The Integration of Environmental Justice into Urban Sustainability
A Comparative Analysis of Barcelona and Oslo

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Abstract

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This thesis investigates the integration of environmental justice into urban policymaking within the sustainability strategies of two reputedly sustainable cities, Barcelona and Oslo. Despite the widespread recognition of the need to balance environmental, economic, and social benefits of development initiatives, the latter often remains sidelined in planning and implementing strategies to mitigate or adapt to climate change in urban settings. Drawing on the theoretical framework of environmental justice, encompassing the pillars of distribution, recognition, and procedure, a comprehensive document analysis is carried out, to illuminate the ways in which social impacts and environmental justice concerns are addressed in the specific governance contexts of Barcelona and Oslo. The findings reveal a significantly deeper integration of environmental justice in Barcelona, with comprehensive considerations of existing distributional disparities and the diversity of needs present in the city informing practical action. In contrast, the approach of Oslo, embedded in a neoliberal governance framework, demonstrates a lower level of engagement, embodied by symbolic conceptualizations of justice and initiatives motivated by economic incentives. While the study identifies effective practices to incorporate environmental justice into urban sustainability strategies, it also offers insights on the operationalization and significance of environmental justice within sustainability endeavors in a European context.

Keywords: environmental justice, urban sustainability, urban governance, Barcelona, Oslo

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1. INTRODUCTION

With the rapid growth of urban populations, the increasingly pressing impacts of climate change, and growing inequalities, cities have become focal points where multiple crises converge (James et al. 2015). It is estimated that by 2050, 68% of the global population will reside in urban areas, posing significant challenges to the provision of adequate urban infrastructure and services, including ensuring access to housing, healthcare and other basic amenities (Cuperstein 2022; Teixeira Dias et al. 2023; United Nations 2018). Compounding these issues, rising temperatures, sea level rise, and the intensifying frequency of extreme weather events associated with global warming further strain basic services, infrastructure, housing, and public health (UNEP 2017). The vulnerability of cities also lies in their strong reliance on external sources to support their expanding populations and provide essential supplies such as food and water (Cribb 2023). Meanwhile, considering the concentration of economic activity in urban areas, such as production, consumption, and innovation, all intended to drive economic growth, cities are responsible for a substantial portion of global greenhouse gas emissions (GHGs) (around 75% of CO2 emissions) and are significant consumers of energy (Mi et al. 2019; UNEP 2017). Therefore, cities have a great potential for mitigating climate change with the reduction of emissions in sectors such as construction, transportation, or waste management. At the same time, implementing adaptation measures is crucial to prevent catastrophic outcomes (Cuperstein 2022; Mi et al. 2019).

Sustainable development has become a potential framework to respond to these interconnected challenges both in global and urban contexts, aiming to ensure environmental, economic, and social development in a way that does not compromise the abilities of future generations to do the same (Brundtland 1985). However, the emergence of urban sustainability is closely intertwined

with the rise of neoliberalism, which heavily influenced the sustainability discourse with its focus on economic growth and competition (Kotsila et al. 2022). Despite the increasing incorporation of sustainability into urban governance, this is often done in a symptomatic, non-comprehensive manner, prioritizing economically beneficial actions while neglecting social considerations (Bulkeley 2010; Kotsila et al. 2022; Pallathadka, Chang, and Ajibade 2023). Viewing urban sustainability primarily as a profitable investment opportunity and focusing on technological solutions and innovation can shift attention away from the balanced consideration of its three foundational dimensions – economic, environmental, and social – potentially resulting in or deepening social inequalities.

Moreover, this must be considered in the context of cities being the product of historical urban planning practices, that have often been instrumental in determining who uses particular areas of the city, thereby creating socially segregated urban landscapes. An inherent consequence of such practices is the disproportionate exposure to environmental hazards in cities, with marginalized communities facing increased risks associated with climate change as well (Maantay 2002; Sze and London 2008). Therefore, sustainability initiatives aiming to comprehensively address contemporary challenges, must not only ensure that residents from all social groups benefit from these efforts but also need to take into account existing disparities. The extent to which social sustainability and more specifically environmental justice are included and operationalized in urban sustainability strategies recognized as holistic and innovative is, therefore, indicative of the significance this dimension holds.

Therefore, the case studies of Barcelona and Oslo have been chosen for the analysis of their sustainability efforts, since both have been recognized as ambitious and in line with internationally established sustainability targets (European Commission 2023; ICLEI, n.d.). The case of Oslo provides an opportunity to examine the scope of environmental justice integration that a neoliberal governance framework allows for, while Barcelona offers a contrasting example (Cavicchia 2021). Here, municipal leadership resists higher-level pressures, adopting a more socially sensitive approach to urban climate governance (Blanco, Salazar, and Bianchi 2020).

1.1 Aims and Objectives

This thesis aims to explore the intersection of urban sustainability and environmental justice in the context of Barcelona and Oslo, in order to examine how environmental justice is operationalized and the extent to which it is an integral part of the cities' efforts towards sustainability. Considering the international influence of a neoliberal framing of sustainable development, the research also investigates the governance contexts of the two cities, to offer a nuanced understanding of how the distinct governance models influence the integration of environmental justice. The study also intends to identify successful modes of addressing injustices and ensuring equal access to the benefits of sustainability initiatives. These objectives will be guided by the main research question:

> How are considerations of environmental justice integrated into the municipal sustainability strategies of Oslo and Barcelona?

Furthermore, it seeks to address the sub-question:

How do the approaches taken by Barcelona and Oslo to address environmental justice reflect their governance models?

The questions will be answered through an in-depth comparative analysis of selected policy documents from the investigated cities, guided by an environmental justice framework. As exemplified by the impact of historical spatial planning practices, the narratives employed in such strategies and policies play a key role in the production of spatial relations (Manderscheid 2012). But more importantly, the conceptualization of environmental justice and the measures taken to address the related challenges serve as the basis of practical applications and, therefore, are crucial to achieve the intended balance among the dimensions of sustainable development (Teixeira Dias et al. 2023).

1.2 Outline

To set the stage for the exploration of the integration of environmental justice into the sustainability strategies of Barcelona and Oslo, the theoretical framework details existing conceptualizations of the three pillars of environmental justice applied in the analysis: distributional, recognitional, and procedural justice. The literature review examines and elaborates on essential concepts related to the incorporation of environmental justice into urban sustainability governance. The chapter also illustrates potential consequences of failing to consider environmental justice in the planning of sustainability initiatives, further reinforcing the relevance of the research. Following the contextualization of the governance framework of the cities, Chapter 4 outlines the methodological considerations employed throughout the research process, encompassing the process of data collection and analysis. Chapter 5 discusses the results of the analysis, elaborating on the findings

from each document, while Chapter 6 offers a comparative analysis of the integration of environmental justice in Barcelona and Oslo, along the lines of distributional, recognitional, and procedural justice, while also reflecting on their respective governance contexts. Finally, Chapter 7 reflects on the implications of the results in light of the objectives of the research, revealing a significantly deeper integration of environmental justice in the sustainability strategies of Barcelona based on the analyzed documents.

2. Theoretical Framework

2.1 Environmental Justice

Although the environmental justice movement has emerged in response to the racialized pattern of exposure to environmental hazards stemming from the placement of landfills, hazardous waste facilities, and other toxic industrial plants in the US, its focus has been extending in recent decades (Bullard 2001; Agyeman, Bullard, and Evans 2002; Pellow 2020; Schlosberg and Collins 2014). The concept has moved beyond disproportionate exposure to environmental hazards to address the equity aspect of access to environmental benefits e.g. green spaces as well. The initial emphasis on race has broadened to incorporate other determinants of environmental injustices, including factors like class, gender and sexuality (Sze and London 2008; Pellow 2020). A shift has occurred in terms of geographical scope as well, not only in the sense of local contexts outside of the US but also reflecting the unequal distribution of the impacts of climate change. While affluent countries bear the responsibility for the majority of greenhouse gas emissions contributing to climate change, it is the poorer nations that are most severely affected by its consequences. However, these countries often lack the necessary resources to effectively adapt to and mitigate floods, droughts or other extreme weather events resulting from climate change (Sze and London 2008; Schlosberg 2013).

At the same time, the movement has transcended its origins as a grassroots movement, now encompassing a variety of social movements, public policy initiatives, and academic research. Disciplinary applications of environmental justice as a theoretical or organizing framework along with its ideas and principles are also widespread, indicating the transdisciplinary nature of the concept (Schlosberg 2013; Sze and London 2008).

The diverse interpretations of the term environmental justice imply that a singular, universally applicable definition remains elusive, as its meaning varies according to context and purpose. The varied understanding of what constitutes environmental justice among specific communities, movements, academics, and policymakers, and their reciprocal influence on each other, often leads to ambiguity and contradictions (Holifield 2001; Schlosberg and Collins 2014). However, to embrace this plurality instead of establishing a restrictive definition, the application of broader guiding principles can allow for greater flexibility and inclusivity in addressing the multifaceted nature of environmental justice.

To capture the complexity of environmental justice issues and expand the conventional distribution-based approach – measuring geographical proximity to environmental risks and benefits – the triangular framework that incorporates procedural justice and the dimension of recognition as well will be applied in this thesis (Calderón-Argelich et al. 2021; Sze and London 2008). Although the aspect of distribution is an essential component of identifying and responding to environmental injustices, it fails to account for the entirety of structural factors resulting in the exclusion of certain populations from environmental benefits or their exposure to adverse health impacts (Schlosberg 2007; Schlosberg and Collins 2014; Calderón-Argelich et al. 2021). Those calling for a more comprehensive approach are also critical of redistribution as the sole solution to justice-related problems (Fraser 1995). This perspective posits that prioritizing the elimination of potential negative impacts may offer a more effective solution than merely equitably redistributing existing harms (Haughton 1999). Procedural justice, therefore, considers the underlying decision-making processes and institutional structures driving or perpetuating the experienced inequalities

(Schlosberg 2007). However, a prerequisite of just formal procedures is the aspect of recognition, since the different identities, needs and values of various groups must be acknowledged in order to be incorporated into policymaking (Young 1990; Fraser 1995; Schlosberg 2007; Walker 2009). Therefore, procedural justice can also be referred to as the method, that is able to realize the claims of distributional and recognition justice. The different dimensions and the indicators of their potential empirical manifestations will be elaborated in more detail following the exploration of environmental justice in relation to sustainable development and the urban sustainability agenda.

Sustainable development has emerged as a prominent approach in addressing the far-reaching consequences of climate change since the 1970s, essentially conceptualizing development within biophysical limits while satisfying the basic needs of both present and future generations (Agyeman, Bullard, and Evans 2002; Brundtland 1985). Precise definitions of the term vary among governing bodies and organizations, however, there is a general agreement on the three pillars of ecological, economic, and social sustainability as needed to achieve the stated goal through more specific actions (Haughton 1999). The bottom-up environmental justice discourse should, therefore, be an essential component of the top-down policy approach to social sustainability, however, in practice, this aspect gets frequently overlooked (Agyeman, Bullard, and Evans 2002). The social dimension is often also portrayed as less relevant compared to the other two, despite being a significant determinant of the success of policy initiatives and projects, as social tensions have the potential to instigate economic, political, and ecological instability, thereby hindering any positive outcomes (Haughton 1999; Pearsall and Pierce 2010). Thus, although the concepts of social sustainability and environmental justice should be overlapping, the significant practical gap suggests that efforts to mitigate and adapt to the impacts of climate change might reproduce or

create injustices. This could occur by not addressing historical patterns of exclusion and not involving the perspectives of all affected populations, which reinforces the need for the application of environmental justice principles to sustainability projects.

Urban settings are no exception to this phenomenon, particularly considering the importance of sustainability in these contexts, given the dense concentration of people, economic activities, and consumption in cities. While all of these factors are significant drivers of GHGs, thereby making substantial contributions to climate change, the vulnerability of urban areas to extreme weather events also underscores the imperative to address potential challenges (Pearsall and Pierce 2010). Simultaneously, due to the same conditions along with accelerated urbanization, cities also tend to exhibit heightened inequalities, manifested in significant income disparities, spatial segregation of communities and unequal access to essential services (UN 2020). Consequently, ensuring that environmental justice considerations are appropriately integrated into the development of municipal sustainability strategies is fundamental for a just urban transformation (Anguelovski, Brand, et al. 2020; Haughton 1999). However, the conceptualization and operationalization of justice in urban governance and planning might create a theoretical gap in addition to the scarce practical implementations, potentially leading to indicators that inadequately capture justice perspectives (Anguelovski, Brand, et al. 2020; Luger, Kotsila, and Anguelovski 2023).

