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Governing intersectional climate justice: Tactics and lessons from Barcelona

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Abstract

Cities and local governments are important actors in the global governance of climate change; however, the specific governance principles and arrangements that enable urban climate plans and policies to realize commitments to social equity and justice remain largely unexplored. This article uses the City of Barcelona, Spain, as a critical case study of emerging “intersectional climate justice” practice, where plans to build resilience to climate change are pursued in conjunction with efforts to tackle structural inequalities in accessing the built environment, health services, energy, housing, and transportation experienced by frontline communities. The study illustrates how Barcelona and its community partners do this through four different categories of governance and decision-making tactics, which include: (1) experimenting with disruptive planning strategies; (2) working transversally across agencies and actors to institutionalize climate justice over time; (3) putting care at the center of urban planning; and (4) mobilizing place-based approaches to tackle intersecting vulnerabilities of frontline residents. These tactics seek to redistribute the benefits of climate-resilient infrastructures more fairly and to enhance participatory processes more meaningfully. Finally, we assess the limitations and challenges of mobilizing these tactics in everyday urban politics. Barcelona's experience contributes to research on climate governance by challenging the notion of distinct waves of governance and revealing concurrent dimensions of climate urbanism that coexist spatially and temporally. Our research also illustrates lessons for fairer climate governance in the city, where different tactics are mobilized to address structural and intersecting socioeconomic vulnerabilities that exacerbate the experience of climate change of frontline residents.

KEYWORDS

Barcelona, climate governance, intersectional climate justice, social justice, urban politics

1 | INTRODUCTION

Cities play a strategic role in facilitating the global governance of climate change (Brundtland, 1987; Gordon, 2020). Recently, efforts to tackle the

climate emergency have been increasingly mobilized in conjunction with the fight for wider social justice (Bulkeley, 2021; Kotsila et al., 2022; Rice et al., 2023). However, research has yet to shed light on the principles and governance arrangements that allow for urban climate planning and

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FIGURE 1 A schoolyard transformed into a climate shelter in Barcelona. Interventions include a new garden with drought-tolerant trees and herbs, unsealed pavement, a gazebo with a vine, water points and seating arrangements. *Source:* Ajuntament de Barcelona.



FIGURE 2 Superblock in Sant Antoni. Interventions include plant beds with trees and shrubs, tables and seats, traffic-calming elements and play areas. *Source:* Ajuntament de Barcelona.

polymaking to translate climate-resilient development into justice-centered actions on the ground. Despite greater explicit rhetoric on justice in cities' climate plans and policies, there is little evidence to show how this goal is effectively operationalized to improve the wellbeing of historically marginalized communities (Anguelovski, Shi, Chu, Gallagher, Goh, Lamb, Reeve, Teicher, Anguelovski, et al., 2016; Chu & Cannon, 2021).

Recent research has showcased Barcelona as an early adopter of “intersectional climate justice” (Amorim-Maia et al., 2022) and has demonstrated how the city is starting to integrate equity and social justice concerns into climate-resilient development to tackle differential social vulnerabilities (Ruiz-Mallén et al., 2022; Satorras et al., 2020, 2023). Barcelona may thus be seen as a “critical” case (Yin, 2009, p. 51) for asking if and how intersectional climate justice efforts can be implemented and governed in a city. In this article, we use this experience of Barcelona to specifically unpack the tactics, political choices, and governance arrangements that support the implementation of climate strategies while also accounting for intersecting vulnerabilities among residents. We do so in order to derive the key dynamics shaping action in this case, but not to claim that Barcelona has realized climate justice, so we also explore the constraints of achieving this outcome in everyday climate politics and decision-making (Bee et al., 2015).

To assess the governance principles and arrangements used in climate governance, we examine two key climate projects in Barcelona—Climate Shelters (*Refugis Climàtics* in Catalan) and Superblocks (*Superilles*)—as well municipal initiatives to reduce energy poverty more broadly. Climate Shelters are urban adaptive infrastructures that aim to provide thermal comfort to vulnerable groups in public facilities, such as schools, libraries, and civic centers, as well as shaded outdoor areas, parks, and gardens. Superblocks are large-scale interventions that include street pedestrianization and landscaping, with the goals of reducing carbon emissions and noise pollution, improving air quality, and increasing pedestrian and communal spaces (Barcelona, 2023a; Zografos et al., 2020). Barcelona's initiatives to reduce energy poverty include projects to subsidize and finance building retrofits, promote community solar energy generation, and provide information and technical advice to

people who are unable to maintain their homes at an adequate temperature. These latter initiatives provide a helpful backdrop against which to assess how the city is adopting governance principles that enable intersectional approaches to climate adaptation (Figures 1 and 2).

In the next section, we contextualize Barcelona's evolving efforts to govern climate change at the local level, focusing particularly on the period from 2015 to 2023, during Ada Colau's tenure as mayor. We employ Bulkeley's (2021) framework of the history of urban climate governance to situate Barcelona relative to three distinct waves and argue that the city's recent efforts relate to the so-called “third wave”—*climate connected*—in which the challenge of addressing climate change is recognized as intricately intertwined with broader concerns of social justice. We relate this recent push to calls for applying an intersectional pivot in urban climate governance to orient policy and action towards justice-focused approaches that redress systemic inequalities (Amorim-Maia et al., 2022; McArdle, 2021; Perkins, 2018). Our results show that Barcelona is beginning to operationalize intersectional climate justice through innovative and disruptive planning, transversal actions, care-centered approaches, and place-based efforts to reduce intersecting vulnerabilities; however, in a departure from Bulkeley (2021), our findings show how Barcelona's successes defy the notion of distinct waves, instead revealing overlapping dimensions of climate action that coexist both spatially and temporally. Barcelona's experience holds lessons on the various challenges and opportunities for enhancing an intersectional approach to urban climate governance.

2 | THE EVOLUTION OF CLIMATE GOVERNANCE

The concept of “governance” refers to the allocation of authority and resources necessary for coordinated action and control (Rhodes, 1996). Building on this concept, Bulkeley (2005) adopted a definition of urban environmental governance that situates local government actors within a range of activities and authorities spanning multiple

scales, including transnational and intermunicipal networks. Later, Angelovski and Carmin (2011, p. 169) defined urban climate governance as the ways in which “public, private, and civil society actors and institutions articulate climate goals, exercise influence and authority, and manage urban climate planning and implementation processes.” A more recent idea of “climate urbanism” reorients climate policy to the local level and promotes cities as the most viable and appropriate sites of climate action (Castán Broto et al., 2020; Castán Broto & Robin, 2021; Long & Rice, 2019).

Reflecting on the theoretical progression of climate urbanism over the last three decades, Bulkeley (2021) described three “waves of climate urbanism” which mark a shift in how climate politics (and associated governance processes) has been understood and conducted by (and between) cities. The first wave, labeled as *municipal voluntarism*, defines a period where urban authorities voluntarily integrate climate change into their strategic priorities to enable economic and urban development (Betsill & Bulkeley, 2004; Bulkeley, Davies, et al., 2010). During this stage, cities’ protagonism in addressing climate change grows largely coordinated by transnational organizations and municipal networks (Bulkeley, Betsill, & Betsill, 2010; Kern & Bulkeley, 2009). The second wave originated in the late 2000s and was named *strategic urbanism*. This wave is marked by greater institutionalization and mainstreaming of climate concerns into urban matters, shifting the role climate change plays in urban politics and planning (Chu et al., 2017; Friend et al., 2014; Sharma & Tomar, 2010; Uittenbroek et al., 2013). It is also marked by experimentation with climate policies and programs, their formalization to strengthen policy legitimacy and support (Angelovski & Carmin, 2011), as well as the rise of hybrid (Toxopeus et al., 2020), adaptive (Juhola, 2021) and polycentric governance models (Jordan & Huitema, 2023; Petrovics et al., 2022). Finally, the third wave—beginning in the mid 2010s and designated as *climate-connected*—is characterized by cities’ recognition that the issue of climate change is inextricably connected to broader concerns related to social justice (Bulkeley, 2010; Vancura & Leichenko, 2015).

The “third wave” gives rise to new forms of urban politics that position climate change as a systemic issue and recognizes that previous climate initiatives have tended to privilege specific interests over others (Angelovski, Shi, Chu, Gallagher, Goh, Lamb, Reeve, & Teicher, 2016; Juhola et al., 2016). This results in the demand for climate actions that are both socially and environmentally equitable and those that encompass a range of social infrastructure systems beyond interventions in the urban built environment (Tenzing, 2020). These include, for instance, the provision of critical social programs, housing services, and the use of urban nature to promote new notions of urban resilience (O’Brien, 2016; Shi et al., 2016).

