Incorporating climate justice into adaptation planning: The case of San Francisco

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A R T I C L E   I N F O

A B S T R A C T

There is growing pressure for cities to plan for and take action on climate change in equitable and just ways. Scholars, however, continue to debate what justice looks like in practice, and cities struggle to plan for and implement climate justice. This article investigates the case of San Francisco, a forerunner in climate action and a city experiencing profound inequality. Our research employs an analytical framework that assesses how and to what extent climate justice is incorporated into climate adaptation planning. This study analyzes 20 years of adaptation efforts in San Francisco and is informed by interviews with city planners and agency staff. Our research has found that San Francisco's approach to climate planning has shifted in recent years from focusing primarily on technology and science to addressing concerns of justice and the needs of residents. While San Francisco has made efforts to develop climate justice plans, further inquiry is needed to study the challenges of fully integrating climate justice into implementation. The insights gained from this case of San Francisco and our analytical framework can inform future urban climate action plans and further the debate around climate justice in cities from the Global North.

1. Introduction

With climate change encroaching on our cities, planners and practitioners have taken on the daunting task of preparing for extreme heat, drought, wildfires, rising seas, and other growing climate risks. The question remains: how can cities adapt to climate change fairly (Rosenzweig et al., 2015; Romero-Lankao et al., 2018; Long & Rice, 2019; Bulkeley, 2021; Hughes, 2020; Swanson, 2021)? The United Nations Intergovernmental Panel on Climate Change (IPCC) reported in 2023 that there are uneven effects of climate change and critical roles that justice plays in the success of urban climate adaptation (Dodman et al., 2022; Mohtat & Khirfan, 2021).

Urban adaptation is how city governments plan and implement efforts to adjust to the actual or expected hazards caused by climate change. While city adaptation planning has begun to add climate justice to its planning, many cities across the Global North still work under technocratic and top-down approaches to climate change (Camponeschi, 2021; Fitzgibbons & Mitchell, 2019; Grove et al., 2020). On the other hand, with growing awareness of the severe threat that climate change has on vulnerable populations, more cities are accepting that

there is a need to prioritize people and justice (Bulkeley, 2021; Fiack et al., 2021; Long & Rice, 2019; Romero-Lankao et al., 2018; Rosenzweig et al., 2015; Sultana, 2022; Ziervogel et al., 2017). Nonprofits and community-based organizations may be included in planning but are not always included in decision-making or final solutions (Shi, 2021). At the same time, scholars have also found that urban adaptation can exacerbate and further entrench injustice in the form of exclusionary practices or undesirable impacts (Anguelovski et al., 2016; Anguelovski et al., 2020; Keenan et al., 2018; Shokry et al., 2020; Zografos et al., 2020). Thus, if equity and justice are not integrated early into climate policy and action, adaptation can lead to maladaptation and reinforce existing inequalities in cities (Shi & Moser, 2021; Chu et al., 2019; Meerow et al., 2016; Robin and Broto, 2021; Schipper, 2020; Forsyth & McDermott, 2022).

In recent years, studies have shown that climate justice is increasingly becoming a focus internationally as cities in the Global North and South attempt to address the equitable distribution of adaptation resources and inclusive planning processes (Chu & Cannon, 2021; Henrique & Tschakert, 2021). However, there is a need to understand better how cities have attempted to be more inclusive, equitable, and just

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through a qualitative analysis of specific and in-depth examples (Juhola et al., 2022). This research contributes to the growing field of urban climate justice by providing concrete examples and a clear methodology to assess how cities can integrate principles of justice into planning efforts. In doing so, this article advances the potential for city scholars and practitioners across the globe to evaluate existing adaptation efforts and pursue climate planning in a justice-based way.

Our research employs a case-study approach to analyze adaptation planning efforts in San Francisco (United States), assessing how the local government approaches three dimensions of climate justice: distributive, procedural, and recognition. We focus on San Francisco as it is considered a forward-thinking city and a leader in planning for climate change (Ekstrom & Moser, 2014; van der Heijden, 2021). San Francisco is home to a prosperous tech industry as well as a progressive liberal government that has prioritized sustainable and inclusive planning (Pinto et al., 2018; Solis, 2017). At the same time, extreme inequality, environmental injustice, and housing costs are of continued concern in San Francisco (Lang et al., 2016). This juxtaposition of good intentions and deep historical problems of injustice brings to light how complex are social, environmental, and climate justice issues.

San Francisco's progressive climate policies, socio-economic disparities, technological innovation, and collaborative governance make it a compelling case study for examining the intersection of climate planning and equitable adaptation. By analyzing the evolution, contributing factors, and challenges of San Francisco's climate justice planning, researchers and policymakers can gain insight into potential paths forward and apply them to other urban areas facing similar challenges. Researchers, practitioners, and activists can benefit from a deeper examination of how the city and County of San Francisco address climate justice and the barriers they encounter. Our research centers around two questions: 1) How has climate justice evolved in San Francisco's urban adaptation planning? and 2) How and to what extent does the city incorporate the three dimensions of climate justice into adaptation planning?

To answer these questions, we examined current climate justice plans and the last 20 years of climate planning in San Francisco. Past scholarship on climate justice has been based primarily on literature assessments, multi-city, or meta-analyses, often lacking a historical perspective (Chu & Cannon, 2021; Coggins et al., 2021; Fiack et al., 2021). An empirical and case-study analysis like our study of San Francisco can provide a closer look at how cities plan for climate change and how they integrate dimensions of justice into adaptation. Such a study may guide cities as they view climate planning through a climate justice lens. To better understand how climate justice is incorporated into San Francisco's climate action, we combined an analysis of planning and policy documents from the last two decades with 25 interviews with city staff and members of local community-based organizations (CBOs). Moreover, this article provides a framework to assess how cities incorporate justice in urban adaptation planning.

Section 2 outlines the theoretical foundation that supports climate justice, while Section 3 provides an overview of our methodology and analytical framework. Section 4 examines San Francisco's current socio-economic situation and climate change effects. In Section 5, we present the findings of our analysis, shedding light on past and current climate planning efforts dating back to 2004. Finally, Section 6 discusses these findings in relation to the ongoing debate around climate justice and presents suggestions for future research and policy.

2. Literature review

From a theoretical perspective, climate justice addresses how planning for climate change has ethical and practical implications. Climate justice scholars emphasize a need for equitable distribution of adaptation strategies, resources, and benefits to ensure that vulnerable communities in cities are not disproportionately affected (distributive justice) (Schlosberg, 2004). This approach calls for an inclusive

decision-making process that recognizes the importance of the perspectives of urban residents, particularly marginalized groups, in developing adaptation policies and subsequent actions (procedural justice). Ultimately, climate justice in urban adaptation seeks to rectify historical inequalities (justice as recognition). This section explains these central theories that underpin climate justice literature, broken into three distinct dimensions: distributive, procedural, and justice as recognition (Bulkeley et al., 2014; Schlosberg, 2004, 2007).

Distributive climate justice considers climate change's uneven impact on marginalized and disenfranchised groups and calls for equitable distribution and access to climate solutions. For example, inequitable distribution of climate-related burdens can result from climate policies, such as emission reductions or climate gentrification (Anguelovski et al., 2016; Carley & Konisky, 2020). Additionally, distributive injustice is evident in uneven allocations of environmental goods like parks, green infrastructure, and transportation (Fiack et al., 2021; Meerow et al., 2019; Schlosberg, 2012). When an unjust distribution of goods and allocations is unavoidable, restoration in the form of compensation for the harm caused is needed (Hughes & Hoffmann, 2020; Schlosberg & Collins, 2014).

Procedural justice looks at the role of decision-making, the planning process, and representation in governance (Holland, 2017; Young, 1990). Procedural justice, in the context of climate adaptation, emphasizes the importance of inclusive and people-centric planning that calls for the participation of the urban poor, the vulnerable, and other marginalized stakeholders (Chu et al., 2019; Chu & Cannon, 2021; Shi et al., 2016). Previous research has found that high levels of participation lead to more transformative urban adaptation in the long run (Cattino & Reckien, 2021). Moving beyond simple consultation toward an approach to justice based on recognition can further strengthen procedural justice in climate adaptation (Bulkeley et al., 2013; Nussbaum, 2011; Schlosberg, 2012).

Recognition as a form of justice is a concept rooted in a recognition of how urban development, policy, and a concentration of political and economic power with the influential minority have historically marginalized specific populations. When urban development and climate policy are grounded in justice as recognition, they acknowledge historical disenfranchisement based on various factors and bring previously marginalized groups into the decision-making process (Juhola et al., 2022). Marginalized groups can be based on race, income, gender, sexuality, ability, or age. The process of untangling past and present injustices brings previously disenfranchised actors into the process of finding solutions by acknowledging them as valid participants (Chu & Michael, 2019). Justice in the form of recognition emphasizes the importance of local knowledge, values, and culture. Although past urban adaptation interventions may have considered the experiences of those most impacted by climate change and highlighted a need for more inclusive approaches that prioritize justice and recognition (Schlosberg, 2004; Sultana, 2022), in a context of impending climate emergency, those efforts should be intensified and generalized.

In the past, climate justice scholarship has focused primarily on distributive and procedural justice, emphasizing the uneven distribution of climate-related 'goods' and 'bads' and critiquing top-down planning and unjust decision-making processes (Anguelovski et al., 2019; Forsyth, 2018; Holland, 2017; Mikulewicz, 2019; See & Wilmsen, 2022). Albeit evolving, existing literature at the intersection of climate justice and urban adaptation is overly reliant on concepts of distributive and procedural justice (Fiack et al., 2021). Cities in the United States (Chu & Cannon, 2021), Europe (Juhola et al., 2022), South America (Bulkeley et al., 2013), and Asia (Fitzgibbons & Mitchell, 2019) share a common pattern whereby adaptation plans incorporate aspects of distributive and procedural justice but are limited in their reference to justice that is restorative or based in recognition. Thus, there is a need to focus more on cultural, social, and political recognition in climate planning and action (Rice, 2014; See & Wilmsen, 2022; Meerow et al., 2019). Scholars increasingly emphasize the importance of recognition as a form of

justice, since there is a growing consensus that without recognition, neither authentic procedural nor distributive justice is possible (Colenbrander et al., 2018; See & Wilmsen, 2022; Hourdequin, 2016; Schlosberg, 2012).

