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The nested hierarchy of urban vulnerability within land use policies fails to address climate injustices in Turkey

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ABSTRACT

Responsive land-use policy amid climate change in urban settings includes infrastructure transformation and necessitates recognizing community- and individual-level vulnerabilities as well as climate-driven injustices, which are isolated in the existing literature. This paper highlights how climate policies set in the nine cities of Turkey identify vulnerable groups and individuals, and develop land-use policy to address the identified vulnerabilities and climate justice concerns. Employing policy content analysis and expert interviews, we find critical relationships between the identified vulnerable groups, responsive land-use policy, and climate justice. While social-aid municipalism-related vulnerabilities dominate the districts' climate policies, nature-based solutions (NBS), especially green infrastructure and urban agriculture, emerge as the dominant climate adaptation solutions. The way urban vulnerabilities are prioritized in the climate and sustainability plans put less emphasis on intersectionality and urban infrastructure-related vulnerabilities. With tokenism of justice taking place in policy documents, the plans do not incorporate vulnerable communities in land-use planning. Ultimately, the complexity of responsive land-use policies for cities must cultivate a greater awareness of how to support vulnerable communities practically.

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1. Introduction

The need to address climate justice concerns of vulnerable urban communities via in-situ urban land-use policy and actions still receive limited attention, especially in urban climate and sustainability policy literature. Cities contribute to the impacts of climate change, especially on vulnerable communities (e.g. heat island effects and flooding due to dense urban planning), but at the same time they create solutions to deal with the impacts of climate change through adaptation planning strategies and actions (e.g. nature-based solutions (NBS)). As global understandings of urban vulnerabilities and internationally funded interventions do not always fit to the needs of local communities (Eriksen et al., 2021), local governments, the key decision-makers in this regard, must orchestrate responsive land-use policy and actions to mitigate climate impacts through adaptation planning in urban settings.

Land-use policy and actions are important elements to mitigate the impacts of climate change for urban populations (Anguelovski et al., 2016; Bulkeley & Tuts, 2013). Responsive urban land-use policies amid climate change are shaped by visions of political actors and policymakers by generating adaptation planning that not only considers land-use planning and infrastructure solutions but also accommodates the needs of

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vulnerable urban populations. Considering the unequal impacts of climate change among different urban communities and individuals, there remains a gap in the literature with respect to understanding the responsiveness of urban land-use policies and actions towards vulnerable urban groups from a climate justice perspective. Vulnerability has multidimensional components including exposure to natural hazards, the sensitivity of systems or populations to absorb impacts, and people's adaptive capacity to withstand and recover from exposure (Adger, 2006; O'Brien et al., 2007; Turner et al., 2003). As urbanization unfolds at an eclectic pace, curbing urban sprawl and preserving green infrastructure while coping with extreme weather impacts from climate change emerge as climate-responsive land-use policy goals. Yet, inadequate policy response on a local scale could also exacerbate urban vulnerabilities and increase justice concerns.

Environmental and climate justice scholars are increasingly focusing on reducing unresponsive climate policies by incorporating distributional, procedural, and recognition justice that looks after the well-being of vulnerable communities and individuals (Schlosberg et al., 2017). Dedicated urban policy responses to ensure the socially fair distribution (distributive justice) of public services (e.g. equal access to blue-green infrastructure, and protection from floods and heatwaves), and including vulnerable communities and their demands in policy-making processes and outcomes (procedural justice) are as important as recognizing who these specific vulnerable groups are and addressing how to meet their demands (recognition justice) via responsive policy-making (York & Yazar, 2022). Any violation of these three dimensions would result in injustices, increasing the vulnerabilities of individuals and groups as well as weakening their ability to adapt to the impacts of climate change.

Against this backdrop, this paper aims to understand how responsive the land-use policy and adaptation planning are in prioritizing vulnerable urban dwellers by including climate justice aspects in policymaking in district municipalities planning in Turkey. As one of the fastest urbanizing countries in the world, Turkey's urban population is highly vulnerable to urban-specific climate change impacts, including flash floods and heatwaves triggered by dense urbanism. Indeed, scholars have been focusing on how metropolitan cities in Turkey, particularly in the megacity of Istanbul, are taking actions to adapt to and mitigate the impacts of climate change, as well as justice concerns and multi-level governance (Williams et al., 2022; Yazar & York, 2021), yet there has thus far been a lack of focus on how small-scale district municipalities specifically address vulnerability and justice concerns through their policy and planning programs. Hence, this study identifies nine district municipalities and their sustainability and climate plans in Turkey, and specifically focuses on: (i) which specific urban groups are identified as vulnerable in these plans; (ii) which land-use policy tools are recommended to address these vulnerabilities; (iii) how are the three dimensions of climate justice included in the policy responses to address urban vulnerabilities. Methodologically, policy content analysis and interviews with municipal officers are deployed to analyze the three points raised above thoroughly.

The paper is organized as follows: Section 2 links urban vulnerability and responsive land-use policy approaches to climate justice; Section 3 introduces the case selection and methodology implemented there; Section 4 outlines four main arguments derived from the results; Section 5 delves into why sustainability and climate policies are designed to respond to the needs of the identified vulnerabilities via land-use arrangements for urban agriculture, and why distributive and recognition justice overshadow procedural justice in the sustainability and climate policy-making processes; and, finally, builds a conclusion for the nested hierarchy of urban vulnerability in addressing climate injustices.