Third wave climate urbanism focuses on how climate action is addressing the distribution of the impacts and benefits of climate change, as well as the rights and obligations of those tasked with responding to this challenge (Armstrong et al., 2022). For instance, based on more developed notions of climate justice (Schlosberg & Collins, 2014; Shi et al., 2016) and resilience (Rockström et al., 2023; Ruiz-Mallén et al., 2022), researchers have documented how efforts to promote resilience of urban infrastructure and environments to climate change may prioritize areas of the city that hold the highest value while

neglecting the needs and rights of the most vulnerable populations who often lack the means to advocate for themselves, thus worsening and/or creating additional inequities (Angelovski et al., 2019; Kotsila et al., 2021; Shokry et al., 2020, 2023). At the same time, research has increasingly emphasized the need to meaningfully involve communities in planning for climate change (Chu & Michael, 2019; Kotsila et al., 2022; Shi et al., 2016). Thus, climate urbanism grew to involve a more holistic social justice perspective through engagement with fundamental aspects of urban life—such as energy distribution, participation in decision-making, and access to climate-protective infrastructure—across multiple agendas simultaneously. However, while this third wave shift has created momentum for addressing multiple fundamental aspects of urban life with direct consideration for social justice, the actual process through which this can be effectively achieved remains an area of ongoing exploration for practitioners and academics alike (Shi et al., 2016).

One promising advancement is through intersectional urban climate justice. Intersectionality informs and analyzes how social categorizations and positions intersect to create unique systems of discrimination and oppression (Crenshaw, 1989). Recent studies have proposed an intersectionality approach to climate justice and urban resilience, arguing that it supports a more comprehensive understanding of the drivers of climate injustices and historical inequalities experienced by marginalized populations as well as when adopting measures to respond to climate impacts (Amorim-Maia et al., 2022; McArdle, 2021; Mikulewicz et al., 2023). Recent advancements in this direction include empirical efforts to measure intersecting climate vulnerabilities (see, for instance, Cundill et al., 2021; Erwin et al., 2021; Owusu et al., 2019) and theoretical contributions and frameworks to apply an intersectional lens to managing climate hazards (see, for instance, Foran, 2020; Walker et al., 2019). Overall, this literature emphasizes the need to incorporate intersectional approaches into climate justice scholarship and public policy to achieve more equitable and accountable climate action (Amorim-Maia et al., 2022).

Despite these advancements, recent scholarship has predominantly remained rhetorical in nature while the practical tactics and mechanisms through which intersectional climate justice can be operationalized remain unclear. Significant adjustments to urban governance arrangements are needed to both address climate and social issues, not to mention also meeting the goals of Bulkeley’s (2021) third wave of climate urbanism through an intersectionality lens. Questions remain about how this governance model is being developed in practice among those who are working on everyday climate politics and decision-making on the ground. Through this study, we seek to better understand how increasing attention on intersectional climate justice is being translated into urban governance mechanisms, institutions, and processes.

3 | METHODS

3.1 | An overview of the Barcelona case and recent plans

Barcelona presents a critical case of progressive climate action as the city has a history of proactively pursuing intersectional policies to



respond to compounding crises. With a population of 1.6 million people, Barcelona is one of the most densely populated cities in Europe (16.5 inhabitants/km²) but has a very low ratio of accessible green-spaces (6.82 m² greenery/inhabitant) (Barcelona, 2020a). Barcelona is one of the most visited cities in the world and close to 15% of its GDP comes from tourism (Barcelona, 2023b). The city experiences a Mediterranean climate with hot summers, cold winters, and humidity amplified by the nearby sea. Climate scenarios predict more frequent and intense heatwaves (Altava-Ortiz & Barrera-Escoda, 2020). Barcelona's high population density and low availability of large green spaces within the most populated and accessible neighborhoods accentuate the heat island effect. The city is especially susceptible to extreme heat, which has varying effects on different population groups according to age, gender, health, socioeconomic status, and postal code (Ingole et al., 2020; Mari-Dell'Olmo et al., 2019). Moreover, the average age of Barcelona's buildings is 65 years and approximately 60,000 buildings, or 85% of the city, were built before the city's first building standard that made it compulsory for them to be thermally insulated (Barcelona, 2023c). Consequently, with insulation of buildings in Barcelona being generally poor, compounded by the fact that 12.4% of the population lives below the energy poverty line, many residents cannot keep their homes at a comfortable temperature in the winter or summer months (Tirado Herrero, 2018). This situation is exacerbated for certain populations when data is disaggregated by social class, gender, and age, revealing that older women and individuals from low-income countries face heightened vulnerability to energy poverty (Mari-Dell'Olmo et al., 2022; Oliveras et al., 2020).

In recent years, particularly since Ada Colau from the left-wing *Barcelona en Comú* party won the mayoral elections in 2015, Barcelona has taken a leading role in creating a greener, more livable, and inclusive city while working to reduce social and economic inequalities. This has included plans to increase green coverage across the city and development strategies with an explicit “feminist urbanism” perspective, which entails designing urban environments that are more inclusive and welcoming to caregiving and playing (Barcelona, 2023a). Table 1 presents a selection of the city's planning documents released since 2015 around climate justice and resilience. These documents comprise one set of information used to triangulate the findings presented in this article.

Barcelona has gained wider recognition as a leader in environmental protection and climate action. Its 2018 Climate Plan won awards for best major European city initiative by the Covenant of Mayors for Climate and Energy and was recognized by C40 for its high ambition and compatibility with the Paris Agreement. In November 2021, and in response to the 2020 Climate Emergency Declaration, the city launched the Climate Emergency Action Plan for 2030. The plan puts people at the center by focusing on reducing climate risks for the most vulnerable groups, improving thermal comfort, and maximizing citizen participation through inclusive decision-making. In recognition of these efforts, Barcelona became the first European Capital for Democracy, bestowed by the Innovation in Politics Institute, Council of Europe, and European Commission. In 2022,

Barcelona was also nominated as the first “World Capital of Time Use Policies” by the Network of Governments and Regions for Time Policies for its efforts to democratize the right to time—a feminist approach that recognizes and aims to rectify the gendered allocation of time for work, family, socializing, resting, and caregiving responsibilities. Moreover, the Superblock street-calming model, which according to the City Council is “at the forefront of the world's greatest urban transformations” (Barcelona, 2023a), has been recognized by the United Nations as an example for other cities to follow.

Since 2016, Barcelona has launched several initiatives to reduce energy poverty and improve thermal comfort in private homes, public facilities, and public spaces. Climate Shelters, launched in 2019 in indoor (e.g., libraries, schools) and outdoor spaces (e.g., parks), are spaces that provide vulnerable groups with thermal comfort during extreme heat and cold (Barcelona, 2021). As of August 2023, Barcelona had 219 climate shelters, which include a network of libraries, civic centers, and schools. In addition to the broader municipal project, Barcelona had previously received funding from the European Commission through the Urban Innovations Actions Program to transform 11 schools into Climate Shelters (UIA, 2022). These were accompanied by commitments to transform patios (*Transformem Patis*) and traffic-calming strategies to enhance thermal comfort, street safety, accessibility, sociability, and playability in and around schools (*Protegem Les Escoles*).

Lastly, the city is devising long-term strategies to improve the energy efficiency of older public and privately-owned buildings. These include subsidizing home insulation and retrofit projects through neighborhood improvement plans (*Pla de Barris*) and structurally rehabilitating buildings in socioeconomically vulnerable areas (*Pla de finques d'alta complexitat*). The city is also coordinating initiatives to rehabilitate vulnerable buildings by improving the built structure, insulating, installing photovoltaic panels, as well as improving accessibility and the surrounding settings (*Programa de regeneració urbana*). Another noteworthy initiative is the opening of 11 district-level Energy Advice Points (*Punts d'Assessorament Enèrgetic*, PAEs), which offer information and technical advice to avoid supply cuts and guarantee residents' access to energy services (Barcelona, 2016). By mid 2022, the PAEs had avoided over 108,000 supply cuts, 65% of which requested by women (Barcelona, 2023c). In this study, we explain how Barcelona is operationalizing efforts and governing intersectional climate justice using Climate Shelters, Superblocks, and initiatives to reduce energy poverty.

3.2 | Primary data collection: Interviewing city leaders addressing the climate emergency

To better understand the governance of these policies, we conducted 23 in-depth semi-structured interviews between October 2022 and February 2023 with municipal employees, technicians, and elected officials who work on various aspects of climate planning and/or action in Barcelona. Residents, civil society, or private sector actors were outside the scope of our study and research question. We first

TABLE 1 Official city plans, declarations, and commitments related to climate action and social justice launched since 2015.