In order to uncover such discrepancies and systematically evaluate how justice considerations are integrated into urban sustainability policies, the policy analysis will be partially guided by the operationalization of the three pillars of environmental justice, as established in previous research and elaborated on below.

2.1.1 Distributional Justice

The aspect of distribution has been rightly considered as the basis of justice issues since the way in which goods and bads are allocated is essentially establishing the foundational structure of society (Rawls 1971; Schlosberg 2007). Considering the origins of the environmental justice movement health is a primary indicator of injustices stemming from distribution. Therefore, quantitative research often engages with the correlation of health data and demographic information to identify the linkages between the siting of various polluting industries and facilities and the exposure of disadvantaged communities. Problem areas encompass air, soil, noise, or drinking water pollution along with activities such as hydrocarbon extraction and fracking, but simpler manifestations of maldistribution include the neglect of proper maintenance in marginalized neighborhoods as well (Browne, Gunn, and Davern 2022; Walker 2009). In this aspect temporality is also implied in conjunction with spatial arrangement, thus whether historically unequal patterns of distribution are addressed in sustainability projects is indispensable for effective outcomes (Calderón-Argelich et al. 2021; Langemeyer and Connolly 2020; Pellow 2020). On the other hand, future implications of such initiatives must be carefully managed as well, in order to avoid gentrification and displacement. As greening projects increase the attractiveness of certain neighborhoods, the appreciation of housing prices easily leads to the displacement of original residents, not being able to afford to live there anymore (Anguelovski, Brand, et al. 2020). Targeting previously deprived neighborhoods is therefore not sufficient to improve overall living conditions if appropriate measures are not in place to prevent displacement. These may include land use tools such as zoning regulations, legal mandates for integrating affordable housing into development plans, or financial initiatives like tax incentives and rent controls to facilitate resident retention (Oscilowicz et al. 2021). At the same time, the health

advantages associated with green spaces – an integral component of sustainability interventions – should be enjoyed indiscriminately, acknowledging their potential involvement in gentrification dynamics (Cole et al. 2019).

2.1.2 Recognitional Justice

However, although distribution defines the basic structures of society, the method of distribution is profoundly influenced by pre-existing social relations, processes, norms, and beliefs and consequently, the outcome will necessarily reflect these structures (Schlosberg 2007; Young 1990). Recognition is, therefore, imperative to adjust for the disparities ingrained in social and institutional processes to involve the perspectives of those not previously recognized, due to deeming their identity inferior (Fraser 1995; Langemeyer and Connolly 2020; Young 1990; Walker 2009). The starting point of recognition is then the examination of the social and cultural context of the occurring maldistribution along with the identification of privileged and oppressed groups. The lack of such an analysis can greatly distort the prioritization of sustainability interventions, for instance, if the identification of target areas and populations is dependent on a profit motive instead of actual local needs (Anguelovski, Brand, et al. 2020). Nevertheless, in the case of disenfranchised neighborhood development misrecognition still persists if the plurality of relating to green amenities, the varied knowledge systems of different groups and their particular needs are not taken into account during planning and implementation (Langemeyer and Connolly 2020). Thus, recognition must be considered at all stages of project development, in order to resolve formal, informal, past, and present processes of misrecognition.

2.1.3 Procedural Justice

Consequently, recognition is the backbone of just and inclusive institutional procedures (Langemeyer and Connolly 2020). This is for instance imperative for the most basic form of ensuring procedural justice; access to and participation in decision-making processes. Although sustainability projects often pride themselves in being co-created with citizens through participatory processes, the failure to elaborate on who is involved and to assess the impacts of their involvement can suggest a merely tokenistic approach. This is precisely the way in which existing power relations are reinforced, since the lack of recognition of the diverse needs of different groups and the homogenization of citizens only deepens spatial and procedural divides, further entrenching marginalization (Anguelovski, Brand, et al. 2020; Luger, Kotsila, and Anguelovski 2023). The issue is deeply entangled with democratic representation, as prioritizing certain voices over others results in decisions about some people's lives being made without their direct input (Walker 2009). Another problematic approach of participatory agendas positions urban sustainability in a depoliticized context, whereby the prevailing political-economic framework cannot be challenged, which automatically limits the possibilities of systemic transformations (Swyngedouw 2009). Therefore, attempts to enhance procedural justice in decision making should be scrutinized in detail, considering whether there is space for structural changes and whether participation is only a meaningless label. Other, less ambiguous measures to be taken are, ensuring transparency and access to information, however, these aspects can also be treated with caution in terms of what information is shared with whom (Bell and Carrick 2017).

2.2 Right to the City

Complementing the environmental justice framework, the concept of the right to the city offers a solid foundation for the conceptualization of the urban and provides a context in which

environmental injustices occur. As the social construction of distribution has been mentioned before, the production of space also happens through the lived experiences of the subjectivities inhabiting the city and their relations to one another according to Lefebvre (Purcell 2002). The material reality of the urban is shaped by the meanings attached to it and the ways in which it is used, but at the same time reproduces these power relations that constitute it (Marcuse 2009). An important element of this argument is that the use of space is closely intertwined with capital since essentially the appropriation of urban space is a struggle and a conflict between the rich and the poor (Purcell 2002). Therefore, the claims of the right to the city underscore the need for a social, economic, and ecological system where environmental justice can be realized, as a call for participation and appropriation of the inhabitants of the city are central to the concept. However, as capitalism and neoliberalism are seen as constituting the targeted issues, these claims entail the challenging of prevalent political and economic processes (Harvey 2003). An important manifestation of this is the emphasis on shifting the realm of decision making to those affected by it and on not only changing the way individuals are able to relate to the urban but allowing them to shape the environment they inhabit and use (Harvey 2003).

3. Literature Review

The concepts and ideas elaborated on below have emerged from existing literature on the integration of environmental justice into urban sustainability strategies and related research fields as essential for unpacking the interplay between these elements. While the adaptation of the sustainable development agenda to urban contexts along with mainstream governance approaches provide the background in which environmental justice is or is not addressed, the subsequent subchapters aim to deconstruct the modes and consequences of its implementation or lack thereof. Finally, narrowing the focus to the case studies of Barcelona and Oslo to examine their climate governance contexts, alongside an overview of previous research on environmental justice in the cities, will underscore the necessity for additional research and establish a foundational basis for policy analysis.

3.1 Urban Sustainability and Governance

Although there is a broad consensus on the vague principles of sustainable development, articulated in the Brundtland Report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED 1987), both policymaking and scholarly approaches exhibit significant diversity in their understanding of the concept. The increasing attention received by cities as fundamental actors in the mitigation and adaptation to climate change, starting with the establishment of transnational municipal networks prior to the Rio United Nations Conference on Environment and Development, necessitated the translation of the sustainability agenda to urban contexts as well (Bulkeley 2010; Huang, Wu, and Yan 2015; Pallathadka, Chang, and Ajibade 2023). The definition of urban sustainability also

varies depending on the context, but it is common to reflect on the three dimensions of sustainable development – environmental, economic, and social - while also touching upon resource consumption and efficiency along with equity and democracy (Huang, Wu, and Yan 2015; Pallathadka, Chang, and Ajibade 2023).

Governing the realization of these principles is, nevertheless, incredibly difficult given the range of affected sectors, involved stakeholders and the complexity inherent in the interplay of formal and informal processes (Nieminen, Salomaa, and Juhola 2021). Concurrently, due to the practicality of the issue, academic research wields significant influence on sustainable strategy development and project implementation (Bibri 2021; Genus and Theobald 2015). Scholarly research has developed various ways of engaging with urban areas and the challenges that they are facing. Theoretical perspectives on the management of sustainability transitions include propositions such as the great transformation, transformative adaptation, sustainability pathways, resilience or socio-ecological transformations (Caldarice, Brunetta, and Tollin 2019; Rink et al. 2018). The latter for instance considers the systemic nature of interactions between humans and the natural environment and puts an emphasis on the modifications inflicted on the environment by humans (Frank, Delano, and Caniglia 2017). Conversely, dominant policy responses tend to take a risk-reduction and adaptation approach to emerging pressures, often failing to address challenges in a comprehensive manner (Caldarice, Brunetta, and Tollin 2019). For instance, in the policy domain the concept of resilience – deemed as imperative for sustainable development – is frequently depicted in a restricted, reactionary manner, referring to the city's ability to adjust in response to severe circumstances. This perspective often overlooks the interconnectedness of disaster risk reduction with aspects such as mitigation, innovation, and development, failing to

adopt a holistic approach (Caldarice, Brunetta, and Tollin 2019; Ni'mah, Wibisono, and Roychansyah 2021). A potential explanation for this misalignment with theory is that most cities lack the capacity to carry out fundamental restructuring. An implementation gap has also been identified in previous research, despite cities' committing to ambitious sustainability goals, attributed in part to insufficient political, legal, and technological capacities as well (Gustafsson, Hermelin, and Smas 2019). Reflecting on the implementation deficit and the absence of tangible outcomes from decades of sustainability efforts, Loorbach et al. (2016) propose the necessity for a more radical approach beyond sustainable development, in order to meet the required targets.

3.1.1 Neoliberal Context

As municipal resources, targets, and decision-making processes are embedded in and shaped by global, national, and regional political and institutional contexts, it is important to examine this background to understand how certain priorities are established (Betsill and Bulkeley 2006; Ehnert et al. 2018). Such contextualization can illuminate the reasons behind failures in implementing comprehensive projects and reveal how priority setting, driven by limited capacities and more urgent issues, might lead to the neglect of environmental justice considerations.

In terms of the international climate governance framework, organizations like the OECD, UNEP, and the World Bank have framed sustainable development as achievable through market-based mechanisms aligned with a green growth agenda, reflecting neoliberal principles (Hickel and Kallis 2019). The emissions trading scheme of the European Union (EU) exemplifies well the commodification of natural resources, while privatization and the growing influence of the private sector in shaping environmental policies highlight the emphasis on market efficiency over social equity (Bailey 2007; Ciplet and Roberts 2017). Considering the focus of sustainable development

on social equity, Manderscheid (2012) has pointed out the apparent contradiction with the neoliberal ideology, within which it is expected to be implemented. The author also suggests that such an approach views the issue of justice purely in distributive terms. However, this is taken a step further by Ciplet and Roberts (2017), as they argue that libertarian notions of justice prioritize individual liberties and property rights over distributive justice concerns. This approach also hinders action purely taken for environmental or social befits, since these aspects are often only achievable as co-benefits of economic gain (Bulkeley 2010).

How and whether this agenda translates to municipal strategies and urban development naturally varies, but the overview of large-scale urban development projects in Europe by Swyngedouw et al. (2002) described a similar urban planning landscape, whereby development projects are geared towards enhancing competitive advantage. Rink et al. (2018) have also criticized the rebranding of the growth agenda as sustainability in numerous cities worldwide, arguing that this perspective essentially maintains that economic growth will ultimately result in more sustainable societies and disregards justice concerns. Reinforcing this argument, justice-related urban sustainability projects funded by the EU have been found to exhibit an ecological modernization perspective, not adequately addressing the issues of justice and instead embracing a technocratic stance to prioritize efficiency through innovation (Luger, Kotsila, and Anguelovski 2023; Hausknost and Hammond 2020). Urban planning for sustainability in Helsinki and German spatial planning policy also reinforces the trend of prioritizing competition and short-term economic benefits instead of social and environmental concerns (Manderscheid 2012; Nieminen, Salomaa, and Juhola 2021). However, the decentralized decision-making system in Sweden can provide a counter-example whereby the Transition Movement Värmdö is able to navigate and carve out political space,

effectively challenging established structural norms, such as those upholding neoliberal principles (Ehnert et al. 2018).

