democracy, better nutrition, and food security, freshness, and quality" (Born & Purcell, 2006, p. 195; see also Ermann & Strüver, 2021, p. 182). As Prové et al. (2019, p. 180) point out in their comparative study of FPCs in Ghent and Philadelphia, many FPCs "take advantage of the momentum for the emergence of the local scale in food governance." Together with seasonality, regionality is also associated with better taste, "unlike the...tomatoes from Spain [which] are carted 2,000 km and don't taste at all, but only cost 99 cents or so" (FPC5b). Under the banner of regional and seasonal, FPCs can steer practices and governance through social and spatial construction of scale: "That's why it also makes sense that we initiate certain processes here on site that simply fit the region" (FPC3; see also Prové et al., 2019, p. 180). There is no fixed definition for regionality, and the term is frequently discussed within the FPCs (FPC3). However, their equation of regional with "good"—that is, more environmentally friendly and socially sustainable—is criticised *inter alia* by Born and Purcell (2006) who used the term "local trap" to counter the "assumption that the local is inherently good" (Born & Purcell, 2006, p. 195). Similarly, Winter (2003) uses the buzzword "defensive localism" to emphasise the moral exaggeration associated with localisation, which is also often protectionist in character as it seeks to protect "local" producers against competition from "outside."

A transformation of the food system not only requires the consumption of "good" food, but it also

means “that, sometimes, people may have to abstain from things” (FPC5b; see also Pritz, 2018, p. 77). The sacrifices that accompany eating regional and seasonal food are offset by the food’s compelling taste. One interviewee described the experience as follows: “When I really got used to seasonal fresh vegetables and also noticed how different they taste, how good they taste, how many flavours are in there and how alive the vegetables still are, that...gave them a completely different value” (FPC2).

Together with other normative attributes of food—for example, fair, vegetarian, or vegan—their consumption creates a clear conscience “not only for my health and the climate, but also for the taste and the cooking experience, for the pleasure then of eating” (FPC2; see also Ermann & Strüver, 2021, p. 181). Thus, in addition to the environmental consequences, aspects of health, taste, and enjoyment are also relevant and show that “every food and every act of eating establishes complex relations among countless humans and non-human beings and realities” (Lemke, 2012, p. 18, translation by the authors). However, the political strategies of FPCs rarely refer to health issues explicitly, which reveals a recognisable equation between sustainable food and a healthy diet. Health aspects, therefore, remain invisible and taking care of one’s health remains the responsibility of the individual.

On this basis, the FPCs’ projects typically address the development of responsible individuals who are expected to adhere more or less to what is considered good and bad, healthy and unhealthy. In this way, norms of the body and behaviour are not only constituted but also performatively changeable (Kühnemann & Günter, 2021, p. 199). Indeed, self and environmental responsibility, rationalities, and knowledge can be understood as the result of governmental logic (Foucault, 1979/2008, pp. 259–260; Lemke, 2014; Linnemann, 2018, p. 241). As a result, everyday practices such as sustainable shopping, cooking, and eating underlie strong bodily, temporal, and spatial imaginaries that shape the good way of eating.

#### *4.3. Generating Self and Environmental Responsibility in the Food System*

The previous sections have already touched on how changing diets through transformation processes and related normativity go hand in hand with very specific modes of subjectivation. As has been shown, they refer to both external and self-governing mechanisms of consumption. The FPCs interviewed explicitly reject prohibitions related to consumer behaviour and, instead, focus on educating critical and conscious subjects as “many people no longer know where a cucumber actually grows. What is actually in it. And this also applies to all other food products” (FPC5a). In addition, they believe that it is “actually better...to develop sustainable and responsible consumer behaviour from the very beginning” from

a young age, as “it’s easiest, so to speak, to do it in nurseries and primary schools because there are still a lot of opportunities there and children are still very open and want to discover things” (FPC1). This belief also drives the creation of sustainable offers in community catering through which people experience the food directly. All the FPCs interviewed have working groups focused on this issue as community programmes have the potential to reach a large number of people through municipal institutions such as hospitals and schools. The impact of community catering is a significant leverage point for gaining greater urban policy influence, this is, one interviewee declared, “where we can have an effect” (FPC4; see also Rückert-John et al., 2011, pp. 44–48).

Various cooking workshops, pandemic-related online dinners, and events for the self-preparation of food also address sustainable forms of eating equally well, “however, this then leads to consumption decisions being made differently or reconsidered” (FPC5). The mode of sustainable action is thus manifested in “subjective self-relations” (Pritz, 2018, p. 78, translation by the authors), whereby resulting technologies of the self relating to the understandings of sustainable food presented here become active and imply a specific causality between private actions and politicised consumption. An empirical study by Krüger and Strüver (2018) confirmed the mediated effect that ecological values and norms of sustainable consumption have on individualised food practices and discourses of responsibility. Thus, the interviewees in this study primarily assigned the responsibility and the power to shape sustainable food practices to consumers. This is consistent with the assumption that food becomes a bearer of demands for action and preferences to producers and “that’s why it’s super important to support regional products because where there’s a demand, the supply then adapts” (FPC2). The conception of eating as a political act that can be used to control production down to the smallest detail is taken up here as a strategy to transform the food system to “convince the city to put this issue on its agenda and address it” (FPC1; see also Ermann & Strüver, 2021). At the same time, it is acknowledged that “you can never blame an individual...[in order to] save the climate or be solely responsible for sustainability because that has a lot to do with structural things” (FPC3). Nevertheless, the project contents of the FPCs are often stuck on the individual level where “everyone [has to] somehow take a good look at themselves” (FPC1).

## **5. Conclusion**

With the growing awareness of the potential of cities to shape a more sustainable food system, FPCs, as part of the alternative food movement, are working to develop strategies and programmes for shaping food policy at the local level. This study has examined the work FPCs are doing to transform the food system from a governmentality perspective and with a focus on the underlying



power effects. The analysis is based on statements from interviews with members of FPCs in five German cities. The key issues identified include networking with a wide range of actors in the food system and designing agricultural production in a sustainable and just way. In this context, the attributes “organic,” “regional,” “seasonal,” and “just” were identified as the characteristics of “sustainable” food and a good way of eating in a green and just city. Thus, it has become clear how FPCs stimulate subjectivation processes through rationalities, knowledge, and the individualisation of environmental responsibility. Food education in schools, various workshops, and participatory activities convey the necessary knowledge, while citizens are called upon to actively participate by making sustainable and conscious consumption choices. In addition, an equation of sustainable food with a healthy diet was identified, whereby health appears as a private matter of self-care through conscious, health-promoting eating. While the transformation of the food system is a necessary and urgent goal, from the perspective of governmentality, research on alternative food movement initiatives, such as FPCs, facilitates critical engagement with reproduced power effects toward providing good food for all and “the making of environmental subjects” (Agrawal, 2005).

This study is based on interviews with German FPC members and not with representatives from the broader public reached by them. The results provide insight into the desired, as opposed to actual, changes that FPCs aim to bring about. Given this limitation, we suggest it would be useful for future research to combine both perspectives in order to generate deeper insights into the intertwining of power and knowledge regarding changing diets and consumer choices. Interviews with other actors in the food system addressed by FPCs, such as political representatives, farmers, caterers, or grocers may also offer further, deeper insight into the influences on local food policy.

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### Conflict of Interests

The authors declare no conflict of interests.

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Article

# How Context Matters: Challenges of Localizing Participatory Budgeting for Climate Change Adaptation in Vienna

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## Abstract

Participatory budgeting originally aimed to promote greater political representation and resource distribution for vulnerable populations. As it globally circulates, however, existing literature points out that its local interpretations and implementations often fall short of proper tools and mechanisms to advance its emancipatory potential. So far, the roles of different actors, objectives, and toolkits that contribute to diverging local experiences and outcomes have been widely studied. In contrast, extant research has rarely addressed the implications of different spatial contexts and their challenges—and the implicit potential—considering the distinctive institutional arrangements and opportunity structures at the urban scale. This article investigates how the policy idea of participatory budgeting landed in Vienna at the district level in 2017 (Partizipatives BürgerInnen-Budget), its outcomes, and how it evolved into a city-level project for climate change adaptation (Wiener Klimateam). It explores how the local institutional and structural conditions—including the political backing for such initiatives—influence the motivations, expectations, and experiences among different governmental stakeholders at multiple governance levels, shaping place-specific outcomes of participatory budgeting. It unpacks the specific opportunities and constraints of the deployed participatory tools in budgeting processes, according to three core values of democratic governance (legitimacy, justice, and effectiveness). The conclusion discusses the potential trade-offs between these three dimensions and argues that the current form of participatory budgeting in Vienna may increase legitimacy in the process but have less of an impact on the effectiveness of the delivery and the empowerment of vulnerable populations in the outcome.

## Keywords

citizen participation; multilevel governance; participatory budgeting; social justice

## Issue

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## 1. Introduction

Since the late 1960s, progressive scholars and grassroots movements argued in favor of more open and participatory urban policymaking, encouraging the state bureaucracy to directly engage with citizens and, thus, facilitate new governance mechanisms to accommodate emerging social needs. While social scientists have since made different and competing judgments on participatory and

deliberative (collaborative) governance (see Silver et al., 2010), expectations of citizen participation and its institutionalization for enhancing democratic values have persisted for decades, indicating that “the issue of democratic procedures remained pertinent” (Fainstein, 2010, pp. 27–28).

Despite the growing inclusion of civil society in public decision-making worldwide, there is considerable evidence that citizen participation—without a proper

organizational design and structure—may limit deliberation to exclusive social groups and, thus, produce policy outcomes that are biased toward partial interests (see Warren, 2009). In response, some have argued that the pursuit of social justice in participatory processes must entail tailored attention to those who benefit less from the existing system of resource distribution. They must also foresee status recognition rather than the equal treatment of all in open communication (see conscience of planning in Banerjee, 2007; the just city in Fainstein, 2010; and equity planning in Krumholz & Hexter, 2018). Contrary to the conception of deeper democracy as the normative standard in just politics (see collaborative planning in Healey, 2006; see also commons planning in Marcuse, 2009), they contend that the naive trust in the power of citizen participation disregards existing socioeconomic problems and institutional constraints, which might work against achieving equitable impacts in the outcome.

Similarly, a growing body of governance research has challenged the conception of horizontal and networked communication as a normative must on which social justice is built, or grassroots social movements as the principal force of social change (cf. Healey, 2012; Innes & Booher, 2015; Mayer, 2009). In contrast, it acknowledges the mutually reinforcing effects of collaboration between citizen and government capabilities (van Meerkerk, 2019), combining both institutional and social innovation (Eizaguirre et al., 2012), and enabling more affirmative public-community relationships as well as effectiveness in action (Stout & Love, 2017).

Furthermore, this area of scholarship has increasingly shed light on the diversifying settings and qualities of participatory mechanisms, generating differentiated pathways and outcomes of citizen participation in its real-world implementation (see Hendriks, 2014). In light of increasing policy mobility at the global scale, such contextual dimensions are gaining more relevance in today's networked policymaking (Cucca, 2022), in particular, the organizational aspect of collaborative governance aimed at designing forms of equitable citizen participation (see Bianchi et al., 2021). While similar participatory toolkits travel between neighborhoods and cities, in fact, existing literature points to increasing ambiguities behind their potentially diverging contexts, whereby—albeit with similar aims, objectives, and target groups—outcomes may significantly differ (see Harris & Moore, 2013).