Year	Document	Code
2015	Barcelona's Commitment to the Climate	D1
	Govt Measure: Gender Mainstreaming in the Barcelona City Council (Mesura de govern: La Transversalitat de Gènere a l'Ajuntament de Barcelona)	D2
2016	2016–2019 Social and Solidarity Economy Promotion Plan (Pla d'Impuls de l'Economia Social i Solidària)	D3
	2016–2020 Gender Justice Plan	D4
	2016–2020 Neighborhoods Plan (Pla de Barris)	D5
	2016–2024 Strategy against the feminization of poverty and job insecurity	D6
	2016–2025 Right to Housing Plan	D7
	Creation of energy advice and basic supply guarantee centers	D8
	Govt Measure: Let us fill the streets with life—Establishing Superblocks in Barcelona	D9
	Govt Measure: Urban Resilience	D10
2017	2017–2020 Govt Measure for the Democratization of Care Work (Mesura de Govern per una Democratització de la Cura)	D11
	2017–2022 Strategic Plan Against Sexism in the City (Pla Estratègic Contra el Sexisme a la Ciutat)	D12
	2017–2037 Trees for Life: Master Plan for Barcelona's Trees	D13
	Govt Measure: Urban Planning with a Gender Perspective (Mesura de Govern: Urbanisme amb Perspectiva de Gènere)	D14
	Govt Measure: Stimulus Program for The City's Urban Green Infrastructure	D15
2018	2018–2030 Climate Plan	D16
	Action Plan for Preventing the Effects of Heatwaves on Human Health (Pla d'Actuació per Prevenir els Efectes de les Onades de Calor sobre la Salut)	D17
	Cooperation for Global Justice Master Plan	D18
	Govt Measure: Plan for Play (Mesura de Govern: Estratègia Cap a Una Política de Joc a l'Espai Públic)	D19
2019	2019–2024 Urban Mobility Plan (Pla de Mobilitat Urbana)	D20
	Climate Shelters in Schools (UIA)	D21
2020	Barcelona Resilience Action Plan	D22
	Climate Emergency Declaration	D23
	Start of the deployment of the “Let us Protect Schools” Program	D24
	Start of the deployment of the Low Emission Zones	D25
2021	2021–2024 II Neighborhoods Plan (Pla de Barris)	D26
	2021–2025 II Plan for Gender Justice	D27
	2021–2030 Climate Emergency Action Plan	D28
	2021–2030 Green Deal Plan	D29
	2021–2030 Nature Plan	D30
	Start of the deployment of the VilaVeïnas	D31
2022	2022–2030 Change for the Climate Plan: Sustainability Culture Strategy (Pla Camviem pel Clima)	D32
2023	Proposals of the Citizen Climate Assembly	D33

Note: Plans presented in English only are available for consultation in English. For documents available exclusively in Catalan, we provide the English translation along with the original Catalan names in brackets.

identified interviewees through the municipality's organization chart and then used snowball sampling to proceed with interviews until reaching data saturation. Participants represented diverse practices, fields, sectors, and positions designing and/or implementing climate action in Barcelona, as shown in Table 2. All participants provided informed consent for participation. For those who agreed, interviews were audio-recorded and transcribed. Interviews generally lasted 1 h and were conducted in Spanish.

Interviewees provided their knowledge, expertise, and perspective on city- or region-wide policy and planning processes. We

interviewed some representatives of the metropolitan area and one member of the government of Catalunya in response to recent scholarship suggesting that climate strategies—particularly those related to green infrastructure—do not strictly follow municipal boundaries (Castán Broto, 2019; Nalau et al., 2015; Shi & Bouma, 2023) but are instead influenced by metropolitan and regional politics and relations. Interviews were conducted using semi-structured guidelines (see Appendix S1) which included specific questions about the following themes: government coordination and collaboration; conceptualization of justice, equity, and vulnerability; conceptualization and

TABLE 2 City personnel interviewed with office and role or responsibility.

Office (alphabetical)	Role/responsibility	Code
Area for Social Rights, Global Justice, Feminisms, and LGBT Affairs	Director of Research and Knowledge	I1
Barcelona Activa	Responsible for Orientation in Socio-Economic Innovation	I2
Barcelona Cuida	Coordinator of the Barcelona Cuida Program	I3
Barcelona Institute for Global Health (ISGlobal)	Specialist Area for Environmental Health	I4
Barcelona Regional	Director Area of Environment and Energy Efficiency	I5
C40 Cities Climate Leadership Group	Inclusive Climate Action City Advisor for Barcelona	I6
Climate Change and Sustainability Office Services Department	Director	I7
Councilor's Office for Climate Emergency and Ecological Transition	Chief of Staff	I8
Councilor's Office for Health, Aging, and Care	Chief of Staff	I9
Department of Participation (Urban Ecology)	Director	I10
Municipal Institute of Parks and Gardens	Representative involved in the Biodiversity Program and Nature Plan	I11
Municipal Institute of Parks and Gardens	Director of Technical Services and Planning	I12
Municipal Institute of Urbanism	Director of Urban Regeneration and Director of European Projects	I13
Office for Climate Emergency Service and Environmental Education (AMB)	Technicians coordinating the Climate Shelters Program in the Metropolitan Area	I14 I15
Office for Gender Services and Time Policies of the City Council	Responsible for Gender Mainstreaming in Ecology and Sustainability projects	I16
Office for the Chief Architect	Technical Coordinator of International Relations Projects (Climate Shelters in Schools)	I17
Office for the Chief Architect	Superblock Technical Office Agent	I18
Office for Urban Policy Development (AMB)	Representative involved in the Urban Master Plan	I19
Public Health Agency (ASPB)	Head of the Area for Quality and Environmental Health	I20
Public Health Agency (ASPB)	Specialist in health impact of climate change and energy poverty	I21
Public Space Promotion and Conservation Office (AMB)	Director of the Parks Office	I22
Technical Cabinet of the Department of Climate Action, Food and Rural Agenda of the Government of Catalonia	Responsible for transversal policies and gender equality	I23

implementation of climate strategies (with a focus on Climate Shelters, Superblocks, and energy poverty reduction initiatives); inspiration and peer-learning; challenges; and future vision.

3.3 | Secondary data sources: Policies and reports

Primary data sources were complemented with relevant secondary data to enrich our understanding of local urban climate planning and to triangulate the case results reported in Section 4. Sources included climate policy and framework documents, reports, and other city planning documents published between 2015 and 2023 (Table 1). Also included were internal documents provided by interviewees, such as methodological toolkits (*Quaderns Metodològics*), selection criteria for implementation of urban programs (i.e., Climate Shelters in Schools, Urban Regeneration), reports, presentations, and articles published in local journals and magazines. All documents were used to triangulate and verify the accounts of interviewees and to identify specific

information about the urban programs and interventions in question. In all, the combination of interview and document data—coupled with informal in-person observations in the city of specific interventions such as Climate Shelters, Superblocks, and refurbishment of *Finques d'Alta Complexitat* (highly complex buildings)—enabled the analysis that supports this study.

3.4 | Analysis

We coded the interviews using NVivo 12 (software release 1.7.1), abstracting from the interviews a set of themes and processes that were aggregated to identify trends in how Barcelona is advancing progressive policies and operationalizing intersectional climate justice. The materials, arguments, and quotes presented in the results build directly on the interviews conducted and their thematic coding. These interview codes were then manually cross-referenced against the documentation in the final analysis.

TABLE 3 Barcelona's climate interventions: outcomes, beneficiaries, and lessons learned.

#	Intervention	Description	Outcomes and beneficiaries	Lessons learned
P1	Climate Shelters	Climate-responsive indoor and outdoor public spaces for vulnerable populations	219 climate shelters; 95% population within 10-min walk. Low-cost, no structural changes, use existing spaces. Transform patios, more resilient schools.	Population unaware of the network and not using it as shelter. Public skepticism about the program. Accessibility and inclusivity issues.
P2	A. Urban Regeneration Program B. Building retrofits C. Neighborhood Plan	City-led retrofitting of vulnerable buildings. Integrated actions for safer, more functional, and habitable buildings.	Energy-efficient buildings with improved insulation, structure, and surroundings. Goal: 10k/year homes. Major social gains in reducing energy poverty and precarity.	Costly and complex project to implement. Low visibility in city outskirts. Time-consuming. Trust-building with locals required.
P3	A. Energy advice points B. Solar pergolas and public productive rooftops C. PV panel subsidy	Technical advice to reduce bills and avoid supply cuts. Access to renewable energy from public pergolas and buildings. Financial and technical support for rooftop solar installation.	100k+ supply cuts avoided, 65% requested by women. 17 solar pergolas, 100+ municipal buildings powering poor communities. 25% bill savings; tax/work permit discounts. 2000 families join in 2022.	Conflicting interests with energy providers. Massive investments required. Need coordination with home retrofit projects. Lifestyle changes needed.
P4	Superblocks	Street-calming, green hubs and squares, spaces for meeting, playing	217 traffic-calmed school environments; 900 play areas, 245 km bike lanes, 75% 30 km/h limit; lower air/noise pollution. Green axes could boost greening benefits.	Benefits for health and wellbeing can be tainted by gentrification risks if not addressed by housing and local economic development policies. Distribution and procedural concerns.
P5	Mobility Plan and Low Emission Zones	Expand walk and bike networks. Promote sustainable, efficient, safe, collective mobility.	Prioritize pedestrians, cyclists, public transport. Reduce private vehicle use, regulate commercial and tourist mobility. Healthier city with lower emissions.	Citizen rejection (especially among lower-income car-dependent workers). Can conflict with personal interests and needs.
P6	New Economic models: Doughnut Economics and Social and Solidarity Economy	Socioeconomic measures that prioritize satisfying humans within planetary boundaries	Provide fundings for SSE, promote local development, redistributive tax policies, cooperative initiatives. Host trainings and workshops for a new economy.	Conflicting interests: big businesses, multinational corporations, hospitality and tourism sectors. Entails citizen habit changes.
P7	A. VilaVeïnas B. BCN Cuida C. Carer Card	Caring City initiatives. Resources and services for carers: support groups, legal advice, community care projects, trainings.	Identify and connect caregivers, support their wellbeing. Meeting spaces; shared parenting; municipal childcare. Democratize care, support women's caregiving and work-life balance.	Democratization hard to achieve in practice. Care remains feminized, precarious, invisible. Requires paradigm shift in care role and responsibilities.
P8	Environmental Health	Monitoring of climate indicators, air & water quality, temperature, mortality, energy poverty.	Climate health impacts monitoring key to combat climate vulnerability, health conditions, and energy poverty.	Health authorities consultative, not deliberative role. Limited decision-making power.