3.1.2 Densification – The Compact City

Within this governance context of urban sustainability, the urban planning strategy of compact city development has been advocated for in policy circles as the optimal solution to the various pressures faced by cities, as defined in the European Commission's Green Paper on the Urban Environment as well (Bibri, Krogstie, and Kärrholm 2020; Conticelli 2019; CEC 1990). Responding to the problems associated with rapid urbanization, the densification of urban settlements aims to reduce and optimize energy consumption, resource use, and pollution, and preserve land, while also favoring mixed-use development. The closer proximity of services and other amenities is anticipated to decrease reliance on automobile journeys and encourage the adoption of alternative modes of transport, such as public transportation, cycling, and walking (Conticelli 2019; Nallathiga 2008). Compact city models are also promoted for their potential to boost social inclusion and diversity by improving access to services and facilities since this accessibility is believed to foster social interaction, cultivate a sense of community, and accommodate the needs of various groups (Bibri, Krogstie, and Kärrholm 2020). Containing urban sprawl involves limiting the spread of low-density suburban areas, typically characterized by the separation of residential, commercial, and industrial land uses, while also drawing clear boundaries of urban units (Nallathiga 2008). However, the approach remains aligned with the growth-centered paradigm of sustainable development, as for instance Bibri et al. (2020) highlight that despite the propagated social and environmental benefits, densification projects are still primarily driven by economic incentives. In fact, Swiss case studies have confirmed the potential of gentrification processes being induced or magnified by compact city developments, suggesting the need for

deliberate planning and the implementation of preventative measures (Rérat 2012). Moreover, Næss et al. (2020, 146) have called densification "the most relevant strategy for ecological modernization within the field of urban spatial development" while arguing for the inadequacy of the approach without questioning the growth paradigm. Another point of contention related to the compact city model is the inherent contradiction of increasing built-in space with the clear necessity of green space and permeable surfaces for handling environmental and health problems (Conticelli 2019).

3.2 Typical Environmental Justice Issues

3.2.1 Green Gentrification

As mentioned earlier, the symptoms of environmental injustice are most evidently detectable in the unequal access to essential resources like housing and green space. While this might occur as a result of historical spatial planning decisions, continuous urban development and redevelopment necessarily impact exclusionary patterns. This is also true of initiatives with a focus on sustainability, which, depending on their planning and intentions, have the power to correct previous wrongs and foster inclusion, but can also solidify and exacerbate inequalities. Originating from Ruth Glass, the term gentrification captures a prominent aspect of how development projects might impact local communities (Cavicchia 2023). It refers to the physical transformation of a neighborhood, that generates an upward shift in the socio-economic fabric of the area, subsequently causing an increase in housing prices that previous residents cannot afford and thus, results in their displacement. Later scholarly debates have expanded the concept to include new construction as well, considering the spillover effect of the increased attractiveness of one neighborhood to others nearby (Davidson and Lees 2010; Marcuse, Rasmussen, and Engler 1988; Phillips et al. 2021). Moreover, less overt forms of displacement have also been brought to the

agenda, as losing a sense of community and place, which pertain to cultural displacement, can be as detrimental as direct displacement (Cavicchia 2023; Phillips et al. 2021; Rodgman et al. 2024).

The concept of green gentrification builds on the same idea, whereby strategies of climate mitigation and adaptation, like the introduction or restoration of green amenities cause the displacement or exclusion of economically vulnerable groups (Anguelovski et al. 2019; Dooling 2009). However, while green gentrification is mostly associated with the negative social impacts of nature-based infrastructures, designed to address risks like flooding, urban heat island effect, and landslides, it is important to recognize, that densification-driven planning decisions, that are intertwined with sustainability efforts, like brownfield redevelopment carry similar risks of displacement (Anguelovski et al. 2019; Cavicchia 2023; Dooling 2009).

3.2.2 Access to Green and Blue Spaces

A prevalent mode of increasing the attractiveness of historically disenfranchised neighborhoods for wealthier residents is the addition of green spaces. On one hand, the process of gentrification inevitably impacts housing affordability and accessibility, which will be elaborated on shortly. On the other hand, economically disadvantaged and immigrant communities, along with racial and ethnic minorities, are consequently also deprived of the benefits of these spaces (Anguelovski et al. 2019; Cole et al. 2017). The significance of vegetation in urban areas is extensive, since parks, nature reserves, greenways, urban forests, green roofs, or community gardens along with streams and waterways, not only fulfil essential ecological functions and mitigate environmental problems like absorbing stormwater and replenishing groundwater reserves (Rodgman et al. 2024; Triguero-Mas et al. 2021; Wolch, Byrne, and Newell 2014). They also play an important role in improving and maintaining human health by regulating air pollution and temperature, consequently reducing

the likelihood of related diseases, yet disparities in access to these green spaces can result in divergent health outcomes among populations (Schüle et al. 2019; Wolch, Byrne, and Newell 2014). The recreational value of outdoor environments should not be disregarded either, given its positive impacts on mental health and general wellbeing (Triguero-Mas et al. 2021). Nevertheless, when municipalities seek to restore underprivileged areas, the paradoxical phenomenon often occurs, that the original residents do not get to fully enjoy the associated benefits. The findings of Triguero-Mas et al. (2021) and Rodgman et al. (2024) reinforce the notion that distribution-based interventions alone are insufficient for addressing complex problems. In several cases, greening initiatives have been found to be poorly maintained, inaccessible, and unwelcoming to local populations. Simultaneously, these initiatives are frequently highlighted in cities' marketing efforts, and the green branding of such areas often encourages more affluent populations to move in, acting as a catalyst for gentrification (Checker 2011; Triguero-Mas et al. 2021; Wolch, Byrne, and Newell 2014).

3.2.3 Access to Housing

These mechanisms also underscore the assumption that in the majority of cases, the environmental and social pillars of sustainability are secondary and initiatives are driven by market-oriented development (Checker 2011; Wolch, Byrne, and Newell 2014). However, the exclusion of underprivileged groups from sustainable amenities depicts a kind of ‘green’ and ‘low-carbon’ lifestyle that is only available for the wealthy. This can be connected to densification strategies and new-build gentrification considering neighborhood transformation and redevelopment projects that not only focus on adding green infrastructure but incorporate elements like improved public transportation networks, low-carbon construction methods, and energy-efficient housing. However, these efforts are rarely targeted at those who would benefit most from reduced utility

expenses, contributing to further social and economic inequalities (Cavicchia 2023; Rérat et al. 2010; Rice et al. 2020). Furthermore, although affordable housing should be a paramount aspect of ensuring social sustainability if it is sidelined for projects guided by neoliberal principles, the living situation of economically disadvantaged communities may be further exacerbated (Severson and Vos 2021).

3.3 The Climate Governance Context of Barcelona and Oslo

As previously discussed, the governance context within which sustainability strategies are formulated significantly influences the priorities and approaches of cities like Oslo and Barcelona, thereby shaping their focus on environmental justice and social sustainability. At the same time, this background allows for the examination of whether the integration of environmental justice into policy documents varies based on the governance context of these cities.

3.3.1 Barcelona

Contemporary urban governance and subsequently sustainability and greening initiatives in Barcelona reflect the legacy of the urban social movements and neighborhood associations opposing the Francoist dictatorship. These networks emerged around the 1960s in response to the city's expansion and densification, not supported by adequate public services and infrastructure. They advocated for appropriate living conditions and gained considerable political power even before the democratic transition began (Calavita and Ferrer 2000). Thus, the transition period was also characterized by a focus on the needs of the people, including the creation of green spaces, squares, meeting places, as well as educational and public facilities, all under the leadership of a leftist mayor (Anguelovski and Connolly 2017; Calavita and Ferrer 2000). Although the

preparations for the 1986 Olympic Games initiated a shift in urban planning towards large-scale developments and economic growth and the financial crisis of 2008 prompted neoliberal austerity policies, protests and social movements demanded a change in governance direction again (Anguelovski and Connolly 2017; Blanco, Salazar, and Bianchi 2020; Sareen and Waagsaether 2023). The new municipalist movement of Barcelona en Comú – described as radical left by Blanco et al.(2020) – called for a citizen-focused, inclusive, participatory, and just reorganization of the urban political agenda, countering growing inequalities, segregation, increasing privatization, and an emphasis on economic growth. Since Barcelona en Comú has gained municipal leadership in 2015, recent sustainability policies emerged out of this context of reclaiming common resources, advancing social and spatial justice and promoting habitable living environments (Blanco, Salazar, and Bianchi 2020). According to Sareen and Waagsaether (2023), this approach could present an alternative to a neoliberal mode of sustainability governance, however, its local focus combined with conflicting top-down EU and national directives hinders the upscaling of measures. For instance, the remunicipalisation of energy services through the creation of a public electricity company is a prominent strategy of the city, but its inclusion in broader procurement processes and the envisioned ownership structure involving workers and residents was obstructed by higher level policies.

Another key element in the participatory governance framework is the establishment of Decidim Barcelona, an online platform aimed at enhancing democracy and engaging residents in the planning and development of initiatives, as they are able to propose ideas and vote on projects to be executed (Sareen and Waagsaether 2023). The platform was also instrumental in the planning of The Barcelona Climate Plan (2018–2030). However, despite its combination with other forms

of gathering input from citizens and organizations, Satorras (2021) highlighted that ultimately, civil servants made the final decisions regarding the inclusion of outcomes from participatory methods in the strategy.

The concept of the Superblocks provides an interesting example of how the new municipalist framing of spatial planning strategies is able to address sustainability more comprehensively incorporating social sustainability and justice considerations as well (Sareen and Waagsaether 2023). The neighborhood transformation plan was first presented by the leadership prior to Barcelona en Comú and resembled a neoliberal orientation, with a focus on drawing in affluent residents and developers within a smart city framework, primarily as a mobility intervention (Zografos et al. 2020). Nevertheless, the implementation of the first pilot projects was refocused on bringing about extensive societal benefits along with the reorganization of mobility networks (Sareen and Waagsaether 2023). Therefore, the analysis of the municipal measure underlying the establishment of the Superblocks can provide valuable insights into what this means for the incorporation of environmental justice. This is especially interesting since the first pilot project faced criticism regarding social equity concerns, which have since been addressed in subsequent projects through measures aimed at preventing green gentrification (Anguelovski, Honey-Rosés, and Marquet 2023). Nevertheless, overall, the city has been acknowledged for its proactive measures to alleviate distributional inequalities within climate planning, particularly in addressing disparities within access to essential services (Amorim-Maia et al. 2024).

Considering the compact city strategy, for Barcelona the issue of adequate access to green space and the enhanced presence of permeable surfaces is imperative, given its position as one of the

most densely populated cities in Europe, consequently facing significant challenges related to air pollution or the urban heat island effect (World Population Review 2024; Rueda 2019). Thus, Barcelona's approach to density is rather characterized by the management of the already dense urban fabric, with increasing green spaces and permeability being a central goal of the city's climate strategy (City of Barcelona 2018).

3.3.2 Oslo

In contrast to Barcelona, Oslo's climate governance framework, dating back to the 1990s, embodies neoliberal principles, with a strong focus on CO_2 reduction, mobility interventions, and technical solutions, implemented through market mechanisms and justified by economic benefits (Hofstad and Vedeld 2020; Kjærås 2024). Having embraced densification as its primary development strategy for the past three decades, Oslo is one of the most rapidly growing cities in Europe (Hofstad 2012; Cavicchia 2023; 2021). In this context, it is not surprising that the topics of social sustainability, equity, and justice only entered the discourse of climate-related planning recently, around 2019, despite the clear socio-spatial segregation of the city (Hofstad and Vedeld 2020; Venter et al. 2023). Although income inequalities are relatively low in Norway, there is a distinct East-West segregation in Oslo, with wealthier residents concentrated in the western parts of the city, while working-class and non-Western immigrant citizens predominantly reside in the eastern part (Brevik 2001; OECD 2022; Venter et al. 2023).

Regardless, Andersen et al. (2020) have shown that private developers, executing urban transformation projects primarily aim to cater to more affluent residents and the municipality is not steering this process towards more inclusive development with the use of regulatory tools. However, local resistance and new ways of relating to densification might have the potential to

shape the dominant neoliberal paradigm and open up space for the prioritization of equity and social justice over purely market-driven interests (Kjærås 2024; Skrede and Andersen 2022).

Also reflecting the neoliberal principles of reliance on technological solutions and market-based tools, a key part of Oslo's governance strategy is its Climate Budget, introduced in 2017 (C40 2023; Hofstad and Vedeld 2020). To ensure that every expenditure approved by the city council aligns with the city's climate targets, the Budget is tightly integrated with the city's overall financial planning process. The aim is to have a comprehensive overview of emission reduction possibilities across sectors, thus the two-year cycle of the budgeting process is divided into planning and identifying CO_2 reduction measures and an implementation and reporting period (C40 2023; Hofstad and Vedeld 2020). How this model is able to incorporate social sustainability is therefore an intriguing question.