2. Responsive land-use policy, vulnerability and climate justice

A growing literature in urban climate and environmental policy explores how local governments engage in transnational and regional municipal networks, such as the ICLEI and C40, to participate in policy processes to mitigate the impacts of climate change in urban settings (Gordon & Johnson, 2018; Heikkinen et al., 2020). Land-use planning has historically been one of the main local services provided by local governments; and, depending on climate conditions of the given location, land-use policies need to be robust to withstand extreme weather events (Anguelovski et al., 2016; Hurlimann et al., 2021; Pincetl, 2003). Scholars argue that climate and sustainability action plans, whether adopted through transnational municipal networks or

solely developed by municipalities, generally remain soft regulations with limited actions taken to address climate vulnerabilities (Blomqvist, 2022; Kasa et al., 2018). NBS (e.g. blue–green infrastructures to prevent flash floods and mitigate extreme heat), developed by the European Commission and the European Environmental Agency and recognized at COP27 for instance, are important solutions to tackle climate-change-driven extreme weather events in urban settings (Frantzeskaki, 2019; Raymond et al., 2017). Yet, we argue that responsive land-use policy for climate change depends on how (and whether) local governments identify specific urban vulnerable groups and generate place-dependent land-use policies to mitigate the exposure on the identified urban vulnerable groups.

2.1. Identifying vulnerabilities and policy responsiveness

Cities grappling with climate change and sustainability policies must recognize the significant variation in individuals' vulnerability. Research on urban vulnerabilities, where locals' exposure to extreme weather events (e.g. flash floods or extreme heat) and their sensitivity to absorb these events, as well as their adaptive capacity to recover from these climate impacts, are analyzed mainly in the literature through physical urban forms and socio-environmental factors (Ahmed et al., 2018; Avashia & Garg, 2020; Yang et al., 2020). When extreme weather events at an urban level triggers exposure, vulnerable communities and individuals are able to withstand them based on their adaptive capacity, including their socio-economic status, social capital, and the existing urban green infrastructure in their neighborhoods (Chakalian et al., 2019; Putnam et al., 2018; Yazar et al., 2022a). In this case, responsive land-use policymaking and adaptation planning, such as reconfiguring urban lands to mitigate exposure and benefit vulnerable urban populations, play essential roles in addressing physical and socio-environmental challenges.

Policy responsiveness has long been studied by public policy scholars, many of whom argue that policy changes generally correspond closely to favoring certain advantaged groups over others (Gilens, 2012; Gilens & Page, 2014). Some scholars find that policies are more responsive especially for socio-economically advantaged groups and groups that have lobbying power over governments in Europe and the USA (Elkjær, 2020; Elsässer et al., 2018; Gilens, 2012; Gilens & Page, 2014; Persson, 2021; Yazar, 2022). Although the extent of such income and political influence-based biased policy responsiveness is found debatable (Branham et al., 2017), such biases inevitably undermine the existence of vulnerable communities. Favoritism in policy responsiveness amid climate change frequently diverges from vulnerable communities' environmental problems. Moreover, policy changes and actions, such as having well-insulated buildings and opening new green public spaces may diminish energy poverty (by decreasing heating costs) and the impacts of heatwaves (by providing cool indoor and outdoor spaces), but it may also render the distribution of environmental goods even more uneven, for instance, when property values increase in districts where new green infrastructure attracts wealthy dwellers, and in turn pushes out low-income renters into the city outskirts with worse housing and urban infrastructure (Bouzarovski et al., 2018; García-Lamarca et al., 2022; Rice et al., 2020). Consequently, a lack of political access among vulnerable communities reproduces unequal patterns of environmental benefits, resulting in vulnerable individuals coming under threat from elite capture.

2.2. Climate justice via responsive land-use policy

Urban policies and local service provision have long contributed to the uneven distribution of environmental resources and pollution, favoring urban elites and developers in policy-making processes (Bullard, 1990; Dai, 2011; Soja, 2013). In this sense, distribution and procedural justices have been historically sidelined by many local governments and exacerbated asymmetric power relations in urban politics and land-use arrangements (Broto et al., 2013; Toxopeus et al., 2020; Yazar et al., 2022b). Scholars argue that recognition as justice is an 'inherent precondition' (Schlosberg, 2007, p. 519) of distributive and procedural justice (Gellers & Jeffords, 2018). Recognition justice has emerged as a critical element of climate justice and has been globally debated since Hurricane Katrina in 2005, which resulted in severe impacts especially for African-American communities in New Orleans, and increased discussion about institutional discrimination and racism towards such

communities in the USA (Henkel et al., 2006). Certainly, this attention drawn by climate justice and especially by the issue of recognition owes much to the environmental justice movements in the USA since the mid-1960s (Schlosberg et al., 2017).

In this study, identifying vulnerable groups in sustainable and climate plans entails recognizing these groups in policy framing and analysis. While recognition justice reveals how local policymakers understand, identify, and frame vulnerable communities and individuals (Bell & Carrick, 2017; Edge et al., 2020), distributional and procedural justice focus on how a specific land-use policy developed for the identified vulnerable urban groups and individuals considers the fair distribution of such land-use implementations and the extent to which the interests of these groups and individuals are considered in decision-making role, respectively (Bell & Carrick, 2017; Kronenberg et al., 2020; Thornton et al., 2020). Increasing green infrastructures in urban settings, especially tree-canopy cover and urban parks, for instance, has been the most applied and replicated land-use policy to deal with extreme heat and floods (Bernstein et al., 2016; Pearsall & Pierce, 2010). However, such a policy does not recognize vulnerable communities and thus reproduces unequal patterns of environmental benefits and burdens.