Empirically, this article uses Vienna's two participatory budgeting processes, *Partizipatives BürgerInnen-Budget* (2017–2021) and *Wiener Klimateam* (2022–2023), as a research window through which to look at the context-bound opportunities and constraints of incorporating civil society into urban policymaking in general, and their transformative role in climate change adaptation in particular. Despite the intense transnational spread of participatory budgeting since the 1990s, the literature shows that its emancipatory potential does not always travel to different places (Montero &

Baiocchi, 2022). This is especially true in European and North American cities, where liberal political organizations push forward top-down budgeting processes that often lack accountability and transparency (Touchton et al., 2022). In this light, extant research has so far focused on the role of different actors, objectives, and toolkits behind the differentiated local outcomes in the European model of participatory budgeting (see Bartocci et al., 2019; Cabannes & Lipietz, 2018).

In contrast, this article places the challenges of designing participatory budgeting within the city's distinctive political opportunity structure that is anchored at a specific layer within the multilevel governance hierarchy: the neighborhood level. We refer this structure to the contextual circumstances providing the policy process with the specific level of capacity for implementation and change (see McAdam, 1996). It regards this particular institutional as well as structural context, within which participatory policies unfold, as a critical element of the budgeting process, impacting their outcomes. This context-sensitive approach serves two purposes. First, it fills the knowledge gap in the existing literature, which rarely connects diverse spatial contexts, and focuses exclusively on a single—external or internal—condition behind localizing participatory budgeting (Bartocci et al., 2022). Second, it embeds Vienna's current budgeting model in its spatial and regulatory contexts, considering the aim of making citizen participation more equitable for the disadvantaged, even though context-sensitivity remains an underplayed aspect of Vienna's participatory policymaking (Ahn & Mocca, 2022).

Against this background, our analysis situates Vienna's approach to participatory budgeting among other international and European models, unpacking the conjoining contextual factors that underpin its processes and outcomes. Its specific institutionalization process, which has been upscaled from the district to the city level over time, provides new insights into “how [participatory budgeting] can work in different settings and at different institutional levels” (Bartocci et al., 2022, p. 15). To consider its broader spatial dimension, this article asks how three analytical elements (structural conditions, policy design, and political opportunity structure) contribute to the place-specific potential and challenges of localizing participatory budgeting for climate change adaptation within Vienna's multilevel governance setting.

The remainder of this article proceeds as follows. First, Section 2 outlines its theoretical frame. This is followed by Section 3 on the case study setting and Section 4 on the methods and data that are used. It then presents the major empirical findings in Sections 5 and 6. They will unpack the participatory mechanisms within our cases and their varying capabilities to advance three core values of democratic governance: legitimacy, justice, and effectiveness. Finally, it concludes with some final remarks and suggestions for future research.

## 2. Social Justice Through Citizen Participation and How Participatory Budgeting Might (Not) Enhance It

One of the earliest and most frequently cited examples of justice-enhancing citizen participation is participatory budgeting in Porto Alegre, Brazil (1991–2004). In brief, participatory budgeting refers to a democratic process, both economic and political, where community organizations in the city's poorer neighborhoods or the residents themselves define local governance priorities, plan and manage fiscal resources, and oversee the effective implementation of those budgetary decisions (de Sousa Santos, 1998). In Porto Alegre, new investment priorities that represent urgent local needs—for example, the improvement of basic public services—provided structural incentives to those in the impoverished neighborhoods, facilitating the participation of underrepresented social groups and, as a result, allocating budgetary resources to the city's poorest areas (Marquetti et al., 2012).

Since the success of the Porto Alegre model, the core concept and idea of participatory budgeting have traveled to thousands of cities across the world. Increasing mobility notwithstanding, its global circulation has trade-offs. Existing scholarship has raised concerns about its diffusion as a best-practice toolkit, uprooted from the historical context of the invention, only to serve other governance priorities that represent the political interests of government actors in the Global North (Baiocchi & Ganuza, 2017) as well as the Global South (Sintomer et al., 2012). Despite its innovative democratic potential (Abdel-Monem et al., 2016; Cabannes, 2015, 2021; Swaner, 2017), only a few were able to fully achieve the substantive political and economic empowerment of the disadvantaged, limiting its transformative capacity to an “abstract discussion of the general principles at play” (Baiocchi & Ganuza, 2014, p. 42; see also Cabannes & Lipietz, 2018; Nez, 2016).

This line of research has developed conceptual models and normative expectations on the diverging processes and outcomes of localizing participatory budgeting, seeing existing sociopolitical and socioeconomic conditions as an important source of such differentiation (see Sintomer et al., 2016; Wampler et al., 2021). For example, earlier participatory budgeting in Latin American cities, combining top-down and bottom-up mobilization, shared common deliberative features and emancipatory principles with a similar socioeconomic profile (Goldfrank, 2007). In contrast, participatory budgeting in European cities mostly features a vertical organizational structure with a strong role played by left-wing politicians and activists, while varying in socioeconomic conditions (Touchton et al., 2022). The differences within the European experience lie in existing democratic and participatory traditions, influencing the diverging dynamics of participatory budgeting (Sintomer et al., 2016). Nevertheless, the shared concern in the European experience continues to be the organized interests of those

behind its local implementation, advancing communication and deliberation in the governance process rather than the empowerment of the disadvantaged in the actual outcome (see Bartocci et al., 2019; Cabannes & Lipietz, 2018).

This weakness of the justice-enhancing mechanisms in its localization is not only affected by different motivations, logics, and instruments, but also by some important practical challenges that government actors face. On the one hand, disadvantaged citizens may not possess the appropriate knowledge, local language proficiency, and expertise concerning governing complex urban issues, such as climate change adaptation, to make their contribution to participatory budgeting anything meaningful. On the other hand, cities and their institutional actors represent only one of many scales within the complex governance system. Therefore, their capacity to intervene in structural problems, transform existing institutional arrangements, and, as a result, overcome inequalities is very much limited within the particular territorial context under scrutiny. From the mid-2000s onward, in fact, the joint effect of overrepresentation of civil society organizations and decreasing institutional capacity among municipal actors reinforced a steady decline of participatory budgeting in its place of origin: Brazil (Coleman & Cardoso Sampaio, 2017; de Paiva Bezerra & de Oliveira Junqueira, 2022).

Concerned with diverging experiences and outcomes of the ubiquitous shift toward participatory governance, scholars in the governance literature also employed normative frameworks for evaluating the diverse possibilities of participatory programs and their designs. Fung (2006), for example, formulated a three-dimensional institutional design space, as an interpretative frame to analyze the particular potential and limits of varying participatory designs in relation to “who” (participants), “how” (communication/decision-making), and “what” (authority/power). The way participation is designed along these three points will influence its capability to advance legitimacy, effectiveness, or justice, because “particular designs are suited to specific objectives” (Fung, 2006, p. 74). These analytical dimensions allow us to connect the specific mix of actors involved (who) with the mechanisms in policy design that frame the participatory process (how) and contextual conditions within which claims are made (what). The result is the specific sociopolitical and socioeconomic opportunity structure tied to the specific territorial context.

In this conception, justice-enhancing reforms diminish political inequality by expanding the “who” and “what” dimensions of institutional design, advancing the needs of those who are ill-served by existing institutions and public policies from dealing with a particular urban problem (Fung, 2006, p. 72). Accordingly, such reforms may require a substantive political objective and structural incentives that redistribute power and resources to a specific target group and area. In this case, the “how” is different from other instruments promoting

effectiveness (e.g., administrative decentralization) or legitimacy (e.g., public meetings and hearings). The latter two demand more intense communication and negotiation between citizens and public actors.

In this view, a participatory approach to climate justice should provide equitable distributional outcomes—prevailing over legitimacy and effectiveness—to disadvantaged communities that are especially vulnerable to the impact of climate change. The resulting institutional adaptation might address inequalities in the participatory process and enhance capabilities in the outcome (Fainstein, 2015; Schlosberg, 2012; Steele et al., 2012). Policies promoting climate justice need political and economic empowerment of disadvantaged communities beyond bargaining and deliberating to ensure real restructuring of governance priorities based on their underrepresented needs. Advancing the capabilities of disadvantaged communities vis-à-vis the impacts of climate change must address the uneven concentration of decisional power to resource-rich participants and substantiate proper economic and power redistribution to the city's poorer residents.

### 3. The Case Studies Context

The participatory budgeting cases analyzed here are embedded in the particular governance structure. From an institutional perspective, Vienna enjoys considerable administrative freedom, being both a municipality (*Gemeinde*) and a regional government in a federal state (*Bundesland*). This allows its institutions to develop robustness to withstand external crises but also limits decision-making power to the governing coalition, the city administration, and public sector organizations (e.g., Housing Fund, Local Agenda 21, and Urban Renewal Office) in the policy implementation. This tendency has compounded bureaucratic obstacles to meaningful inclusion of civil society in participatory programs, which often fall short of proper mechanisms and tools to ensure equitable opportunities for its vulnerable populations (e.g., non-EU migrants, youth, and older people).

Vienna's neo-corporatist governing system and its top-down policy-making style have been often considered an obstacle preventing the full-fledged participation of non-institutional actors in the policy process (see Novy & Hammer, 2007). Coinciding with the city's long-term structural transformation (see Kazepov & Verwiebe, 2022), however, a series of administrative reforms has incrementally opened up diverse pathways to grassroots participation, and rescaled considerable urban governance responsibilities down to the district level.

Since the late 1980s, in fact, Vienna's 23 districts have had full or partial jurisdiction with their own budget to self-govern small-scale urban issues, such as street greening and maintenance, coordinating citizen participation in localized urban projects with decentralized public offices. Despite growing political responsibilities, their financial resources are limited. Their total budget (circa

€248 million in 2021, 1.5% of the city budget) depends on the city's income and municipal tax revenue rather than a specified percentage of the city government budget, which is unevenly distributed to each district based on their structural conditions (e.g., population and road network) and the tasks specified by the city (e.g., green space and road management).

These two trends—the growing responsibilities of the city's districts and new institutional platforms for citizen participation—also extend to the effort to address climate change issues. Since the 1990s, a transition to sustainable energy and transportation and the reduction of urban heat islands became, among others, the city's most urgent environmental priorities, facilitating a policy shift toward an ecological approach to urban planning that rolled out new modes of collaboration for small-scale green infrastructure development.

One such effort is citywide participatory budgeting for climate change adaptation (2022–2023)—Wiener Klimateam—which aims at transforming citizen inputs into needs-oriented climate measures at the district level. Currently, district officials are fully responsible for planning, managing, and maintaining urban green space. Wiener Klimateam was kicked off in three districts (Margareten, Simmering, and Ottakring) in April this year. Its budgeting process involves five stages: (a) on/offline idea submission; (b) expert idea screening; (c) face-to-face co-creation; (d) project selection; and (e) implementation.

In our analysis, we will focus on the first two districts, where district-level participatory budgeting—Partizipatives BürgerInnen-Budget—already took place in previous years (2017–2021). This specific temporal dimension of the Vienna case enables a cross-case comparison between the two neighborhoods not only in terms of specific ideas, needs, projects, and requests, but also the deployed participatory tools, the idea selection processes, and the financial support for project implementation.