Co-creation is claimed to be an integral part of Oslo's climate governance; however, this primarily refers to the inclusion of the business community in processes of priority setting and implementation, further reinforcing the emphasis on economic development (Vedeld et al. 2021). Meanwhile, under the Norwegian political system, the city of Oslo is strongly influenced by extensive national policy frameworks and receives substantial financial support from the central government, comprising about 75% of its budget. At the same time, the vagueness of national directives grants the city considerable independence in determining the explicit strategies for climate change and urban development (Hofstad and Vedeld 2020). Thus, unlike Barcelona, Oslo's municipal government is not constrained by the central government yet remains heavily reliant on it.

Therefore, the two distinct governance approaches, along with different perspectives towards densification provide an interesting background for the examination of how social impacts and environmental justice concerns are taken into account in these two contexts.

3.4 Environmental Justice Research in Barcelona and Oslo

3.4.1 Barcelona

Green interventions in Barcelona have received extensive scholarly attention from an environmental justice perspective, highlighting the need for further research into the root causes of these injustices. With The Barcelona Lab for Urban Environmental Justice and Sustainability (BCNUEJ) located in the city, much of the scholarship on environmental justice in urban settings and green gentrification has originated from Barcelona, making the city a prominent example of these processes. For instance, in the context of the city's urban greening agenda in the 1980s and 1990s, gentrification has been detected near more attractive or previously industrialized areas such as historic districts or waterfront areas (Anguelovski et al. 2018; Anguelovski and Connolly 2017). This case of introducing green space and infrastructure into disenfranchised neighborhoods, that negatively impacted residents lacking college degrees, with a Global-South immigrant or a low-income background has also been used to underpin the theory of the urban green paradox. The paradox highlights how intentions to improve overall quality of life can result in disadvantaging marginalized groups (Anguelovski, Connolly, and Brand 2018). Qualitative research has delved into the intricate dynamics of experiencing gentrification by long-term residents as well, since despite the intended positive outcomes, a prevalent observation of declining mental and physical well-being among this demographic has emerged (Anguelovski, Triguero-Mas, et al. 2020). At the same time, quantitative and spatial analyses uncovered disparities in exposure to air pollution, with

less privileged groups experiencing the impacts to a greater extent, although noise pollution was measured to be higher in wealthier areas (Saez and López-Casasnovas 2019). March and Sauri (2017) reflected on the celebrated decrease in domestic water consumption in Barcelona and drew attention to the issue of water poverty, particularly affecting financially disadvantaged communities occurring as a result of the policy measures that facilitated this decline. However, on a more positive note, despite expectations of an unequal distribution of ecosystem services tied to street tree coverage, Baró et al. (2019) found that trees in Barcelona help balance the allocation of ecosystem services.

The widespread awareness of the historically uneven sustainability-related development of Barcelona along with the intentions of rectifying the situation allow for an interesting analysis of how such efforts are manifested in policymaking.

3.4.2 Oslo

While the subject of environmental justice and green gentrification is not untouched in existing academic research in the context of Oslo either, policy documents have not been explicitly scrutinized using an environmental justice framework. Nonetheless, spatial analysis and quantitative findings on socio-economic segregation and exclusionary patterns associated with densification strategies based on sustainability targets provide a foundation for examining the policy background leading to and informing these initiatives (Cavicchia 2023; Wessel 2015). Venter et al. (2023) for instance, detected spatial disparities in the distribution of blue-green spaces, revealing that economically disadvantaged citizens have less access to urban nature and face greater exposure to air pollution and heat. The results of Suarez et al. (2020) showed a similar pattern when examining the availability of nature-based outdoor recreation opportunities,

indicating that households with immigrant or low-income backgrounds experience disproportionately limited access. Inequalities have also been uncovered in the accessibility of public transportation by Lunke (2022), further reinforcing the assumption of Venter et al. (2023) that environmental justice aspects are not adequately incorporated in the planning of sustainability interventions as residents are treated as a homogenous group. The close examination of an area transformation program in the formerly disadvantaged neighborhood of Tøyen arrived at a similar supposition since the project failed to prevent displacement despite the clear recognition of its risks (Holgersen 2020).

Based on these findings, it is evident that even though Oslo is perceived as a frontrunner in sustainability, a focus on environmental and economic sustainability does not automatically ensure the inclusion of social sustainability and environmental justice in the transformation process. It is also clear that these aspects must be explicitly targeted in policymaking in order to at least avoid the deterioration and consolidation of existing injustices.

3.5 Research Gap

As it has been shown above, commitments to sustainable development, especially in a neoliberal governance context do not necessarily guarantee a balanced approach to economic, environmental, and social sustainability in the planning and implementation of sustainability interventions. The existing spatial and socio-economic divisions in the cities of interest also suggest that inequalities and injustices will be upheld unless directly addressed, however, this hypothesis mostly occurred in the form of assumptions (Venter et al. 2023). Measures and tools have been proposed in existing literature to counteract trends of injustices and create a fairer environment, encompassing land use

and financial regulations, along with developer requirements (Oscilowicz et al. 2021). Wolch et al. (2014) have also introduced the concept of 'just green enough', which seeks to balance the advantages of green space development and the needs and preferences of local communities.

Therefore, a thorough analysis of the underlying documents driving sustainability initiatives is crucial to understanding how disparities manifest in supposedly 'sustainable' European cities, as advocated by Anguelovski et al. (2018), especially considering that these mentioned methods are available for policymakers to employ. While a policy analysis may not offer a comprehensive view of the entire process from planning to implementation, it can play a vital role in uncovering the narratives that shape equity outcomes in cities like Barcelona and Oslo. It might also reveal whose perspectives and experiences are deemed as important to take into account, which is an essential aspect for ensuring a just transition (Luger, Kotsila, and Anguelovski 2023). As Anguelovski et al. (2019) highlighted, there is a need for research that delves into the analysis of inequities arising from green resilient infrastructure, which involves the incorporation of environmental justice considerations into green infrastructure planning and climate adaptation strategies.

Since the topic of green gentrification is predominantly explored in the US context, this research aims to contribute to enriching and expanding the discourse to encompass European urban settings (Anguelovski et al. 2018).

4. METHODOLOGY

4.1 CASE STUDY SELECTION

Barcelona and Oslo were selected through purposive sampling, primarily due to their internationally renowned sustainability efforts, which is an essential aspect for analyzing how justice perspectives are integrated into these initiatives. Oslo was awarded the 'European Green Capital' title in 2019 and the Covenant of Mayors for Climate and Energy award recognized Barcelona's Climate Plan for its comprehensive strategy in 2018 (European Commission 2023; ICLEI, n.d.). The availability of sources in English was another key concern, however, the distinct political, geographical, and socio-economic backgrounds of the cities make for a compelling comparison. Despite their differences, both cities have emerged as frontrunners in sustainability, presenting an interesting opportunity to investigate whether environmental justice is intrinsically tied to sustainability leadership or is more affected by their different backgrounds.

Barcelona, the capital of Catalonia, has 1,620,809 inhabitants and a population density of 16,000 people per square kilometer. In contrast, Oslo, the capital of Norway, has 673,469 inhabitants and a population density of 3,300 people per square kilometer (World Population Review 2024a; 2024b; UN Habitat, n.d.). These differences in size and density can already indicate varying challenges in managing the sustainability transition of the cities, however, considering that the GDP per capita of Norway was 108,729.2 USD in 2022, compared to that of Spain, which was 29,674.5 USD, it is evident that their resource capacities differ significantly as well (World Bank 2022). The membership of Spain in the European Union can also influence the climate governance of Barcelona, whereas Oslo, though less impacted, is still subject to EU directives through its participation in the European Economic Area (EU, n.d.; Eurostat 2020). In terms of population

diversity, with immigrants making up approximately 30% in Oslo and 17% in Barcelona, this demographic factor likely contributes to shaping a unique social fabric in both cities (World Population Review 2024a; 2024b). The unemployment rate in Barcelona was 6.1% in 2023 whereas in Oslo it was significantly lower at 2.2%, with the city also being renowned for its high quality of life (City of Barcelona 2024; EURES 2023; World Population Review 2024b).

Regarding the main climate pressures endangering the cities, those projected in Oslo appear to be less immediate. These include intensified rainfall, rising temperatures, stronger winds, increased flooding from cloudbursts, and reduced natural infiltration areas due to urban development (GREENGOV, n.d.). Barcelona, on the other hand, is already grappling with severe droughts leading to water crises, heatwaves, along with the consequences of the urban heat island effect. While these are expected to intensify, other challenges involve heightened forest fire risks in peri-urban areas and enhanced rainfall patterns resulting in increased flood risks, exacerbated by urban development reducing natural water absorption capacity (City of Barcelona, n.d.-a; UN Habitat, n.d.).

Therefore, documents for the analysis have also been chosen with purposive sampling, to represent the overall approach of the city towards sustainability along with the specific projects of the Superblocks in Barcelona and FutureBuilt in Oslo. The main climate strategy of each city was selected for analysis as they represent the cities' broader understanding and operationalization of environmental justice. In the case of Oslo, the Climate Strategy for Oslo towards 2030 was supplemented by the Climate Budget from 2023, as it is the main tool for the realization of the city's sustainability initiatives. The large-scale urban development projects of the Superblocks and

FutureBuilt are central to the sustainability efforts of their respective cities, repeatedly mentioned in the main strategies and in the case of Oslo, in the Climate Budget as well (City of Barcelona 2018; City of Oslo 2020; 2023). They are not only embedded in the densification-related efforts of the cities but are also illustrative of the governance modes adopted by the cities. The FutureBuilt framework supports Oslo's emission reduction aims, involving technological innovation in terms of low-emission construction methods and the circular use of materials (FutureBuilt 2016). As explained above, the Superblocks are especially interesting, as their introduction can be associated with the left-leaning municipal leadership of Barcelona, not only targeting the alleviation of environmental pressures but also the generation of significant social benefits (Sareen and Waagsaether 2023). Since both projects include extensive spatial transformations, they can be expected to prioritize environmental justice and social sustainability given their significant impact on local residents Therefore, they serve as relevant case studies for the examination of the extent to which this is realized. The Urban Mobility Plan of Barcelona was included the analysis due to its significance as the foundational measure for the Superblocks and its instrumental role for implementing the climate goals identified in the Climate Plan of the city (City of Barcelona 2018).

Barcelona	Oslo
Barcelona Climate Plan (2018-2030)	Climate Strategy for Oslo towards 2030 (2020)
Barcelona Urban Mobility Plan (2013-2018)	Oslo's Climate Budget 2023
Establishing Superblocks in Barcelona – Government Measure (2016)	FutureBuilt Project Description (2016)

Table 1 - Analyzed Documents

4.2 METHODS

The research question of how environmental justice is integrated into the sustainability strategies of Barcelona and Oslo will be answered through the application of a grounded theory approach to

the analysis of key policy documents and specific project-related documents from the cities. This method allows for a structured assessment of how environmental justice principles are operationalized and the extent to which they are addressed, while it also aligns effectively with the three-pillar environmental justice framework. Interviews were intended to enrich the data uncovered by the document analysis and address aspects not covered within them. The collected data is also relevant in unpacking how the approach adopted by each city aligns with the main principles of their governance contexts, thereby determining the extent to which the prevailing governance framework influences the incorporation of environmental justice.

4.2.1 Document Analysis

For the analysis of the documents, a mixed approach of inductive and deductive coding methods has been employed, in order to allow for new manifestations of justice and injustice to emerge, while being guided by predefined categories outlined in existing literature and detailed in the theoretical framework. As Williams and Moser (2019) highlight, this dual approach is effective, since it facilitates a comprehensive and nuanced interpretation of the data, while ensuring precise thematic categorization in line with established theoretical frameworks. The predetermined categories of environmental justice were heavily influenced by Luger et al. (2023), however, these needed to be adjusted to the three-pillar framework of distributional, recognitional, and procedural justice. The codes emerging from the documents were identified and synthesized using a grounded theory approach as outlined by Corbin and Strauss (2008).