The unequal distribution of such spatially selected green infrastructures consequently increases the climate change vulnerability of socio-economically disadvantaged locals and increases legacies of power asymmetries in urban decision-making processes (Anguelovski et al., 2011; Broto et al., 2013). The 2008–2015 economic recession and austerity measures due to neoliberal policies directly affected municipal services and sidelined disadvantaged urban communities and individuals even more as the disparity widened in wealth accumulation. There are cases in which social policies, for instance social assistance and services, are created by municipalities to address urban vulnerabilities. Yet, these initiatives have been criticized by scholars who assert that such initiatives do not necessarily alleviate urban poverty but instead preserve the status quo in urban resource governance (Fox, 2014; Meerow et al., 2019; Sareen & Waagsaether, 2023). Thus grassroots activism has emerged as a popular response to such unequal distribution of municipal services for wealthy residents; for instance, local activism has supported urban agriculture, especially for socio-economically disadvantaged urban groups seeking food security (Anguelovski, 2013; Wekerle & Classens, 2015; White, 2011). Some scholars argue that such local activism is a clear indication of new municipalism, which comes in response to policies of austerity and includes citizen-centric and high levels of local participation in urban resource governance to redistribute municipal services in favor of vulnerable urban communities (Blanco et al., 2020; Janoschka & Mota, 2021). Following the existing literature outlined above, the next sections will illustrate how the selected district municipalities in Turkey, through sustainability and climate plans, identify and consider vulnerability and climate justice aspects while developing responsive (or in some cases irresponsible) land-use policies.

3. Case studies and methods

3.1. District municipalities in Turkey

Neoliberal economic restructuring and a construction-based economy have been changing socio-spatial and policy landscapes in Turkey over the past two decades (Adaman et al., 2017). In addition, economic neoliberalization has led to deregulation and privatization of state-owned companies, and the embracing of more centralized decision-making on national development priorities and the rearranging of spatial, regional, and local planning controlled by the national government. Although governance reforms associated with Turkey's EU admission negotiations have led to the emergence of regional development agencies, these have failed to increase local administrations' autonomy as these agencies are under the central government's jurisdiction (Tansel, 2017). Turkey's unitary system comprises two levels of government (national and local), with state-centric governance. Turkey is a highly urbanized country, as 77% of its 84 million population live in urban areas (World Bank, 2018). There are two types of local government in Turkey, namely local municipalities and metropolitan municipalities (for settlements with a population exceeding 750,000). The administrative structure of local governments consists of an elected mayor and municipal council. Overall, there are 30

metropolitan municipalities in Turkey, subdivided into district municipalities with their governing structures and locally elected mayors. Metropolitan municipalities oversee all their constituent districts, organizing and monitoring their operations. However, district municipalities participate in the policy-making processes through their city council, can own subsidiary companies, and are responsible for providing municipal services, from social services to infrastructure.

Turkey is highly vulnerable to global environmental change, and specifically to a predicted temperature increase of 2.5°C by 2050, dehydration, and rising sea levels (Meyer, 2015; Daloğlu Çetinkaya et al., 2022). Climate change has been included in national policy and strategy documents since 1999, while carbon emission levels have been exponentially increasing in Turkey, exceeding the global average. In 2021, Turkey ratified the Paris Agreement, thereby committing to achieving net-zero emissions by 2053. The passing of the EU-inspired 2007 Energy Efficiency Regulations to mitigate climate change, nationally driven goals to access climate funds, and the signing of the Paris Agreement in 2016 provided the impetus for local governments to collaborate with multiple institutions within and outside Turkey. In addition, many metropolitan and district municipalities in Turkey are part of transnational municipal networks (TMNs) such as the Covenant of Mayors, the ICLEI, and C40, as well as climate change action plans or sustainable energy plans adopted through one of these networks.

3.2. Document selection and policy content analysis

We collected district-level climate and sustainability related plans and programs published by April 2022 through web searches, district-government websites, and the C40 and ICLEI databases. In total, we found that nine district municipalities in Turkey had climate and sustainability-related plans and programs to include in our analyses (see Appendix A for the list of analyzed documents). The socio-demographic and climate-risk-related characteristics of the nine selected cities are summarized in Figure 1.

The selected nine plans were coded following a three-stage qualitative coding process. First stage was to determine the themes and categories following the literature discussed above. We explicitly looked at (i) which specific urban groups are identified as ‘vulnerable’ in these plans; (ii) which land-use policy tools are recommended to address these vulnerabilities; and (iii) the extent to which the three dimensions of climate

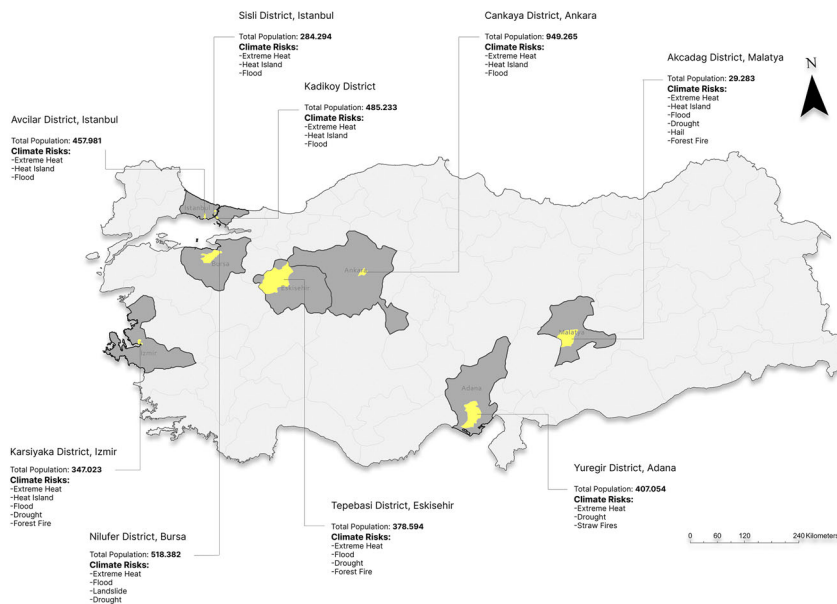


Figure 1. The selected district municipalities and their population and climate-change related characteristics.

justice (distributive, procedural, and recognition) are included in the policy responses to address urban vulnerabilities. At the second stage, each author conducted a policy content analysis on the nine district plans independently to test the coding protocol following the three categories (vulnerability, land-use policy, and three dimensions of climate justice) mentioned above. Researchers find such testing useful to evaluate the strength and clarity of the protocol for document analyses (Diezmartinez & Short Gianotti, 2022). At the last stage, all three authors discussed and agreed upon the frequencies of identified vulnerable groups, types of land-use policy responses, and the three dimensions of climate justice (see results in Table 1). NVivo software was utilized for all coding procedures.