3.5 | Methodological limitations

While our methodology was robust, it is important to acknowledge the limitations of our study. Our analysis is primarily based on interviews with city representatives, which may have introduced bias in

the sense that these respondents would be expected to express a generally positive portrayal of the city's projects and initiatives. We are aware of the potential risk of presenting an excessively commendatory perspective and encourage the results to be read with this limitation in mind even while asserting the importance of extracting the

lessons learned from those engaged as these processes unfold. To address this concern, we made deliberate efforts to incorporate critical viewpoints in our interview follow-up questions and discussion. We recognize that the inclusion of a broader range of stakeholders, including representatives from civil society and academia, would enrich the understanding of our study findings and would comprise a suitable follow-up to this study. However, given our primary objective of understanding governing tactics and political arrangements from the point of view of municipal climate action, engaging with public administration stakeholders at various levels provided valuable insights into the governance dynamics we sought to explore.

4 | RESULTS

This section explores the four categories of tactics employed by Barcelona to govern and implement emerging intersectional climate justice efforts, focusing particularly on the period between 2015 and 2023. These tactics are disruptive, transversal, care-centered, and place-based, which work in concert to mobilize innovative policies that challenge business-as-usual development models and approaches. These tactics are guided by an overarching commitment to mainstream climate and incorporate a gender perspective into all municipal policies and to place care at the forefront of urban development. Furthermore, the policies aim at grounding justice in efforts to empower communities to make decisions and enable access to climate goods, services, and the built environment. In the following table, we outline the main interventions associated with what we consider to be the city's overarching climate strategies plus outstanding initiatives related to democratizing and valuing care work (Table 3).

4.1 | Disruptive: Challenging the status quo

An essential element of Barcelona's ability to address intersectional elements of climate justice relates to collective efforts to disrupt conventional approaches to urban and climate planning. These actions occur at various levels of the governance system, but some can be mainstreamed into public policies and programs. Here we understand disruption as policies and practices that actively drive change by challenging and transforming existing political structures and planning norms, thus enabling the emergence of radically new policies, technologies, and critical infrastructures. Our results show that Barcelona gained international visibility and legitimacy as a pioneer in climate action by showcasing experimental and disruptive climate practice in transnational networks (i.e., C40 and ICLEI) and fostering city-to-city knowledge exchange.

The first tactic of disruption involves enabling innovation through connection with research and transnational networks. Interviewees recurrently highlighted Barcelona's status as a "case study" city and emphasized Barcelona's role as a "cradle for international research projects" that seek to utilize the city as a test site or living lab. This is evidenced by a statement from I13 (see Table 2): "for us, making the

city available for international projects is perfect, because it is the way for us to move forward. The role of Barcelona as a demonstrator is very important." This engagement with international research projects and networks enabled and validated innovation and experimentation as transformative forces, thereby allowing the city to push boundaries and adopt disruptive approaches to climate governance. However, it is important to acknowledge that while transnational networks and international research projects can have a disruptive character in challenging the status quo (Evans, 2000), they can also have a system-reinforcing effect when they express hegemonic norms supported by international organizations. Thus, caution should be exercised as some of these initiatives may reinforce the established trajectory of, for example, smart, technological, and private-led adaptation and resilience. This would potentially hinder the pursuit of intersectional climate justice. Cities can also portray projects within those networks as innovative, yet this innovation might have little to do with system transformation through climate adaptation or socially equitable goals.

Innovation is also enabled by leveraging transnational networks that pushed Barcelona's government to embrace a culture of innovation driven by a willingness to learn from other cities. In other words, this innovation comes from "trying hard to be a knowledge sponge," as attested by I8. This is confirmed by I9, who noted that "we are in constant search for references that we can apply and adapt to the Barcelona context." Interviewees revealed, for instance, that Barcelona drew inspiration from Paris to devise its greening and biodiversity plans (D13) and progress the 15-min city locally ("proximity model"); from Bogotá to develop its district-based care system (VilasVeña—P7); from Porto Alegre for participatory budgeting (P9); and from Milan and London for advancing low emission zones (P5). The Climate Shelters (P1) were also inspired by experiences in the US and Australia with cooling centers, air-conditioned spaces for individuals especially impacted by extreme heat to cool down. Participation in these networks was a mechanism for disruption in the Barcelona case because it allowed the city to learn from other cities, adapt and experiment within its unique context, and gain insights from its own experiences, thus being a catalyst for continuous refinement of experimental approaches.

The second and, according to interviews, most important tactic of disruption involves a willingness to persist on unpopular policies accepting that there will be contestation. Such policies likely generate public resistance because they can interfere with people's daily habits and lifestyle. Some interviewees explain that resistance also happens because some projects like the Superblocks (P4), which entail traffic-calming strategies, interfere with people's perceived privileges (of, for instance, using the car as and when they want), making them feel personally curtailed or attacked. This polarization can become strongly political, with residents taking sides on the ideological battleground of their desired urban model. In the words of I18, "the citizenry is very polarized among those who defend tooth and nail that a change is necessary to reduce environmental issues, and, therefore, that active mobility be promoted... And there is a super radical sector that considers it an attack against their freedom of mobility." Because of this divide, there is a central preoccupation with enshrining innovative and

disruptive practices in public policies. As I1, explains “it is important to treat these actions as city policies, which cannot be waived by any government actor.” Simultaneously, the city is striving to mitigate this polarization by extensively communicating the benefits (i.e., in health, wellbeing, and safety) of projects, with a particular emphasis on social media platforms, and broadening citizen participation in decision-making, as further discussed in Section 4.4.2.

Barcelona's disruptive ecosystem is always operating in response to the reality that measures which are not yet well established in the existing legal framework are often being challenged in media, courts, or sector-specific meetings by influential private companies and lobbies. This was seen in the case of the Low Emission Zone (P5), which was blocked by judges after pressure from the car lobby.¹ The Low Emission Zone, which restricted polluting vehicles from certain parts of the city, was temporarily annulled in March 2022 due to “lack of reports that support some restrictions, excessive geographic scope of implementation, and excessive restriction of the type of vehicles affected.”² Similarly, resistance from stakeholders in the tourism and hospitality sectors—including the airport and port—also merits acknowledgement (Blanco et al., 2019; Morales-Pérez et al., 2020). In response, the City Council has attempted to build on residents' resistance to those lobbies to institutionalize more progressive counter-policies. In the words of I8, “everything goes much slower when it comes to approving disruptive policies now, because we know that the judges are going to try to overthrow them. So, we need to shield them as much as possible and make sure that they are as robust and solid as possible.” Shielding policies from dismantlement includes getting approvals from different sectors, relying on extensive scientific data, publishing lengthy documentation for consultation processes, and encouraging participation in ways that the average resident is not burdened by the necessary paperwork for approving projects.

Although the Superblocks (P4) initially faced significant citizen resistance due to an early abrupt and rather undemocratic implementation (in Poblenou), the City Council remained committed to implementing the disruptive model, maintaining a steadfast conviction that Superblocks played a pivotal role in mitigating air and noise pollution, calming traffic, and increasing greenspaces. As residents have become more aware of the positive impacts and more involved in decision-making processes, the initial rejection has waned. However, new concerns have surfaced regarding the equitable distribution of Superblocks throughout the city. Notably, they are currently primarily located in the Eixample neighborhood, the city's affluent and touristy district.

Furthermore, pilot efforts to transform schools into climate shelters (i.e., spaces that provide thermal comfort to vulnerable populations) challenged entrenched building and neighborhood norms about what can be modified in urban design or infrastructure. I13 explains the choice for working to improve schools: “We realized that schools

were not climate shelters, but climate hells. They had a horrible behavior in the heat, with very high temperatures. When the children go out to the patio [for recess], it is a track yard without a single tree.” While this problem had persisted for years, a rapid and disruptive push characterized what the city did with a “climate transformative intention.” (I17) The design and mobility actions in schools, interviewees believe, have a transformative potential precisely because the disruption has begun to become the norm. As I17 puts it, “the transformation will continue to happen. I think it is non-negotiable. Everyone wants it [...] And the will is to transform all the courtyards of all the schools.”