While empirical research has demonstrated that many cities' climate adaptation efforts lack an emphasis on justice and, in particular, recognition, we do see a recent surge of climate action plans that address racial, social, and economic injustices. For example, Boston's Climate Action Plan (City of Boston, 2021) assesses climate impacts and solutions through a racial justice framework, while Dallas' climate planning efforts emphasize the importance of racial healing and transformative change (Chu & Cannon, 2021; City of Dallas, 2020). Other frontrunner cities like New York City and Barcelona are taking distinct steps to address social, economic, and racial equity and justice issues in their climate plans and policies. New York City (NYC) took on climate justice in OneNY 2050, its updated strategic plan from 2019. OneNY's goals and strategies highlight the importance of equity and fairness by focusing on inclusive economic growth, equity, excellence in education, and community health (City of New York, 2022). Moreover, NYC relied on democratic processes, participatory practices, and online tools to support procedural justice (Chu & Cannon, 2021; Foster et al., 2019).

Similarly, Barcelona's 2018 Climate Plan and 2020 Climate Emergency Declaration turned to co-production and digital platforms to engage the community and facilitate discussions and actions in the name of climate justice (Satorras, 2022; Satorras et al., 2020). Barcelona has also shared its climate justice practices by leading a subgroup within the C40 network (a global network of 100 mayors of international cities committed to confronting the climate crisis) to exchange experiences on energy poverty, inclusion of vulnerable groups, and community resilience to heat. The city also hosted the first Inclusive Climate Action Academy (C40, 2022).

Studies show that a racial justice approach to climate adaptation occurs more often in the United States than other countries. Scholars attribute this fact to America's long legacy of racial injustice and the civil rights and environmental justice movements starting in the mid-1960s (Shi, 2021; Schlosberg & Collins, 2014). However, cities in Europe and South America also increasingly consider socio-economic, demographic, and cultural challenges and benefits as they plan for climate change (Yang, Lee, & Juhola, 2021; Araos et al., 2021; Satorras et al., 2020). Now that scholars and governments acknowledge the importance of justice in climate action, they are developing roadmaps to help integrate climate justice into planning and implementation (Fitzgibbons & Mitchell, 2019). There is a need to understand the nuances of climate justice and examine how cities integrate all three dimensions of justice into climate planning. In particular, empirical research connecting urban adaptation and the three pillars of climate justice would provide a roadmap to assess and achieve equitable, inclusive, and just climate action (Mohtat & Khirfan, 2021). Cities would benefit from examples of how climate justice can be successfully incorporated into planning while learning to avoid the pitfalls and challenges of other municipal governments (Chu & Cannon, 2021).

3. Methodology

This article analyzes 17 plans and policies on climate action developed in the past two decades by the City of San Francisco, California. The article is also informed by 25 interviews with city staff and local CBOs conducted in 2021 and 2022. The plans used in this study were adopted by the city between 2004 and 2022 and are outlined in Figs. 1 and 2 in Section 5. These documents were selected based on their focus on climate change, resilience, and adaptation and their central role in setting the city's visions, goals, and strategies. In order to focus on the government-led adaptation efforts within the city of San Francisco, we reviewed and analyzed only documents published by the City of San Francisco. While government agencies outside of San Francisco have adaptation and climate plans that address the broader Bay Area, we

limited the scope of our study to the geography and governance of San Francisco. This narrow scope allows for a more thorough analysis grounded in a particular urban context and history, resulting in an understanding of broad patterns, trends, or dynamics that may apply to other urban areas. A document or plan was deemed relevant if it addressed actions and strategies targeted specifically to San Francisco and explicitly stated climate change as a primary motivation for the plan's creation. Documents had to be published and completed before the date of analysis and were available online for public access.

Documents were systematically examined for their reference to justice, in particular, the dimensions of procedural, distributive, and recognition. In order to analyze the extent to which San Francisco's climate adaptation plans incorporate climate justice, we developed an analytical framework (Table 1) informed by existing studies examining urban climate plans through this lens (Chu & Cannon, 2021; Meerow et al., 2019). Table 1 outlines indicators assessed to examine the 17 documents through a holistic analysis of justice and includes the three dimensions of justice: distributive, procedural, and recognition as justice. We evaluated the plans based on the presence of each dimension of justice by determining the number of indicators present in a plan (see Table 1). For each indicator present, the plan received a point, culminating in a total score for each dimension and, subsequently, a total score for the plan's level of incorporation of climate justice.

An examination of distributive justice in these documents focuses on how the City prioritizes funding and addresses the uneven distribution of resources, funding, and access. On the other hand, an analysis of procedural justice considers if and how public agencies conduct community engagement and outreach. Lastly, recognition as a form of justice is assessed based on the plans' acknowledgement of historical and systematic discrimination and strategies to address these injustices. Themes and patterns related to climate justice were analyzed through Atlas.ti using a coding system informed by the analytical framework in both inductive and deductive phases.

This article also benefits from an analysis of 25 semi-structured interviews conducted between October 2021 and January 2022 with members of government agencies and CBOs working on climate planning, adaptation projects, and social and environmental justice in San Francisco. Interviews with government agencies and community organizations attempted to gain a better understanding of climate change adaptation and climate justice in San Francisco. An overview of the interviews' areas of inquiry and example questions is presented in Table 2. Due to the COVID-19 pandemic, all interviews were conducted online.

To examine the City of San Francisco's approach to climate justice, we interviewed representatives from city agencies (n = 11) having an impact on climate adaptation planning, projects, and policies in San Francisco. We selected the agencies who authored or played a significant role in creating the planning documents mentioned above. Agencies included the Port of San Francisco, the Recreation and Parks Department, the Department of Public Health, the Office of Resilience and Capital Planning, the Municipal Transportation Agency, and the Department of the Environment. Over half of these agencies are landowners and build or maintain city infrastructure. The other agencies work with planning, permitting, and coordinating climate change projects, plans, and policies.

In addition to city staff, we interviewed participants working for community-based organizations (CBO) (n = 14) to understand the engagement between governmental agencies, private groups, and citizens. The interviews helped us understand the processes in action, how justice was or was not incorporated into the process, and to better view the planning landscape from a non-governmental perspective. These organizations were selected because they are active and explicit about their climate justice advocacy. These groups conduct environmental education, research, and philanthropic work. The CBOs selected vary in size and include neighborhood community activism, regional advocacy, urban greening, workforce development, and philanthropy. The interviews were recorded, transcribed digitally, and analyzed in Atlas.ti
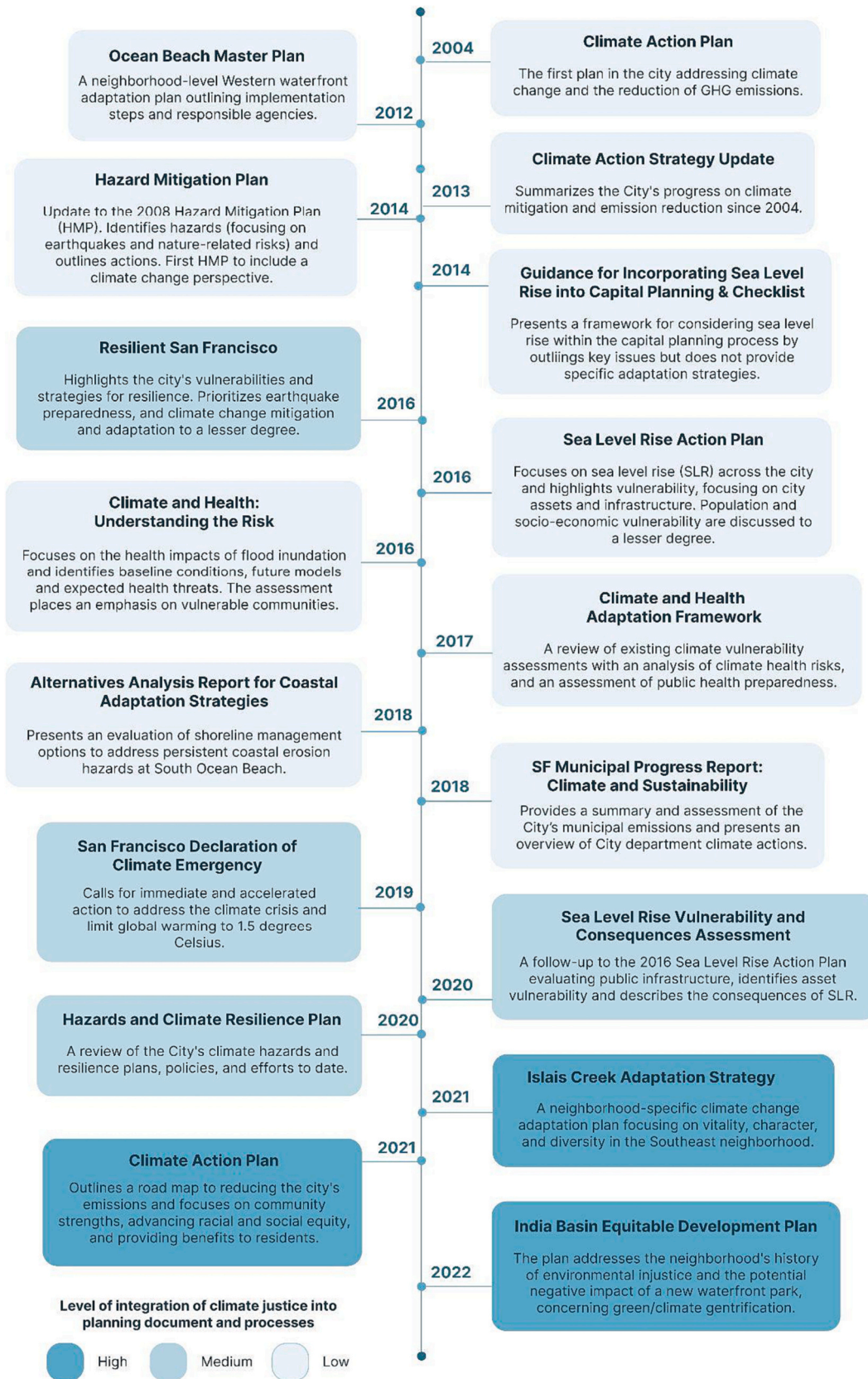
Ocean Beach Master Plan

A neighborhood-level Western waterfront adaptation plan outlining implementation steps and responsible agencies.