Although the aim from the beginning of the coding process was to categorize the codes along the themes of distributional, recognitional, and procedural justice, the initial, open phase of the coding process disregarded this aspect to avoid limiting the identification of other relevant themes that

might not fit into this framework. This stage involved a line by line examination of the texts with the goal of uncovering a variety of ways in which justice is or is not expressed, referred to, or addressed, also considering the contexts in which these occur. In some cases, this resulted in a differentiation between positive and more negative articulation of similar aspects. As noted in the theoretical framework, when participatory processes are discussed or implied, for instance, citizens or stakeholders may be perceived as a uniform group, which could perpetuate existing power dynamics (Luger, Kotsila, and Anguelovski 2023). Conversely, distinguishing between different groups and involving them in planning or decision-making is likely to lead to more inclusive outcomes. The same scrutiny has been applied to the use of words like justice, fairness, or the inclusion of everyone since these often lacked accompanying explanations of how these ideals will be achieved and were used more as symbolic gestures. Therefore, in both cases, two distinctive codes were developed to convey the potentially positive or negative outcome of the operationalization of these expressions. Except for the codes of 'exclusion' and 'justice as a co-benefit of other efforts', the rest of the identified codes are regarded as catalysts for corrective measures rather than obstacles to such processes.

Following the open coding process, the final codes were refined through a series of comparisons and exercises involving questioning the contexts in which certain concepts appear, based on the guidelines of Corbin and Strauss (2008). Similar, but somewhat different categories were compared to determine whether the differences are significant enough to justify separate classification, or if they essentially refer to the same phenomena and to understand the meanings they entail in light of the other. This phase of focused or axial coding aimed to narrow down the diverse aspects captured during the first phase, in order to identify key themes or patterns essential

for understanding urban policy approaches to environmental justice (Charmaz 2008; Williams and Moser 2019).

Finally, the codes were organized into the pre-existing main thematic categories of distributional, recognitional, and procedural justice. This process was highly interpretive, given the overlaps and interdependencies of the three categories, especially as distributional and recognitional justice often serve as the basis of procedural justice. This has been tackled by grouping more action and outcome-oriented codes under procedural justice, and those related to acknowledgements of spatial or social differences under the other two categories.

After finalizing the codes based on the analysis of all documents, the previously designated codes were adjusted and the frequency of the occurrence of each code was assigned in case of each document. This quantification enables a direct comparison of the narratives and approaches both within and across cities. It not only allows to infer the extent to which environmental justice is incorporated into the sustainability strategies of Oslo and Barcelona but also sheds light on the depth and substantiality of its integration.

4.2.2 INTERVIEWS

Although interviews were planned to complement the details uncovered by the document analysis in both cities, unfortunately, this has not been successful in the case of Barcelona, due to the lack of available participants. Nevertheless, one semi-structured interview was conducted with a member of the Climate Agency at the Municipality of Oslo. The interview questions were tailored to address gaps, left by the documents and to explore considerations of environmental justice in decision-making processes and its influence on the prioritization of sustainability-related

initiatives. Prior to the interview, a consent form was signed by the interviewee, agreeing to the details of the process and the inclusion of the content in this thesis. The interview was carried out online, recorded, and subsequently transcribed. The transcript was then analyzed in conjunction with the results of the document analysis. Ethical considerations were thoroughly adhered to, ensuring the voluntary nature of participation.

4.3 Limitations

While three documents may not constitute a representative sample of each city's approach to environmental justice, whether or not the aspect is integrated in any randomly selected document, does illustrate the extent of integration — whether justice is merely symbolically referenced in one primary document or chapter, rather than consistently applied across all target areas and initiatives.

Another clear limitation of working with only two cities is that the generalizability of the findings is not ensured. However, the comparative approach applied in the research facilitates an in-depth exploration of two distinct contexts, enabling the identification of patterns of both similarities and differences. This method yields valuable insights into the complex dynamics of sustainable urban development, thereby enriching the wider understanding of the subject matter (Bergene 2007).

Due to a language barrier in the case of both cities, the longer version of Oslo's Climate Strategy and the Urban Mobility Plan of Barcelona have been translated using DeepL Translate, potentially altering the precise usage of certain terms in these documents. In the case of Oslo's Climate Strategy, this could be partially alleviated by cross-referencing the main themes and points to the shorter version that is available in English. Additionally, when analyzing these documents,

particular attention has been given to the context in which relevant aspects appear. Nonetheless, the use of the machine translation technology should not necessarily be a cause for concern regarding the accuracy of the translations, as recent studies deemed the quality of translations generated by DeepL reliable for scientific research (Yulianto and Supriatnaningsih 2021; Zalikha 2024).

4.4 Positionality

Since the subjective stance of researchers inherently influences the research process (Creswell and Creswell 2017; Secules et al. 2021), it is important to reflect on how my academic or personal preconceptions and position might have impacted the research design and the process. Considering the theoretical underpinnings of this study, my ontological stance rooted in constructivism necessarily informed the choice of the right to the city as the lens through which to examine urban issues. Additionally, although people belonging to marginalized communities have not been interviewed, which would have brought up more issues to address, the seniority and expertise of the one interviewee created a distinctive power dynamic. The interviewee's slightly educative approach, along with a defensive stance, stemming from the environmental justice context of the research undoubtedly influenced the information shared during the interview. Being a student working on a master's thesis also impacted the depth and quality of the research, given the limited availability of time and resources, as these constrained the scope of data collection and analysis.

5. RESULTS

As a result of the document analysis, 22 codes were generated along the lines of distributional, recognitional, and procedural justice, as shown in Table 2. A comprehensive or systemic approach emerged as an important pre-condition for addressing environmental justice already from the literature and the documents reinforced its relevance, however, since it does not fit into the subcategories of the conceptual framework, it was added as an additional code. Considering the distribution of codes along the three pillars, procedural justice encompassed the widest variety of targeted approaches as illustrated by Figure ***1***. This can be connected to the argument that distributional and recognitional justice should essentially provide a conceptual basis for measures intended to achieve fair outcomes. On the other hand, procedural justice did not only involve more forms of operationalization than the other two, but references to these aspects were also more frequent both overall and separately in the cities, indicating a more action-oriented approach. However, as discussed earlier, the category of procedural justice also includes the negative codes of homogenizing citizens in relation to participatory processes and a tokenistic implication to justice, whereby it is not elaborated on what justice entails and how it will be achieved. Therefore, these appeals to procedural justice include less meaningful engagement with the topic, which could potentially exacerbate inequalities. Interestingly, while mentions of participation in a homogenizing manner were the second most frequent across all documents, the most prominent category was 'differentiated needs as a basis of action', consistently ranking among the top categories in all documents. In cases of more symbolic and less impactful engagement with environmental justice, more frequent tokenistic references to justice could have been anticipated rather than calls for substantial action. Thus, this result indicates a deeper consideration of the topic in both cases, even if Barcelona demonstrates a significantly amplified level of commitment.

A differentiation has been made among different purposes of information dissemination, which is reinforced by the findings. While instances of sharing information to raise awareness about, for example, the potential consequences or drivers of climate change were rare, both cities prioritized disseminating information to empower action, such as providing advice on available grants and subsidies for climate-related purposes. The third aspect related to information dissemination was also separated and categorized as 'transparency of formal processes' since it serves a distinct function of procedural justice from the other two by making governance processes clear and accessible.

Acknowledgements of spatially and socially differentiated impacts were also separated, although this contrast has been mostly articulated in the Climate Plan of Barcelona (City of Barcelona 2018). Spatial differentiation refers to how the impacts of climate change are unevenly distributed across the city, affecting different neighborhoods in varying ways, while the recognition of social differentiation emphasizes that these impacts are experienced differently among diverse social groups.

The grounded theory approach to the document analysis generally worked very well for unpacking the various ways in which environmental justice is addressed in the cities, nonetheless, it did not facilitate the exploration of aspects that the documents are lacking. Although this would have been a highly abstract endeavor beyond the scope of this thesis, in certain cases highlighting the absence of for instance anti-gentrification measures could have provided a more comprehensive picture. Moreover, despite the focus on the integration of justice into policies and therefore examining

aspects directly attributable to the topic, it must be noted that practical applications may also include guidelines or practices not explicitly outlined in the documents. For instance, the interviewee from Oslo reflected on the lack of official evaluation procedures for assessing the social sustainability and environmental justice impacts of proposed measures, explaining that the component of positive social outcomes is informally expected to be part of proposals. Thus, it might occur that certain processes are not institutionalized but still influence the outcomes.

In light of these considerations, the following sections will explore how the examined factors unfolded in each document, providing a background for the comparison of the governance approaches taken by the two cities in relation to environmental justice.

Type of Justice	Code	Barcelona Climate Plan	Urban Mobility Plan	Superblocks	Oslo Climate Strategy	Oslo's Climate Budget 2023	Future Built
Distributional Justice	Acknowledgement of differentiated impacts - socially	14	-	1	-	-	-
	Acknowledgement of differentiated impacts - spatially	12	-	1	-	1	-
	Ensuring accessibility	5	8	2	6	3	-
	Justice as a co-benefit of other efforts	1	-	-	5	2	-
Recognitional Justice	Differentiated needs as a basis of action	7	9	14	6	5	1
	Differentiated impacts as a basis of action	13	-	-	-	-	-
	Recognition of different groups, their socio-economic backgrounds, or needs	9	1	6	-	-	-
	Acknowledgement of transboundary environmental injustice	3	-	-	-	-	-
	Acknowledgment of intergenerational environmental injustice	2	-	-	-	-	-
	Exclusion	1	-	-	-	-	-
Procedural Justice	Participation - homogenizing	21	-	1	9	5	-
	Participation - non-homogenizing	6	2	13	-	-	-
	Justice - tokenistic	7	-	1	5	3	-
	Justice - non-tokenistic	10	5	1	3	-	-
	Enabling people to exercise their rights	1	2	1	-	-	-
	Information dissemination to create awareness	5	-	-	2	1	1
	Information dissemination to empower action	19	3	1	2	4	-
	Legal, financial, or other tools to ensure environmental justice	14	-	-	-	4	-
	Monitoring effectiveness based on differentiated needs and impacts	2	-	2	-	-	-
	Prioritizing based on differentiated impacts, vulnerability, or access	17	-	2	2	-	-
	Transparency of formal processes	4	1	1	2	-	-
	Systemic approach	7	1	3	3	3	-

Table 2 - List of Codes and Their Frequency in the Analyzed Documents

5.1 BARCELONA CLIMATE ACTION PLAN (2018-2030)

The Climate Plan of Barcelona is structured around the primary climate pressures affecting the city and the strategic lines adopted to address them (City of Barcelona 2018). Two out of the four strategic lines are particularly pertinent to environmental justice; 'climate justice' and 'promoting citizen action' (as this is closely tied to co-creation projects), which already indicates the deep integration of environmental justice considerations into the plan. The document also outlines existing government measures and strategic plans relevant to climate change. Out of the 34 measures listed 20 are claimed to target 'climate justice' and 24 'promoting citizen action', thus only 5 of the strategies do not consider any of these goals, further reinforcing Barcelona's commitment.

The Climate Plan proved to be the most robust in integrating environmental justice principles out of the analyzed documents (City of Barcelona 2018). Consequently, it also had a prominent role in generating the codes, with four aspects appearing only in the Climate Plan, including the acknowledgement of transboundary and intergenerational injustices, underpinning the extensive nature of its coverage on the topic. Nevertheless, direct exclusion also only occurred in the Climate Plan, when inviting the men and women of Barcelona to participate in the creation of a more sustainable city. This is a subtle demonstration of how environmental injustices can stem from gender-based differentiation, as people not identifying within the heteronormative classification of gender are at the very least ignored in this vision of a sustainable future. On the other hand, the distinction between differentiated needs and impacts as a basis of action was also only relevant in the case of this document, as the latter was not observed elsewhere. While the Plan includes a thorough analysis of the socio-economic composition of the city to identify vulnerabilities across various dimensions such as life expectancy and health, along with a spatial analysis of

vulnerability, it also specifically examines how climate change will impact these different groups and locations (City of Barcelona 2018). Meanwhile, this foundational approach is omitted in the case of actions based on differentiated needs in Oslo, further reinforcing the nuanced stance of Barcelona on environmental justice.