The broader Climate Shelters program (beyond the pilot in schools) has a lesser disruptive connotation as it was implemented in existing public facilities and open spaces (such as libraries and parks) without structural reworkings. Still, as interviewees suggested, the underlying goal has a disruptive intent: to transform the role of public and quasi-public spaces in the city towards universal climate shelter access. Although climate shelters do not change the urban fabric, their functionality is changed for residents, opening up possibilities to previously unconsidered forms of using public spaces (e.g., for recreation and shelter). Interviewees relate this to more and less visible scales of action to tackle the climate emergency, as explained by I18:

Climate Shelters and the Superblocks are different ways of acting. I believe that when you have a problem, you must do this, act at different scales. In other words, the Climate Shelters are almost free, and there may be people who will benefit from them. The Superblock is much more expensive. Here you need millions of Euros. So, it's very spectacular, but you may go very slowly.

Indeed, recent recognition in local media attests to the effectiveness of Superblocks as open-air climate shelters, for significantly changing the microclimate and reducing temperatures in public spaces by over 20°C in relation to surrounding areas.³

Finally, Barcelona's measures to reduce energy poverty have a disruptive nature because they have a transformational intent that extends beyond building retrofits. These measures aim to enhance the physical, environmental, and social infrastructure of vulnerable neighborhoods, leading to improved household energy efficiency, as well as enhanced health, social cohesion, and quality of life for residents (EPAH, 2021). Notably, the Energy Advice Points have been recognized by the EU Energy Poverty Observatory as a best practice for effectively reducing energy cuts in vulnerable households and training citizens facing unemployment to become energy advisors (EPOV, 2019).

Barcelona's disruptive model is a delicate balance between slow and fast action that leverages international research, transnational networks, and local political will to withstand contestation and

¹<https://www.publico.es/public/contaminacio-atmosferica-indignacio-cientifica-i-ecologista-per-l-anul-lacio-zona-baixes-emissions-reduir-contaminacio-evita-morts.html>.

²Tweet by the Catalan High Court of Justice translated from Spanish to English by authors. Available on https://twitter.com/tsj_cat/status/1505909339521007618?s=20. Viewed on November 21, 2023.

³https://www.elperiodico.com/es/eixample/20230721/microclima-superilla-barcelona-examen-sorpresas-90125489?utm_source=twitter&utm_medium=social&utm_campaign=btn-share.

confront powerful vested lobbies and private interests to generate a stream of more and less visible projects with a long-term transformative vision.

4.2 | Transversal: Mainstreaming climate and gender in all policies

One of the main leaps of mainstreaming innovative and disruptive climate actions involved the launch of Barcelona's Commitment to the Climate (D1) in 2015, which cemented links with other early plans (i.e., D3, D4, D5, D7, and D10) that aimed to change the political economy of the city. These plans sought to reconfigure the way the city regarded climate change from an "environmental matter" to an issue that needed to be tackled at multiple levels, by multiple sectors, and through transforming manifold existing systems and ways of governing. At the same time, the "traditional" environmental agencies (i.e., urban ecology, greenspaces) were also working to revamp their plans by incorporating a climate perspective, as seen, for instance, in D13 and D15 launched in 2017. These efforts culminated in the 2018 Climate Plan (D16), which encompassed comprehensive urban strategies addressing mitigation, adaptation, and promoting citizen action.

Climate mainstreaming was accomplished by transversal work across institutional sectors, which enabled different government actors to work on climate actions in a more integrated manner. Interviewees highlighted highly structured and internalized networking and coordination between governmental and non-governmental agencies (i.e., health agencies, academic institutions, and civil society) as a means to effectively integrate climate action into municipal governance structures. As I12 puts it, "here, even though you have a title, all work is transversal." "Transversality means working collaboratively by project," says I7, who leads the Climate Change and Sustainability Office. Established in December 2020 in recognition of the need to have a designated body to institutionalize efforts, this Office acts as the umbrella for climate-related projects. The Office spearheads diverse steering groups that strategize, oversee, and monitor the city's key climate initiatives. The experiences from Barcelona demonstrate that transversal endeavors necessitate the engagement and collaboration of diverse stakeholders across the city, as well as centralized and structured coordination in ways that respond to the city's stated priority of responding to the climate emergency (Barcelona, 2020b).

Despite overall cooperation among most agencies, certain entities exhibit a reluctance to engage in more regular collaboration, even when confronted with mutually relevant and interconnected topics. Many express difficulty or limited motivation to move outside familiar confines or strict mandates when considering the exploration of new practices, networks, and projects. This limitation is exemplified by the 2021 Green Deal Plan (D29), launched by the Area for Economy, Work, Competitiveness, and Finance. Despite the "green" in its name, there seemed to be no consultation or participation from "green"-related departments within the City Council. This indicates that while most departments exhibit effective collaboration, there is room for improvement in fostering transversal efforts.

Aside from mainstreaming climate policies, since 2016, the city has spearheaded an initiative to mainstream gender, incorporating a feminist perspective into all its municipal policies and governance practices with the goal of reducing entrenched gender inequalities, including those related to climate impacts and benefits from climate action. This is implemented by a designated department of "gender mainstreaming"—the Municipal Management Body for Gender and Time Policy Services. This department has put 38 gender mainstreaming units and 52 reference figures in place to ensure that the gender perspective reaches all municipal policies. Representatives from the agency overseeing climate policies, in particular, revealed how they take part in climate-related steering groups in a consultative role and assess all climate plans and programs through a gender lens. This includes the Superblocks, climate shelters, and energy poverty reduction programs, all of which have been thoughtfully infused with a gender perspective to tackle disparities in public space utilization and coping strategies to face extreme heat. The work of the department is anchored in the Barcelona II Plan for Gender Justice (D27) as well as several other guiding documents to consolidate feminist municipal policies that combat inequality and discrimination against women.

However, interviewees noted several persisting challenges of gender mainstreaming with an intersectional perspective. For instance, municipal staff shared ongoing efforts to incorporate different axes of inequality into their analysis (e.g., social class, age), but acknowledged that these efforts are nascent and may not be as effective in addressing intersectional inequalities. Notably, designing efforts that target specific racial or ethnic groups remains a taboo, as disclosed by one interviewee,

We do not talk about race because it is a protected and political variable, but if we think about skin color, it is a very clear axis of inequality. It is usually the people who are in an economically vulnerable situation, or migrants and refugees. This axis should be made more visible.

Moreover, interviewees emphasized a pervasive implementation gap, as highlighted by I11 who worked on the city's Nature Plan: "the Plan proposes working with gender equity, and social justice in mind. The thing is *actually doing* it. I believe that more professionals and experts are needed in the field." This shows the need to integrate the gender perspective beyond policy design and into operationalization and monitoring, especially through the training and support of municipal employees working on the ground. Despite these challenges, Barcelona's mainstreaming of climate and gender exemplify a proactive reshaping of the dynamics of urban climate politics, institutionally restructuring it to effectively address pressing concerns—climate change and gender inequality in particular—in a more integrated manner.

4.3 | Care-centered: Visibilizing the climate-health-care nexus

A main outcome of mainstreaming feminist principles into climate change policies is the elevation of care as a fundamental aspect of

society and economy. As a self-proclaimed “Caring City,” Barcelona has put everyday life and care work at the center and has taken a localized approach to care—caring for people, for the city, and for the climate. This is best exemplified by the VilaVeïnas (P7A), which serve as local centers that support care needs and aim to align with the Superblocks (P4) through environmental improvements (greening and traffic-calming) in the vicinity. However, interviewees point out that effectively aligning VilaVeïnas with Superblocks remains challenging, due to disparities in terms of scope, budget, and complexity of each project. At the same time, the city is expanding its walking and cycling network—a central measure of its climate mitigation and adaptation goals—with a feminist perspective by focusing on everyday journeys carried out for reproductive and caring activities. In fact, the new sustainable mobility plan (P5) characterizes “walking [as] taking care of yourself, of others, and of the environment” (Barcelona, 2022, p. 100, translated from Catalan). Apart from VilaVeïnas that have been spread across all city’s districts, Barcelona has one central hub to offer services, information, and resources to carers, the “Barcelona Cuida” (P7B).

Putting care at the fore entails not only addressing the needs of care recipients but also attending to the wellbeing and support systems of carers. This is in recognition that “caregivers are the people that no one takes care of [...] Who takes care of the person who cares for the sick? Nobody. Us.” (I3). To further address this, the city introduced in 2022 the Carer Card (P7C) with the goal to identify caregivers and provide them with resources, training, and support related to care. The resources range from artistic and entertainment activities that promote emotional wellbeing to trainings focused on mitigating the health impacts of heatwaves. They also include visa services and legal advice for immigrant cardholders to obtain contracts as domestic and care workers, thereby aiming to regularize an often irregular and invisible occupation. As explained by I3: “Care is very invisible and very little valued. [...] It’s typically done by women and people who don’t have many resources. So, what the Carer Card does is to identify these people and value their work.” These initiatives reflect the city’s commitment to prioritizing care and fostering a more democratic and equitable distribution of domestic and care work, with inequalities in the private sphere increasingly visibilized and tackled.