In design terms, the participatory instruments deployed in both Partizipatives BürgerInnen-Budget and Wiener Klimateam are slightly different. Partizipatives BürgerInnen-Budget exclusively relied on online participation and communication. This reflects the general trend toward online participatory budgeting in most European cities since the late 2010s as a solution to low turnout and high opportunity costs in the traditional budgeting process (Wampler et al., 2021). Wiener Klimateam combines both online and offline instruments at different stages of the overall budgeting process, using extensive onsite information events and a digital platform to collect budgeting ideas, and face-to-face meetings to co-develop selected ideas into concrete projects. As witnessed by other examples of “e-PB” (Stortone & de Cindio, 2015), such a hybrid form of participatory budgeting is also gaining increasing popularity elsewhere, especially targeting middle-class and younger residents in wealthier areas (Touchton et al., 2019).



In structural terms, both case districts diverge with respect to demographics, residential density, heat exposure, green spaces, and public transport connection. Margareten is a central district with a comparatively high population density and a limited amount of green space. Simmering, in contrast, is a peripheral district, characterized by large urban development projects, modest population density, and an adequate supply of green space. The main environmental issue here relates to transport, characterized by an above-average share of commutes and longer distances to public transport stops. Both districts also differ in socio-economic aspects. Margareten can be characterized as a middle-class district with an above-average share of well-educated residents and a moderate average net income, whereas Simmering can be characterized as a working-class district with a substantially lower education level.

These contextual dimensions might produce district-specific challenges that Wiener Klimateam could address through the participatory processes in Margareten and Simmering. We assume that they may influence who participates in the idea submission process and what claims are made as a result. In turn, this will affect the extent to which the districts can effectively manage the budgeting outputs for longer-term environmental impacts. To consider this, we reflect also on previous experiences with Partizipatives BürgerInnen-Budget in both districts. This will also allow us to disentangle the democratic elements of both budgeting designs in question. Therefore, our analysis attends to the relationship between the small-scale socio-spatial contextual conditions, the specific policy design, and the resulting opportunity structures influencing the specific patterns of citizen inputs from the case districts.

#### 4. Methods and Data Collection

Methodologically, we draw inspiration from mixed methods approaches, deploying a “convergent design strategy” (Creswell & Plano Clark, 2017, p. 68). Accordingly, we collected and analyzed qualitative and quantitative data independently, and then merged the two to combine the results.

First, we conducted a content analysis of the policy advertisements and interviews with key actors in media and four preparatory documents declaring the objectives, goals, and deployed methods behind Partizipatives BürgerInnen-Budget and Wiener Klimateam. This first step identified (a) the institutional and structural contexts, from which both budgeting processes emerged; (b) their anticipated political and social aims; and (c) the specific participatory designs and mechanisms.

Second, nine expert interviews were held with the key institutional stakeholders both at the city and district levels, capturing their varying motivations, expectations, and practical experiences from the two budgeting processes. Based on a hybrid approach to thematic analysis (Fereday & Muir-Cochrane, 2006), elicited data were

coded and classified into thematic units for correspondence with some pre-established categories (legitimacy, justice, and effectiveness), identifying their perceived (in)abilities to advance the anticipated policy objectives (democratic learning, just climate protection, and governance innovation).

Third, we collected more than 1,100 citizen inputs from the budgeting processes in both districts, which were submitted online (<https://partizipation.wien.gv.at> and <https://klimateam.wien.gv.at>). These were then coded and quantified for (a) the number of citizen inputs; (b) their thematic focus concerning environmental, social, traffic, or political issues; and (c) the number of received votes (see Tables 1 and 2).

Fourth, we analyzed socio-structural and environmental administrative data at the smallest available scale for both districts. Basic indicators on place-specific social (educational level and share of foreign citizens) and environmental conditions (heat exposure, population density, green space availability, and transport access) were calculated and mapped, using a geographic information system.

Lastly, following Fung’s (2006) analytical approach to democratic governance, we interpretatively integrated the coded qualitative data on expert attitudes and perceptions with the tabulated data on the citizen inputs and the identified structural conditions in both case districts. For legitimacy, we analyzed how recruitment procedures and selection tools influenced the participation rate in the budgeting process. For justice, we analyzed how the overall participatory design facilitated the specific thematic patterns of the citizen inputs as well as their (uneven) spatial patterns in underserved areas of the city’s environmental policies. For effectiveness, we analyzed how the district actors perceived the feasibility of the implementation of citizen inputs based on their institutional capacity and financial resources within Vienna’s multi-level governance setting.

#### 5. Localizing Participatory Budgeting in Vienna’s Districts: First Steps

Vienna’s first participatory budgeting was launched in Margareten in 2017. Due to lacking financial commitment at the city level, the district council used its budget to organize and implement the budgeting process, adopting the city’s existing participatory tools and using its online platform. The formal procedure of the official budgeting cycle included (a) online idea submission, (b) feasibility evaluation by the district committees, (c) selection by the district parliament, and (d) implementation. District-level participatory budgeting took place four times in Margareten (2017–2020) and twice in Simmering (2018–2021), using the identical format for recruiting and engaging with citizens, as well as selecting and implementing submitted budgeting ideas.

One of the major motivations behind implementing participatory budgeting among the district actors was

to enhance citizen participation in district politics for those without voting rights—e.g., foreigners and youth (see Stadlmair, 2020). Both districts feature an above-average share of foreigners and, as a result, a gap in electoral participation has continuously increased. However, the experience that the district actors share points to the difficulties of maintaining representativeness in an open-to-all online participatory format. In fact, participation biases resulted from the self-selection of residents and lacking interest among the more disadvantaged groups. The emerging concern was related to the idea submission process, and it is being dominated by a few individuals and organized groups, limiting the participatory process to the “internet-savvy (and well-educated) middle-class.” With recruitment tools mostly limited to online advertisement, the anticipated objective of narrowing the distance between ordinary citizens and district politicians—and thereby enhancing legitimacy—was hampered by low participation rates, especially in Simmering with a higher share of the low-educated, benefiting from only around one budgeting idea per 1,000 residents, as opposed to 3.2 in Margareten.

Such participation biases further reduced the thematic and geographical range of the submitted bud-

geting ideas to very specific urban issues and areas (small-scale greening and new urban designs in the northwest of Margareten and the south of Simmering; see the Environment and Social in Table 1). Despite the general motivation to locate new urban challenges in their respective district, the shared experiences among the respondents indicate the evident shortcomings of indiscriminate open-to-all participation, which was perceived as less useful in addressing the underrepresented issues—and thus advancing social justice—in mainstream politics. In fact, the submitted ideas actually reflected existing structural problems in both districts less (e.g., lack of green space, high heat vulnerability, and population density in the south of Margareten and in the center and north of Simmering; see Maps D, E, and G in Figure 1). The shared understanding of the thematic bias was not only because the district actors believed that “middle-class” interests would reinforce the social exclusion of others, but also that citizens—without prior support—generally lack knowledge about complex governance issues involving political, social, and technical expertise.

Indeed, the budgeting process solicited a range of ideas that complement the general aesthetics of good

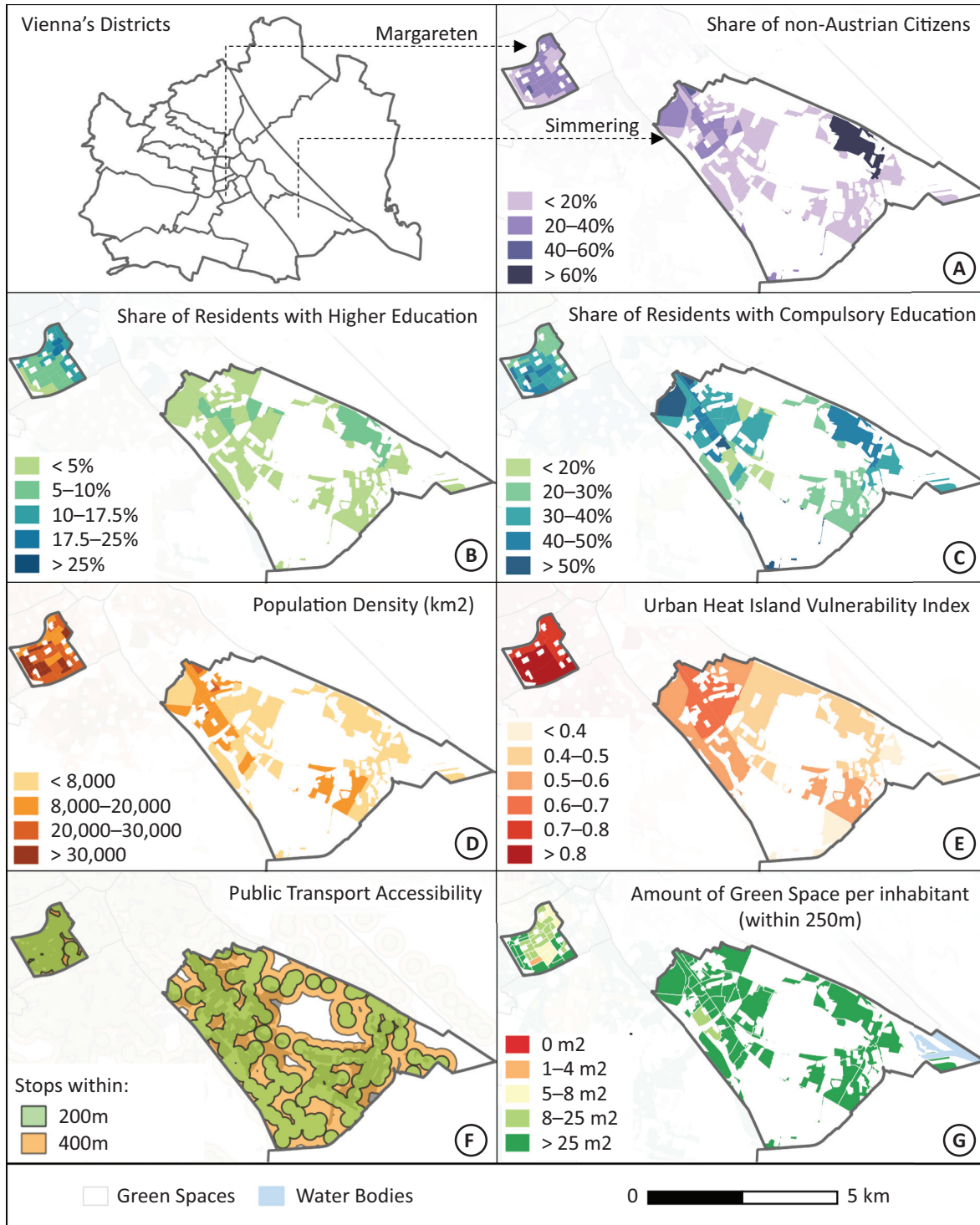
**Table 1.** Submitted budgeting ideas in Margareten (2017–2020) and Simmering (2018–2021): Top five.