3.3. Interviews with the district municipal officials

The researchers of this study draw on their long-term engagement with the cases at hand and experiences from multiple research projects on the broad theme of climate change governance and justice. In the specific nine cases discussed in this paper, face-to-face interviews with the selected municipal officers ($n = 9$) were conducted in Turkey (see Appendix B for the interviewee list). The municipal officers were identified from the analyzed documents; some of them have participated in the process of drafting and implementing climate action and sustainability plans, and some officers were responsible for follow-ups more than the original processes (bearing in mind that some people involved in the process of drafting climate actions were not available anymore). Meanwhile, the interviews were designed to best capture the results derived from the policy content analyses explained in the Section 3.2. Thus the research team first shared the policy content analyses results with the selected interviewees during the interview and then asked follow-up questions related to the frequencies in identified vulnerable groups, responsive land-use policies, and the three dimensions of climate justice. The research team assigned codes (I) using Bernard et al. (2016) coding methods to identify statements made by the interviewees. Once the coding was completed, the research team performed a systematic comparison between coded interviews (I) across groups to capture emerging discussions that are best suited to explain the three main results (vulnerability, land use policy, and climate justice) emerged through policy content analyses, coded as (D). The interview materials were essential to provide a complete picture of the land-use policy processes – who is recognized and who is not in, as well as who is included and who is excluded from, the decision-making processes – for addressing urban vulnerabilities and climate injustices in the selected nine cities of Turkey. These inputs were instrumental in elucidating the prioritization of some vulnerable groups while shaping climate actions. The studies involving human participants were reviewed and approved by the universities of the research team, and the interviewees provided their written informed consent to participate in this study.

4. Results

We discuss the main results of the study under three subheadings: (i) social-aid municipalism's targeting of vulnerabilities dominates the districts' plans; (ii) climate justice is contextualized differently with regard to vulnerabilities and land-use policies; and (iii) green infrastructures and urban agriculture are emerging as responsive land-use policies (see Appendix A for the list of analyzed documents).

4.1. Social-aid municipalism's targeting of vulnerabilities dominates the districts' plans

Table 2 shows the overall results for identified vulnerabilities in the district municipalities. Older people, children, farmers, and people with low income are the most dominant vulnerable groups identified in the climate and sustainability plans of the selected districts in Turkey. Meanwhile, women, people with disabilities, waste collectors, and immigrants constitute the next most dominant groups identified in the documents.

The interview results show that 'health', 'disaster preparation', and 'urban agriculture' are targeted as the main goals to be addressed by most of the district municipalities, while specific vulnerable urban groups and individuals are identified. Most district municipalities have mentioned that the easy access of senior citizens and

Table 1. Vulnerability, land-use policy, and justice results for the selected district municipalities.

District municipality and plans (D)	Identified vulnerable groups	Land-use policy response	Distributive justice	Recognition justice	Procedural justice
Akcadag District Municipality (D1)	Farmers (8), Agricultural workers (5), Women (3)	Training farmers for sustainable and less carbon-intensive agricultural techniques. Afforestation via pine trees	Female farmers living in socio-economically disadvantaged neighborhoods are prioritized for the distribution of organic seedlings	Farmers and especially women farmers are recognized as vulnerable groups	Representatives of the neighborhood chiefs' association and Akcadag Chamber of Agriculture, considered as the representatives of farmers, were included in the planning process
Avclar District Municipality (D2)	Old people (12), People with low income (6), Children (3), Immigrants (3), Women (2), People with disabilities (2), Unemployed (2), People with chronic diseases (1), Homeless people (1), Pregnant women (1)	Improving blue-green infrastructure, and increase green spaces and bicycle paths. Afforestation in stream beds, and conservation of migratory bird routes	More urban green spaces are highlighted in the plan to mitigate heat island effects, especially for the benefit of old people. No specific distributional justice identified	Several social groups are recognized as vulnerable including low-income people, internal migrants, women, and people with disabilities but their connection to justice and the municipality's relevant policy actions are not clearly demonstrated	The Turkish Foundation for Combating Erosion, Afforestation and Conservation of Natural Assets (TEMA) and the Water Politics Association are included in the decision-making processes for green infrastructure allocations
Cankaya District Municipality (D3)	Waste collectors (14), Syrian and Afghan refugees (1), People with low income (1)	Establishing a database for nature-based solutions and rain-harvesting within the scope of a European Horizon2020 Nature4cities project	Refugees and people with low income are prioritized for recruitment as waste collectors for municipal services	Several social groups are recognized as vulnerable waste collectors, refugees, people with low income; but their connection to justice and the municipality's relevant policy actions are not clearly demonstrated	The municipality has not identified any CSOs specialized in addressing the identified vulnerabilities to be included in the decision-making process
Kadikoy District Municipality (D4)	Children (5), Old people (4), Pregnant women (3), People with low income (2), Unemployed people (1)	Creating new blue-green spaces, and to stimulate biodiversity conservation around water reserves	The equal and just distribution of green spaces and air-quality monitoring for locals is mentioned in the plan without specifying any vulnerable groups	Vulnerable groups are recognized with many of the residents in the district being old people, who are prioritized in the plan. Low-income people's connection to justice-related actions is not articulated clearly	The municipality has not identified any CSOs specializing in addressing the identified vulnerabilities to be included in the decision-making process. However, engineering faculty members from public universities are included in the planning processes
Karsiyaka District Municipality (D5)	Old people (33), People with disabilities (7), People with low income (7), Children (3), Immigrants (2), Forest villagers (2), Farm workers (2), Homeless people (2), People in dense neighborhoods (2), People with chronic diseases (2), Women	Rain-harvesting and solar power in district parks; afforestation and increasing green spaces; and conservation of forestlands. Supporting urban agriculture via support for	Farm workers, forest villagers, and low-income families are prioritized when it comes to getting support in agricultural activities. Roma people are also given priority for waste collector	The identified vulnerable groups are already recognized in the plan, but their connection to justice and the municipality's relevant policy actions are not clearly demonstrated	The Union of Chambers, SOLAR Mena, the Chamber of Doctors and Agricultural Engineers, Ege Forest Foundation, the Environmental Energy Association, the Support Center for Health Services at Home (ESDEM), and agricultural