Putting care at the center also means placing an emphasis on attenuating climate impacts on human health and supporting vulnerable groups (Barcelona, 2021). For instance, Barcelona’s Public Health Agency (ASPB) participates in all climate- and environment-related working groups and in the decision-making and monitoring processes of flagship projects such as the Superblocks (P4), the Low Emission Zone (P5), and the Climate Shelters (P1). Furthermore, the Agency conducts significant research on energy poverty, with dedicated professionals overseeing this area and investigating its connections with health disparities in the city. This research is carried out collaboratively with municipal agencies and civil society organizations, including the Human Rights Observatory (DESC), the Alliance Against Energy Poverty (APE), and the Platform for People Affected by Mortgages (PAH). Together, they produce comprehensive assessments and reports on the state of energy poverty, housing rights, and its

implications for public health in Barcelona. According to interviewees, climate measures and actions are only launched after review by the main local health authorities, who also ensure that actions and measures are evaluated and monitored following specific health indicators. For instance, I21 revealed how the program Climate Shelters in Schools was monitored by tracking school environmental conditions (e.g., temperature, air quality, and noise pollution), as well as student’s wellbeing and opinion about the interventions. She explains that students “asked for a lot more greenery, which they liked a lot. Some were bothered because they had bits of their sports courts taken. But in general, it was very positive feedback.”

Barcelona’s focus on care and health shows that it is possible to address climate change while acknowledging and tackling social inequalities, such as those reinforced by the invisibility and feminization of care work. Furthermore, the case of Barcelona supports a current trend that promotes a more comprehensive perspective on care, which encompasses caregiving, receiving, self-care, and caring for the environment, thus recognizing care as a pervasive and multifaceted element of human life, and working to make it more democratic and rewarding.

4.4 | Place-based: Promoting community empowerment and redistribution

The fourth tactic guiding Barcelona’s approach to climate governance is an initiative to ground justice in efforts to enable access to climate goods, services, and the built environment and empower communities in decision-making processes. As attested by I9, “we are beginning to create a very, very accurate symbiosis of the binomial ‘social justice—climate justice’, because there used to be a lot of resistance there.” In this final subsection, we divide these efforts between (i) actions related to a more equitable distribution of climate goods and services, and (ii) actions to advance representative, procedural and recognition justice through enhanced participatory processes.

4.4.1 | Distributive: Regenerating to better distribute climate goods and services

While large-scale projects such as the Superblocks (P4) and Climate Shelters (P1) offer promising solutions for climate resilience, their effectiveness is contingent on distribution and accessibility. Paradoxically, those most in need—marginalized populations grappling with precarious living conditions and energy poverty—often face barriers to accessing these interventions. Consequently, there is an imperative to protect these communities by retrofitting their homes and ultimately reducing the need to seek shelter elsewhere. As I14 said, “I envision a city that is so pleasant and thermally comfortable that the network of climate shelters becomes obsolete.” To that extent, Barcelona has created an Urban Regeneration Program (P2A) to improve people’s living conditions, their comfort at home, and access to public spaces. The program involves a broad definition of “regeneration” that

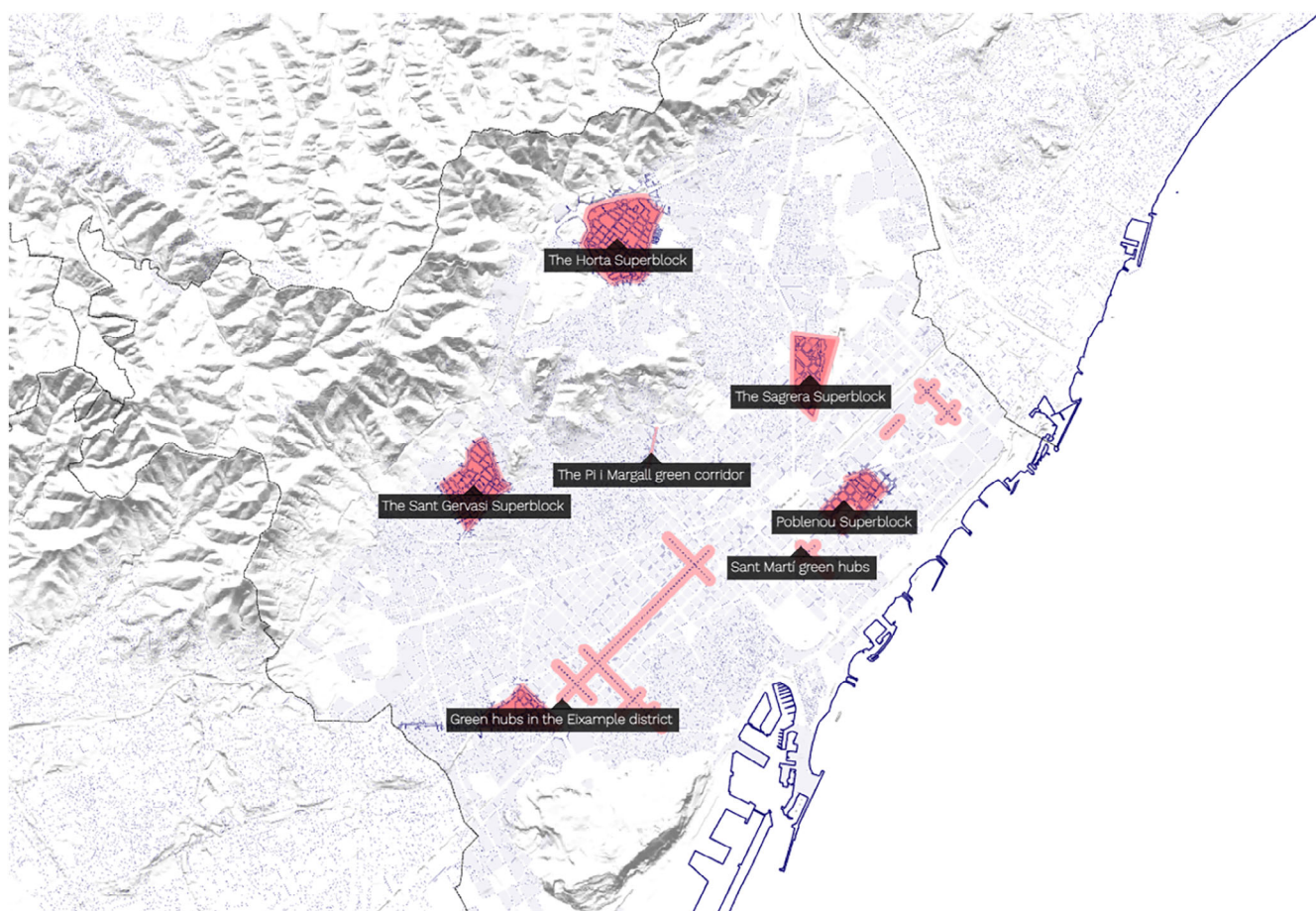


FIGURE 3 Map of Barcelona showing the Superblocks (existing and in construction), as well as the green axes and hubs in the Eixample district. Source: Ajuntament de Barcelona.

goes beyond building rehabilitation to include greenspaces in general as well as public spaces for leisure and recreation. While various initiatives—including the Superblocks (P4) and the Urban Mobility Plan (P5)—are now encompassed under the umbrella term of “urban regeneration,” much of the program focuses on retrofitting highly vulnerable buildings in poor neighborhoods. Besides, the city offers diverse financing options and subsidies to support low-income households in retrofitting and facilitating a just energy transition, ranging from comprehensive building rehabilitations (P2B) and neighborhood renewal plans (P2C) to incentives for installation of solar panels (P3C). Moreover, the creation of Energy Advice Points (P3A) has helped prevent power cuts for vulnerable consumers by prohibiting supply companies from disconnecting services to households who can demonstrate social exclusion or an inability to pay.

While progressive climate initiatives improve human health and quality of life, they can affect housing prices and contribute to real estate speculation and green gentrification. In response, the Superblocks (P4) are now associated with a Land Use Plan that regulates the local housing market and “prevents commercial monocultures,” (I18) another illustrative instance of the city's efforts to counter vested interests stemming from commercial hospitality ventures and global corporate retail chains. However, the city has limited ability to regulate the economic

market, as explained by I8, “we need other measures beyond municipal policy to limit housing prices. That is why we ask the state to regulate rents.” Interviewees also mentioned efforts to increase the stock allocated for public housing (currently at 1.7%) with a feminist approach that aims to allocate at least 20% of public housing for women and single-parent families. The city is also buying and rehabilitating existing buildings to turn into public housing, as in Eixample, the district with most Superblocks⁴ (see Figure 3). Other councilors, however, believe that a change in the way the Superblocks are conceived and implemented is what can best address gentrification issues. In this direction, I18 describes how the city has adjusted the original Superblocks from a “9 × 9 model” to a new “Green Axes” model to distribute the benefits of the project more homogeneously in the city:

Many people criticize us under the concept of ‘green gentrification’. That is one of the reasons why we have changed the way of implementing the Superblock project, from blocks to axes. In other words, we don't want a super cool neighborhood next to an uncool

⁴https://ajuntament.barcelona.cat/eixample/es/noticia/mas-vivienda-protegida-con-la-compra-de-dos-fincas-en-el-eje-verde-del-eixample_1250278.

one. It is a program throughout the city, so that everyone has green spaces within 200 m [...] With that, we manage to reduce car traffic in a more affordable way. We get much more powerful pedestrian routes because we can go from one end of the city to the other. So, we spread the benefit faster and avoid creating *ghettos*. Rather, we are creating a new green infrastructure throughout the city.

