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Journal

Proceedings of the National Academy of Sciences, 121(32)

Authors

Pastor, Manuel

Cha, J

Méndez, Michael

et al.

Publication Date

2024-08-06

DOI

10.1073/pnas.2310073121

Peer reviewed



California dreaming: Why environmental justice is integral to the success of climate change policy

Manuel Pastor^a, J. Mijin Cha^b, Michael Méndez^c, and Rachel Morello-Frosch^{d,e,1}

Edited by Glen MacDonald, University of California, Los Angeles, CA; received July 6, 2023; accepted February 12, 2024

In the realm of climate policy, issues of environmental justice (EJ) are often treated as second-order affairs compared to overarching sustainability goals. We argue that EJ is in fact critical to successfully addressing our national and global climate challenges; indeed, centering equity amplifies the voices of the diverse constituencies most impacted by climate change and that are needed to build successful coalitions that shape and advance climate change policy. We illustrate this perspective by highlighting the experience of California and the contentious processes by which EJ became integrated into the state's climate action efforts. We examine the achievements and shortcomings of California's commitment to climate justice and discuss how lessons from the Golden State are influencing the evolution of current federal climate change policy.

climate justice | climate policy | California

1. The Imperative for Climate Justice

Driven primarily by fossil fuel use and associated carbon emissions, climate change threatens planetary life, transforming physical and social environments through rising sea levels, drought, heat waves, more intense storms and flooding, and disruptions to energy and food production (1, 2). Within the United States, the risks of climate change disproportionately impact people of color and low-income communities who have the fewest resources to protect themselves from extreme weather events and other disasters (3). This “climate gap” has fueled mounting calls for policymakers to address the “syndemic” of climate change, economic injustice, and the persistent legacies of structural racism (4).

In a bold attempt to address the climate emergency with an equity lens, environmental justice (EJ) advocates and policymakers in the United States have put forth a vision for a federal Green New Deal, an ambitious legislative resolution to decarbonize the economy and address social and economic inequality (5). While not binding legislation, the Green New Deal provided a well-timed policy framework that paved the way for the passage of bipartisan climate change legislation in 2021 and 2022, including the Infrastructure Investment and Jobs Act (6) and the Inflation Reduction Act (7).

These efforts have been bolstered by President Biden's Executive Orders on Tackling the Climate Crisis at Home and Abroad, (8) which calls for a “whole of government,” approach to addressing climate change, and Revitalizing our Nation's Commitment to EJ for All, which more recently reaffirmed the governmental commitment to addressing long-standing environmental disparities (9). Equally important was the launch of the Justice40 Initiative (10). Justice40 requires that at least 40%

of the benefits from federal programs in clean energy, transit, affordable and sustainable housing, workforce development, remediation and reduction of legacy pollution, clean drinking water and sanitation infrastructure benefit EJ communities (i.e., socioeconomically marginalized communities that are disproportionately burdened by multiple environmental hazards). These federal climate change and EJ initiatives seek to close the climate gap by prioritizing the needs of communities of color and low-income communities that continue to endure the disproportionate health impacts of climate change and pollution from our fossil fuel-driven economy.

Similar to the “New Deal” of the 1930s, which emerged from social policy experiments in states and localities across the country, much of the template for today's equity-oriented federal policy on climate change stems from the vision, hard work, advocacy, and organizing of low-income communities of color that have pushed at state and municipal levels to implement regulatory tools that reduce greenhouse gas emissions (GHGs) while also addressing inequality and improving public health (11, 12). One of the most influential states in this regard is California, which over the past two decades, has been at the forefront of combatting climate change, with ambitious strategies to curtail GHGs through a combination of direct regulations and market incentives that have been emulated by other states and by the Biden Administration.