The lack of adequate attention paid to monitoring processes presents a clear opportunity for future enhancement, but in general, the emphasis is predominantly on substantive action. For instance, there is clearly more engagement with information dissemination that empowers people to access services and utilize available resources, rather than simply sharing knowledge on climate change. This trend also extends to the use of 'legal, financial or other tools to ensure environmental justice', and as explained before, the manifestations of procedural justice are built on strong foundations of acknowledging distributional and recognitional challenges. These aspects are also well integrated across all lines of action which reinforces the claimed systemic approach of the Plan (City of Barcelona 2018). However, participation is referenced more frequently in a homogenizing manner than non-homogenizing, and the majority of involved participants are recruited from organizations rather than the general public, signifying the need for deeper engagement of all affected segments of society.

5.2 Barcelona Urban Mobility Plan (2013-2018)

Despite the existence of a more recent version of the Urban Mobility Plan (UMP), the edition covering the period of 2013-2018 remains especially relevant for several reasons (City of Barcelona 2014). Firstly, the document is referenced in the Climate Plan as targeting the strategic lines of 'promoting citizen action and mitigation', hence certain forms of justice can be expected

to be an integral part of the UMP, which necessitates detailed examination. At the same time, the period coincides with the transition in the municipal leadership and, therefore, provides a distinctive perspective compared to the main climate strategy, developed by the succeeding administration. Lastly, the UMP serves as a foundational document for the Superblocks project, also allowing for the exploration of the integrated and systemic approach.

Regarding the content of the UMP (2014), the document outlines strategies to prioritize sustainable and efficient transportation modes such as public transport and cycling. Central to these efforts is a commitment to placing people at the center of this new mobility model that will be "safer, healthier, and fairer", according to the description of the UMP on the municipality's website (City of Barcelona, n.d.-b). This is also expected to be manifested in the strong emphasis on increasing social cohesion and the creation of public spaces for the benefit of everyone. Thus, the detailed analysis sheds light on the extent to which the document achieves these goals.

Overall, out of the documents analyzed in Barcelona, the UMP showcases the lowest engagement with indicators of environmental justice, yet it touches upon all three pillars investigated. The primary emphasis lies in tailoring actions to meet the diverse needs of the population and ensuring universal accessibility, which is frequently highlighted as a goal for all, although the target groups are not specified. At the same time, justice is only referred to in a non-tokenistic manner, and participation is handled similarly, with specific references that avoid homogenizing citizens and clearly identify the groups to be involved. Mentions of procedural justice focus on actions, like 'enabling people to exercise their rights' and 'information dissemination to empower action' instead of simpler engagements like raising awareness. Thus, although environmental justice could

be integrated into the plan more deeply, the existing content reflects a genuine consideration of the topic.

5.3 Establishing Superblocks in Barcelona – Government Measure (2016)

The Superblocks Project (City of Barcelona 2016) plays a central role in Barcelona's climate strategy and is embedded in various municipal policies, including the UMP, as it aims to tackle a wide array of issues, including air and noise pollution, permeability, the urban heat island effect, not to mention car-dependent urban planning practices (Zografos et al. 2020).

"In short, the establishment of a Superblock means the unification of nine blocks in the sense of rerouting car traffic to the external streets, allowing for a thoughtful redesign of the interior streets to serve alternative purposes. These might include the creation of public spaces that enhance social cohesion, such as playgrounds or marketplaces, but increasing green surface areas on the streets and intersections is a crucial component in the implementation of the initiative (Eggimann 2022; López, Ortega, and Pardo 2020). With a few pilot projects already functioning throughout the city, the final plan is to undertake a substantial restructuring of the city's mobility network and establish 503 Superblocks, that would among other benefits lead to the prevention of 667 premature deaths per year (Mueller et al. 2020)."[1]

Illustrating the strategy's comprehensiveness, the Superblocks are linked to all four lines of action in the Climate Plan (City of Barcelona 2018), including 'climate justice' and 'promoting citizen

[1] This paragraph is excerpted from my essay titled "Aspects of Urban Metabolism in the Resilience Strategy of Barcelona" submitted for the class Resilient Cities and Communities

action', thus the underlying government measure is able to offer a representative account of the city's approach towards environmental justice.

In terms of the three pillars of justice, attention is nearly balanced between the indicators of recognitional and procedural justice, with a marginally greater focus on the latter, while distributional issues are also briefly targeted. Similarly to the UMP, the main focus is on customizing actions to address the diverse needs of the different groups residing in the neighborhoods to be transformed. Participation is also integral to the project and is predominantly mentioned in a way that avoids homogenizing the members of the involved community. The emphasis on the 'recognition of different groups, their socio-economic backgrounds, or needs' is also considerably high, whereas the rest of the appearing codes receive minimal discussion. The absence of mentioning the use of any 'legal, financial or other tools to ensure environmental justice' is particularly notable, considering the argument of Anguelovski et al. (2023), that anti-gentrification measures are employed to prevent the displacement of long-term residents in the target areas. An explanation for this could be that flexibility and adaptability are deemed as core characteristics of the Superblocks, accommodating local needs in terms of implementation details, and allowing for adjustments in case certain changes do not fulfill their expected functions (C40 2018). Therefore, such measures might be incorporated into individual projects, however, this does not necessarily indicate a proactive approach to ensuring the prevention of physical or cultural displacement from the outset. Overall, from an environmental justice perspective, the Superblocks are based primarily on the recognition of varying needs and participatory processes, but given the large-scale implementation plan, adopting a more systematic framework for the use of regulatory tools and monitoring processes could be beneficial.

5.4 CLIMATE STRATEGY FOR OSLO TOWARDS 2030

Mirroring Oslo's highly technical governance approach, its Climate Strategy is structured around the sectors and fields where emission reductions can be achieved, including land use, transport, building and construction, waste, energy, consumption, and climate governance (City of Oslo 2020). Considering the goals of the strategy climate resilience and the sustainable management of the natural environment are emphasized along emission reductions, however, in terms of forest management, the focus is on carbon storage. It is notable that throughout the strategy references are often made to alignment with regional and national decision-making, highlighting the significant influence these broader governance levels have on the city's climate initiatives.

The strategy involves environmental justice indicators to a moderate extent, with procedural justice given the most significant weight (City of Oslo 2020). Nonetheless, this is mostly expressed in the form of participation, which is only mentioned in a manner that homogenizes citizens, while tokenistic references to justice also outweigh the ones adequately operationalizing the term. The use of regulatory and monitoring tools is absent from the strategy as well, and procedural justice is primarily translated to actions related to information dissemination. Justice also often appears as a co-benefit of other efforts relative to other codes and both recognition and distribution are addressed on a quite superficial level. The disproportionate distribution of the impacts of climate change or the adverse consequences of historical planning practices is not addressed, similarly to the 'recognition of different groups, their socio-economic backgrounds, or needs'.

While the strategy refers to the 'The Oslo model for just transition', the document does not provide a detailed elaboration of what this entails and available information about the model either in Norwegian or English is scarce (City of Oslo 2020). However, the interview proved to be beneficial to clarify its content. The model essentially aims to ensure labor rights, just procurement processes and fair workplaces, which is naturally indispensable, however, may not be able to fully tackle the complex dimensions of environmental injustices. A call for the establishment of a council for just transition is also made in the document, demonstrating a commitment to deeper engagement with the issue, while also illustrating the recent shift in the inclusion of equity and justice into climate-related strategies.

5.5 Oslo's Climate Budget 2023

Considering the pivotal role of the Climate Budget (City of Oslo 2023) in Oslo's climate governance, and the increased emphasis on environmental justice issues since 2019, the Climate Budget from 2023 should be representative of the newly developed modes of addressing related challenges, and how they shape the prioritization of efforts. However, the document displays similar patterns to the main strategy of Oslo in terms of addressing justice, while the prevalence of codes is also comparable in frequency (City of Oslo 2020). For instance, participation receives the main emphasis again, however, non-homogenizing references to it are absent from the document. Similarly, justice is only used in a symbolic manner and is mentioned on a few occasions as a co-benefit of other efforts. Recognitional justice is only elaborated in the form of differentiated needs serving as a basis of action, and accessibility is again the main indicator of distributional justice. Nonetheless, improvements compared to the main strategy can be detected in the shift towards more impactful manifestations of procedural justice, as the focus of

information dissemination is mainly to empower action and the use of regulatory tools appears with a relatively high frequency within the document. Thus, although minor positive adjustments confirm the city's deeper commitment to environmental justice and social sustainability, a profound restructuring of the way in which sustainability initiatives are prioritized cannot be observed.

5.6 FUTUREBUILT PROJECT DESCRIPTION (2016)

The municipality of Oslo is collaborating with other municipalities in the region on the FutureBuilt programme, which is essentially an overarching framework that encourages sustainable urban development (Nguyen 2018; FutureBuilt, n.d.). Pilot projects are put forward by private developers and a committee overseen by the municipality evaluates whether they meet the stringent emission reduction requirements of the programme that pertain to transportation, energy, and materials. Projects must meet the primary criterion of achieving a 50% reduction in carbon emissions relative to current standards for inclusion. FutureBuilt was launched in 2010 and up until May 2024, 75 projects have been carried out of the targeted 100, including projects related to housing, neighbourhood development, public facilities, or office buildings. The programme is mentioned both in the main strategy of Oslo and in the Climate Budget as imperative for establishing a precedent in the construction sector for climate-friendly practices, while it is also large-scale enough to be representative of the city's approach towards sustainable urban development and of the emphasis environmental justice receives within this context (FutureBuilt, n.d.). Therefore, the project description of the programme was analyzed to gain insights into the manifestations of these aspects.

In terms of content, the document provides an overview of the objectives, criteria, and methodology for assessing proposed projects, then details the aims and benefits of specific projects (FutureBuilt 2016). Notably, social considerations of any kind receive limited attention in the document, particularly when compared to documents from either of the two cities. One reference is made to 'differentiated needs as a basis of action' and one to 'information dissemination to create awareness'. Yet even the reference to differentiated needs primarily focuses on children and young people, failing to address differentiation based on socio-economic background.

Whereas these results showcase an apparent lack of environmental considerations, the updated FutureBuilt 2.0 criteria include comprehensive social sustainability criteria since 2021 as mandatory for involvement (FutureBuilt 2021). Prior to 2021, evaluations were grounded in technical conditions, that factored in direct and indirect emissions, material circularity, waste management and transportation, all calculated and monitored using innovative methods (Resch et al. 2022). Thus, the addition of social sustainability criteria illustrates well the shift in the governance attitude towards justice around 2019. The criteria expect a very thorough engagement with social sustainability, addressing all three pillars of justice, as projects need to be based on a socio-cultural site analysis, hence, recognizing the various needs in the area. Participatory processes must represent all perspectives, local knowledge needs to be taken into account, while a guide on ethical construction is included as well. Attention is also given to preventing gentrification, as dwellings must be available for households from all kinds of economic backgrounds and characteristics of the area ensuring a sense of belonging must be maintained (FutureBuilt 2021). The direction taken by the municipality in relation to FutureBuilt is, therefore,

certainly positive, and thorough, but considering the number of projects already implemented, the criteria will only be applied to a small proportion of all projects.

6. Discussion

As indicated by the results and illustrated in Figure ***1***, the analysis of the selected documents shows that Barcelona demonstrates a significantly deeper integration of environmental justice in its sustainability agenda compared to Oslo. It should be noted, that for instance, the Climate Strategy of Oslo (City of Oslo 2020) is considerably shorter with 68 pages than 164 pages of the Barcelona Climate Plan (City of Barcelona 2018), thus the differences should be considered in light of these proportions. Nonetheless, the lack of longer elaboration on proposed actions and their contextual backgrounds may suggest a transparency shortfall in itself, while the variations in the ways in which justice is addressed reinforce the divergent stance taken by the two cities concerning environmental justice.