Submitted Partizipatives BürgerInnen-Budget Ideas (Total and Top Five)					
	Total	%		Total	%
Margareten			Simmering		
Environment	78	29.3	Environment	56	21.8
<i>of which</i>			<i>of which</i>		
Street trees	22	28.2	Green space	12	21.4
Green space	9	11.5	Street trees	12	21.4
Dog waste	6	7.7	Green stops	8	14.3
Gardening	6	7.7	Flower strips	3	5.4
Flower strips	4	5.1	Odor pollution	3	5.4
Social	83	31.2	Social	47	17.9
<i>of which</i>			<i>of which</i>		
Cultural events	15	18.1	Cultural events	10	21.3
Sport facilities	15	18.1	Children	5	10.6
Seating	7	8.4	Street art	4	8.5
Children	5	6	Water fountain	3	6.4
Public toilet	4	4.8	Consumption	2	4.3
Traffic	104	39.1	Traffic	150	58.4
<i>of which</i>			<i>of which</i>		
Shared zone	15	14.4	Public transport	24	16
Bicycle parking	13	12.5	Bike path	21	14
Speed limit	10	9.6	Speed limit	15	10
Bike paths	8	7.7	Traffic light	13	8.7
Traffic lights	7	6.7	Car parking	11	7.3
Total	266*		Total	257 <sup>†</sup>	

Notes: \* One entry in the category Politics excluded in the analysis; <sup>†</sup> five entries in the category Politics excluded in the analysis. Source: Authors’ work based on data from Bezirksvorstehung Margareten (2019) and Bezirksvorstehung Simmering (2021).

neighborhood life in both districts, such as street tree planting, green space creation, and hosting cultural events (see Table 1). Among the respondents, however, its complete openness in the idea submission was perceived to have stimulated no particular input

that addressed urgent problems detrimental to the well-being of the urban poor. Budgeting ideas for urban greening in both districts were heavily centered around revitalizing existing green spaces and street tree planting in commercial streets in the northwest of Margareten



**Figure 1.** Selected structural differences in Margareten and Simmering. Source: Authors’ calculations based on socio-demographic data from Stadt Wien—Wirtschaft, Arbeit und Statistik (2018) and environmental data from Stadt Wien—Stadtentwicklung und Stadtplanung (2019) and Stadt Wien—Stadtteilplanung und Flächenwidmung (2021); open data on urban heat island vulnerability is based on calculations by Stadt Wien—Energieplanung (2021) and public transport accessibility by Wiener Linien GmbH & Co KG (2021).

and the south of Simmering, where population density and urban heat island vulnerability are comparatively lower and access to green urban infrastructure is higher (see Maps D, E, and G in Figure 1). Similarly, the demands for community-building initiatives were concentrated on cultural events limited to selective locations in the northwest of Margareten and the south of Simmering, where not only such activities already exist, but are also repeatedly submitted by the same participants in every budget cycle. In contrast, fewer budgeting ideas focused on the south of Margareten and the north of Simmering, where the shares of non-Austrian citizens (see Map A in Figure 1) and residents with lower levels of education (see Maps B and C in Figure 1) are higher.

A clear thematic difference was observed among the traffic-related ideas, reflecting the specific structural challenges in both districts (see Traffic in Table 1). While both districts are extensively covered by a public transport stop within a 200-m distance (see Map F in Figure 1), some parts of Simmering feature lower public transportation coverage throughout its low-density neighborhoods (see Map D in Figure 1). In contrast, Margareten features high-speed traffic going through its densely built residential buildings. Accordingly, the most submitted traffic-related ideas (shared road spaces by vehicles and pedestrians in Margareten and public transportation connection in Simmering) correspond to the specific structural problems that differently characterize Margareten (e.g., high-traffic affected residential areas) and Simmering (e.g., low public transport connectivity). However, the district actors perceived them as neither the most urgent nor important issues that elevate the living standards of the disadvantaged in the deprived neighborhoods of their respective districts (e.g., low standard housing conditions and social integration of migrants).

A lack of adequate information and guidelines in the submission phase is another major implication for its effectiveness. While Vienna's districts maintain governance responsibilities over a wide range of policy fields within their jurisdiction, their ability to produce effective policy outputs from citizen inputs faced a few practical limitations. The city's administrative decentralization has rescaled the decision-making authority in urban planning to multiple governance actors, creating a gap in their coordination, who operate—while often disconnected—within a single policy area. For example, sidewalks and public spaces are the financial responsibility of the districts, but their maintenance is the responsibility of the city's municipal departments. In contrast, the responsibility of cycling and traffic infrastructures lies fully at the district level, while the technical competencies remain at the city level. This increasing institutional complexity undermined the overall quality of the generated citizen inputs and, thus, the abilities, knowledge, and skills of the district actors to engage in meaningful citizen-state interaction in the budgeting process.

Furthermore, the simultaneous budget decentralization put increasing financial pressure on the district

actors in the determination of allocating limited district funds. Therefore, the district actors faced great budget challenges to effectively align priorities and allocate resources for implementing the accepted budgeting ideas. This is the reason for, despite the highest submission, the low acceptance rate of traffic-related ideas for implementation (23.1% in Margareten and 15.3% in Simmering), which require not only a substantial amount of financial resources to change physical infrastructural arrangements, but also a long-term strategic plan involving different public and private stakeholders whom the district governments share planning responsibilities with. For example, creating shared zones in the high-capacity streets of Margareten requires consent from the city or—depending on the speed limit—the federal government, whereas expanding the public transportation infrastructure in Simmering is the sole responsibility of the city government and its own holding company.

## 6. Upscaling Participatory Budgeting in Vienna: Targeting Climate Change Adaptation

While the budgeting process was already in place at the district level, the planning of participatory budgeting at the city level began in 2020, which targeted climate change adaptation and mitigation in three pilot districts. These included Margareten and Simmering, which scored highest in the selection process based on four criteria: the urban heat island effect, socioeconomic inequalities, life satisfaction, and green space accessibility. In contrast to the district-level budgeting process, the new governmental environment surrounding this city-level project implies far greater financial resources and institutional capacities with the potential to enable more extensive and effective collaboration between citizens and public actors at a higher governance level.

With a budget of €13 million between 2022 and 2023, the annual policy cycle includes (a) online/offline budgeting idea submission (April–May), (b) feasibility evaluation by the city's municipal departments (June–July), (c) co-creation workshops for selected ideas (August–October), (d) final selection by citizens' juries and open-to-all online voting (November–December), and (e) implementation (December). As of October 2022, more than 1,000 budgeting ideas were evaluated based on positive climate and social impact assessment, (legal) implementation feasibility, and interest alignment with the city's policy agenda in urban development, which are currently in the co-creation phase.

Strong political commitment and financial resources at the city level—mediated by an extensive information campaign—resulted in more intensive participation from citizens in the idea generation phase, enhancing the communicative (how) and participant dimension (who)—therefore legitimacy—in the budgeting process. In comparison to the previous model, new recruitment tools in Wiener Klimateam, including extensive media coverage, offline information events, and involvement of local

multipliers (e.g., Local Agenda 21 and Urban Renewal Office), resulted in a much higher number of idea submissions in both Margareten and Simmering. More than half of the submissions addressed environmental issues (56.9% in Margareten and 62.5% in Simmering). In less than two months, it generated more than 600 inputs in both districts with the number of average submissions per 1,000 residents at 13.92 in Margareten and 2.97 in Simmering, exceeding about 520 budgeting ideas collected between 2017 and 2021 in the entire period of the district-level budgeting process. During the 50-day idea generation phase, the number of submissions in both districts showed a steady increase. This increase in the number of climate-related budgeting ideas led to thematic diversification.

Given its thematic focus on climate change adaptation, one remarkable differentiation in the submitted ideas was the share of submissions relating to energy issues in the environment category, 18.2% in Margareten and 22.8% in Simmering, (see Share Submission for Energy in Table 2), with solar panel installation making up around a tenth of all environment-related ideas in both districts (8.5% in Margareten and 10.7% in Simmering). Although the demand for green space and street trees remained relatively high, especially in Margareten (17.6% and 10.9% of all submissions related to the environment), other budgeting ideas represented the specific structural challenges characterizing each district, for example in Simmering, where a lot of inputs point to the need for greening existing brownfields and extensive road networks.

Despite the thematic diversity reflecting their distinctive spatial contexts, the share of the votes that the budgeting ideas received online remained similar in both districts (see Share Votes and Average Votes per Submission in Table 2). This is related to some more general criticalities in the idea selection phase, regarding the emancipatory dimension (what)—therefore justice—in the budgeting process.

First, the level of technical knowledge implied in the submitted idea influenced the online voting results. In fact, most technical issues related to climate change adaptation require relevant knowledge and expertise of trained professionals that ordinary citizens do not have. This has great implications for guiding the budgeting process toward the most urgent needs of those at risk from climate change. In total, traffic-related ideas (pedestrian zones and shared road spaces by vehicles and pedestrians in Margareten and cycling infrastructure in Simmering) remained the most popular among the voters, in terms of the votes per submission (see Average Votes per Submission for Traffic in Table 2). Among environment and social-issues-related ideas, however, the most perceived priorities were given to the ideas with low technical content, such as small-scale streetscaping, environmental awareness building, and do-it-yourself urban projects. For example, although higher in submission number, energy-related submissions (e.g., solar

panel installation) shared lower average votes (see Average Votes per Submission for Energy in Table 2) than other environmental topics, such as worm bins, flower strips, and street gardening, among others, which require less technical knowledge and expertise from average participants to choose in the voting phase (see Average Votes per Submission for Greening and Recycling in Table 2).

Second, the timing of submission has a great influence on the number of votes the budgeting ideas receive on the online platform. In terms of participation, the lengthy online submission process indeed maintained a steady increase of citizen inputs throughout the idea generation phase, reaching a 25.2 average number of submissions per day in the last nine days (as opposed to 6.8 in the first 10 days). In terms of selection, however, the simultaneous online voting process resulted in participants favoring the budgeting ideas that were posted in the earlier phase. The most popular ideas—with a few exceptions—were posted in the first few weeks. Whereas the budgeting ideas received 17.9 votes on average in the first 10 days (16.2 in Margareten and 19.5 in Simmering), those submitted in the last nine days gained considerably less attention, scoring only 3.4 votes per submission (2.8 in Margareten and 4.1 in Simmering).

To these criticalities, we add a concern about the translation of selected budgeting ideas into concrete policy outputs—therefore effectiveness—with substantial longer-term environmental outcomes. The concern is about the capabilities at the district level to manage the budgeting ideas once they are implemented. While the €13 million budget and the collaboration with the city administration imply crucial political support to the initiatives, which was not given in the previous experiences, the districts still undertake the maintenance of the selected inputs with the same level of financial and political resources outside Wiener Klimateam. Such concern about the sustainability of the budgeting ideas was directed toward small-scale streetscaping, traffic infrastructure, and urban greening, which fall under the full responsibility of district governments.

Related to this, there is also the timing question. The city's goal is to produce concrete planning outcomes from the selected budgeting ideas until 2023. This implementation timeframe is perceived by the district actors as a major obstacle to realizing meaningful outcomes of citizen participation with effective climate actions. Indeed, creating a climate-change-mitigating (green or traffic) infrastructure would require a long-term strategic plan with effective coordination mechanisms that connect public decision-making not only with citizens but with all relevant public and private stakeholders with diffused responsibilities at multiple governance levels. Along the communicative (how) and authority/power (what) dimensions, the district actors still need to manage top-down delivered budgeting outputs with limited technical expertise and direct authority—a legacy emanating from Vienna's long-run decentralization process.