2004 **Climate Action Plan**

The first plan in the city addressing climate change and the reduction of GHG emissions.

2012

Hazard Mitigation Plan

Update to the 2008 Hazard Mitigation Plan (HMP). Identifies hazards (focusing on earthquakes and nature-related risks) and outlines actions. First HMP to include a climate change perspective.

2013 **Climate Action Strategy Update**

Summarizes the City's progress on climate mitigation and emission reduction since 2004.

2014

2014 **Guidance for Incorporating Sea Level Rise into Capital Planning & Checklist**

Presents a framework for considering sea level rise within the capital planning process by outliings key issues but does not provide specific adaptation strategies.

Resilient San Francisco

Highlights the city's vulnerabilities and strategies for resilience. Prioritizes earthquake preparedness, and climate change mitigation and adaptation to a lesser degree.

2016

2016 **Sea Level Rise Action Plan**

Focuses on sea level rise (SLR) across the city and highlights vulnerability, focusing on city assets and infrastructure. Population and socio-economic vulnerability are discussed to a lesser degree.

Climate and Health: Understanding the Risk

Focuses on the health impacts of flood inundation and identifies baseline conditions, future models and expected health threats. The assessment places an emphasis on vulnerable communities.

2016

2017 **Climate and Health Adaptation Framework**

A review of existing climate vulnerability assessments with an analysis of climate health risks, and an assessment of public health preparedness.

Alternatives Analysis Report for Coastal Adaptation Strategies

Presents an evaluation of shoreline management options to address persistent coastal erosion hazards at South Ocean Beach.

2018

2018 **SF Municipal Progress Report: Climate and Sustainability**

Provides a summary and assessment of the City's municipal emissions and presents an overview of City department climate actions.

San Francisco Declaration of Climate Emergency

Calls for immediate and accelerated action to address the climate crisis and limit global warming to 1.5 degrees Celsius.

2019

Sea Level Rise Vulnerability and Consequences Assessment

A follow-up to the 2016 Sea Level Rise Action Plan evaluating public infrastructure, identifies asset vulnerability and describes the consequences of SLR.

2020

Hazards and Climate Resilience Plan **2020**

A review of the City's climate hazards and resilience plans, policies, and efforts to date.

2021 **Islais Creek Adaptation Strategy**

A neighborhood-specific climate change adaptation plan focusing on vitality, character, and diversity in the Southeast neighborhood.

2021

Climate Action Plan

Outlines a road map to reducing the city's emissions and focuses on community strengths, advancing racial and social equity, and providing benefits to residents.

India Basin Equitable Development Plan

The plan addresses the neighborhood's history of environmental injustice and the potential negative impact of a new waterfront park, concerning green/climate gentrification.

2022

Level of integration of climate justice into planning document and processes

High   Medium   Low

Fig. 1. San Francisco climate change plans (2004–2022). Source: own elaboration.

	Distributive	Procedural	Recognition

Climate Action Plan 2004
Emphasizes outreach and education of SF residents but no discussion of equity, justice, or the uneven burdens and consequences of climate change. Engagement: no mention.

Ocean Beach Master Plan 2012
Focuses on infrastructure and has little reference to equity or justice. Engagement: 3 workshops, planning advisory committee, and soliciting community input and feedback.

Climate Action Strategy Update 2013
Acknowledges vulnerable populations and the role of race, income, and other demographics in SF's climate vulnerability. Engagement: input from 5 community panels.

Hazard Mitigation Plan 2014
First Hazard Mitigation Plan to mention climate change and identifies general populations and locations at risk of nature-related hazards. Has no mention of equity or justice. Engagement: posted information about the plan and provided public comment opportunities.

Guidance for Incorporating Sea Level Rise into Capital Planning 2014
Includes no discussion or mention of equity, justice, or the uneven burdens and consequences of climate change. Engagement: no mentioned.

Resilient San Francisco 2016
Little mention of equity, justice, or climate change's uneven impacts or burdens. Emphasizes community resilience, not in regards to climate change. Engagement: 30 agencies and 50 community and private sector stakeholders.

Climate and Health: Understanding the Risk 2016
Addresses (in)equity in the form of uneven distribution of climate related flooding. The assessment places an emphasis on socioeconomic and demographic vulnerability.

Sea Level Rise Action Plan 2016
Includes a section on vulnerability focusing on city assets and infrastructure, not population or socio-economic vulnerability. Engagement: community feedback and project-based outreach.

Climate and Health Adaptation Framework 2017
The plan includes a comprehensive look at how climate impacts neighborhoods differently in SF and includes a specific goal to improve health equity with little detail as to how. Engagement: workshops and outreach.

Alternatives Analysis Report for Coastal Adaptation Strategies 2018
The plan reviews shoreline vulnerability to sea level rise (SLR) and includes a series of strategies to adapt the West-side beaches. There is no mention of social or economic vulnerability. Engagement: workshops and outreach.

SF Municipal Progress Report: Climate and Sustainability 2018
Acknowledges socioeconomic and historical injustice, stating, "people of color within San Francisco fare worse than their white counterparts" (pg. 3). Identifies actions that advance equity but lacks the specificity of how these actions address justice. Engagement: no mention.

San Francisco Declaration of Climate Emergency 2019
Declares a climate emergency in San Francisco and requests immediate action. Stresses the uneven burden of the climate crises and calls to apply an equity lens to climate work. Engagement: no mention.

Sea Level Rise Vulnerability and Consequences Assessment 2020
Includes a social equity lens and examines the "effects [of SLR] on communities and the services on which they rely, with a focus on disproportionate impacts due to existing inequalities" (pg. 25). Engagement: no mention

Hazards and Climate Resilience Plan 2020
Equity informs strategies by "working to eliminate racial or social disparities, empowering people to reduce vulnerability" (pg. 3). Engagement: 5 workshops (1 on racial, social, and environmental justice) with 60+ CBOs.

Islais Creek Adaptation Strategy 2021
Addresses climate justice, stating "racial injustice and disinvestment have unfairly disenfranchised this environmental justice community, which suffers disproportionate pollution, social, economic, and health burdens, and impacts of climate change" (pg. 2). Engagement: Multiple community-lead meetings were held and priorities and assets were identified and informed by residents.

Climate Action Plan (CAP) 2021
Strategies focus on community strengths and are evaluated with a "racial and social equity assessment tool." Engagement: CBOs were hired as consultants, and outreach efforts included surveys, workshops, public comment, social media, and webinars.

India Basin Equitable Development Plan (EDP) 2022
Addresses climate change adaptation, transportation, arts and culture, workforce, public health, youth, and housing. Engagement: co-created process between agencies and a local CBO with a Leadership Committee.

Fig. 2. City of San Francisco's approach to the three dimensions of climate justice. Source: own elaboration. Note: The circle sizes in the figure below indicate the extent to which the different dimensions of justice are incorporated into the plans. The smaller the circle, the fewer indicators of justice. Conversely, the larger the circle, the more ways justice is indicated. This analysis is based on our framework outlined in Section 3, Table 1.

Table 1
Incorporation of climate justice into urban climate adaptation planning — an analytical framework.

Dimension of justice	Indicator
Distribution Acknowledges the uneven distribution of the impact of climate change and strives for equitable distribution of opportunities and resources regardless of an individual's or group's identity and background.	Identifies how climate change impacts groups differently and how or if resources are equitably or inequitably distributed across the city and outlines strategies to enhance equitable resource allocation. Acknowledges inequitable access to infrastructure and/or provides solutions focusing on access to safe and green living environments and adequate public facilities in extreme climate events. Acknowledges inequitable economic opportunities and presents strategies to enhance equity of economic opportunities.
Procedural Creates processes designed for inclusive decision-making. The processes incorporate diverse voices, values, and perspectives and transparent and accountable procedures.	Describes how different public members are engaged in the planning process or initiatives. Creates processes that are broadly participatory and representative of diverse interests. Strategies include providing general communication of outreach materials, surveys, and questionnaires. The process also includes conducting workshops and forming advisory committees of diverse voices within the community. Processes are designed to build partnerships and increase widespread participation in decision-making.
Recognition Recognizes that certain groups are historically and structurally vulnerable and intergenerationally disadvantaged regarding socioeconomics, culture, or race.	Recognizes systemic and entrenched inequalities based on race, ethnicity, income, gender, ability, and sexuality. Strives to rectify systemic and entrenched inequalities resulting from discrimination (race, ethnicity, gender, ability, and sexuality). Includes strategies to address injustice in ways that are anti-racist, transformative, and socioeconomically empowering.

Source: own elaboration, based on Chu and Cannon's (2021) analysis of equity, inclusion, and justice in urban climate adaptation and Meerow et al.'s (2019) equity assessment in urban resilience planning.

for qualitative assessment of thematic codes and recurring themes.

4. San Francisco: wealth, inequality, and climate vulnerability

The city of San Francisco (California, USA) has a population of 815,201 (2021) and is divided into 11 districts. It is surrounded by the greater metropolitan Bay Area, with a population of 7 million (U.S. Census Bureau, 2020). The city is the second most dense city in the United States, with 18,633 inhabitants per square mile (ibid.). As of 2021, San Francisco's population was 43.4 % white, 34.4 % Asian, and 15.4 % Latino, and 5.2 % Black or African American (U.S. Census Bureau, 2020).