A final distributive effort is a push towards new economic models. This is exemplified by the city's longstanding commitment to developing a Social and Solidarity Economy (SSE) and recent work towards Doughnut Economics (P6). The push towards SSE has a distinctive feminist approach by addressing gendered job insecurity and providing support to women-led entrepreneurship projects. To this end, the city has established Barcelona Activa, an agency dedicated to reviving the city's economy with a focus on proximity, environmental care, and social justice. As I2 explains, "social economy entities offer products and services that have certain added values, such as caring for the environment, strengthening territorial roots, and incorporating workers who are at risk of social exclusion, as well as principles such as horizontality, plurality, and cooperation." These actions reflect an understanding that, beyond alterations in the urban landscape, addressing the climate crisis requires substantial transformations in our current economic models.

4.4.2 | Representative: Striving to improve recognitional and procedural justice across historically excluded groups

A final enabler of governing intersectional climate justice relates to the ways in which the city is striving to maximize participation in climate politics, recognizing that mere provision of participatory spaces is insufficient to ensure representative and meaningful participation. The most important tool for public participation in Barcelona is the online platform DECIDIM. Launched in 2016, this free and open-source digital platform allows residents to consult, vote, and comment on city projects, programs, plans and budgets. Interviewees pointed out that DECIDIM has proved particularly valuable for individuals who lack time or feel uncomfortable participating in in-person sessions. However, they also acknowledged limitations due to pervasive digital divide. To counter that, the city council is seeking to provide technology support in neighborhoods that have higher levels of digital divide, as well as considering new methodologies to enhance participation of women, immigrants, and youth. This need came upon the recognition that those who typically participate both in online and in-person participatory processes generally have a similar profile: predominantly older men with high levels of education, who are members of existing environmental entities or neighborhood associations. As noted by I9, some groups might also be unaware that their opinion matters as "in the end, since they are subjected to so much discrimination, they don't understand that they are active subjects in building the city."

To diversify participation beyond well-established associations, she explains that Barcelona is "try[ing] to design strategies to reach groups that haven't usually participated because they don't feel called upon to decide or think about their own city." Actions to increase participation include reaching out to specific collectives and trusted focal people within communities; offering translation services and assistance to people who are hearing or vision impaired; and adapting session locations to diversify spaces of socialization. As I10 explains, "we are looking for the spaces where they are, rather than waiting for them to come to ours." Other actions crafted with a gender perspective include providing childcare services during participatory sessions and offering financial remuneration for participation. The Citizen's Assembly is a notable endeavor in fostering civic participation within the city. Designed to mirror Barcelona's diverse demographic composition, the initiative engaged 100 residents to deliberate on climate-related issues and generated 34 proposals to change energy, mobility, and consumption models (D33).

The implementation of Climate Shelters in schools exemplifies participatory processes with pedagogical and place-based gains. As put by I13:

We wanted to make children aware of climate change firsthand. So, a professional training in climate change was carried out. And then the entire educational community, including children, was compelled to be part of this process. So, the solutions implemented came from an internal participatory process of children and teachers and were unique for each school, based on their local needs and preferences.

Similarly, the new generation of Superblocks, like those in Horta, Sagrera, and Sant Gervasi, serves as recent attempts of participatory urban innovation. The process is led by a steering group comprising neighborhood associations, civic centers, and community members who collaborate to prioritize transformation proposals for street-calming and urban greening. Residents participate in ranking actions and co-creating implementation roadmaps which then receive feedback from the broader community via in-person sessions and online channels.

These experiences show that beyond offering spaces and platforms for participation, cities must take proactive steps to improve representation in decision- and city-making, fostering a greater sense of community, ownership, and belonging.

5 | DISCUSSION: LESSONS FROM CONCURRENT WAVES OF CLIMATE URBANISM

Our results show that Barcelona is governing and implementing intersectional climate justice through efforts that are disruptive, transversal, care-centered and place-based. These governance arrangements define a new model of climate urbanism (Castán Broto, 2017), that

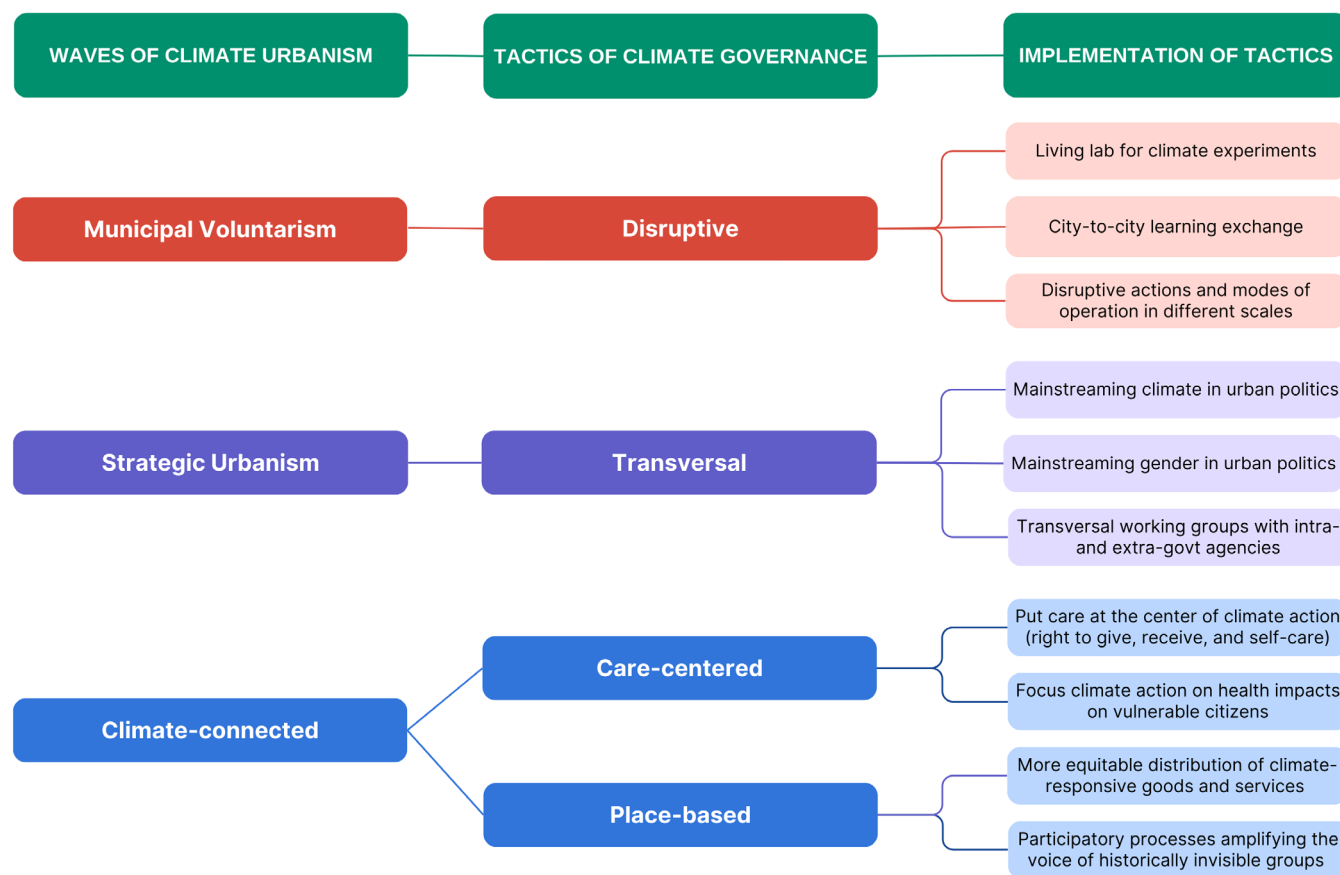


FIGURE 4 Concurring waves of climate governance (based on Bulkeley's model), Barcelona's climate governance tactics, and the practical implementation of governing tactics.

aims to be more socially just and tackle other social concerns. We relate Barcelona's approaches to the three waves of climate governance (Bulkeley, 2021) and zoom in on the links between the “third-wave” and intersectional climate justice (Amorim-Maia et al., 2022). Our research uniquely highlights the fact that Barcelona's climate governance tactics do not conform to distinct waves, but rather manifest overlapping dimensions that concurrently coexist spatially and temporally in order to institutionalize them. Barcelona's experience therefore supports calls for engaging multiple stakeholders in a coordinated manner to lock in plans, programs, and actions to ensure the deployment of efforts that enable climate resilience over time. This manifests through grand, large-scale projects as well as less visible, smaller-scale physical and social projects (Figure 4).