(Continued)

Table 1. Continued.

District municipality and plans (D)	Identified vulnerable groups	Land-use policy response	Distributive justice	Recognition justice	Procedural justice
	(1), Roma people (1), Waste collectors (1)	women cooperatives, local producers, and beekeepers	recruitment in municipal services		producer cooperatives are included in urban agriculture planning and actions
Nilufer District Municipality (D6)	Farmers (17), Old people (15), Children (9), People with low income (4), Women (3), People with chronic diseases (3), People with disabilities (3), Agricultural workers (2), Unemployed people (2), Immigrants (2), Homeless people (1), Forest villagers (1)	Afforestation and increasing green spaces. Monitoring endemic and endangered species and the conservation of biodiversity. Supporting cooperatives and farmers through training them on wildfires & sustainable agriculture	Distributing organic seedlings and allocating urban plots for organic agriculture to ensure food security have been mentioned, yet actions for distributional justice are lacking	The identified vulnerable groups are already recognized in the plan, but their connection to justice and the municipality's relevant policy actions are not clearly demonstrated	CSOs such as Agriculture Credit Cooperatives are included in the decision-making process as representatives of farmers. TEMA is also involved in the process, issuing advice on green spaces. Producer cooperatives are also considered as an efficient stakeholder and mentioned several times in agriculture-related actions
Sisli District Municipality (D7)	Old people (3), Children (2), People with disabilities (1), People with low income (2), Immigrants (1)	Increasing green spaces and afforestation, especially in immigrant-populated neighborhoods. Allocating lands for hobby gardens. Rain-harvesting	Neighborhoods with a significant immigrant population are prioritized in increasing green spaces	The identified vulnerable groups are already recognized in the plan, but their connection to justice and the municipality's relevant policy actions are not clearly demonstrated	Sisli City Council Ecology Committee moderates the decision-making processes without including the identified vulnerable groups or their representatives
Tepebasi District Municipality (D8)	Farmers (19), Old people (6), Children (4), People with low income (3), Women(2), Pregnant women (1), Unemployed people (1), Immigrants (1), People with disabilities (1), People with chronic diseases (1)	Increasing green spaces and afforestation in collaboration with CSOs. Allocating territory for sustainable agriculture production and urban gardens. The detection and the conservation of endemic and endangered species	Equal access to healthy food is mentioned but specific distributional justice is not	The identified vulnerable groups are already recognized in the plan, but their connection to justice and the municipality's relevant policy actions are not clearly demonstrated	TEMA and farmers' cooperatives are mentioned several times as the stakeholders of agriculture-related actions planned by the municipality
Yuregir District Municipality (D9)	Children (36), Syrian refugees (8), Women (7), People with disabilities (3), Farmers (1), Agricultural workers (1)	Increasing the number of parks and afforestation. Incentives for urban agriculture, and distribution of organic fertilizer to farmers	Women are supported via the municipally created business development center. Distribution of organic fertilizers for vulnerable farmers is also mentioned	Syrian refugees, children, and women are prioritized, and municipal projects have been specifically developed to highlight injustices for these groups	Adana Children and Women's Rights Association is identified as the main stakeholder in strategizing municipal actions for women and children

Table 2. The vulnerable groups identified overall in the selected districts.

	Total number
Old people	72
Children	71
Farmers	45
People with low income	25
Women	20
People with disabilities	16
Waste collectors	15
Immigrants	9
Syrian and Afghan refugees	9
Agricultural workers	8
People with chronic diseases	7
Unemployed people	6
Homeless people	4
Pregnant women	4
Forest villagers	3
People living in densely populated neighborhoods	2
Roma people	1

children to hospitals and urban green spaces and parks have been prioritized, with individuals belonging to these groups identified as vulnerable. The interviewees also mentioned that increasing green spaces was highlighted in the policy documents to complement health-related actions for senior citizens and children, and to mitigate the district's identified climate-driven impacts, including floods and extreme heat (I2; I4; I5; I6; I7; I8).

'Farmers' is the third most mentioned category, and most prevalent for districts where urban agriculture has been part of the local culture and economy. The district municipalities specifically aimed to train farmers on drought-resilient approaches, such as water-saving irrigation, and to provide seeds to producers, cooperatives, and seasonal workers in agriculture. More importantly, when interviewees from the districts were asked about other emerging vulnerable groups in the list, some of them indicated that agriculture workers, people with low income, women, producer-cooperatives, and immigrants all fell under the 'farmers' category, especially given the seasonal work provided by the district municipality in the urban agriculture by either negotiating with well-established farms to recruit these vulnerable groups, or persuading the districts to designate their municipally-owned lands for urban agriculture to meet those groups' survival needs (I1; I5; I6; I8; I9).