San Francisco has benefited economically from two large technology booms from Silicon Valley, 30 miles south. In the past 20 years, San Francisco has become one of the wealthiest cities in the United States (Walker, 2018). The influence of the technology sector is not simply because of its proximity to Silicon Valley. Over the years, the City of San Francisco has welcomed numerous technology companies (such as Twitter, Uber, Airbnb, and Salesforce) providing tax incentives for corporate offices, making public space improvements, and offering lifestyle amenities tailored to high-income earners (Guzman & Stern, 2015; Walker, 2018).

Table 2
Overview of interview questions and areas of interest.

Interview sections	Example questions	
	Public agencies	Community organizations
Background *To understand the overall work of interviewees and the context of their work.*	How has the city's focus on climate resilience evolved over the years?	How would you describe your organization's work?
Climate adaptation *To focus on adaptation in San Francisco and what are the city's most pressing risks and challenges related to climate change.*	In what ways does your agency address adaptation, and what have been the driving factors for this approach?	What does governmental-led adaptation to climate change look like in San Francisco and, more specifically, in your neighborhood?
Climate justice *To highlight the ways issues of equity and inclusion are addressed in adaptation efforts.*	How have social issues been integrated into the climate change and adaptation agenda?	How have you seen issues of equity and inclusion addressed in city-led climate adaptation planning projects?
Partnerships & collaboration *To examine how city agencies work with community-based organizations.*	Who do you consider the most important partners in creating a resilient and prepared city in the face of climate change? How do/did you work with them (if at all)?	In what ways has your organization engaged in or taken action in response to city-led climate adaptation projects and planning efforts?

Alongside increased wealth, San Francisco has seen a rise in homelessness, income disparity, housing costs, and development challenges (Chapple, 2017). The average household income in San Francisco is $160,396, and approximately 10 % of the population lives below the poverty line (ibid.). Because of the city's high income levels, the U.S. federal government defines "low income" in San Francisco as $82,200 for an individual and $117,400 for a family of four (2018). In comparison, the national definition of low income in the United States for the same year is $12,140 for an individual and $25,100 for a family of four (U.S. Department of Health and Human Services, 2018).

As the technology industry flourished in San Francisco and the Bay Area, high-income earners flooded the housing market, leading to some of the most expensive housing in the country. The median rental costs in the city hover around $3525 per month, and a median house value of $1.15 million (U.S. Census Bureau, 2020). It has become apparent in San Francisco that the income gap, the housing crisis, and growing disparities have led to displacement and evictions. There has been a mass exodus of the middle class and Black, Indigenous, and other BIPOC (Black, Indigenous, People of Color) communities (Chapple, 2017; Maharawal, 2017).

The city's increasing economic, social, and racial inequities may be exacerbated by enhanced climate change risks, including extreme heat, sea-level rise, storms, flood inundation, wildfire, and drought (San Francisco Department of Public Health, 2017). Extreme heat events are of particular concern for vulnerable populations such as San Francisco's growing homeless population, which increased by over 1000 individuals from 2017 to 2019 (San Francisco Office of the Mayor, 2022a), and seniors over the age of 60, which make up 23 % of the population of the city (San Francisco Human Services Agency, 2022). Residents in temporary shelters, totaling 4000 in 2021, are also highly vulnerable to extreme heat due to aging buildings, lack of air conditioning, and limited financial mobility (San Francisco Department of Homelessness and Supportive Housing, 2021). Sea-level rise and coastal and flash flooding are also a concern for San Francisco with its steep hills and proximity to the Bay and the Pacific Ocean. Flooding can damage aging infrastructure, cut off essential transportation routes, and inundate historically toxic shorelines, leading to groundwater contamination in areas that are located in vulnerable neighborhoods (May, 2020).

5. Findings

5.1. San Francisco's history of climate adaptation planning

San Francisco is considered a leader in climate change governance and planning in the United States (Ekstrom & Moser, 2014; van der Heijden, 2021), with early plans dating back to 2004 (Fig. 1). Alongside its progressive politics, San Francisco has a rich social and environmental justice history, which has informed policies, social programs, and innovative use of public space (Contreras, 2019; Robinson, 1995; Stehlin, 2015; Walker, 2018). Its history of activism and community organizing dates back to the 1970s. Environmental activists have remained active and influential in climate justice advocacy and planning (Pezzullo, 2009; Dillon, 2018; Walker, 2018; Solis, 2020).

The City's first plan to address climate change city-wide was the Climate Action Plan led by the Department of Environment in 2004 (see Fig. 1). The Climate Action Strategy Update followed in 2013 and focused on reducing greenhouse gas emissions, improving energy efficiency, offsetting electricity consumption with renewable energy, and transitioning to cleaner transportation options. In 2013, the Rockefeller Foundation selected San Francisco as one of the first 100 Resilient Cities, and the city received funding to create the Office of Resilience and Capital Planning. In 2016, this newly formed Office published Resilient San Francisco, which identifies the City's most pressing challenges, calling for coordination and collaboration to mitigate and adapt to climate change and ensure safe and retrofitted housing (San Francisco Office of Resilience and Recovery, 2016). While the plan was comprehensive and technologically grounded, it lacked an open process and made limited reference to climate justice (Fitzgibbons & Mitchell, 2019).

San Francisco has continued planning for sea-level rise and heat effects over the past decade. In 2016, the Port of San Francisco drafted the Sea Level Rise & Adaptation Study to assess sea-level fluctuations, projections, and impacts. Similarly, the Office of Resilience & Recovery released a Guidance for Incorporating Sea Level Rise into Capital Planning & Checklist (City of San Francisco, 2014), which focused on the physical vulnerability of city-owned assets. To study and further prepare for sea-level rise, the Planning Department published the Sea Level Action Plan (2016) and the Sea Level Rise Vulnerability and Consequences Assessment (2019), while the Public Utilities Commission released the Alternatives Analysis Report for Coastal Adaptation Strategies (PUC, 2018). These plans are technical and often drafted with scientific experts and consultants focusing on infrastructure, municipal buildings, and risk assessments. On the other hand, the Public Health Department has focused its climate work on the impact of extreme heat events in San Francisco and its vulnerable populations (for an evaluation of heat-related plans in the city). With federal Center for Disease Control funding, the Public Health Department partnered with local universities to conduct climate health assessments, including the Climate and Health Adaptation Framework (2017).

Our climate justice analysis of adaptation-related plans, visualized in Fig. 2, results from reviewing climate planning through the lens of climate justice and its three dimensions of distributive, procedural, and recognition (see Section 3 for an overview of our analytical framework and methodology). As shown in Figs. 1 and 2, San Francisco's climate plans before 2019 paid little attention to procedural and distributive justice, and recognition is limited, if nonexistent.

These early plans' strategies, goals, and actions generally acknowledge economic disparities and social inequities. They also recognize the need to engage community members in the planning process. However, there is no discussion of the historical and systemic conditions that created and reinforced these injustices in most plans up to 2018. However, we see a few examples of plans that address justice issues better than others. For example, the Ocean Beach Master Plan, a roadmap published in 2012 for adapting the city's west coast in light of rising tides and flooding, emphasizes stakeholder outreach and participation (City of San Francisco, 2012: p. iv-2). This plan also incorporates distributive justice by stressing the importance of livable streets, affordable housing, and community spaces for the resilience of the City. Resilient San Francisco, published in 2016 by the newly created Office of Resilience and Capital Planning, also recommended inclusive planning and expressed a willingness to address its strategies through a social equity lens. There is no mention in Resilient San Francisco of the strategy's creation process, and it included little reference to climate or environmental justice (S.F. Office of Resilience & Recovery, 2016: p. 10).

While these plans leaned toward a justice-oriented approach to climate adaptation, most climate adaptation efforts in San Francisco, such as the Hazard Mitigation Plan and the Sea Level Rise Action Plan, were more technical and addressed justice inadequately. The first generation of city-led climate change plans, from 2004 to 2018, provided thorough reports on climate threats and showed a commitment to scientifically sound and sustainable solutions. However, those plans make little reference to social equity, environmental justice, or climate justice.

As seen in Figs. 1 and 2, early plans incorporated a low or medium reference to climate justice, and according to our analysis, they rarely presented solutions to address the inequities identified. These plans will sometimes highlight existing inequities and often include public participation. However, their strategies and processes do not recognize or attempt to rectify systemic and entrenched injustices.

5.2. A shift toward justice-oriented climate adaptation planning

Beginning in 2019, San Francisco shifted their approach to climate planning, addressing climate justice, equity, and inclusion. This shift coincided with growing social justice movements in the United States sparked by the Black Lives Matter movement of 2013. The national and local outcry against unjust practices has spurred a shift in San Francisco's planning, leading to a reassessment of internal and external city practices. "It is relatively new," a staffer at the Department of the Environmental commented, "A lot of this erupted in 2019 and 2020, with George Floyd and the Black Lives Matter movement. It was like, okay, we have got to get serious about this" (Interview #13).

In the following years, other events increased awareness that climate change planning needed to address social inequities. Some of those other events included disparities revealed by the COVID-19 pandemic, an intensification of climate-related inequality, and an explosion of global climate movements (Fisher & Nasrin, 2021; Mattar et al., 2021; Ranganathan & Bratman, 2019).

This shift in climate planning is part of the third "wave" of climate urbanism, which connects urban climate politics to social justice issues (Bulkeley, 2021). Many interviewees pointed out that this shifting focus was also a result of recent real-life climate crises such as frequent wildfires, heat waves, and flooding. These climate events hit frontline communities hardest. Climate change as an abstract concept is shifting so that "within San Francisco, people are concerned about the climate in a way that they have not been before" (Interview # 17). These recent weather events and their uneven impact put questions of climate justice to the forefront in the minds of planners and city officials (Interviews #1, #3, #5, #7, #21, and #24). Since 2019, planning and policy in San Francisco have made intentional steps toward equity and justice across all departments, as a Recreation and Parks Department project manager emphasized: "We have, especially in recent years, really taken very seriously our commitment to equity" (Interview #19).