Through innovation and disruption, Barcelona navigated the *first* wave of urban climate governance—municipal voluntarism—to position itself and consolidate its role as a leader in climate action. This was and continues to be accomplished through city-to-city learning, partnerships in international research projects, and leadership in transnational municipal networks, which conferred the city international support and recognition. Barcelona is still using its international reputation to reinforce its progressive leadership and justify disruptive planning approaches, including those that require shielding from vested commercial interests and threats of judicial

dismantling. Furthermore, in this first wave, we also find that disruptive initiatives are often driven not only by elected officials but also by practitioners and technicians within the city council. Armed with extensive interconnected networks and a shared ethos, these individuals play a crucial role in both resisting dismantlement and championing disruptive initiatives, even in the face of changing governments. Yet, while participating in transnational networks and international research projects can result in disruptive governing tactics, it could potentially reinforce the agenda of technological, private-led climate adaptation and resilience, raising the need for such collaborations to be thoroughly scrutinized to ensure they effectively elevate intersectional climate justice within urban contexts.

Then, by breaking institutional silos, Barcelona leveraged and continues to consolidate efforts in the *second* wave of urban climate governance—strategic urbanism—by incorporating climate and gender considerations into public policies with the goal of advancing climate action and social justice. During this process, the city integrated workplans across different jurisdictions and sectors, turning climate action into a central transformative driving force for urban change (Chu et al., 2019). Barcelona also utilized the climate-mainstreaming movement to promote urban experimentation (Bulkeley et al., 2014). The Superblocks and the Climate Shelters in Schools exemplify the

city's ongoing emphasis on experimentation as a means to implement various ways of thinking and designing the urban environment.

Last, the city has embarked on the *third wave* of urban climate governance—climate-connected—by prioritizing climate concerns alongside a commitment to social justice, particularly issues pertaining to care. For instance, our results show how the city has integrated the notion of care within urban regeneration efforts, incorporating localized and personalized care strategies (i.e., VilaVeinas) into large-scale urban transformations (i.e., Superblocks) and aligning social and environmental services (such as healthcare, mobility, housing, and public spaces) around the notion of “everyday life.” However, challenges arise in integrating projects with such diverse scopes and in reconciling conflicts with residents' personal interests and habits. The city's commitment to valuing care is also reflected in its efforts to support and visibilize carers, though obstacles persist in shifting entrenched gendered roles and relations. Barcelona's actions align with a growing trend that recognizes the importance of care in achieving justice in climate change planning and governance (Bond & Barth, 2020; Calderón-Angelich et al., 2023) and the need to focus on the wellbeing of carers in addition to those that are cared for (MacGregor et al., 2022). The focus of climate action on health impacts also reflects a recognition that climate change is not a standalone equalizing threat, but rather intertwined with historical injustices that contribute to unequal health impacts of climate change at local levels (Jurgilevich et al., 2023; Kotsila & Anguelovski, 2023).

Barcelona's efforts to regenerate the city with a focus on tackling pre-existing urban vulnerabilities—especially those related to poor quality and low energy-efficient housing—and avoiding exclusionary land use planning acknowledge historic legacies of social and environmental injustices. However, we are cautiously optimistic about Barcelona's green distributive efforts: while recent studies show the potential for the green axes to transform disconnected urban green areas into a more interconnected infrastructure system (Magrinà et al., 2023), research in Barcelona has shown that environmental sustainability initiatives may sometimes prioritize elite interests at the expense of providing essential services (Anguelovski et al., 2018). The implementation of Green Axes (the new iteration of Superblocks) in Eixample—Barcelona's wealthiest and most touristy neighborhood—raises questions about the city's commitment to democratizing the benefits of green interventions. Despite Eixample experiencing poor air and noise pollution levels and a lack of green space, focusing efforts on less-privileged neighborhoods could lead to more environmentally and socially transformative outcomes (Anguelovski et al., 2023).

The city's efforts to expand local participation refer to the need to adopt place-based approaches to planning that recognize local knowledge and include marginalized residents in decision-making. Our results showcase different ways in which the city is advancing procedural justice by establishing diverse channels and means for citizens to participate in climate governance. However, there is a lag in efforts towards recognition and representation, as current participation efforts still tend to involve the same individuals and groups repeatedly. This shows that simply offering a platform is insufficient for

meaningful participation without a genuine political will to transfer decision-making power to residents. Notably, participatory mechanisms have, at times, been exploited by undemocratic regimes to conceal their lack of freedoms (Ortega, 2022). Nascent initiatives are being undertaken to improve recognition justice by making participatory processes more accessible and flexible to appreciate a greater diversity of voices, knowledges, and experiences. To increase participation, the city could benefit from innovative approaches, such as investing in visual tools for participatory scenario planning and future visioning approaches to support visualizing plausible and desired futures (López-Rodríguez et al., 2023; Nalau & Cobb, 2022; Oteros-Rozas et al., 2015).

Lessons from Barcelona demonstrate that to address intersecting systems of inequalities in climate governance, it is necessary to act at different scales concurrently and challenge dominant epistemologies through diverse forms of political action and channels for participation. These different scales of action can range from projects with prominent exposure like the Superblocks to retrofitting projects in often-overlooked peripheral areas. The transformative potential of such interventions relies on their equitable distribution and accessibility. As simpler measures that do not require major infrastructural transformations, it appears that Climate Shelters could be positively impactful in protecting residents who are vulnerable to extreme temperatures because of their extensiveness and connection throughout the city (219 are currently in operation). However, recent research has shed light on concerns and equity implications associated with school selection criteria for the Climate Shelters in Schools program, as well as challenges linked to the co-design process and subsequent project implementation (Baró et al., 2022). Besides, the population remains largely unaware of the network of Climate Shelters, and there is a degree of skepticism among residents about their effectiveness and potential to address intersecting vulnerabilities (Amorim-Maia et al., 2023). Moreover, it is crucial for these spaces to be inclusive and culturally adequate to ensure that diverse populations feel welcomed and comfortable when utilizing them. Thus, future research could benefit from a better understanding of climate shelter's accessibility and inclusiveness, as well as the extent to which they are addressing the intersecting needs of the city's most vulnerable populations.

6 | CONCLUSION

Our study explains the emerging tactics and mechanisms implemented by Barcelona to govern and operationalize intersectional climate justice, with a particular focus on the period between 2015 and 2023, when Ada Colau held the mayoral position. The findings show how the city concurrently adopted the three waves of climate urbanism, acting disruptively, challenging preexisting norms, and breaking institutional silos to address climate change and tackle enduring inequalities. A clear intention to center care in climate action and disseminate the benefits of climate interventions was observed, along with place-based efforts to redistribute climate services and enhance

representative participation. We connect empirical findings with theory, contributing to contemporary scholarship on climate urbanism and urban climate governance, and provide tangible outcomes and on-the-ground reflections on the tactics implemented to operationalize climate-resilient development while attending to intersectional justice.

While the tactics, mechanisms, and governing principles identified in Barcelona may not be entirely generalizable, they can serve as valuable insights for future research and cross-city assessments of practices on intersectional climate justice action. We recognize, however, that by studying Barcelona we may have reinforced a pervasive trend to focus on global cities as the primary sites of governance, neglecting medium-sized and smaller cities that may have fewer resources but an equal need for change. We encourage future research to investigate these tactics and mechanisms in different urban contexts, including “ordinary cities” (Castán Broto, 2019) or those outside the global, early-adopter spheres. We also suggest future studies to focus on the distribution and perception of climate action on residents' wellbeing through, for instance, documenting lived urban experiences to better identify local needs and vulnerabilities.

In conclusion, this study contributed to a nuanced and analytic understanding of the tactics employed to operationalize climate-resilient development while considering principles of justice and equity. We shed light on the mechanisms and rationales behind climate strategies that aim to also address social injustices, and bridged theory and practice by providing practical insights within a broad theoretical framework. The tactics implemented by Barcelona showcase an understanding of the intersectionality between climate issues and diverse societal dimensions (i.e., reducing socioeconomic disparities, respecting cultural traditions, and safeguarding the rights of communities) and the need to address them simultaneously. By uncovering the underlying mechanisms and justifications for Barcelona's perceived success, we identified enabling principles, ongoing challenges, and valuable lessons that hold relevance for application in diverse urban contexts. The election of Jaume Collboni as the new mayor in June 2023, representing the socialist and more center-left party, possibly opens a new era of climate urbanism, one where pro-market and business-as-usual interests risk undermining, undoing, or compromising progressive and equity-driven governance. Only time will tell whether progressive civic movements and disruptive officials and technicians within the municipality will manage to keep pushing Barcelona towards intersectional climate justice.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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