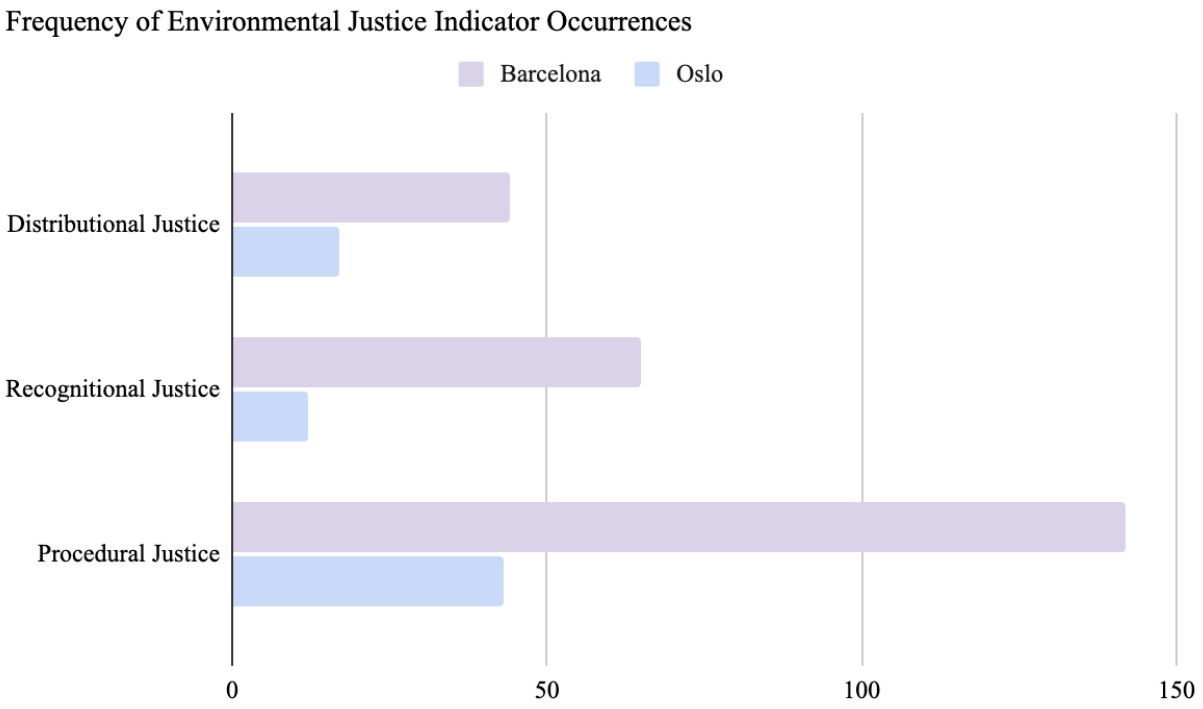

Figure 1 - Frequency of the Three Pillars of Environmental Justice in Barcelona and Oslo

6.1 Distributional Justice

These findings seem to be consistent with the assumption based on existing research (Cavicchia 2023; Holgersen 2020; Lunke 2022; Suárez et al. 2020; Venter et al. 2023; Wessel 2015) that environmental justice is handled inadequately in Oslo, and the city's approach also aligns with a more neoliberal take on the issue. While the most straightforward explanation for this is that Oslo has only recently begun to focus on social sustainability considerations and environmental justice, the reasons behind the previous lack of attention might explain the shortcomings evident in the current approach. In a comparative study among the cities of Cape Town, Copenhagen, Gothenburg and Oslo on urban climate governance, Hofstad and Vedeld (2020) drew attention to the more substantial changes in relation to climate equity and social inclusivity in Cape Town and Gothenburg. This was attributed to the need to respond to the profound challenges related to social disparities and segregation in these cities. Thus, considering the relatively low levels of income inequality, high employment rates, and generally optimal living standards in Oslo, the long negligence towards justice-related considerations in terms of sustainability initiatives might be connected to the lack of immediate urgency in this area.

A similar dynamic is detectable in the access to green space in the two cities, indicating the role of more immediate pressures. Relative to the WHO's recommendation of 9 m^2 of green space per capita, Barcelona falls short with 7 m^2 whereas Oslo surpasses this standard with 60 m^2 (Goro and Mwasi 2017; Pámies 2023; Venter et al. 2020). Consequently, in Barcelona the shortage of green space does not only affect marginalized communities, in fact, Cubino and Retana (2023) have found that public spaces in lower-income neighborhoods feature a higher density of trees. On the one hand, this suggests that greening initiatives can be successful in reducing disparities, but it also shows that increasing available green space is not only in the interest of less affluent

communities but impacts the whole population of Barcelona. The same applies to air and noise pollution, which also affect neighborhoods of average socio-economic status (Anguelovski, Honey-Rosés, and Marquet 2023). Of course, whether the response to such pressing demands for improvement are tailored to all residents or favor wealthier neighborhoods depends on the governance approach taken by the city. However, if the least advantaged groups in Oslo have access to more green space than the more affluent in Barcelona, then inadequate access to green space may not be seen as a problem in Oslo, despite uneven distribution. This situation could be the cause of the inertia in terms of addressing the need to equalize green space distribution.

The firm prioritization of emission reductions in Oslo may reflect a comparable situation in terms of adaptation, since the city is not encountering as extreme climate change consequences as Barcelona, thus demanding less attention towards adaptation measures (Hofstad and Vedeld 2020). Although the city of Oslo might infer from this that it is unnecessary to focus for instance, on how extreme weather events affect various neighborhoods unequally, mitigation measures should also take into account their accessibility and the varying impacts of different groups. However, even when adaptation is considered, the main incentive is often grounded in an economic rationale, as the quote below demonstrates.

“Failing to implement preventive climate adaptation measures also has a financial consequence. In the period between 2008 and 2014, around 3,500 flood-related insurance claims were registered in Oslo” (City of Oslo 2020, 24).

The emphasis here is evidently not on the impacts on people in general, let alone the varied consequences across spatial or socio-economic distributions. This stance clearly embodies a neoliberal perspective on urban sustainability, prioritizing financial justifications for action while treating justice and social benefits as secondary outcomes accompanying other initiatives. This is notably pronounced in documents related to Oslo, where 'justice as a co-benefit of other efforts' is mentioned relatively frequently, compared to only one occurrence in Barcelona.

In the context of mitigation efforts in Oslo, given the significant emphasis on the shift towards low-emission transportation, including passenger cars, measures aimed at promoting public transportation and electric vehicles should ensure accessibility across diverse socio-economic groups within the city to facilitate distributive justice. The need to include such considerations in mitigation is clearly acknowledged by the city, as for instance, the statement from the Climate Budget illustrates. Nevertheless, it also showcases that the tokenistic use of justice does not necessarily guarantee impactful engagement.

"At the same time, climate mitigation measures must be formulated so that they help to create a socially sustainable city which offers equal opportunities to all" (City of Oslo 2023, 25).

Despite these aims, the introduction of measures limiting car usage in certain parts of the city was met with strong resistance, indicating potential disparities in transportation access and distribution (Christiansen 2018; Lunke 2022). The findings of Lunke (2022) reinforce the necessity to differentiate among the varying needs in the city, revealing that lower-income neighborhoods experience limited accessibility and inefficient public transport options. While the Climate

Strategy of Oslo partially addresses transport poverty by aiming to reduce the price of single tickets by 20 percent, offering a family discount, and improve public transport services in suburban areas and across the entire city, these are not based on a thorough assessment of where the greatest need exists (City of Oslo 2020). In contrast, as explained in the results, Barcelona carried out a comprehensive vulnerability analysis that can serve as a foundation for more inclusive efforts. This is also reiterated in relation to transportation services, as apparent from the quotes below (City of Barcelona 2018).

"Strengthen the mobility services for the most vulnerable neighbourhoods and people" (City of Barcelona 2018, 65).

"The idea is to have a broad range of mobility options in place that meets the needs of every journey and is more efficient" (City of Barcelona 2018, 104).

Although not mentioned in the analyzed documents and less comprehensive than the approach of Barcelona, the interviewee from Oslo explained that the distributional impacts of mobility-related measures will be evaluated in relation to the currently developed Climate Budget. Furthermore, as the accessibility of transportation is especially relevant for commuting to and from work, it is promising that the municipality is collaborating with labor unions to reduce associated emissions. It is, however, striking that the reasoning behind this joint effort is related to environmental sustainability rather than ensuring accessibility to people. Additionally, a considerable portion of the population – those not participating in the labor force – is excluded from this endeavor. Given that accessibility in public transportation is often closely tied to individuals living with disabilities

(in the case of both cities), the collaboration between the public transportation company in Oslo and the Organization for Disabilities to assess the fulfillment of these needs is particularly promising.

Interestingly, the prevention of gentrification is not directly addressed in any of the documents. Moreover, the tools outlined by Oscilowicz et al. (2021) including zoning and legal regulations along with development requirements are not integrated into the examined documents. Instead, most related attention is focused on subsidies and grants for housing renovations, including energy efficiency improvements, with the highest frequency in the Climate Plan of Barcelona, but also present in Oslo's Climate Budget (City of Barcelona 2018; City of Oslo 2023). Thus, the newly developed social sustainability criteria of FutureBuilt represent the most significant effort to ensure access to housing for long-term residents in developing neighborhoods.

Energy poverty is another issue, tackled very differently in the two cities. To begin with, in Barcelona, the evaluation of current energy poverty levels and the identification of neighborhoods facing the greatest challenges is central to formulating further action (City of Barcelona 2018). Anticipated rising energy poverty rates and their effects on residents also guide planning and action in this area. However, despite the pivotal role of energy in the sustainability strategies of Oslo, displayed both in the main Strategy and the Climate Budget, the topic of energy poverty remains untouched. Again, this could be attributed to the relatively low level of energy poverty in Norway compared to other European countries (Bouzarovski 2014), however, Bredvold and Inderberg (2022) highlight the prevalence of the issue in the country, especially in the context of a highly electrified energy system. The absence of legal, financial, or other mechanisms to assist in meeting

the energy needs of the most vulnerable people is, therefore, in stark contrast with the approach taken by Barcelona, illustrated by these calls for short-term action:

"Work on responding to people's supply needs while improving consumption efficiency, as well as guaranteeing everyone's basic, essential consumption of potable water, gas and electricity, with a special emphasis on people at risk of social exclusion" (City of Barcelona 2018, 69)

"Reinforce the energy advice points (PAEs) which offer people the help, information and any intervention they need so they can exercise their energy rights, and utility companies cannot deny them access to basic utility supplies" (City of Barcelona 2018, 69).

The aspect of energy poverty also points out the advantage of the comparative method. As explained before, a limitation of the document analysis was the inability to scrutinize aspects that the strategies overlook, such as directly targeting energy poverty in Oslo. However, the comparison with Barcelona enabled the identification of this gap. Another limitation confirmed in this section is the importance of the nuanced information provided by the interview in Oslo. This suggests, that relying solely on the document analysis may not offer a comprehensive understanding of the approaches taken by the cities or that the scope of the analysis is not sufficient. On the other hand, the imbalance skews the results of the research since such information is not available in the case of Barcelona.

6.2 Recognitional Justice

Closely related to the aspect of distribution, the way in which the two cities engage with recognition is markedly different, but mostly apparent in the Climate Plan of Barcelona (City of Barcelona 2018). Essentially, the only appearing manifestation of recognitional justice in Oslo is 'differentiated needs as a basis of action', while this is supplemented by 'recognition of different groups, their socio-economic backgrounds, or needs' in the Urban Mobility Plan and the Government Measure of the Superblocks (City of Barcelona 2014; 2016; City of Oslo 2023; 2020; FutureBuilt 2016). The broader approach of Barcelona is clearly observable in the vulnerability analysis discussed earlier, which is often the basis of measures within the Climate Plan and references to 'vulnerable people' are recurring throughout the document. While vulnerability is considered in terms of socio-economic status in the case of issues like energy poverty, differentiation is repeatedly made based on the factors of age and health. Young people and the elderly are highlighted as particularly vulnerable to the impacts of extreme heat, as seen below.

"High temperatures directly affect people's health, especially those in vulnerable conditions, such as the chronically sick, elderly people and young children" (City of Barcelona 2018, 72).

This attention also lays the foundation for concrete action. For instance, the elderly are directly targeted with information about heatwaves, shelters are made available for them, and efforts to promote their care and strengthen their social connections are actively pursued. School-aged children also receive targeted focus, which is more prevalent in the Urban Mobility Plan of Barcelona and is primarily associated with the safety and accessibility of different forms of mobility (City of Barcelona 2014). Similar notions are observable in the Climate Strategy of Oslo as well in terms of distinguishing the particular needs of young people and the elderly, however,

this is mainly connected to mobility-related solutions, exemplified by the initiatives of ‘pink buses’ and ‘Activity transport’ (City of Oslo 2020).