In February 2019, San Francisco's Board of Supervisors took their most unequivocal stance on climate change, declaring a climate emergency. The declaration stated that the climate emergency process should consider "investments in working-class, low-income communities and communities of color historically and disproportionately impacted by pollution, high unemployment, poverty, and environmental injustice" (City of San Francisco, 2019: pg. 3). With this stated intention, the City

has made an official commitment toward more equitable and just climate planning and adaptation.

This move to incorporate equity into planning efforts, starting with a reflection of current policies, is partly due to legislation, guidance, and funding from the State of California. As of 2016, the State (through Senate Bill No. 1000) requires cities in California to incorporate an environmental justice element or framework into their General Plan.

State law also requires cap and trade funding. Cap and trade is a system that limits emissions from emitters by setting a 'cap' on maximum emissions; companies that exceed the cap are taxed, while companies that cut their emission can sell unused credits. These taxes are collected from major greenhouse gas emitters and are dedicated to local sustainability, green, and climate projects. These funds support City planning efforts and on-the-ground adaptation projects such as wetland restoration and shoreline protection projects in disadvantaged communities (MTC, 2023). Furthermore, tools such as the California Environmental Protection Agency's CalEnviroScreen, a mapping tool identifying communities most affected by pollution, have supported local planning efforts directed at neighborhoods impacted by environmental injustice (CA OEHHA, 2023).

In tandem with state-wide mandates, the Mayor of San Francisco established the Office of Racial Equity, publishing the first phase of the Citywide Racial Equity Framework in 2020 (City of San Francisco, 2020). In compliance with these city and state requirements, the San Francisco Planning Department is developing an Environmental Justice Framework that informs the 2021 Climate Action Plan. This Framework sets goals and actions to advance health for communities of color and low-income residents. A staff member at the Department of the Environment highlighted the connections between city-wide equity efforts and the Department's climate action planning: "There is a lot of really good synergies as we are doing this equitable climate action plan. We are building on relationships and lessons learned over the years engaging with those communities" (Interview #21).

This Framework requires every city department to create an inward-facing plan to address equity internally in order to, as a city planner stated, avoid "exacerbating racial disparities and racial inequities and ensure we are actually getting to the root causes [of inequity] and undoing them" (Interview #18). This process will be followed by an external equity assessment of the city services, programs, and projects (City of San Francisco, 2020).

Our research found that San Francisco's climate plans have, over time, incorporated the various dimensions of climate justice: procedural, distributive, and recognition (see Fig. 2). In 2020, the Office of Resilience and Capital Planning led the planning and engagement process for the Hazards and Climate Resilience Plan. The plan addresses mitigation and adaptation to bridge social justice, sustainability, and disaster recovery gaps. The plan looks beyond physical risks and technological solutions and prioritizes concerns related to unaffordability, social inequity, and the growing population. Moreover, the plan highlights how climate hazards impact different people and discusses social equity in the context of vulnerability, emphasizing the importance of distributive justice. It also acknowledges that vulnerability can be "structurally determined, such as socio-economic status" (San Francisco Office of Resilience and Capital Planning, 2020; pg. 43). However, as we see in Fig. 2, the discussion around socio-economic vulnerability or climate justice does not address recognition as a form of justice.

Our study looks at San Francisco's numerous climate plans and analyzes to what degree each one has incorporated the three elements of justice: distributive, procedural, and recognition. The Department of the Environment put equity and climate justice at the center of its 2021 Climate Action Plan (CAP). The plan focuses on distributive justice by assessing climate action based on social and racial equity. The plan highlights the importance of distributive justice when preparing equitably for climate change and focuses on tenant protection, funding support, and educational resources. The plan includes a discussion on how to promote an equitable transition to all-electric buildings (San Francisco Department of the Environment, 2021). Also, the CAP identifies the decarbonization of San Francisco's buildings as a critical strategy. This 2021 plan aspires to build a just transition by protecting public health and increasing community resilience. Distributive justice is discussed throughout the CAP and emphasized in its key focus areas: energy and building operations, transportation, housing, and health ecosystems.

Procedural justice is also evident throughout the development of the Climate Action Plan (2021). City staff and CBOs collectively shaped the CAP, its strategies, and its focus on procedural and distributive justice and recognizing past and present systemic injustices. According to a planner working on the CAP, the Department of the Environment took a collaborative planning approach, which included contracting with local CBOs, developing an online informational series, and conducting an outreach program that connected with over 200,000 community members through surveys and workshops (Interview #17). One of the organizations partnering with the city was People Organizing to Demand Environmental and Economic Justice (PODER), which has worked with the city since the 1990s to advocate for Latino and vulnerable communities in San Francisco. A staff member at PODER agreed that the city's process for the CAP was an improvement from past efforts, stating: "In my experience, doing this type of work for 20 plus years, the Climate Action Plan had the most intensive and authentic engagement and collaboration with a city department on an initiative" (Interview #2).

Fig. 2 illustrates how the Climate Action Plan (2021) addresses procedural and distributive justice and incorporates strategies and goals to recognize past discrimination and rectify these injustices. The plan acknowledges current and potential climate injustices. It includes actions that call for the co-creation with CBOs of public space and transportation in order "to advance racial and social equity by co-developing plans and projects with BIPOC community members and understanding their needs" (San Francisco Department of the Environment, 2021: p. 90).

Neighborhood-level plans have also progressed in incorporating climate justice. For instance, the Islais Creek Adaptation Strategy, also published in 2021, emphasizes a holistic approach to adaptation planning, emphasizing the importance of equity and even distribution of benefits and risks. As seen in Fig. 2, the strategy incorporates aspects of procedural and distributive justice by prioritizing community definitions of vulnerability and assets needed to be protected. However, indicators of recognition in the Islais Creek Adaptation Strategy process and plan remain limited.

The 2022 India Basin Equitable Development Plan (EDP), another neighborhood-level plan, was inspired by the 11th Street Bridge project in Washington, D.C. (Building Bridges Across the Bridge, 2022). The India Basin Equitable Development Plan takes a long-term, justice-oriented approach to climate adaptation and green development. The city worked with CBOs and stakeholders to draft the EDP to accompany the renovation of the India Basin Waterfront Park, a key area for sea-level rise adaptation in Bayview-Hunters Point. This neighborhood has historically suffered disinvestment and environmental injustices.

The plan is the product of a collaborative planning effort to address concerns around the area's legacy of environmental injustice and threats of displacement and gentrification. Like the Climate Action Plan, the EDP has taken steps from the start to bring local CBOs into the process early on and hire some as consultants. The city convened a Leadership Committee to elevate and reflect diverse perspectives on the EDP and future park improvements. The Leadership Council meets monthly "to help drive project design and ensure that the resulting legacy of the new park captures the heart and soul of the Bayview-Hunters Point community" (City of San Francisco, 2022: p. 28). The participatory process behind the EDP is based mainly on principles of procedural justice. CBOs interviewed hope this close participation will continue beyond the plan by "making sure that the Committee is involved with every single aspect of what we are doing" (Interview #6).

Recognition of past injustices and the importance of local values,

culture, leadership, and knowledge is a central theme throughout the plan. The EDP and the future India Basin Waterfront Park have set out to "correct environmental injustices within the neighborhood and utilize the project to combat systemic racism" (City of San Francisco, 2022: pg. 11). One of the city's planners and contributors to the EPD highlighted the importance of equity, inclusion, and justice: "By partnering with the community, the India Basin project provides an important opportunity to equitably address social, economic and environmental injustices in this historically underserved and neglected neighborhood" (Interview #25).

Despite the city's new-found commitment to climate justice, the agencies and organizations we interviewed voiced concerns over a lack of action and follow-through with recent plans. One agency representative recognized such challenges by stating, "It is easy to have an equity section of a plan or use an equity matrix. But that is still the city presuming what the community wants, as opposed to allowing communities some sort of power in the process" (Interview #21).

Another interviewee stressed that due to factors such as funding, political will, and staff capacity, "equity issues are built into high-level discussions, but getting down to specific implementation is a few years ahead" (Interview #15). In general, many interviewees shared the sentiment expressed by one interviewee who said, "It feels like we are not practicing what we are preaching" (Interview #20).

From our research, we have seen that climate justice is an increasing priority in San Francisco. While the city's planning in the early years did not address climate justice, this approach began to change in 2016 alongside an influx of funding and support from the 100 Resilient Cities program. In 2019, the city began a more robust and inclusive approach to climate adaptation, focusing more on procedural and distributive justice. In the past two years, we have seen a complete incorporation of all three dimensions of justice in a way that includes a recognition of past injustices and identifies strategies to rectify these injustices.

6. Discussion and conclusion

This article explores the evolution of climate planning by assessing to what extent climate justice is integrated into urban adaptation plans. Plans and policies have real-life implications. Therefore, planners and policymakers must address current and past injustices to ensure that the impacts of climate change do not further burden those already at risk (Anguelovski et al., 2019; Chu et al., 2019). In this article, we provide a framework for municipal and regional governments to plan for climate change in ways that address the needs of vulnerable populations. This study explores the past 20 years of climate action in San Francisco. A close critical look at a climate leader like San Francisco illustrates a possible path toward a just and equitable future in the face of the climate emergency. San Francisco has spent almost two decades preparing for climate change.

An examination of the city's plans from 2004 until 2019 shows that San Francisco's past climate plans have been predominantly technocratic and top-down. This trend aligns with the trajectory of other cities in the U.S. and beyond (Chu & Cannon, 2021; Fiack et al., 2021). In recent years, San Francisco has moved toward an approach grounded in climate justice, similar to other politically and environmentally progressive cities (Hughes, 2020; Satorras et al., 2020; Swanson, 2021; Shi, 2021; Granberg & Glover, 2021). This evolution reproduces the shifts seen in climate politics, as Bulkeley (2021) described as the third "wave" of climate urbanism, characterized by its connection to social justice issues.