**Table 2.** An overview of submitted ideas\* and number of votes in Wiener Klimateam in two pilot districts.

<b>Most Submitted Wiener Klimateam Ideas</b>											
	Total Submissions	Total Votes	Share Submission (%)	Share Votes (%)	Average Votes per Submission		Total Submissions	Total Votes	Share Submission (%)	Share Votes (%)	Average Votes per Submission
<b>Margareten</b>						<b>Simmering</b>					
Environment	165	1,006	100	100	6.1	Environment	197	1,714	100	100	8.7
<i>of which</i>						<i>of which</i>					
Greening	113	695	68.5	69.1	6.2	Greening	138	1,318	70.1	76.9	9.6
Energy	30	139	18.2	13.8	4.6	Energy	45	293	22.8	17.1	6.5
Recycling	18	155	10.9	15.4	8.6	Recycling	8	78	4.1	4.6	9.8
Construction	3	8	1.8	0.8	2.7	Construction	3	11	1.5	0.6	3.7
Traffic	57	460	100	100	8.1	Traffic	61	533	100	100	8.7
<i>of which</i>						<i>of which</i>					
Transport	46	424	80.7	92.2	9.2	Transport	34	377	55.7	70.7	11.1
Service	7	24	12.3	5.2	3.4	Service	11	72	18.0	13.5	6.5
Regulation	3	8	5.3	1.7	2.7	Safety	11	65	18.0	12.2	5.9
Safety	1	4	1.8	0.9	4.0	Regulation	4	11	6.6	2.1	2.8
Social	67	212	100	100	3.2	Social	56	340	100	100	6.1
<i>of which</i>						<i>of which</i>					
Public utility	30	81	44.8	38.2	2.7	Public utility	32	238	57.1	70.0	7.4
Social care	17	56	25.4	26.4	3.3	Social care	8	44	14.3	12.9	5.5
Cultural event	12	41	17.9	19.3	3.4	Economy	7	42	12.5	12.4	6.0
Economy	5	24	7.5	11.3	4.8	Responsibility	5	7	8.9	2.1	1.4
Campaign	3	10	4.5	4.7	3.3	Cultural event	3	7	5.4	2.1	2.3
<b>Total</b>	<b>290<sup>†</sup></b>	<b>1,679</b>	<b>100</b>	<b>100</b>	<b>5.8</b>	<b>Total</b>	<b>315<sup>†</sup></b>	<b>2,591</b>	<b>100</b>	<b>100</b>	<b>8.2</b>

Notes: \* 24 entries from the total submissions excluded in the analysis; † one entry in the category Politics excluded in the analysis. Source: Authors' work based on data from Stadt Wien—Energieplanung (2022).

## 7. Discussion and Conclusions

This contribution situated the potential and limitations of Vienna's participatory budgeting for climate change adaptation within the specific contextual dimensions, from which it is designed and implemented in two case study contexts. Our analysis compared the designs, processes, and outcomes of two participatory budgeting programs at the district and city levels. This particular setting was chosen to investigate the influence of the multi-level governance arrangements at the city level vis-à-vis the policy design and structural conditions at the neighborhood level. Their specific challenges were analyzed through Fung's (2006) three dimensions of institutional design space (who, how, what). This interpretive frame provided a way of looking at how the changes in budgeting designs over time influenced the communicative (legitimacy), emancipatory (justice), and governance (effectiveness) dimensions in relation to existing structural and political conditions of the case districts.

Our case offers a novel example to study the current trend of participatory budgeting in European cities. First, Vienna's top-down approach—which is increasingly common worldwide (Baiocchi & Ganuza, 2017)—features a strong presence of organized groups in the public sector, such as urban planning offices and Local Agenda 21, who play an active role in guiding the idea submissions and selection, as well as co-creation in the budgeting process. Currently, such a “corporatist” model of participatory budgeting is not widespread in Europe (Sintomer et al., 2016). Second, Vienna's budgeting design—combining online and offline tools at different stages—contributes to building knowledge about such a hybrid form of participatory budgeting, which is gaining popularity in wealthier cities, but often lacking in opportunities for intense engagements from citizens (Wampler et al., 2021).

Our findings uncovered the joint effects of structural conditions, policy design, and political opportunity structure at a particular urban scale, producing place-specific processes and outcomes of localizing participatory budgeting. It showed that greater political and financial commitment at a higher governance level may enhance the legitimacy of the budgeting process by substantiating deliberation (see Citizen Input from Phase 2 in Table 3). However, its open-to-all recruitment strategy and selection method of voting may not produce an emancipatory outcome for disadvantaged communities by increasing self-selection biases. Furthermore, the implementation of budgeting outputs without enhancing the institutional capacities of district actors may undermine their effectiveness in achieving longer-term social impacts. Indeed, it is the combined influence of such conjoining contextual factors, framed by the local spatial dimension of the policy-making process, that actualizes the globally circulating policy ideas and principles into a situated local experience (see Kazepov et al., 2022). In other words, the context, wherein local demands and policy responses encounter each other, shapes the very (in)ability of pol-

icy actors to achieve their anticipated objectives behind localizing a traveling policy idea, because while the idea can travel beyond its place of origin, its contextual conditions cannot.

There are a few caveats to these results. First, given that Wiener Klimateam is ongoing, our research is limited to the inputs and activities that were undertaken in the idea submission phase. Second, due to the lack of administrative data on participant demographics, its emancipatory dimension was measured by the thematic patterns of the citizen inputs and their geographic locations in the case districts. While the uneven spatial patterns of the budgeting ideas in line with structural inequalities still indicate inherent selection biases in the budgeting process, the specific socioeconomic background of the participants would complement the argument made in this article. Furthermore, a meaningful evaluation of its outcomes and impacts should follow the end of the implementation phase.

Nevertheless, our analysis of the submitted ideas, in comparison to the previous district budgeting process, fills one important knowledge gap in the existing literature. So far, extant research has mostly focused on a single structural or institutional domain of localizing participatory budgeting, rarely combining multiple contexts of its spatiality into an integrated analysis (see Bartocci et al., 2022). While various types of contextual factors shape the local impact and effectiveness of governmental programs, such contextual influences are often treated as mere background information in the analysis (see Hayduk et al., 2017; see also Montero & Baiocchi, 2022). Future research on participatory budgeting needs to knit together diverse spatial and also temporal elements of the policy in question, to fully grasp its place-specific process and outcome, emerging from the combined effect of the structural, institutional, and policy design environment.

In conclusion, the current budgeting format of Wiener Klimateam may require alternative recruitment and selection strategies to promote equitable climate change adaptation. Because open-to-all participation, in reality, attracts a wealthier and better-educated “self-selected subset of the general population” (Fung, 2006, p. 67), justice-enhancing participatory budgeting must provide equitable opportunities in the process, especially to those who are excluded from regular modes of participation. Indeed, citizens' juries—stratified random samples representing the district demographics—ultimately decide the budgeting outputs in the final voting phase. However, this representativeness advances the legitimacy of implementing pre-screened and expert-co-created ideas, and not so much the empowerment of more disadvantaged communities in the overall budgeting process (see Table 3).

In this light, the future budgeting process may benefit from more targeted recruitment that invites specific social groups—or their representatives—in the areas most at risk from the effects of climate change, whose

**Table 3.** A summary of budgeting processes in Margareten and Simmering according to the institutional design space.

Participatory Design of Partizipatives BürgerInnen-Budget					
	Citizen Input	Process	Participants	Authority/Power	Communication/Decision
Phase 1		Idea generation	Self-selected	Advice/consult	Develop preferences
Phase 2	177*	Idea screening	District administrators	Direct authority	Technical expertise
Phase 4	87*	Selection	District politicians	Direct authority	Technical expertise
Phase 5	46*	Implementation	District politicians	Direct authority	Technical expertise
Participatory Design of Wiener Klimateam					
	Citizen Input	Process	Participants	Authority/Power	Communication/Decision
Phase 1		Idea generation	Self-selected	Advice/consult	Develop preferences
Phase 2	556 <sup>†</sup>	Idea screening	City administrators	Direct authority	Technical expertise
Phase 3	152	Co-creation	Experts/self-selected	Advice/consult	Develop preferences
Phase 4	65	Selection	Citizens' juries	Direct authority	Aggregate/bargain
Phase 5	To be determined	Implementation	City/district administrators	Direct authority	Technical expertise

Notes: \* Yearly average; <sup>†</sup> 24 entries from the total submissions excluded in the analysis. Source: Authors' work based on data from Bezirksvorstehung Margareten (2019), Bezirksvorstehung Simmering (2021), and Stadt Wien—Energieplanung (2022).

empowerment must follow sufficient information about the governmental environment in general, and the budgeting process in particular. This accompanying approach to participatory budgeting may not only help to streamline citizen inputs to align with the anticipated objectives of policy actors, but also enhance the competencies of ordinary citizens for meaningful engagement and participation in the decision-making process. Without such design principles, local experiments with participatory budgeting may not overcome the well-known limits of citizens' participation, succumbing to a thin celebration of diversity and openness in public decision-making.

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### Conflict of Interests

The authors declare no conflict of interests.

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Article

## Fiduciary Activism From Below: Green Gentrification, Pension Finance, and the Possibility of Just Urban Futures

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### Abstract

This article investigates the evolving concept of fiduciary duty and its role in Canadian public sector pension funds' environmental, social, and governance (ESG) investing practices. It contributes to the literature in the distinct but related fields of environmental gentrification and urban climate finance by bringing fiduciary debates into sharper focus. Engagement with issues surrounding investors' legal and ethical duties to invest responsibly can contribute to an enhanced understanding of the global and local mechanisms of production and reproduction of environmental and spatial inequalities, as well as strategies for creating more than just urban futures. ESG, a calculative and modelling technique used to manage investment risks, overwhelmingly focuses on physical and financial climate risks (e.g., infrastructure assets and risks associated with regulatory change). This privileges the instrumental, Cartesian view of the environment as severed from its social, historical, and relational character, a perspective that has been thoroughly critiqued in the environmental/ecological gentrification literature. However, ESG investing has also introduced a potentially productive uncertainty in the realm of financial expertise; it forces questions about what it means to invest deferred compensation in the "best interests" of workers and retirees. This article has three interrelated aims. First, it reviews recent trends in environmental gentrification and urban climate finance literature to highlight an emerging but underdeveloped engagement with ESG and fiduciary duty. Second, it shows how the rise of ESG has revealed a vulnerability in the hegemonic profit maximization interpretation of fiduciary duty and invited further, open-ended, critical-theoretical engagements with the concept of the fiduciary and their responsibilities. Finally, it offers the concept of "fiduciary activism from below" to explore how grassroots agency increasingly stages a direct confrontation with corporations, institutional investors, and shareholders in the struggles over urban space and resistance to environmental and infrastructural violence.

### Keywords

climate risk; environmental gentrification; environmental, social, and governance investing; fiduciary duty; housing and infrastructure financialization; organized labour; public sector pension funds; Toronto

### Issue

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### 1. Introduction

The investment decisions of institutional capital are playing an increasingly important and well-recognized role in shaping the political economy of the built environment, with significant implications for both social and environmental justice in an era of the climate crisis. However, critical literature on these phenomena generally pays little attention to the theoretical and practical significance of "fiduciary duty." Fiduciary duties inhere across a broad range of spheres (e.g., familial, medical, and corporate)

and are central to institutional investor decision-making and risk management. In the investment context, fiduciary duty is widely associated with a fiduciary's charge to seek maximum risk-adjusted financial returns for their beneficiaries (Archer, 2017). However, the rise of environmental, social, and governance (ESG) investing has revealed a vulnerability in the profit maximization consensus in ways that could lead to more progressive forms of fiduciary thought and activism.