The districts with large industries that attract immigrants, refugees, and internal migrants listed these groups as vulnerable under the 'immigrants' category without clearly specifying their characteristics and vulnerabilities. Waste collectors, for instance, represent the other most common vulnerable group identified by the selected municipalities. Children and adults with Kurdish, Roma, or refugee backgrounds (e.g. Syrian and Afghan refugees) are recruited mainly by the municipalities or paper/plastic recycling companies to collect goods and earn their living by externally providing municipal services. Recruitment of 'urban refugees' into municipal waste services is one of the means of social municipalism in Turkey, where municipalities have limited financial power to accommodate refugees. Some districts with high numbers of Afghan and Syrian refugees highlight the need for social integration through education and orientation programs, without mentioning climate impacts (D2; D4; D9), whereas one district aims explicitly to increase urban green space, especially in neighborhoods where the numbers of immigrants are highest (D7).

More surprisingly, women and pregnant women are generally categorized as weak and vulnerable because of their gender, with their obstacles to access resources such as food and energy or their disadvantaged and uneven working conditions are not taken into account. Thus these plans reflect a narrow understanding of vulnerability or weakness for particular gender groups.

4.2. Green infrastructure and urban agriculture emerging as responsive land-use policies

While age, land-specific occupation (e.g. farming/agriculture), socio-economically disadvantaged urban groups, and gender dominate the identified vulnerabilities in the district municipalities in Turkey, land-use

policies are generally based on two main green-infrastructure-based approaches: (i) increasing green spaces and green corridors; and (ii) increasing urban lands for agricultural purposes.

Several municipal officers mentioned that nature-based solutions (NBS), especially creating urban green corridors and investing in blue–green infrastructure, are afforded more attention in climate and sustainability plans made by municipalities as these solutions are recommended by transnational and regional municipal networks, such as the Covenant of Mayors. In addition, such ideas are supported to potentially receive funding from the EU or similar regional or international funding agencies (I2; I4; I5; I6; I7). The policy documents also frequently mention biodiversity conservation via blue–green infrastructure (e.g. creating wetlands) to reduce heat island and flood effects.

The second specific green-infrastructure-based policy approach is to increase the quantity of urban lands for agricultural purposes, and this stands out as the most common land-use policy to consider the identified vulnerable groups, specifically farmers and producer-cooperatives already operating within the district boundaries. Some district municipalities support women farmers, donate seeds to support their agro-activities, and encourage them to consider biodiversity through agricultural activities. Integrating specific vulnerable groups, especially low-income citizens and immigrants, into these already available agricultural lands or designating municipal lands for agricultural spots, is seen as a viable solution to deal with income-based vulnerabilities by using the limited municipal financial resources. Some districts are leaders in implementing urban agriculture by creating cooperatives and managing agricultural activities through them (D5; D6; D8). These activities are either conducted by a circular economy model, which supports local cooperatives of women and farmers (D5), or by allocating municipally owned land to an urban agriculture cooperative in which farmers are advised to cultivate ecological crops and practice organic farming to provide healthy and affordable food to locals (D6).

4.3. Climate justice is contextualized differently with regard to vulnerabilities and land-use policies

Depending on the vulnerable groups and individuals identified in each district municipality, climate justice, which includes distributive, recognition, and procedural dimensions, have different contexts and approaches in the districts' plans.

For the distributive justice dimension, limited municipal aid is allocated through urban agriculture to support the most vulnerable urban poor in the context of land-use policy response. The interviewees from the municipalities that focus on urban-agriculture-based land-use planning, for instance, clearly indicate the distribution of organic seedlings to women farmers or socio-economically disadvantaged farmers and agriculture workers (I1; I5; I6; I8), while some districts designate specific urban plots for vulnerable groups for agricultural purposes (I4; I6). A similar municipal social-aid approach can be seen in the targeting of certain vulnerable urban groups, such as refugees, Roma people, and low-income people, in municipal waste collection jobs. Some municipalities with green-infrastructure-based land-use policy approaches focus on the equal distribution of green spaces (D2; D4; D5; D6; D7), taking into special consideration elderly citizens and neighborhoods with large refugee and immigrant populations (D7). Some municipalities also mention the importance of green spaces to mitigate heat island effects (D2).

The identified vulnerable groups listed in [Table 1](#) are already recognized in the plans, but their connection to justice and the districts' land-use plans are not clearly outlined. In only a few districts are specific recognitions given of the identified vulnerable groups. For instance, women farmers, women, and immigrants are mentioned in different district plans within the context of land-use policy responses (D1; D5; D6). Pertinently, the district municipalities studied in this paper operate under powerful metropolitan municipalities with relatively strong financial power and independence from the national government's resources. These metropolitan municipalities also host large industries that attract refugees to migrate there. Yet, policies that target these two different groups are not distinguished; while refugees are mentioned during the interviews with respect to the need for social integration and recruitment in municipal waste collection jobs (I3; I9), other immigrants are only generally noted within the context of agricultural jobs (I5; I6).

The procedural justice dimension in the plans remains weak because the districts generally seek civil society organizations (CSOs) to represent the identified vulnerable groups in decision-making processes. The

interview results reveal that local governments tend to prioritize the inclusion of local CSOs and unions representing specific professional organizations on a local level (e.g. the relevant local chapter of the Union Agriculture). When the municipal officers were asked why they needed an intermediary organization rather than be directly connected with the identified vulnerable group, a common response was that the sustainable energy and climate action plan requires a fast-written process, leaving no room for detailed engagement with each vulnerable group or issue identified in the plans (I2; I4; I5; I6; I8; I9). As engaging with vulnerable groups and arranging neighborhood-based meetings and hearings consumes substantial time and resources, the municipalities prefer to be in close touch with professional unions or CSOs with a specific agenda tailored to address vulnerabilities for the identified urban vulnerable groups. Most districts include well-established CSOs and unions or chambers in their decision-making, including TEMA (D2; D6; D8), the Chamber of Agriculture (D1; D5; D6), the Chamber of Doctors (D5), and the Water Politics Association (D2). Furthermore, a few municipalities with strong ties to local farmers and producer-cooperatives include them in their planning processes (D1; D5; D6). There are also cases in which municipalities form committees and associations within their own or metropolitan organizational structures, such as Sisli City Council (D7) and Adana Children and Women's Rights Association (D9), to include topics related to the identified vulnerable groups during the planning processes.