From our analysis, we see San Francisco begin to sporadically incorporate procedural justice by trying to include more extensive public participation in the development of plans. By 2016, San Francisco broadly acknowledged that "social equity and inclusiveness need to be at the core of what makes a city thrive" (City of San Francisco, 2016). However, not until 2019 do we see the city declare a state of climate emergency, calling for public engagement in transitioning away from

fossil fuels and recommending investments in historically disenfranchised communities. After 2021, the city's plans directly address all three dimensions of justice. This is evident in San Francisco's 2021 Climate Action Plan (CAP), which included a collaborative process alongside CBOs to identify priorities and take a leadership role in the development and implementation of the plan.

Our analysis illuminates the City of San Francisco's increasing alignment of adaptation planning with equity concerns while highlighting the tensions that arise as the need for equitable adaptation increases. We see a recent trend whereby the city's adaptation plans take a broader approach to climate justice beyond being inclusive and equitable merely in distributing resources, such as gray infrastructure or open space. In plans like the India Basin Equitable Development Plan (EDP), Climate Action Plan, and the Islais Creek Adaptation Strategy, we see a more explicit focus and alignment with the values of recognizing past injustice and the importance of local leadership and voices. This is an evolution from the Ocean Beach Adaptation Plan (2012) almost a decade earlier, centered around open space improvements in vulnerable and frontline communities.

While Ocean Beach's plan focuses on technical interventions and implementation procedures, India Basin's EDP more clearly illustrates a need to address the potential outcomes of adaptation strategies, particularly around gentrification and displacement. The EDP highlights the need for nature-based solutions to address inclusive economic opportunities, cultural representation, and equitable transportation in historically disinvested neighborhoods. Cities that face the threat of displacement and maladaptation can strive to prepare for climate change in a way that recognizes past inequities while highlighting potential future climate injustice. We see similar efforts in cities like Barcelona and New York City, where affordable energy, just transitions, and inclusive economies are critical strategies in their climate action plans (see C40, 2022). San Francisco's 2021 Climate Action Plan (CAP) also acknowledges underlying historic injustices, informing the Plan's goals to invest in communities to ensure housing security. Similarly, the 2022 India Basin Equitable Development Plan recognizes systemic injustices and sets specific strategies to promote cultural awareness and workforce development. Our analysis shows how equity and justice are increasingly being addressed in city-led climate adaptation plans but struggle to secure adequate adaptation finance for climate justice plans. While we briefly touched upon these tensions in our findings, we see a need for further research to shed light on the transition from planning to action and how climate funding, urban priorities, and local politics shape the implementation process.

Scholarship shows that procedural and distributive justice are unachievable without recognizing historical injustices, leaving climate justice simply as an aspiration (Colenbrander et al., 2018; See & Wilmsen, 2022). Our study builds on research from scholars such as Meerow et al. (2019) and Chu and Cannon (2021), who point to a need for more recognition in urban adaptation and resilience planning. In San Francisco's case, we find that, since 2019, adaptation planning has begun to recognize the root cause of systemic inequity, discriminatory practices, and historical social and environmental injustice. Despite San Francisco's efforts, challenges remain as scholars and practitioners grapple with the fact that "recognition itself is contentious, socially constructed and context-dependent" (Chu & Michael, 2019: p. 141). By recognizing diverse values, voices, and experiences, cities can begin actualizing climate justice planning.

While cities often strive for equitable and just solutions, in the end, interventions, such as green infrastructure and emission reductions, can add to existing social, economic, and environmental injustices (Shi, 2021; Rice et al., 2019). Planners, advocates, and scholars must critically examine how solutions to climate change are taking place, for whom, by whom, and to what end (Chapple, 2017; Shi, 2021). San Francisco has started acknowledging the potential of maladaptation and is taking steps to mitigate this issue by adopting strategies such as the India Basin Equitable Development Plan and the Climate Action Plan.

We can see similar efforts to address maladaptation in cities like Barcelona and New York City (Foster et al., 2019; Zografos et al., 2020).

Reflecting on the learnings emerging from the case of San Francisco, our findings contribute to recent debates examining the practical application of climate justice planning and equitable adaptation in urban areas. Our analysis shows how the City of San Francisco's adaptation planning has shifted toward more equitable, inclusive, and justice-based approaches. We have identified noticeable trends highlighting how San Francisco has evolved its approach to climate action to be more justice-based. This transformation can be primarily attributed to the city's agencies adopting holistic and collaborative approaches to climate adaptation planning. San Francisco's public agencies and climate justice plans are bolstered by regional and national support and guidance and are responsive to community needs and current events.

The city's shift toward more equitable and inclusive planning, beginning in 2019 and 2020, corresponds with several global, national, and local events. This follows a trend identified by recent research examining the influence of public discourse around issues of social justice, public health, and environmental disparities. In particular, scholars highlight the connection between recent events such as the U.N.'s 2019 Climate Action Summit and its declaration of an international climate emergency, the death of George Floyd in the United States leading to Black Lives Matter protests in 2020, and the COVID-19 pandemic (Colebrook, 2020; Krieger, 2020; Levy, 2021).

San Francisco's city agencies responsible for climate justice plans span a wide range, from implementing bodies like the Recreation and Parks Department to policy and planning-focused entities like the San Francisco Planning Department and the Department of the Environment. These agencies and their climate plans vary from focusing on the city-wide level, such as the Climate Action Plan, to specific neighborhoods, like the India Basin and Islais Creek plans. Beyond these differences, San Francisco's recent approach takes a more holistic perspective of climate change and urban adaptation, ranging from public health and green spaces to utilities, housing, and transportation.

The evolution of San Franciscos's adaptation planning is also influenced and supported by the broader regulatory and funding context of the State of California. The City's equitable adaptation efforts are bolstered by funding from cap and trade requirements, the utilization of resources like CalEnviroScreen, and compliance with State mandates such as Senate Bill No. 1000, which mandates the integration of environmental justice into city planning (Zuñiga and Méndez, 2023). Cities can learn from San Francisco's approach to equitable adaptation, which involves leveraging funding opportunities, integrating environmental justice into planning, utilizing accessible data and tools, and fostering collaborative governance.

Central to San Francisco's focus on climate justice has been its collaboration and partnership with local CBOs. San Francisco is home to a robust and influential climate justice movement driven by advocacy organizations working parallel to or in conjunction with the city government (Dillon, 2018; Pezzullo, 2009; Walker, 2018). These partnerships are pivotal in integrating climate justice principles into planning efforts and outcomes. Our findings support previous scholarship emphasizing the importance of community-based planning to ensure local voices are heard and resident needs are met (de Moor et al., 2021; Frantzeskaki et al., 2018). As Shi (2021) argued, the move toward climate justice planning is influenced by the advocacy and support of community-based organizations, social movements, and grassroots activists. Further qualitative inquiry into the role of CBOs and advocates will be essential to illuminate how the broader network of community stakeholders works toward climate justice.

By adopting these lessons, cities can enhance their climate resilience efforts while addressing the specific needs of their communities and promoting equitable outcomes. We hope that the insights gained from the case of San Francisco and our analytical framework can inform future urban climate action plans and further the debate around climate justice in cities from the Global North.

CRediT authorship contribution statement

Kaitlin F. Strange: Writing – original draft, Conceptualization, Methodology, Investigation. **Hug March:** Supervision, Conceptualization, Writing – review & editing. **Mar Satorras:** Conceptualization, Supervision, Writing - review & editing.

Declaration of competing interest

None.

Data availability

The data that has been used is confidential.

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References

Anguelovski, I., Brand, A. L., Connolly, J. J., Corbera, E., Kotsila, P., Steil, J., … Argüelles Ramos, L. (2020). Expanding the boundaries of justice in urban greening scholarship: Toward an emancipatory, antisubordination, intersectional, and relational approach. *Annals of the American Association of Geographers, 110*(6), 1743–1769. https://doi.org/10.1080/24694452.2020.1740579

Anguelovski, I., Connolly, J. J. T., Pearsall, H., Shokry, G., Checker, M., Maantay, J., et al. (2019). Why green "climate gentrification" threatens poor and vulnerable populations. *Proceedings. National Academy of Sciences. United States of America, 116*, 26139–26143. https://doi.org/10.1073/pnas.1920490117

Anguelovski, I., Shi, L., Chu, E., Gallagher, D., Goh, K., Lamb, Z., … Teicher, H. (2016). Equity impacts of urban land use planning for climate adaptation: Critical perspectives from the global north and south. *Journal of Planning Education and Research, 36*(3), 333–348. https://doi.org/10.1177/0739456X16645166

Araos, M., Jagannathan, K., Shukla, R., Ajibade, I., de Perez, … Turek-Hankins, L. L. (2021). Equity in human adaptation-related responses: A systematic global review. *One Earth, 4*(10), 1454–1467.

Building Bridges Across the Bridge. (2022). 11th Street Bridge Park. https://bbardc.org/project/11th-street-bridge-park/.

Bulkeley, H. (2021). Climate changed urban futures: Environmental politics in the anthropocene city. *Environmental Politics, 30*(1–2), 266–284. https://doi.org/10.1080/09644016.2021.1880713

Bulkeley, H., Carmin, J., Castán Broto, V., Edwards, G. A. S., & Fuller, S. (2013). Climate justice and global cities: Mapping the emerging discourses. *Global Environmental Change, 23*(5), 914–925. https://doi.org/10.1016/j.gloenvcha.2013.05.010

Bulkeley, H., Edwards, G. A. S., & Fuller, S. (2014). Contesting climate justice in the city: Examining politics and practice in urban climate change experiments. *Global Environmental Change, 25*, 31–40. https://doi.org/10.1016/j.gloenvcha.2014.01.009

C.A. Office of Environmental Health Hazard Assessment (OEHHA). (2023). About CalEnviro-Screen. https://oehha.ca.gov/calenviroscreen/about-calenviroscreen#:~:text=CalEnviroScreen%20is%20a%20mapping%20tool,especially%20vulnerable%20to%20pollution%27s%20effects.