California has also sought to enhance the cobenefits of climate change regulations in ways that integrate sustainability and equity goals and improve environmental health (13, 14). Cobenefits are ancillary near-term benefits (including cost-savings) of GHG reduction efforts, that can also help justify specific regulations. For example, health cobenefits provide support for innovative land-use or energy policies that reduce GHGs as well as local air pollution in the most disadvantaged communities, particularly since GHG-emitting facilities tend to be disproportionately located in neighborhoods with higher proportions of poor residents and people of color (15, 16).

Author affiliations: ^aEquity Research Institute, University of Southern California, Los Angeles, CA 90015; ^bEnvironmental Studies, University of California, Santa Cruz, CA 95060; ^cSchool of Social Ecology, University of California, Irvine, CA 92697; ^dSchool of Public Health, University of California, Berkeley, CA 94720-3114; and ^eDepartment of Environmental Science, Policy and Management, University of California, Berkeley, CA 94720-3114

Author contributions: M.P., J.M.C., M.M., and R.M.-F. wrote the paper.

The authors declare no competing interest.

This article is a PNAS Direct Submission.

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¹To whom correspondence may be addressed. Email: rmf@berkeley.edu.

Published July 29, 2024.

Ensuring that EJ benefits are a part of California's climate change policy frameworks has been the result of contentious processes within the policy and regulatory arenas (12). EJ activists are often at odds with industry who often favor market-based mitigation and carbon management solutions that may not significantly reduce GHG emissions or phase out fossil fuel extraction. They have even been at odds with traditional environmental organizations that may embrace market measures that fail to maximize air quality and public health cobenefits in low-income communities of color (17–19). These conflicts illustrate that although the science of climate change and the evidence of climate inequities are clear, policy responses involve competing interests and reflect racialized and economic power struggles.

We begin below by reviewing the evolution of climate change and EJ policy in California, making clear not just the gains but also the conflicts that are rooted in the social and political tensions between community understandings of local environmental conditions and the prevailing global, top-down conceptualization of climate change solutions. Understanding the tensions between policy actors can provide valuable insights, not only for federal debates but also for other states seeking to forge economically viable climate strategies that integrate EJ and health equity principles into policy and regulation (12). Along the way, we consider implementation challenges for California's climate justice efforts and the implications for federal- and state-level policy debates and implementation.

2. The Evolution of California's Climate Change Policy

California has long been recognized as a leader in addressing environmental problems, including climate change. For example, the legislature passed multiple laws to reduce GHG emissions years before other states, with the most prominent piece of legislation being Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006 (20). Compared to other states and the nation at the time of its passage, AB 32 set an ambitious target of reducing GHG emissions to 1990 levels by 2020 and then to 80% of this baseline level by 2050 and mandated that the California Air Resources Board (CARB) develop a Scoping Plan with other agencies and stakeholders to achieve that goal (21, 22). AB 32 spawned other pieces of legislation and regulatory initiatives that have shaped CARB's Scoping Plans over the years, including disallowing the construction of new coal-fired power plants or contracts with coal-based power generators; a renewable portfolio standard mandating 60% renewables by 2030 and 100% by 2045; energy efficiency requirements for buildings; and reductions in methane emissions from dairies and oil and gas development activities (21).

EJ advocates collaborated with legislative allies to ensure that critical EJ provisions were embedded in AB 32 prior to its final passage; these provisions included the creation of an EJ Advisory Committee (EJAC) made up of representatives of EJ organizations to advise CARB on the development of a Scoping Plan; and requirements that CARB "ensure that activities undertaken to comply with the regulations do not disproportionately impact low-income communities," and "prevent any

increase in the emissions of toxic air contaminants or criteria air pollutants" before employing market-based compliance mechanisms (20).

One point of eventual contention between EJ and other forces emerged because AB 32 also allowed for the adoption of market-based mechanisms for incentivizing reductions of GHG emissions from diverse industrial sectors and mobile sources, with two of those taking fuller form as a Clean Vehicle Rebate Program and an emissions cap-and-trade program. California's cap-and-trade program, launched in 2012, is the third-largest such program in the world, after the European Union and China. Under this market-based system for regulating GHG emissions, regulated companies must acquire tradable emission permits, or "allowances," equal to the amount of GHGs they emit. An overall emissions cap is set by the total allowances issued, which is designed to decrease over time to achieve aggregate emissions reduction goals.