5. Discussion

Although the existing literature on climate adaptation planning for vulnerable urban groups and communities amid extreme weather events has highlighted the need for justice framing, this study shows that the nested hierarchy of urban vulnerabilities (Figure 2) in the climate and sustainability plans of the selected nine cities in Turkey fails in addressing multiple dimensions of climate justice.

Such a hierarchy in the selected plans reflects that vulnerability is not framed as a singular concept, but also the interconnected and multi-layered of urban vulnerabilities amid climate change is ignored in these plans. In

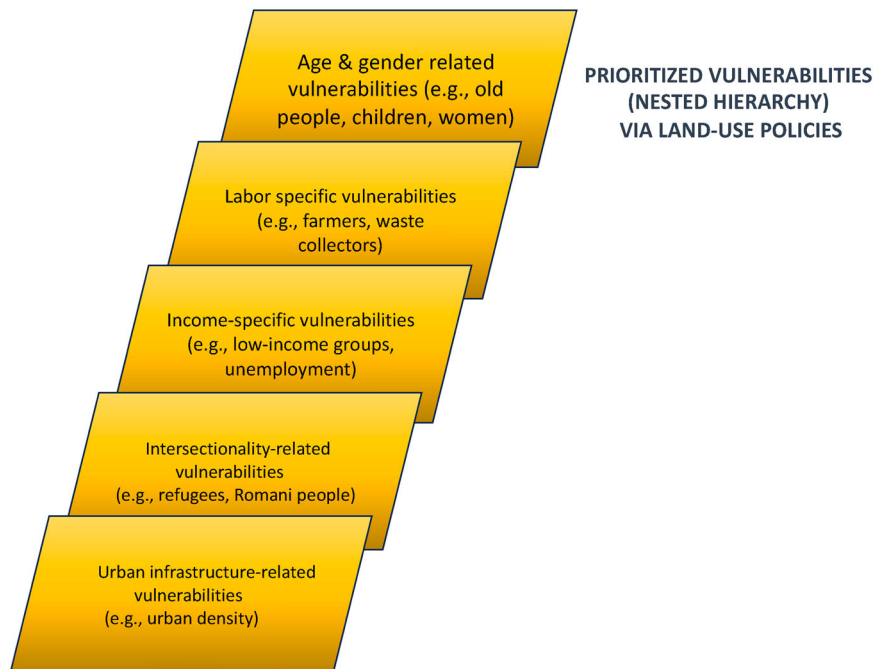


Figure 2. The overall nested hierarchy of urban vulnerability within land use policies in the selected cities in Turkey.

other words, urban vulnerabilities are prioritized through two main land use policies (increasing green infrastructure and urban agriculture lands) by putting more emphasis on age and gender related vulnerabilities to less emphasis on intersectionality, and urban infrastructure-related vulnerabilities (Figure 2). The nested hierarchy of urban vulnerability within the two land-use policies, thus, does not successfully address the inequalities and injustices caused by the impacts of climate change in urban areas. Crosscutting findings related to responsive land-use policy, urban vulnerabilities, and climate justice are examined below.

The selected nine cities in Turkey are with high density in terms of both population and building structure, and grapple with climate change impacts (e.g. extreme heat and floods). Although the analyzed sustainability and climate action plans recognize multiple vulnerable groups, they are less inclined towards taking actions to the great variation in the climate injustices linked to particular vulnerabilities. While manifesting the deprivation of specifically age-based vulnerabilities (e.g. senior citizens, and kids) in the plans and spatial configuration arrangements for these groups, the issues of access and inclusivity of survival vulnerability (e.g. poverty-related vulnerabilities) are consequently ignored. Although multiple vulnerabilities are defined and pinpointed by the selected local authorities, responsive land-use planning through green infrastructure investments (e.g. green corridors and tree canopy, and urban agriculture lands) do not necessarily target the vulnerability of individuals and communities to the risks arising from urban infrastructural challenges and explicitly consider climate justice as a critical element of urban climate policy adoption and actions.

The interview analyses also reveal that the transnational-municipal networks introduce new measurements and solution-based approaches to serve municipalities in the selected nine cities. Still, the existing urban land-use and aid-based social municipality approaches overshadow what was sought to be achieved through responsive land-use policy addressing vulnerable urban communities and spatial injustices. Cities and urban communities are considered the nexus for the transformation to a post-carbon, climate-resilient society, and the studied district plans clearly recognize climate-driven extreme weather events, including extreme heat, floods, and heat island effects. Although the selected districts identify similar climate-driven risks; there is no variation in location-specific vulnerabilities among them. To redress injustices and make their citizens more resilient amid the impact of climate change, cities follow the methods of transnational municipal networks or other organizations to analyze their vulnerability in their sustainability and climate plans (Reckien et al., 2018). Borrowing the vulnerability definitions from these organizations, local governments generally fail to detect their genuinely vulnerable citizens and/or misrecognize specific groups. The district plans referring to urban transformation typically involve changes in the built urban environment, such as reactivation of underutilized spaces, NBSs for multifunctional greening and bluing, and the design of public parks without clearly considering the distribution of these changes and their potential outcomes that may exacerbate existing injustices. These changes in the urban built environment occur in the same temporal and spatial frames, but they do not affect the same urban groups and communities. Consequently, these changes carry the risk of increasing existing disadvantages for vulnerable urban populations. Instead, the municipalities focus on a municipal social-aid approach to address urban vulnerabilities by recruiting the most socio-economically vulnerable groups for temporal municipal service works.