“The aim is to ensure that digital solutions used in public transport meet the transport needs of citizens and at the same time achieve the goal of increased green mobility. One example is the pilot project Age-friendly transport, also known as "pink buses", which is a flexible transport service for the elderly, as well as Activity transport, which is a flexible public transport service for children for leisure activities” (City of Oslo 2020, 34).

As discussed above, the needs of people living with disabilities are also taken into account within this domain, but there is a noticeable absence of considering socio-economic factors in all documents examined in Oslo. Interestingly, young people are specifically singled out in the main strategy of Oslo for educational purposes, aiming to equip them with skills and knowledge “necessary to promote sustainable development, take care of themselves and nature” (City of Oslo 2020, 56). Due to the lack of further elaboration on the content of these educational intentions, it is difficult to determine whether these efforts would strengthen the neoliberal discourse of individual responsibility (Klein 2014). Education can have an important role in teaching children to challenge narratives advocating for individualized climate action, like changing consumption practices, and cultivating collective action (Schindel Dimick 2015). The opposite, however, can solidify notions of inequalities and injustices, therefore, it is important to understand how individuals are situated in the sustainability narratives of the cities.

The main strategy of both cities dedicates a section to the role of citizens in the transition to a more sustainable urban system, with raising awareness being at the center in both cases. Nonetheless, the framing of the responsibility of citizens differs in terms of a few aspects. This suggests that Oslo's approach rather consolidates a neoliberal narrative, whereas Barcelona provides a more solid foundation for the actions expected from citizens.

"Through good communication about climate change and climate measures, the municipality can help to create understanding and encouragement for such behavioral changes. Communication should be relevant, understandable and recognizable so that people can be inspired to make good climate-friendly choices in their everyday lives" (City of Oslo 2020, 56).

Here, inspiring people for behavior change is the main aim, and while 'dialogue, training, and cooperation' are mentioned as well, these are only manifested in relation to educating young people in schools. In contrast, in the Climate Plan of Barcelona, the intention is to offer support to citizens that enables them to take action – as it is also clear from the frequent occurrence of the indicator 'information dissemination to empower action'. Furthermore, citizens are invited to participate in decision-making processes, thereby promoting and enhancing democracy, as shown by the short-term actions below, outlined in the Plan (City of Barcelona 2018).

"Strengthen the participation of the local community in defining urban development, green development and mobility plans for mitigating the effects of climate change (throughout the whole process)" (City of Barcelona 2018, 133).

"Widely publicise information on the opportunities, subsidies and support available (renovation, improved, energy efficiency improvements, training and so on)" (City of Barcelona 2018, 134).

The contrasting approaches can be detected in encouraging residents to take advantage of available support schemes to improve their living conditions and the thermal comfort of their homes in Barcelona, as opposed to promoting alternative financial habits in Oslo. While the latter places significant responsibility on individual choices and aligns more with neoliberal understandings of sustainability, this is alleviated in Barcelona by offering institutional as a foundation for such actions. It must be noted that eligibility criteria for grants and subsidies are not elaborated upon in either the Climate Plan of Barcelona or the Climate Budget of Oslo when the topic arises (City of Barcelona 2018; City of Oslo 2023). This lack of clarity may indicate issues related to recognition; nevertheless, this aspect cannot be fully assessed within this context.

6.3 Procedural Justice

Indicators of procedural justice are the most prevalent in both cities compared to the other two pillars of justice, indicating a stronger emphasis on action-oriented measures. References to participation constitute a significant portion of codes related to procedural justice, reflecting its widespread manifestation through participatory processes. However, in the case of Oslo, the representation of participants from different socio-economic backgrounds is not mentioned to be ensured. In Barcelona, the Superblocks project seems to be the most inclusive in this sense, however, the main Climate Plan also involves references to participatory processes that do not homogenize citizens (City of Barcelona 2016; 2018).

As denoted by the examples related to mobility, participation and collaboration in Oslo mainly refers to organizations, like labor unions, but cooperation with businesses has the most substantial role in the city's sustainability strategies. Businesses are seen as instrumental in reducing greenhouse gas emissions and driving innovation, therefore, the municipality emphasizes incentivizing such behavior through grant schemes and market mechanisms.

"The municipality promotes more climate-friendly behavior in the business community through the strategic use of market mechanisms (including procurement and investment), incentives and regulations" (City of Oslo 2020, 58).

The centralization of the role of the business community, market mechanisms, and technological innovation in both the main strategy and the Climate Budget can be strongly associated with neoliberal principles (City of Oslo 2020; 2023). This approach suggests that technofixes can ensure the least disruptions to current ways of living. Therefore, ignores the need to address the root causes of environmental issues that exploit the environment for financial gains as well as humans, thereby contributing to injustices and inequalities (Klein 2014). It is also interesting that the provision of grants and subsidies is highlighted in relation to the involvement of the private sector but is not mentioned to be used to alleviate energy poverty. Of course, this analysis is limited to the content of the documents of interest, thus cannot ascertain whether the implementation of specific projects involves the utilization of such tools. Nevertheless, the acknowledgment of one and the disregard for the other already denote a disparity in their perceived importance.

When asked about the inclusion of civil society, the interviewee from Oslo confirmed a very vague engagement with the topic in relation to decision-making and the prioritization of sustainability initiatives. Top-down processes of organization were emphasized, with citizens only asked if there is a very specific question relevant to the planning of an initiative. However, even these consultations largely take the form of collaboration with councils representing the elderly, youth, people with disabilities, and artists, rather than directly involving residents from the affected areas.

The weight of citizen input is not addressed either in Oslo, in terms of the incorporation of the shared preferences and information, which was also criticized by Satorras (2021) in relation to the coproduction of Barcelona's Climate Plan. In this regard the government measure of the Superblocks appears the most promising, at least in terms of its proposed objectives, considering the criticisms regarding citizen involvement during the first pilot project (Anguelovski, Honey-Rosés, and Marquet 2023; City of Barcelona 2016).

"A participatory process has been designed that is intended to accompany the entire deployment of the measures to be implemented, seeking at all times the involvement and joint responsibility of the social fabric of each area" (City of Barcelona 2016, 21).

"In these two cases, the proposals gathered in the participatory process will be taken up again and their feasibility studied. The proposals will be prioritised and some of them will be implemented, depending on budgetary availability" (City of Barcelona 2016, 29).

"The selection of the various Superblock areas corresponds to in-depth knowledge of the territory and social groups of which they are comprised from each District and will be ratified at each zone's participatory process" (City of Barcelona 2016, 30).

The quotes above give an account of the comprehensiveness of participation in the planning and implementation processes of the Superblocks. The decisions regarding locations are informed by both spatial and social exploration of the targeted neighborhoods, indicating that participatory processes are grounded in the acknowledgement of recognitional and distributional differences. At the same time, it is specified that citizen input will be essential throughout all stages of the process, along with the intention to prioritize based on the emerging proposals and feedback.

The Climate Plan of Barcelona also often refers to organizations in relation to participation similarly to Oslo, not specifying how these organizations can adequately represent the whole of the socio-economic composition of the interested areas. This is especially relevant for sustainability-focused organizations, that might already engage members who are voluntarily involved in sustainability efforts. However, this approach may not effectively reach those segments of society that have not had prior opportunities for engagement. As the Superblocks measure represents a more nuanced understanding of citizen involvement, it might be the case that specific project directives apply municipal guidelines with greater scrutiny and detail. Overall, procedural justice is more deeply integrated into the sustainability planning of Barcelona, however, the updated FutureBuilt criteria signal a positive direction in Oslo as well, despite the constrained top-down approach adopted by the city.

6.4 Comparison of Barcelona and Oslo

In synthesizing the discussion on the integration of environmental justice into the sustainability strategies of Barcelona and Oslo, it becomes evident that these cities approach urban climate governance through distinct lenses across the dimensions of distributional, recognitional, and procedural justice. The comprehensive Climate Plan of Barcelona, along with the government measure of the Superblocks illustrates a robust integration of environmental justice principles, despite the above-mentioned shortcomings. Procedural justice indicators are mostly founded on the recognition of the differentiated needs of the various groups residing in the city. Additionally, distributional aspects are also considered, both with regard to existing disparities and the anticipation of future impacts. In contrast, Oslo's approach showcases a less explicit commitment to addressing socio-economic disparities and ensuring access to newly introduced green amenities for everyone. While recognitional and distributional justice are scarcely touched upon, differentiation is predominantly made based on factors of age and health, failing to address the varying needs tied to socio-economic backgrounds or locations. Procedural justice, including participatory efforts further widen the gap between the two cities, partly due to the lack of attempts to ensure the representation of the various perspectives existing in the city, but also stemming from the strong emphasis on the role of the business community. Thus, despite the unique challenges facing both cities and opportunities in their sustainability agendas, Barcelona's holistic approach suggests a more inclusive path towards achieving environmental justice within urban contexts.

7. CONCLUSION

This thesis set out to investigate the integration of environmental justice into the sustainability strategies of Barcelona and Oslo, in order to uncover the significance and operationalization of this aspect in distinct governance contexts. It conducted a thorough analysis of relevant policy documents, utilizing an environmental justice framework and applying a grounded theory approach. Based on the results of the analysis, the questions of 'How are considerations of environmental justice integrated into the municipal sustainability strategies of Oslo and Barcelona?' and 'How do the approaches taken by Barcelona and Oslo to address environmental justice reflect their governance models?' can be answered as follows.

Barcelona not only engages with the topic of environmental justice more profoundly in terms of the frequency of related references compared to Oslo, but also showcases a more thorough perception of existing issues, their potential intensification, and required solutions. This is mainly manifested in the extensive vulnerability analysis of the city, providing a foundation for adequately targeting inequalities and preventing the emergence of new disparities. The relatively widespread use of regulatory tools to ensure environmental justice and the substantial emphasis on non-homogenizing participatory processes demonstrate the integrated approach of Barcelona. The framing of the role of citizens along with the institutional support to facilitate it is also consistent with the citizen-focused and inclusive political agenda, represented by the municipal leadership, despite the occasional occurrences of counterexamples.

While Oslo also predominantly focuses on procedural justice, the absence of a comprehensive foundation, built on the acknowledgement of the diversity of needs present in the city and the

consideration of distributional aspects, clearly diminishes the effectiveness of these objectives. At the same time, the expressions of procedural justice are less impactful compared to Barcelona, considering the rather symbolic use of the concept of justice, limited utilization of regulatory tools, and the inadequate use of participation, in terms of not engaging all affected populations in the city's sustainability transition. Alongside these elements, the emphasis on individual responsibility, market mechanisms, technological innovations, and the frequent conceptualization of justice as a co-benefit of other efforts fit into the neoliberal narrative of Oslo's governance framework. However, the updated social sustainability criteria of the FutureBuilt project represent an exception to this trend, indicating that there might be room for more comprehensive engagement with environmental justice within this governance context (FutureBuilt 2021).

A notable difference between the two approaches is related to a strong conceptual foundation built on the pillars of distributional and recognitional justice, which undoubtedly proved essential for the integrated approach of Barcelona. Although this study cannot determine whether its incorporation is dependent on the governance model of a given city, due to the lack of a representative sample, further, large-scale research could examine whether this pattern extends beyond the cases of Barcelona and Oslo. As environmental justice and social sustainability should be integral to any initiative targeting sustainable development, such findings could suggest a potential necessity for more stringent international guidelines delineating the parameters of sustainability. This could prevent its definition from being subject to the interpretation of political agendas, thereby facilitating consistent and appropriate applications of the concept. In order to examine the practical implications of the uncovered narratives in the urban sustainability strategies of Barcelona and Oslo, further research might connect the textual analysis – of a potentially wider

scope of documents, to reinforce the discovered patterns – to longitudinal field research. On the one hand, this could provide insights into the success of achieving ambitious participatory targets, for instance. On the other hand, it could also shed light on the long-term impacts of implemented projects on the lives of local residents and their access to the promised benefits.

Overall, the findings suggest that an in-depth engagement with environmental justice is not necessarily a requirement for being acknowledged as sustainable, considering Oslo's appointment as the European Green Capital in 2019 (European Commission 2023). The research also contributes to an enriched understanding of how inequalities might arise as a result of sustainability initiatives since the narratives identified in the documents shape the equity outcomes of the implementation processes in Barcelona and Oslo. Finally, it also offers insights into the operationalization and significance of environmental justice within sustainability endeavors in a European context.

8. REFERENCES

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