As the cap decreases, regulated industries must reduce their GHG emissions (e.g., through energy efficiency measures, new technologies, or switching to less GHG-intensive fuels) or purchase excess allowances from other regulated entities that are able to reduce their emissions more cheaply. California's cap-and-trade program also allows industries to purchase carbon offsets generated from projects outside of the legal jurisdiction of the program, such as forestry or agriculture projects in other states or Canada, that can be used to augment the use of allowances. The share of offsets has been curtailed over time, however, partly because of EJ concerns that the potential cobenefits of reducing localized air pollution are foregone when offsets are widely used (12, 15). There have been concerns that this offset strategy can result in a failure to support land management and restoration projects within the state that integrate traditional ecological knowledge (TEK) in tribal communities, although some California Indigenous groups participated in the carbon offset market and used the revenues to buy back land that was once theirs (23–25).

Decision-makers and some traditional environmental groups have found such market-based systems attractive because, ostensibly, cap-and-trade can provide flexibility that lowers the cost of emissions reductions and thus enhance industry support for climate change mitigation policies (18, 26). In contrast, EJ advocates assert that GHG reductions should be targeted in locations where the health benefits of copollutant reductions [e.g., particulate matter (PM_{2.5}) or volatile organic compounds (-VOCs)] are likely to be greatest. This objective, they argue, cannot be achieved with an unrestricted market strategy in which all GHG reductions are treated equally regardless of the location in which they occur (26, 27). Offsets further undermine climate justice goals by undercutting financial incentives for companies to reduce emissions onsite. Thus, market-based programs can potentially perpetuate, or even amplify, existing inequities in copollutant exposure burdens (28).

These concerns, along with the political back-and-forth that we detail below, paved the way for AB 617, the Community Air Monitoring Program, which was passed in 2017 after the passage of Senate Bill 32 (which requires California to reduce GHGs 40 percent below 1990 levels by 2030), and the reauthorization of the cap-and-trade program (AB 398) (29–31). The Community Air Monitoring Program established the

nation's first state-run community-scale air quality monitoring program to characterize elevated exposures, or so-called pollution "hot spots" at the neighborhood scale (32). AB 617 also included other significant provisions to fast-track direct reductions of local air pollutants, including accelerating deadlines for existing large emitters (including oil refineries and power plants) to install the best available pollution control technology and increasing monetary penalties for exceeding air quality standards, the first increase in such penalties in 40 y.

The confluence of these three pieces of legislation highlighted the interplay of contrasting economic, environmental, and political interests connected with California's climate change policies. As legal scholar Alice Kaswan observed, "[C]ompromises abounded, with industry achieving significant concessions in the primary cap-and-trade extension, and EJ stakeholders achieving a companion bill that, although not directly addressing concerns about cap-and-trade, nonetheless renews attention on the cumulative burdens many communities continue to endure" (33). The intersection of climate change and EJ policies within the California legislative process was the result of conflict, forecasting how federal policy around climate equity concerns is likewise a bumpy process. For that reason, it is useful to examine the tensions that emerged in California and how they could have been avoided or ameliorated to allow for even stronger commitments to addressing climate change.

2.1. EJ Conflicts over California's Climate Change Regulations.

Although language in AB 32 explicitly elevated EJ considerations, implementation of the law through the regulatory process catalyzed significant discord between EJ advocates, CARB (the regulatory body charged with implementation of AB32), and traditional environmental groups. Indeed, as California's cap-and-trade system was being considered by CARB as a primary strategy for achieving GHG reductions in the industrial sector, EJ groups opposed to market strategies engaged in vociferous climate policy debates with state and local decision-makers in order to reorient climate change policies toward what they viewed as more equitable public health outcomes at multiple scales (12).