The concept of fiduciary duty dates back to medieval times. Feudal intergenerational management of (landed)

wealth spawned the legal innovation of the trust, which separated “legal” and “beneficial” ownership (Harrington, 2016). Contemporary fiduciary responsibilities consist of the duties of prudence, care, and loyalty in managing property or financial assets in the “best interests” of others. In the pension context, the best interests of beneficiaries are often thought to be equivalent with or reducible to an atomistic financial interest in maximum risk-adjusted returns. However, the spectre of climate catastrophe has propelled ESG investing into the mainstream, inviting renewed reflection on matters of fiduciary duty and best interest. Environmental factors such as physical damage to infrastructure are more readily assimilated into fiduciary logic than social factors. Understanding humans and their environments as fundamentally and inexorably in relation (Mussell, 2022) with one another poses a more profound challenge for ESG’s atomized, calculable, and knowable understanding of the environment.

The first two decades of the 21st century have seen significant legal and policy debates and “regulatory clarifications” over the theory and practice of fiduciary duty (Sullivan et al., 2019). In particular, the so-called “Freshfields Report” (Freshfields Bruckhaus Deringer, 2005) commissioned by the UN Environment Program Finance Initiative (UNEP-FI), precipitated new debates about investor responsibilities and the meaning of investment fund beneficiaries’ “best interests.” Ostensibly, the report made room for workers’ wider social and environmental interests beyond narrowly construed financial interests (Archer, 2017; Sullivan et al., 2015). However, most discourse on ESG is dominated by climate. This is evident in both the volume of ESG analysis and regulation dedicated exclusively to climate factors (e.g., Bauslaugh, 2021; Gold & Scotchmer, 2015) and the proportional weight given to these factors in more general reports (e.g., Sullivan et al., 2019). In the context of significant diversity and conflict across ESG ratings, there is both implicit and explicit pressure, as evidenced in a recent *The Economist* editorial, to abandon social and governance factors altogether, while further narrowing the “E” to denote emissions alone (“ESG should be boiled,” 2022). However, the explosion of interest in what climate change and climate science mean for fiduciary duty (Sullivan et al., 2019, p. 13) exposes a moment of flux within fiduciary thinking that can potentially be harnessed for more socially conscious interpretations of “green” transitions.

Public sector pension fund investment practices offer an excellent example of how capital “hits the ground” (Mezzadra & Neilson, 2019). Like many of their international counterparts, Canadian public sector pension funds are some of the largest and most sophisticated investors in the world. Canada’s eight largest pension funds manage over one trillion dollars, and their investment practices play an increasingly significant role in shaping the political economies and ecologies of the built environment, both at home and abroad (Skerrett, 2017).

Moreover, the fragmented and non-universal nature of pensions coverage means that financialized pension investing threatens to pit the present and future social reproduction of different groups of workers against one another.

For a brief period in mid-20th-century Canada, the fragmented and employer-centric world of pensions looked like it might evolve into a public system of broad and equitable redistribution that could guarantee a minimum level of material security beyond paid employment (Shilton, 2016; Skerrett & Gindin, 2017). Instead, neoliberal and financialized pension funds have become central actors in what geographer Deborah Cowen calls the “racial and colonial violence of infrastructure” (Cowen, 2017). Pension capital is increasingly entangled in processes that divide, hierarchize, and oppress—e.g., the poor maintenance and inadequate housing security in rental complexes (Rockwell, 2022), substandard eldercare and exploitative working conditions in long-term care facilities (August, 2021), and carceral institutions that thrive on policing and surveillance (Lindeman, 2019).

Canadian pension funds—including Canada’s public retirement program, the Canada Pension Plan, and the country’s largest government-union jointly-sponsored public sector plans—are “effectively private for-profit actors...subject to minimal disclosure requirements” (Skerrett, 2017, p. 146). Despite collectively benefitting a sizable majority of the Canadian working population, public scrutiny and accountability of these funds face significant challenges. Yet, these funds’ activities are attracting increased scrutiny, as diverse constituencies have successfully pressured pensions to divest from polluters, and human and labour rights abusers (Harman & Ruiz, 2021; Mojtehdzadeh & McKeen, 2018; Woodside, 2021). Indeed, as “stewards” for the retirement savings of diverse workers, public pensions are uniquely positioned for responsible investment, both in terms of economic heft and legal/ethical duties. They are sensitive to reputational risk, direct pressure from unions and workers, and broader social and environmental justice movements (Shilton, 2021).

This article proceeds as follows. The next section reviews current literatures to show how urban climate finance builds on the core insights of environmental gentrification while bringing new processes and actors, such as pension funds, catastrophe insurers, and global governance institutions like the World Bank to the fore. Section 3 builds on these recent contributions by focusing on the UNEP’s efforts to clarify the meaning of fiduciary duty in the context of ESG and responsible investment decisions. It shows how global governance institutions reproduce epistemological separations underpinning environmental gentrification processes. In Section 4, I draw on the case of Parkdale, Toronto, where abstract debates over the meaning of responsible investment crossed into a specific material struggle over urban space and environmental justice.

The fifth and final section offers the provisional concept of “fiduciary activism from below” to understand a form of grassroots agency which is increasingly staging direct confrontation with corporations, institutional investors, and their shareholders in the struggles over urban space and resistance to environmental and infrastructural violence. Those impacted by investments perhaps have more agency than the profit maximization interpretation of fiduciary duty implies.

## 2. Environmental Gentrification, Urban Climate Finance, and ESG

### 2.1. *Environmental Gentrification: Contesting the Erasure of the Social in Sustainability Initiatives*

Environmental gentrification research understands that capitalist urbanization involves substantial amounts of socioecological violence (Silver, 2018), including environmental degradation, forced removal, and unequal spatial distributions of environmental burdens and benefits (Dooling, 2018). Environmental gentrification “builds on the material and discursive successes of the environmental justice movement and appropriates them to serve high-end development” (Checker, 2011, p. 212). This definition underscores the fact that any benefits realized from the often unpaid or low-paid labour of resisting environmental harm frequently accrue to others. Thus, environmental gentrification is part of, not separate from, broader capitalist processes that appropriate others’ land and resources to create private wealth. Research in this tradition must attend to the broader social effects of urban sustainability initiatives and efforts to “clean” and “green” urban space.

Urban greening initiatives are often presented as politically neutral (Elgert, 2018), especially given the increasingly high stakes of the climate emergency (Rosol et al., 2017). However, such initiatives frequently lead to intended and unintended forms of displacement, erasure, violence, and exclusion, though they can also develop forms of solidarity and resistance (Curran & Hamilton, 2018). In a classic essay on ecological gentrification, Dooling (2009) documented how mutually exclusive land use epistemologies that separate “home” and “urban public green space” normalize the displacement and marginalization of people experiencing homelessness as an inevitable consequence of improving urban habitat for non-human species. Similarly, Checker (2011) explored how longstanding community demands for enhanced public space in Harlem, New York, were ignored until new high-rise condominiums and their whiter, more affluent residents brought a suddenly urgent need for more greenspace. Kern (2015) calls attention to the gendered and embodied aspects of environmental gentrification by examining how the “slow violence” (Kern, 2016) of green consumerism and performatively “healthy lifestyles” consolidate the environmentally sustainable neighbourhood as a socially exclu-

sionary place for those who do not embody hegemonic norms of gender and sexuality (Kern, 2015; see also Anguelovski, 2015; Parish, 2019a, 2020). Wealthy, majority-white, and heteronormative neighbourhoods, communities, and cities are more likely to benefit from ecosystem services like street trees, urban forests, and parklands. Meanwhile, working class and racialized communities are exposed to the everyday violence of environmental neglect and the effects of extreme weather brought by a changing climate.

Yet, environmental gentrification research does not simply conclude that urban environmentalism is inevitably unjust. It also highlights community strategies that advocate for more just and sustainable futures (Goodling, 2021; Safransky, 2017). For example, in a study on the regeneration of Portland harbour, Goodling (2021) demonstrates how complex solidarities forged over time and across difference contest configurations of racial patriarchal capitalist power. Such solidarities, forged between people within and across communities, acknowledge their relationality with one another and their shared environments. Likewise, Safransky (2017, p. 1085) argues that land and property are key “sites through which a range of grievances related to racialized dispossession and contemporary urban crisis are articulated” and thus generate “potent imaginaries of how things could be otherwise.”

### 2.2. *Urban Climate Finance: Searching for the Cracks in Green Capital*

The relationship between local greening initiatives and the broader ascendance of green and climate finance remains under-explored in the environmental gentrification literature (Anguelovski et al., 2019). Meanwhile, a growing body of critical urban geography seeks to “provincialize” the world of climate finance (Urban Climate Finance Network, n.d.) through detailed, place-sensitive, comparative, and relational approaches to understand where and how finance hits the ground and the implications for urban social and environmental justice (e.g. Bigger & Webber, 2021; Hilbrandt & Grubbauer, 2020; Knuth, 2016; Long & Rice, 2019; Ponder, 2021; Robin, 2021; Taylor, 2020; Taylor & Aalbers, 2022; Webber et al., 2022).

Urban climate finance extends the scalar and regional scope of urban greening. It demonstrates how these processes reproduce social and spatial injustice within cities, between cities in the Global North (e.g., Ponder, 2021), and across North–South contexts (Bigger & Webber, 2021; Hilbrandt & Grubbauer, 2020). The legacies and ongoing processes of capitalism and colonialism ensure that cities, neighbourhoods, and regions most exposed to the effects of climate change are also often those with the least financial and infrastructural capacity to pursue large-scale adaptation or mitigation projects, rendering inhabitants particularly exposed to the extractive institutions of global financial capital (Bigger &

Webber, 2021; Ponder, 2021). Bigger and Webber (2021) argue that the World Bank's investments in Global South cities' adaptation and mitigation needs amount to a kind of "green structural adjustment." The World Bank opens up new "green" markets to help Northern investors find new places to invest over-accumulated capital while fulfilling growing social and regulatory pressures to integrate ESG factors into portfolios. Long and Rice (2019) argue that climate urbanism is characterized by a focus on the protection of digital and physical infrastructures. It excludes or marginalizes human and social infrastructures and may reproduce the social justice issues discussed above (see also Long, 2021).

Urban climate finance studies consider new financial and governmental actors and processes (e.g., the re/insurance industry, institutional investors, green bonds, catastrophe bonds, rating agencies, and international standard-setting organizations). They document the broad and deep neo-liberalization and financialization of urban space as an emergent form of climate-related collateral damage between and across specific places and environments (coastal cities; see Bigger & Millington, 2020; Taylor, 2020), actors (real estate agents, municipal bureaucrats; see Elgert, 2018; Taylor & Aalbers, 2022), financial industries (re/insurance; see Collier & Cox, 2021; Johnson, 2015; Taylor & Weinkle, 2020), and instruments and techniques (green bonds, ratings, standards; see Hilbrandt & Grubbauer, 2020; Ponder, 2021). This occurs through the geographical expansion of financial markets and instruments to new cities and regions (Bigger & Webber, 2021). Through these processes, local governments have come to depend increasingly on the capital and the technical expertise supplied by insurance companies, bond markets and investors to imagine and implement climate resilience strategies (Collier & Cox, 2021; Cox, 2022; Hilbrandt & Grubbauer, 2020; Taylor & Weinkle, 2020).