Landscape urbanism, such as agricultural plots and increased urban greening, is the most articulated land-use policy in the selected plans to address urban vulnerabilities. Yet, such approach is in limbo with the current urban development and land-use planning that are designed for the benefits of private developers for lucrative residential projects. Urban development projects have been highly profitable and the major economic growth engines in Turkey, and urban green spaces and agricultural spots in the city centers are often easily given up by the public authorities in favor of private developers. For decades, many scholars have documented how these development plans in Turkey have perpetuated injustices due to forced evictions of low-income urban groups (Karaman, 2014; Lovering & Türkmén, 2011; Yazar & York, 2023). The interviews also reveal that the district councils consider the local climate and sustainability plans and policies, but do not necessarily adopt or apply them. One of the main reasons behind the lack or looseness of applicability of these policies and plans is that, generally, these plans are not directly approved by the district councils, and thus are not legally obligatory. Although not surprising, these findings underscore how land-use policy dealing with climate vulnerabilities tends to favor certain advantaged groups over vulnerable communities (Anguelovski et al., 2016; Harlan et al., 2019).

Our findings also show that ‘*tokenism of justice*’ (Luger et al., 2023), in which justice and equity is mentioned but the municipal workers through their already established and well-connected CSOs measure and decide how to address the identified vulnerabilities, without including community members in the policymaking. Such tokenism connotes the same notions of sustainability fixes or greenwashing (Manteaw, 2008). Lack of representation of the identified vulnerable groups, such as a form of association, is highlighted as the main reason why the procedural justice aspect is routinely glossed over during the planning process. The hidden nature of these safe networks between the district municipalities and the established civil society groups maintains the status quo through the exclusivity of meetings and limited public communication, which is clearly a strategic decision made by districts to keep a shared understanding amongst stakeholders within the networks, and to prevent resistance. Tokenism of justice, therefore, makes responsive land-use policy and planning for climate change and justice ‘post-political’, thereby overlooking the negative consequences of technocratic sustainability fixes (Swyngedouw, 2010).

6. Conclusion

For land-use policy addressing climate change in an urban context to be responsive, it is necessary to increase the ability of local governments to adjust to climate-related challenges by developing and implementing alternative visions to the existing urban infrastructure. Socio-demographic and spatial vulnerabilities vary in each city, and these vulnerabilities must be considered when adopting (or developing) climate and sustainable plans and actions. The results from the nine cities of Turkey reveal that the local governments are overly reliant on green infrastructure investments as a land-use policy to tackle with the impacts of climate change, despite the multi-layered urban vulnerabilities and climate injustices located in these cities. Thus there is a risk of reproducing urban vulnerabilities over time and across multiple urban spaces that are reinforced by inadequate policy tools and actions. Importantly, the nested hierarchy of urban vulnerability raises particular concerns on the ways in which land-use policies create and perpetuate the existing urban planning, political and social processes that exacerbate urban vulnerabilities especially among certain urban groups and communities. Against this backdrop, this study’s findings on the way urban vulnerabilities are categorized and prioritized in the climate and sustainability action plans can contribute to paying closer attention to unpacking intersectional marginalization and urban planning amid climate change.

Our findings also suggest that local policymakers must urgently alleviate climate-change driven extreme weather events through effective urban policies and actions. There is no a panacea for finding the right land-use policy to address urban vulnerabilities and injustices embedded within them. Yet, local climate and sustainability action plans must be orchestrated by location-specific actors to overcome socio-spatial issues within their communities. Consequently, the interconnected and multilayered nature of urban vulnerabilities cannot be understood without closely examining location-specific socio-demographic, political, economic, and infrastructural contexts. Identifying the multiple aspects of urban vulnerabilities, along with their commonalities and differences, is important for formulating in-situ land-use planning and actions that are comprehensive and holistic enough to embrace climate justice in urban planning. Overall, this study underscores the importance of in-situ and responsive land-use planning that is inclusive, just, and intersectional in addressing the impacts of climate change in urban areas.

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Appendices

Appendix A

Table A1. Description of the documents analyzed and coded for this study.

Identified codes	Analyzed action plan	Associated organizations
D1	Handbook for GHG Mitigation and Urban Footprint Inventory Analysis (2020)	Akcadag District Municipality
D2	Sustainable Energy and Climate Action Plan (2020)	Avcilar District Municipality
D3	Sustainable Energy Action Plan (2017)	Cankaya District Municipality
D4	Climate Adaptation Action Plan (2018)	Kadikoy District Municipality
D5	Sustainable Energy and Climate Action Plan (2021)	Karsiyaka District Municipality
D6	Sustainable Energy Action Plan (2021)	Nilufer District Municipality
D7	Sustainable Energy and Climate Action Plan (2022)	Sisli District Municipality
D8	Sustainable Energy and Climate Action Plan (2021)	Tepebasi District Municipality
D9	Climate Change Action Plan (2018)	Yuregir District Municipality

Appendix B

Table B1. Description of interviewee's sectors and positions.

Identified codes	Interviewed organizations	Interviewees' occupation
I1	Akcadag District Municipality	Officer, District Municipality
I2	Avcilar District Municipality	Officer, District Municipality
I3	Cankaya District Municipality	Officer, District Municipality
I4	Kadikoy District Municipality	Officer, District Municipality
I5	Karsiyaka District Municipality	Officer, District Municipality
I6	Nilufer District Municipality	Officer, District Municipality
I7	Sisli District Municipality	Officer, District Municipality
I8	Tepebasi District Municipality	Officer, District Municipality
I9	Yuregir District Municipality	Officer, District Municipality