When CARB released its AB 32 Scoping Plan, the EJAC—itsself authorized by AB 32—criticized CARB's decision to implement a cap-and-trade program due to concerns about its potential disproportionate impact on communities of color and the poor (19). A coalition of EJ organizations sued CARB to overturn the cap-and-trade program, and seven of the EJAC's 11 members signed on to the lawsuit (34). Traditional environmental organizations were concerned that efforts by EJ organizations to overturn or reform the market-based elements of CARB's Scoping Plan could derail implementation of AB 32. Ultimately, the California Supreme Court upheld CARB's Scoping Plan, and the cap-and-trade program was allowed to proceed (35).

Subsequent equity assessments of the cap-and-trade program found that regulated industries in communities of color had lower GHG and copollutant reductions compared to those in wealthier and whiter neighborhoods, and in some cases, pollution levels increased. Moreover, one study showed that the use of offsets to comply with emissions obligations can undermine overall GHG reduction and equity

goals (15). In addition, an analysis of the Clean Vehicle Rebate Program demonstrated the need to incorporate equity elements into the design of this regulatory tool by facilitating the distribution of rebates to more socioeconomically diverse communities with higher air pollution burdens (36). Housing analyses of transit-oriented development also indicated the need to preserve affordable housing (and prevent displacement of low-income residents) in projects intended to mitigate GHG emissions from the transportation sector (12).

Despite the general opposition of EJ groups to cap-and-trade, when California's climate change law was threatened by a 2010 fossil fuel industry-sponsored state ballot initiative that sought to suspend GHG emission targets, EJ organizations worked to ensure that voters of color turned out to defeat the measure (37). While the ballot initiative faced general disapproval, with 62 percent of the electorate voting against it, the share of white voters in opposition was 57 percent while the share of voters of color in opposition was 73 percent, with some analysts attributing this voting pattern to organizing by the state's EJ advocates (38). This reflected a particular balancing act in which EJ groups ensured that progress in climate change initiatives continued, even as they were pursuing strong actions—including filing lawsuits—to keep justice in the mix. This blend of support and critique also seems to apply to the relationship of national EJ leaders to the current actions of the Biden administration (39).

2.2. Investing in Equity—California Climate Investments.

Although many EJ advocates were fundamentally opposed to cap-and-trade as a GHG reduction strategy, some worked to ensure that revenues generated by this program were invested to maximize public health and environmental quality benefits as well as economic opportunities in California's most burdened communities. To that end, some EJ organizations joined other environmental groups to secure the passage of Senate Bill (SB) 535, which requires minimum investment levels from the state's Greenhouse Gas Reduction Fund to "benefit" so-called "Disadvantaged Communities" (DACs). The initial minimums set in SB 535 were 25 percent to "benefit" DACs, with a minimum of 10 percent of projects to be located in such neighborhoods; in 2016, this threshold was increased to 25 percent of projects required to be directly located in DACs (40).

This landmark law gave the California Environmental Protection Agency (CalEPA) responsibility for using science-based screening and mapping methods to designate DACs based on "geographic, socioeconomic, public health, and environmental hazard criteria" (41). As a result, CalEPA created CalEnviroScreen, the first online mapping tool of its kind in the country to identify communities that are disproportionately burdened by multiple sources of pollution and social stressors. These maps are then used to steer the spending of cap-and-trade dollars toward disadvantaged communities (DACs) (42) through California Climate Investments (CCI) (43).

CalEnviroScreen does not include measures of racial and ethnic make-up or boundaries of tribal lands, with the former excluded largely because of statewide mandates against the use of race in decision-making and allocation of resources. The agency responsible for developing CalEnviroScreen, however, does release a separate report showing race and ethnic composition of DACs, a process that has built confidence in

the use of CalEnviroScreen among EJ groups that see race as an important independent predictor of disadvantage and cumulative environmental burdens (44). This is an important lesson—the need to do a parallel analysis—for the Climate and Economic Justice Screening Tool being developed by the Biden White House, which has been subject to criticism for its failure to include race (45)

The diverse array of projects funded by CCI and often steered by CalEnviroScreen include acceleration of the transition to low carbon freight and passenger transportation; affordable housing near transit stations to reduce the number of vehicle miles traveled; urban forestry projects; installation of energy efficiency and renewable energy projects; and more. Another program, California's Transformative Climate Communities Initiative, was launched in 2018 to fund multi-stakeholder local planning and comprehensive approaches to climate change resilience through renewable energy, clean accessible transit (including car and bike sharing), affordable housing, and other initiatives in socioeconomically and environmentally burdened communities (42, 46).