C40. (2022). City stories: Tackling energy poverty and building community resilience to crisis. https://www.c40knowledgehub.org/s/article/City-stories-Tackling-energy-poverty-and-building-community-resilience-to-crisis?language=en_US

Camponeschi, C. (2021). Narratives of vulnerability and resilience: An investigation of the climate action plans of new York City and Copenhagen. *Geoforum, 123*, 78–88. https://doi.org/10.1016/j.geoforum.2021.05.001

Carley, S., & Konisky, D. M. (2020). The justice and equity implications of the clean energy transition. *Nature Energy, 5*, 569–577. https://doi.org/10.1038/s41560-020-0641-6

Cattino, M., & Reckien, D. (2021). Does public participation lead to more ambitious and transformative local climate change planning? *Current Opinion in Environmental Sustainability, 52*, 100–110. https://doi.org/10.1016/j.cosust.2021.08.004

Chapple, K. (2017). Income inequality and urban displacement: The new gentrification. *New Labor Forum, 26*(1), 84–93. https://doi.org/10.1177/1095796016682018

Chu, E., Brown, A., Michael, K., Du, J., Lwasa, S., & Mahendra, A. (2019). Unlocking the potential for transformative climate adaptation in cities. In *Background paper prepared for the global commission on adaptation, Washington, DC, and Rotterdam.* Available online at www.gca.org.

Chu, E., & Michael, K. (2019). Recognition in urban climate justice: Marginality and exclusion of migrants in Indian cities. *Environment and Urbanization, 31*(1), 139–156. https://doi.org/10.1177/0956247818814449

Chu, E. K., & Cannon, C. E. B. (2021). Equity, inclusion, and justice as criteria for decision-making on climate adaptation in cities. *Current Opinion in Environmental Sustainability, 51*, 85–94. https://doi.org/10.1016/j.cosust.2021.02.009

City of Boston. (2021). Climate action plan. https://www.boston.gov/sites/default/files/file/2021/10/FY21%20Boston%20Climate%20Action%20Report_2.pdf.

City of Dallas. (2020). Climate action plan. https://www.dallasclimateaction.com/cecap.

City of New York. (2022). OneNYC 2050: Building a strong and fair city. https://onenyc.cityofnewyork.us/.

City of San Francisco. (2012). Ocean beach master plan. https://www.spur.org/publications/spur-report/2012-05-21/ocean-beach-master-plan.

City of San Francisco. (2014). Guidance for incorporating sea level rise into capital planning In San Francisco. https://onesanfrancisco.org/sites/default/files/inline-files/Guidance-for-Incorporating-Sea-Level-Rise-into-Capital-Planning1.pdf.

City of San Francisco. Resilient San Francisco. https://sfgov.org/ccsfgsa/sites/default/files/ORR/documents/Resilient%20San%20Francisco_0.pdf.

City of San Francisco. (2019). Declaration of climate emergency. https://sfbos.org/sites/default/files/r0160-19.pdf.

City of San Francisco. (2020). Citywide racial equity framework. https://static1.squarespace.com/static/5ed18d943016244d3e57260c/t/5efbe89e247faf024e6fdaca/1593567402561/ORE+SF+Citywide+Racial+Equity+Framework+Phase+1.pdf.

City of San Francisco. (2022). India Basin equitable development plan. https://viewer.joomag.com/india-basin-equitable-development-plan-edp-0587225001643671116?short.

Coggins, S., Berrang-Ford, L., Hyams, K., Satyal, P., Ford, J., Paavola, J., … Harper, S. (2021). Empirical assessment of equity and justice in climate adaptation literature: A systematic map. *Environmental Research Letters, 16*(7), Article 073003. https://doi.org/10.1088/1748-9326/ac0663

Colebrook, C. (2020). Fast violence, revolutionary violence: Black Lives Matter and the 2020 pandemic. *Journal of Bioethical Inquiry, 17*, 495–499.

Colenbrander, S., Dodman, D., & Mitlin, D. (2018). Using climate finance to advance climate justice: The politics and practice of channelling resources to the local level. *Climate Policy, 18*(7), 902–915.

Contreras, E. (2019). *Latinos and the liberal city: Politics and protest in San Francisco.* University of Pennsylvania Press. https://www.jstor.org/stable/j.ctv16t6hp2.

Dillon, L. (2018). The breathers of Bayview Hill: Redevelopment and environmental justice in southeast San Francisco. *Hastings Environmental Law Journal, 24*, 227. https://repository.uchastings.edu/hastings_environmental_law_journal/vol24/iss2/2.

Dodman, D., Hayward, B., Pelling, M., Broto, V. C., Chow, W., Chu, E., … Ziervogel, G. (2022). Cities, settlements, and key infrastructure. In H.-O. Pörtner, D. C. Roberts, M. Tignor, E. S. Poloczanska, K. Mintenbeck, A. Alegría, … B. Rama (Eds.), *Climate change 2022: Impacts, adaptation, and vulnerability. Contribution of Working Group II to the sixth assessment report of the intergovernmental panel on climate change.* Cambridge University Press. https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FinalDraft_Chapter06.pdf.

Ekstrom, J. A., & Moser, S. C. (2014). Identifying and overcoming barriers in urban adaptation efforts to climate change: Case study findings from the San Francisco Bay Area, California, USA. *Urban Climate, 9*(September), 54–74. https://doi.org/10.1016/j.uclim.2014.06.002

Fiack, D., Cumberbatch, J., Sutherland, M., & Zerphey, N. (2021). Sustainable adaptation: Social equity and local climate adaptation planning in U.S. cities. *Cities, 115*. https://doi.org/10.1016/j.cities.2021.103235

Fisher, D., & Nasrin, S. (2021). Shifting coalitions within the youth climate movement in the U.S. *Politics and Governance, 9*(2), 112–123. https://doi.org/10.17645/pag.v9i2.3801

Fitzgibbons, J., & Mitchell, C. L. (2019). Just urban futures? Exploring equity in "100 resilient cities". *World Development, 122*, 648–659. https://doi.org/10.1016/j.worlddev.2019.06.021

Forsyth, T. (2018). Is resilience to climate change socially inclusive? Investigating theories of change processes in Myanmar. *World Development, 111*, 13–26. https://doi.org/10.1016/j.worlddev.2018.06.023

Forsyth, T., & McDermott, C. L. (2022). When climate justice goes wrong: Maladaptation and deep co-production in transformative environmental science and policy. *Political Geography, 98*(102691). https://doi.org/10.1016/j.polgeo.2022.102691

Foster, S., Leichenko, R., Nguyen, K. H., Blake, R., Kunreuther, H., Madajewicz, M., … Ravenborg, D. (2019). New York City panel on climate change 2019 report chapter 6: Community-based assessments of adaptation and equity. *Annals of the New York Academy of Sciences, 1439*(1), 126–173. https://doi.org/10.1111/nyas.14009

Frantzeskaki, N., Dumitru, A., Wittmayer, J., Avelino, F., & Moore, M.-L. (2018). To transform cities, support civil society. *Urban Planet*, 281–302. https://doi.org/10.1017/9781316647554.016

Granberg, M., & Glover, L. (2021). The climate just city. *Sustainability, 13*(3), 1201. https://doi.org/10.3390/su13031201

Grove, K., Barnett, A., & Cox, S. (2020). Designing justice? Race and the limits of recognition in greater Miami resilience planning. *Geoforum, 117*, 134–143. https://doi.org/10.1016/j.geoforum.2020.09.014

Guzman, J., & Stern, S. (2015). Where is Silicon Valley? *Science, 347*(6222), 606–609.

van der Heijden, J. (2021). When opportunity backfires: Exploring the implementation of urban climate governance alternatives in three major US cities. *Policy and Society, 40*(1), 116–135.

Henrique, K. P., & Tschakert, P. (2021). Pathways to urban transformation: From dispossession to climate justice. *Progress in Human Geography, 45*(5), 1169–1191. https://doi.org/10.1177/0309132520962856

Holland, B. (2017). Procedural justice in local climate adaptation: Political capabilities and transformational change. *Environmental Politics, 26*, 391–412. https://doi.org/10.1080/09644016.2017.1287625

Hourdequin, M. (2016). Justice, recognition and climate change. In *Climate justice and geoengineering: Ethics and policy in the atmospheric anthropocene* (pp. 33–48).

Hughes, S. (2020). Principles, drivers, and policy tools for just climate change adaptation in legacy cities. *Environmental Science & Policy, 111*, 35–41. https://doi.org/10.1016/j.envsci.2020.05.007

Hughes, S., & Hoffmann, M. (2020). Just urban transitions: Toward a research agenda. *WIREs Climate Change.* https://doi.org/10.1002/wcc.640

Juhola, S., Heikkinen, M., Pietilä, T., Groundstroem, F., & Käyhkö, J. (2022). Connecting climate justice and adaptation planning: An adaptation justice index. *Environmental Science & Policy, 136*, 609–619. https://doi.org/10.1016/j.envsci.2022.07.024

Keenan, J. M., Thomas, H., & Gumber, A. (2018). *Environmental Research Letters, 13* (054001). https://doi.org/10.1088/1748-9326/aabb32

Krieger, N. (2020). Climate crisis, health equity, and democratic governance: The need to act together. *Journal of Public Health Policy, 41*, 4–10.