Importantly, scholars researching urban climate finance interventions also emphasize the political importance of "imagin[ing] and creat[ing] alternatives by widening and exploiting cracks in climate finance" (Webber et al., 2022, p. 20). For instance, Robin (2021) argues that a limited focus on large-scale infrastructure and financial instruments obscures the possibilities and achievements of local actors and initiatives "on the ground" (see also Robin & Broto, 2021). Likewise, research across diverse contexts has also highlighted the "emerging," "unstable" (Bracking, 2019), "conflictive," "provisional" (Hilbrandt & Grubbauer, 2020), and "fragile" (Taylor, 2020) nature of finance-led processes to suggest that they may present new "avenues for critique and praxis" (Taylor, 2020, p. 1144).

### *2.3. Urban Climate Finance, Fiduciary Duty, and ESG: An Emergent Research Agenda?*

The role of pension funds, fiduciary duty, and responsible or ESG investing (Elgert, 2018; Taylor, 2020; Taylor &

Aalbers, 2022; Webber et al., 2022) remains to be systematically explored in the urban climate finance literature. Where these issues do arise, the literature is suggestive of the potential for further critical engagement with fiduciary duty and ESG. For instance, Taylor's (2020) research on catastrophe modelling and re/insurance in Florida shows how calculative and financialized modelling and securitization techniques allowed the industry to create a new asset class tailored to institutional investors (including Florida public sector pension funds) risk tolerances (Taylor, 2020). This process contributes to environmental and climate injustice by shifting risk onto individual homeowners, exacerbating racialized housing affordability and abandonment issues, and rendering catastrophe insurance a "crucial vector in housing precarity" (Taylor, 2020, p. 1144). However, the presence of local pension capital highlights "the sociality of climate finance and risk" and raises questions about how capital "might be steered toward adaptation investment measures which transform the underlying geographical basis of risk" (Taylor, 2020, p. 1145).

Webber et al. (2022, p. 19) offer the notion of "capital switching into reparative infrastructures" to analyze how five different small-scale projects decommodify and democratize climate initiatives across three continents. Capital switching builds on David Harvey's insight that capital "temporarily resolve[s] internal contradictions" by "switching" surplus capital "between and within different spaces and sectors of the economy" (Webber et al., 2022, p. 5). The spatial "fix" has a dual meaning—locating in space and solving a problem. Webber et al. (2022) challenge us to imagine problems and solutions as not (wholly) defined by capital. They argue that politics, governance, and the state have crucial roles to play in defining problems (crises) and their solutions (fixes). The concept of reparative infrastructure "links repair to reparations and reparative justice" while emphasizing durable, scalable and life-sustaining solutions (Webber et al., 2022, p. 4). Webber et al. (2022) position pension funds as "the most likely lenders" for such capital-switching initiatives but observe that "this would require a fundamental redefinition of fiduciary duty as, at least initially, yields would need to be kept extremely low" (Webber et al., 2022, pp. 14–15). The next section builds on these suggestive observations to highlight key fissures within ESG discourse. The concept of fiduciary duty is already in flux; it is therefore timely for critical scholars and activists to pose fundamental questions about it.

### **3. Fiduciary Deliberations From Above: What are Workers' "Best Interests" and Who Decides?**

In its simplest form, fiduciary duty means that "trustees exercising fiduciary investment powers must exercise those powers for the purpose for which they were granted" (Freshfields Bruckhaus Deringer, 2005, p. 10). In the Canadian pension context, fiduciary powers are granted to "provide periodic payments to individuals

after retirement and until death in respect of their service as employees” (Gold & Scotchmer, 2015, p. 23).

As previously mentioned, the concept of fiduciary duty dates to medieval times, where it evolved in the feudal context of intergenerational management of (landed) wealth via the legal innovation of the trust (Harrington, 2016). Separating “legal” and “beneficial” ownership solved a crucial problem for landowning classes, in that it allowed land assets to remain in the family in the absence of a male heir (women were legally barred from property ownership and inheritance). Contemporary fiduciary responsibilities consist of the duties of prudence, care, and loyalty in the management of the property or assets of others, and each is supposed to be given due weight (Mussell, 2022). The duty of care implies “skill and diligence,” meaning that fiduciaries must consider a wide range of potentially relevant factors affecting the value of investments when managing a portfolio. Loyalty requires that investors make decisions that conform to the purpose of the trust and avoid conflicts of interest. Finally, impartiality means that the interests of particular people (e.g., trustees) or groups of beneficiaries (e.g., retirees, young workers) should not be privileged. These duties are enshrined in law, so trustees can be held personally liable; however, they also have deeply moral historical and ontological foundations (Harrington, 2016; Mussell, 2022).

Fiduciary duty is a paternalistic concept that tends to assign beneficiaries a passive role in deliberations over what constitutes their best interest (revealing the concept’s gendered and classed origins). This passivity has not always been accepted by workplace pension beneficiaries, usually unionized workers in the Global North. However, union trustees face real and persistent challenges when seeking to exercise agency in investment decisions on behalf of beneficiaries due to real or perceived conflict of interest issues (Weststar & Verma, 2017). The risk-adjusted profit maximization interpretation of fiduciary duty is often traced to a UK legal decision (*Cowan v. Scargill*; see Freshfields Bruckhaus Deringer, 2005) issued in the mid-1980s. The case asked whether social or moral objectives could be pursued through a pension investment. The decision held that social objectives were incompatible with the pension’s purpose to provide an income to present and future retirees, and that best interests were self-evidently of a financial nature. This underpinned two decades of consensus around a narrow common law interpretation of workers’ “best financial interests” (Archer, 2017).

At the beginning of the 21st century, the UNEP-FI commissioned an influential report, *A Legal Framework for the Integration of Environmental, Social and Governance Issues Into Institutional Investment* (hereafter Freshfields Report; Freshfields Bruckhaus Deringer, 2005). It found that the most notable thing about *Cowan v. Scargill* was its consistent misinterpretation and misapplication (Freshfields Bruckhaus Deringer, 2005, p. 9). The Freshfields Report was foundational to UNEP-FI’s

subsequent work to clarify fiduciary duties and incorporate ESG analysis. It compiled international legal expertise on whether:

The integration of environmental, social and governance issues into investment policy (including asset allocation, portfolio construction and stock-picking or bond-picking) [is] voluntarily permitted, legally required or hampered by law and regulation; primarily as regards public and private pension funds, secondarily as regards insurance company reserves and mutual funds? (Freshfields Bruckhaus Deringer, 2005, p. 6)

The report affirmed that fiduciary duty is not a barrier to ESG integration. Rather, given ESG factors’ broad financial materiality, decision makers “are required to have regard (at some level) to ESG considerations in every decision taken” (Freshfields Bruckhaus Deringer, 2005, p. 10).

The Freshfields Report affirms that fiduciaries must prioritize considerations of “best financial interests.” However, it broadly interpreted such interests to include the relationship between financial and non-financial (i.e., social, ethical, environmental) considerations. It concluded that both “value-driven” and “values-driven” investments are permissible, depending on the specific context. ESG considerations can impact investment decisions either because of the financial value ascribed to an investment or because the ESG criteria are “relevant to the objectives that investment decision-makers pursue” (Freshfields Bruckhaus Deringer, 2005, p. 10). In the latter case, fiduciaries are not permitted to make decisions based on their own personal views or preference, or on those of a segment of beneficiaries (i.e., young workers, retirees):

However, a decision-maker may integrate ESG considerations into an investment decision to give effect to the views of the beneficiaries in relation to matters beyond financial return. Courts in the UK have recognised that trusts such as charities are entitled to exclude investments that conflict with their values and that the concept of beneficiaries’ ‘best interests’ under a general pension trust may extend beyond their financial interests to include their ‘views on moral and social matters’. In a similar way, US law permits investments to be excluded where the beneficiaries so consent. (Freshfields Bruckhaus Deringer, 2005, p. 12)

This points towards the significance of plan documents, such as statements of investment policies and procedures (SIPP) as well as the mechanisms of communication between beneficiaries and fiduciaries. Ontario regulations now require all pension plans to have SIPP that include “information about whether and how ESG factors are integrated into the plan’s investment policies and procedures” (Parish, 2019b, p. 40). Investors can also



utilize research on the relationship between finance and sustainability to draft “evidence-based” statements of investment beliefs to “help trustees and others in governing roles to clarify and articulate their understanding of the relationship between investment practices and forms of financial, ecological, or social sustainability” (Parish, 2019b, p. 40). When an ESG issue enjoys clear consensus among beneficiaries, it must be considered alongside other factors (Shareholder Association for Research and Education [SHARE], 2008). Even when plans do not provide guidance for fiduciaries to pursue or avoid specific kinds of investments for non-financial reasons, fiduciaries may consider social, ethical, or environmental factors as “tiebreakers” when questions of economic value are held to be essentially equal (Bauslaugh, 2021; Freshfields Bruckhaus Deringer, 2005; SHARE, 2008).

The principles initially articulated in Freshfields have been subsequently reaffirmed by a series of reports investigating “fiduciary duty in the 21st century” by the UNEP-FI and Principles of Responsible Investment (e.g., Sullivan et al., 2015, 2019; Tomlinson et al., 2017). A final report (Sullivan et al., 2019, p. 12) summarized the findings of this multi-year global project: “Fiduciary duty itself is not a static concept. It evolves and adjusts in response to changes in knowledge, market practices and conventions, regulations and policies, and social norms.” Furthermore:

Fiduciary duties require ESG incorporation, however capital markets remain unsustainable. As currently defined, the legal and regulatory frameworks within which investors operate require consideration of how ESG issues affect the investment decision, but not how the investment decision affects ESG issues. *Changing this will be our next phase of work.* (Sullivan et al., 2019, p. 9, emphasis added)

In the past decade, climate change has become the single most important element for ESG consideration in fiduciary requirements (obscuring the breadth of factors under the ESG umbrella). Climate change and climate science were not a central focus of the Freshfields Report. Rather, it was used to support the pivotal claim that investment decision-makers must consider ESG “because there is a body of credible evidence demonstrating that such considerations often have a role to play in the proper analysis of investment value” (Freshfields Bruckhaus Deringer, 2005, p. 11). A footnote uses climate change to illustrate this broader principle since it is “an obvious example of an environmental consideration that is recognized as affecting value” (Freshfields Bruckhaus Deringer, 2005, p. 11, note 11).

However, by the early 2010s, climate change’s position in expert debates about ESG and fiduciary duty had been amplified. Entire reports, legal briefs, opinions, and investment conference panels unpacked the fiduciary duty to consider climate change when making invest-

ment decisions (Bauslaugh, 2021; Bauslaugh & Gartz, 2019; Gold & Scotchmer, 2015; Lancaster House, 2018). Climate change often takes center stage in documents on the general question of ESG (while core social and governance issues such as labour rights, modern slavery, executive compensation, and corporate diversity receive comparatively less space). The fact that investors may be increasingly compelled to consider, not only how climate issues affect investment decisions, but also how investment decisions affect climate issues is undoubtedly a form of progress. However, in line with the climate urbanism thesis, the climate is overwhelmingly framed as “environmental” in the Cartesian sense, that is, primarily impacting the physical world. Climate science is transmuted into models depicting risks to physical infrastructures and the built environment (e.g., Mercer, 2015). The social impacts of climate change and, especially, the potential social impacts of capital and finance-driven adaptation and mitigation are largely externalized.