Lang, W., Radke, J. D., Chen, T., & Chan, E. H. (2016). Will affordability policy transcend climate change? A new lens to re-examine equitable access to healthcare in the San Francisco Bay Area. *Cities, 58*, 124–136. https://doi.org/10.1016/j.cities.2016.05.014

Levy, D. L. (2021). COVID-19 and global governance. *Journal of Management Studies, 58*(2), 562. https://doi.org/10.1111/joms.12654

Long, J., & Rice, J. L. (2019). From sustainable urbanism to climate urbanism. *Urban Studies, 56*(5), 992–1008. https://doi.org/10.1177/0042098018770846

Maharawal, M. M. (2017). Black lives matter, gentrification and the security state in the San Francisco Bay Area. *Anthropological Theory, 17*(3), 338–364. https://doi.org/10.1177/1463499617732501

Mattar, S. D., Jafry, T., Schröder, P., & Ahmad, Z. (2021). Climate justice: Priorities for equitable recovery from the pandemic. *Climate Policy, 21*(10), 1307–1317. https://doi.org/10.1080/14693062.2021.1976095

May, C. (2020). Rising groundwater and sea-level rise. *Nature Climate Change, 10*(10), 889–890. https://doi.org/10.1038/s41558-020-0886-x

Meerow, S., Newell, J. P., & Stults, M. (2016). Defining urban resilience: A review. *Landscape and Urban Planning, 147*. https://doi.org/10.1016/j.landurbplan.2015.11.011

Meerow, S., Pajouhesh, P., & Miller, T. R. (2019). Social equity in urban resilience planning. *Local Environment, 24*(9), 793–808. https://doi.org/10.1080/13549839.2019.1645103

Mikulewicz, M. (2019). Thwarting adaptation's potential? A critique of resilience and climate-resilient development. *Geoforum, 104*, 267–282. https://doi.org/10.1016/j.geoforum.2019.05.010

Mohtat, N., & Khirfan, L. (2021). The climate justice pillars vis-à-vis urban form adaptation to climate change: A review. *Urban Climate, 39*, Article 100951. https://doi.org/10.1016/j.uclim.2021.100951

de Moor, J., De Vydt, M., Uba, K., & Wahlström, M. (2021). New kids on the block: Taking stock of the recent cycle of climate activism. *Social Movement Studies, 20*(5), 619–625. https://doi.org/10.1080/14742837.2020.1836617

MTC. (2023). Cap and trade funding. https://mtc.ca.gov/funding/state-funding/cap-and-trade-funding.

Nussbaum, M. C. (2011). *Creating capabilities: The human development approach.* Harvard University Press. https://doi.org/10.2307/j.ctt2jbt31

Pezzullo, P. C. (2009). *Toxic tourism: Rhetorics of pollution, travel, and environmental justice.* University of Alabama Press.

Pinto, P. J., Kondolf, G. M., & Wong, P. L. R. (2018). Adapting to sea level rise: Emerging governance issues in the San Francisco Bay region. *Environmental Science & Policy, 90*, 28–37. https://doi.org/10.1016/j.envsci.2018.09.015

Public Utilities Commission (PUC). (2018). Alternatives analysis report for coastal adaptation strategies. https://default.sfplanning.org/Citywide/ocean_beach/SFPUC_Alternatives_Analysis_Report_South_Ocean_Beach-April2018.pdf.

Ranganathan, M., & Bratman, E. (2019). From urban resilience to abolitionist climate justice in Washington, DC. *Antipode, 53*(1), 115–137. https://doi.org/10.1111/anti.12555

Rice, J. L. (2014). An urban political ecology of climate change governance: An urban political ecology of climate change governance. *Geography Compass, 8*(6), 381–394. https://doi.org/10.1111/gec3.12134

Robin, E., & Broto, V. C. (2021). Towards a postcolonial perspective on climate urbanism. *International Journal of Urban and Regional Research, 45*, 869–878. https://doi.org/10.1111/1468-2427.12981

Robinson, T. (1995). Gentrification and grassroots resistance in San Francisco's tenderloin. *Urban Affairs Quarterly, 30*(4), 483–513. https://doi.org/10.1177/107808749503000401

Romero-Lankao, P., Bulkeley, H., Pelling, M., Burch, S., Gordon, D. J., Gupta, J., … Munshi, D. (2018). Urban transformative potential in a changing climate. *Nature Climate Change, 8*(9), 754–756.

Rosenzweig, C., Solecki, W., Romero-Lankao, P., Mehrotra, S., Dhakal, S., Bowman, T., & Ali Ibrahim, S. (2015). ARC3.2 summary for city leaders — *Climate change and cities: Second assessment report of the urban climate change research network.* Urban Climate Change Research Network, Columbia University.

San Francisco Department of Homelessness and Supportive Housing. (2021). Sheltered point-in-time count. https://hsh.sfgov.org/wp-content/uploads/2021/09/2021-Sheltered-PIT-Count.pdf.

San Francisco Department of Public Health. San Francisco's Climate and Health Adaptation Framework. https://sf.gov/sites/default/files/2023-05/SFDPH_ClimateHealthAdaptFramework2017a.cleaned.pdf.

San Francisco Department of the Environment. (2021). Climate action plan. https://sfenvironment.org/climateplan.

San Francisco Human Services Agency. (2022). Older adults in San Francisco. Retrieved June 3, 2022, from https://www.sfhsa.org/about/reports-publications/older-adults-san-francisco.

San Francisco Office of Resilience and Capital Planning. (2020). Hazards and climate resilience plan. https://onesanfrancisco.org/sites/default/files/inline-files/HCR_Full Report_200326_0.pdf.

San Francisco Office of Resilience and Recovery. (2016). Resilient San Francisco. https://sfgov.org/ccsf-gsa/sites/default/files/ORR/documents/Resilient%20San%20Francisco_0.pdf.

San Francisco Office of the Mayor. (2022a). Homeless population Accessed: June 1, 2022 https://sfgov.org/scorecards/safety-net/homeless-population.

Satorras, M. (2022). Formal and disruptive co-production of the climate emergency response: The case of Barcelona. In I. Ruiz-Mallén, H. March, & M. Satorras (Eds.), *Urban resilience to the climate emergency* (pp. 177–196). Cham: Springer.

Satorras, M., Ruiz-Mallén, I., Monterde, A., & March, H. (2020). Co-production of urban climate planning: Insights from the Barcelona climate plan. *Cities, 106*, Article 102887.

Schipper, E. L. F. (2020). Maladaptation: When adaptation to climate change goes very wrong. *One Earth, 3*, 409–414. https://doi.org/10.1016/j.oneear.2020.09.014

Schlosberg, D. (2004). Reconceiving environmental justice: Global movements and political theories. *Environmental Politics, 13*(3), 517–540. https://doi.org/10.1080/0964401042000229025

Schlosberg, D. (2007). *Defining environmental justice: Theories, movements, and nature.* OUP Oxford.

Schlosberg, D. (2012). Climate justice and capabilities: A framework for adaptation policy. *Ethics & International Affairs, 26*(4), 445–461. https://doi.org/10.1017/S0892679412000615

Schlosberg, D., & Collins, L. B. (2014). From environmental to climate justice: Climate change and the discourse of environmental justice. *Wiley Interdisciplinary Reviews: Climate Change, 5*(3), 359–374. https://doi.org/10.1002/wcc.275

See, J., & Wilmsen, B. (2022). A multidimensional framework for assessing adaptive justice: A case study of a small island community in the Philippines. *Climatic Change, 170*(1), 1–21.

Shi, L. (2021). From progressive cities to resilient cities: Lessons from history for new debates in equitable adaptation to climate change. *Urban Affairs Review, 57*(5), 1442–1479. https://doi.org/10.1177/1078087419910827

Shi, L., Chu, E., Anguelovski, I., Aylett, A., Debats, J., Goh, K., … VanDeveer, S. D. (2016). Roadmap towards justice in urban climate adaptation research. *Nature Climate Change, 6*(2), 131–137. https://doi.org/10.1038/nclimate2841

Shi, L., & Moser, S. (2021). Transformative climate adaptation in the United States: Trends and prospects. *Science, 372*(6549). https://doi.org/10.1126/science.abc805

Shokry, G., Connolly, J. J. T., & Anguelovski, I. (2020). Understanding climate gentrification and shifting landscapes of protection and vulnerability in green resilient Philadelphia. *Urban Climate, 31*(100539). https://doi.org/10.1016/j.uclim.2019.100539

Solis, M. (2017). The triple bottom line and wastewater planning in San Francisco a tool for environmental justice. In *ISSI graduate fellows working paper series 2015-2016.76.* City and Regional Planning. University of California, Berkeley, March 27, 2017.

Solis, M. (2020). Conditions and consequences of ELULU improvement: Environmental justice lessons from San Francisco, CA. *Journal of Planning Education and Research.* https://doi.org/10.1177/0739456X20929407

Stehlin, J. (2015). Cycles of investment: Bicycle infrastructure, gentrification, and the restructuring of the San Francisco Bay Area. *Environment and Planning A, 47*(1), 121–137. https://doi.org/10.1068/a130098p

Sultana, F. (2022). Critical climate justice. *The Geographical Journal, 188*, 118–124. https://doi.org/10.1111/geoj.12417

Swanson, K. (2021). Equity in urban climate change adaptation planning: A review of research. *Urban Planning, 6*(4). https://doi.org/10.17645/up.v6i4.4399

U.S. Census Bureau. (2020). 2022 census. https://www.census.gov/programs-surveys/dece-nnial-census/decade/2020/2020-census-results.html.

U.S. Department of Health and Human Services. (2018). Poverty guidelines. https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines.

Walker, R. A. (2018). *Pictures of a gone city: Tech and the dark side of prosperity in the San Francisco Bay Area.* PM Press. ISBN: 9781629635101.

Yang, Lee, T., & Juhola, S. (2021). The old and the climate adaptation: Climate justice, risks, and urban adaptation plan. *Sustainable Cities and Society, 67*, 102755. https://doi.org/10.1016/j.scs.2021.102755

Young, I. R. (1990). *Justice and the politics of difference.* Princeton, New Jersey: Princeton University Press.

Ziervogel, G., Pelling, M., Cartwright, A., Chu, E., Deshpande, T., Harris, L., … Zweig, P. (2017). Inserting rights and justice into urban resilience: A focus on everyday risk. *Environment and Urbanization, 29*(1), 123–138. https://doi.org/10.1177/0956247816686905

Zografos, C., Klause, K. A., Connolly, J. J. T., & Anguelovski, I. (2020). The everyday politics of urban transformational adaptation: Struggles for authority and the Barcelona superblock project. *Cities, 99*, Article 102613. https://doi.org/10.1016/j.cities.2020.102613

Zuñiga, M. E., & Méndez, M. (2023). The emergence of environmental justice in general plans: Lessons from California's Senate Bill 1000. *Urban Affairs Review, 0*(0). https://doi.org/10.1177/10780874231175841