ESG and climate considerations are thus closely linked to the ongoing reconsideration of fiduciary duty. However, it is not entirely clear what this portends for the “S” in ESG, or indeed for the social nature of environmental justice more broadly. Tremendous amounts of public and private resources have been leveraged to pass knowledge about our changing climate through the grid of risk management and financial intelligibility. The same is not true of social factors such as the “existential threat” of inequality (Lydenberg et al., 2018), and, arguably, nor should it be. As Archer (2017) notes, the rise of ESG as a form of expert-driven fiduciary innovation displaced another way of thinking about the fiduciary duty to invest responsibly. The workers’ capital movement, which began in the 1980s, considered social factors to be the starting point of investing. Adherents realized that it was not in workers’ class interests to have pensions for workers in one sector or geography profiting from job losses and deteriorating labour conditions of workers elsewhere (Archer, 2017; Skerrett, 2018).

The purpose of a pension fund, beyond the legal technicalities of “payment streams,” is ultimately a duty to provide workers with the means of supporting life after retirement. Such a purpose presumes a life worth living, which, at minimum, requires a habitable world. But the question of what constitutes habitability is not self-evidently reducible to the reduction of emissions or protection of infrastructure. Answering it requires input from the very people who are marginalized in debates between legal and financial experts.

#### 4. When ESG Hits the Ground: Resisting Environmental Gentrification in Parkdale

Public sector pension funds have recently taken center stage in the longstanding struggle against gentrification (e.g., Slater, 2004) in West Toronto’s Parkdale neighbourhood. Some parts of this neighbourhood enjoy increasingly saturated “healthy” and “green” luxury

consumption (Parish, 2019a, 2020), while in others, residents struggle to keep landlords accountable for basic environmental health obligations like building maintenance and pest control (Shilton, 2021). Indeed, corporate landlords investing in the affordable, post-War rental housing blocks characteristic of the neighbourhood sometimes use environmental degradation—including neglect and construction-related noise and air pollution—to push lower-income tenants out and attract higher rents for newly renovated units (see August & Walks, 2018; Zigman & August, 2021).

In response, tenants across 12 different buildings in Parkdale staged a three-month rent strike against the property manager MetCap Living in the spring and summer of 2017. MetCap is one of a growing number of financialized landlords acquiring and maintaining rental housing across Canada (August, 2020). One of the company's major investors is the Alberta Investment Management Corporation (AIMCo), which invests on behalf of public sector pension funds and other government funds in Alberta (AIMCo, n.d.). The rent strike protested "above guideline rent increases" and argued that the significant hikes were meant to drive shareholder profits by pushing lower-income residents out. This was especially egregious given their units' chronic state of neglect and disrepair, and the broader city and nationwide housing crisis (Shilton, 2021; see also Zigman & August, 2021).

During the strike, AIMCo issued eviction notices and threatened heavy-handed legal action (Jangård & Gertten, 2019; Shilton, 2021). Their hypocrisy was not lost on the strikers and their supporters, as tenant lawyer and activist Cole Webber explained: "AIMCo claims socially responsible investment practices. We fail to see what is socially responsible about evicting low-income people from their homes in the middle of a housing crisis" (as quoted in Harman & Ruiz, 2021, p. 19). Strikers reached out to the Alberta Union of Provincial Employees, the union that represents employees with savings managed by AIMCo, to seek solidarity. The strikers ultimately claimed victory—MetCap agreed to reduced rent increases, better maintenance, and rent relief measures for those in need (Harman & Ruiz, 2021; Shilton, 2021).

Beyond the immediate successes of keeping racialized and working-class tenants in their homes and developing a social infrastructure of care and solidarity in the face of financialization and gentrification, the strike was also notable because of how it subsequently circulated. The strike was featured in the high-profile international documentary *PUSH* (Jangård & Gertten, 2019) on housing financialization and its impact on human rights. It also featured as part of a panel discussion on ESG and infrastructure investing at a Canadian national pensions conference (Lancaster House, 2019) and was highlighted as a case study in research and advocacy materials prepared by the SHARE (Farha et al., 2021; Harman & Ruiz, 2021).

SHARE is a not-for-profit research and advocacy organization based in Canada that "helps investors steward

their assets in ways that contribute to positive social and environmental outcomes" (SHARE, 2022). In late 2021, the organization held an online forum entitled "Investors for Affordable Cities: An online forum on responsible investment and the financialization of housing" (Farha et al., 2021) to launch a report on the same topic (Harman & Ruiz, 2021). It sought to answer the question: "Why is housing affordability an issue of concern for investors?" (Harman & Ruiz, 2021, p. 6). The panel featured former special rapporteur on the Right to Adequate Housing, Leilani Farha, in conversation with SHARE staff, an anti-poverty activist, and an academic. The panel and report are notable as they demonstrate how a relatively small group of striking renters (probably unintentionally) shaped the contours of a hitherto undefined "risk" for institutional capital and brought an investors violation of the human right to safe and affordable housing into visibility as an effect of an ostensibly "responsible" investment policy.

The Investors for Affordable Cities (IFAC) document framed its response to the question of housing affordability in terms of internationally recognized human rights instruments as well as investor responsibilities to respect human rights "in their operations and value chains" (Harman & Ruiz, 2021, p. 6). IFAC builds on an existing concern within the institutional investing world that income inequality is a "systemic risk" or existential threat to capitalism itself:

Institutional investors are increasingly realizing that income inequality...has become one of the most noteworthy socioeconomic issues of our time. It has the potential to negatively impact institutional investors' portfolios as a whole; increase financial and social system level instability, damage output and reduce economic growth, and contribute to the rise of populism, extremism, isolationism and protectionism. (Lydenberg et al., 2018, p. 8, as cited in Harman & Ruiz, 2021, p. 7)

To make the case that housing unaffordability is a problem, the IFAC report draws on critical urban research connecting financialization to the dispossession of low-income and racialized renters. It specifically cites the Parkdale rent strike as emblematic of an emerging reputational risk for institutional investors who pursue aggressive gentrification tactics associated with rental housing financialization in Canada and elsewhere. Indeed, the strikers' effective organizing tactics are explicitly said to have created a reputational risk for AIMCo: "In addition to the systemic risks associated with inequality, investors face reputational risks for housing investments associated with inequality and unaffordability" (Harman & Ruiz, 2021, p. 7). The report details how tenant tactics "specifically targeted" AIMCo:

The Parkdale Rent strike drew residents from across the city to rallies and solidarity pickets. Some targeted

AIMCo's Toronto office as part of a broader strategy to expose a contradiction between the pension manager's responsible investment policies and its treatment of low-income tenants living in its properties....The organizers launched a website named [www.aimcoevictstenants.ca](http://www.aimcoevictstenants.ca), which allowed supporters to click on a link and write to AIMCo executives to demand a halt to the evictions and negotiations with tenants. They engaged trade union activists in Alberta and brought the issue to the 2017 Canadian Labour Congress Convention, leading the Alberta Union of Provincial Employees (AUPE)—whose members' pension assets are managed by AIMCo—to issue a statement in support of the tenants. (Harman & Ruiz, 2021, pp. 19–20)

This concretely illustrates how the “social norms” around the meaning of responsible investment can shift. It demonstrates that there is perhaps more space for agency than is implied by the profit maximization interpretation of fiduciary duty.

### 5. Fiduciary Activism From Below?

J. P. Hawley coined the term “fiduciary activism” in 1995 to illustrate how American corporate institutions—and pension funds in particular—had displaced individuals as the largest holders of corporate equity and debt. In Hawley's formulation, public pension fund fiduciaries were “activists” because of their increasingly important “political voice” in influencing corporate policy and enacting “external monitoring of corporate behaviour” (Hawley, 1995, p. 417). I use the term differently—and provisionally—to describe how pension beneficiaries and other stakeholders negatively impacted by pension investments form activist solidarities that can be directed at the pension fiduciary. Fiduciary activism from below describes instances when decision-makers are called to reconcile the impacts of their investments with stated commitments to invest responsibly.

The Parkdale case was a struggle for environmental justice because it advanced the economic and environmental habitability of residential rental accommodation for working-class and racialized residents in the face of pension fund housing financialization. That a rent strike is a less-than-obvious example of environmental justice illustrates a broader point about the narrowing of “environmental” categories. Indeed, the home is a quintessential example of an environment; it cannot be severed from the social reproduction of human life and community. Corporate landlords permit the environmental degradation of housing as part of broader strategies to push renters out. “Improvements” that uphold the interests of investors and shareholders (and not the communities) are a form of environmental racism (e.g., Kern, 2022). Had the strike been unsuccessful, the pre-existing green gentrification pressures in Parkdale would likely have intensified. As with other areas experiencing

these kinds of pressures, the result is a profound tension between infrastructures of care (Power & Mee, 2020) and infrastructures of violence (Cowen, 2017).

Another recent example of this form of activism occurred in 2018, when unionized teachers in Ontario forced a property management company owned by their pension plan to rehire hundreds of cleaners across the country (mostly racialized women) who had been forced out of their jobs through legal but unethical means (Mojtehedzadeh & McKeen, 2018). Additionally, in 2017, Canadian unions with major investments in the British company Thames Water supported their UK counterparts in a fight to protect their defined benefit pension plan by invoking the premise of labour solidarity (Skerrett, 2016, 2018). These examples help us make some preliminary observations about the logic of fiduciary activism from below. Namely, it is premised on an assumption of collective interests that unsettles the fiduciary presumption of an atomized worker possessed by individual interests. Collective and trans-local interests hold sway in certain moments. Furthermore, both the planetary scale of the climate emergency and these complex solidarities—spanning union and non-unionized workers as well as diverse geographies—question the assumption that beneficiaries' best interests are necessarily characterized as narrow, short-term, and highly individualized. Within the context of fragmented and non-universal pension coverage, these actions could potentially deflect the anti-pension race to the bottom arguments and resist the tendency of financialized pension investing that pits the present and future social reproduction of different groups of workers against one another. These examples also shed light on the actors, processes, and temporalities that blur the distinction between financial and non-financial criteria and contribute to “changes in knowledge...and social norms” (Sullivan et al., 2019, p. 12).

Fiduciary activism from below could also gesture toward “a politics that is not centered on the state”—it may be “capable of confronting neoliberalism and the extractive operations of capital at the level of their encroachment in the material fabrics of daily life” (Mezzadra & Neilson, 2019, p. 11). Unlike voluntary “comply or explain” ESG regulation, it demands investor accountability for the effects of investment decisions and not merely the process of making those decisions. However, as the above examples implicitly illustrate, when state protections for workers and renters are eroded, pension funds, like other investors, exploit the proliferating and widening cracks in social democracy wrought by neoliberalism. Local struggles for environmental justice must, therefore, be cognizant of the wider financial context, which includes a legal and ethical duty to keep pension promises, the theory of the diversified portfolio, and a persistent culture of risk-adjusted profit maximization. Even when a pension fund is successfully persuaded to divest from a particular asset for ethical or financial reasons, numerous questions remain: who

buys dirty or abusive assets and where will the fund reallocate the capital to achieve comparable returns? Thus, any transgressive potential of ESG and fiduciary duty in the 21st century requires broad trans-local and cross-sectoral solidarities to pressure financial entities, governments, and regulators—certainly no small task.

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