Cumulatively since 2014, 73% of the total CCI project dollars are benefiting disadvantaged communities. This amounts to more than \$6.7 billion of the total \$9.3 billion spent of the \$11.8 billion that has been awarded (excluding cap-and-trade monies awarded and spent on the state's High-Speed Rail Project) (42, 47). However, CCI is highly decentralized, with multiple state agencies administering various programs, a feature that makes tracking and evaluating the distribution and impacts of investments a challenge. Moreover, the structure of the state's databases that make it difficult to attach geographic or neighborhood specificity to many investments (48). These implementation and measurement challenges limit the program's ability to evaluate the extent to which it is delivering equitable results. Nevertheless, California's climate change investment programs and Cal-EnviroScreen established important policy frameworks for other states, and the Biden Administration's Justice40 initiative, and the development of a national Climate and Economic Justice Screening Tool (49).

3. Why Embed EJ in Climate Change Policy?

A wide range of studies demonstrate persistent race/ethnic and class-based disparities in exposure to air and water contaminants (50, 51). Racial differences in particular are a more significant and consistent determinant of exposure and are not reducible to income or wealth, including housing value (52–54). Moreover, a review article looking at the relationship between equity and environmental quality posits that social inequality degrades environmental quality through the concentration of wealth and political power. In turn, this concentration decreases social cohesion and collective willingness to protect the commons, with the effects strongest for air and water quality (55).

In short, this newest wave of research does not just demonstrate disparities but suggests the intriguing possibility that eliminating such disparities may be critical for promoting healthier environments (56). Other research indicates that centering equity goals can result in larger overall reductions of GHGs, improve air quality overall, as well as narrow inequities in PM_{2.5} exposures (17). Recent studies show that rather

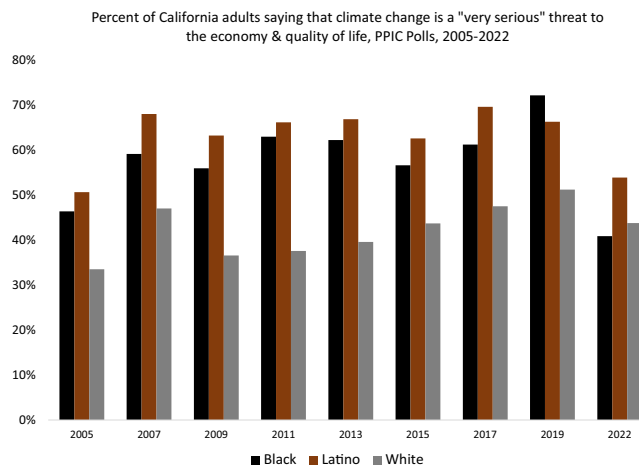


Fig. 1. Public opinion by racial/ethnic group on climate change in California.

than relying on universal reductions of PM_{2.5} emissions, targeting specific sources or locations where levels are highest would improve health outcomes and advance EJ goals (57, 58).

3.1. Building Climate Justice Constituencies. While studies indicate that environmental disparities are real and that tackling them could maximize benefits, the EJ elements that are now embedded in California's climate policies are not strictly the result of a rational consideration of the scientific evidence. Rather, the growing consideration of equity in climate change policy in California is largely due to the advocacy, organizing, and power-building efforts of EJ communities. These community-based efforts have sought to elevate interconnections between climate change threats, economic inequalities, and racialized health disparities (14). Indeed, one innovation in California organizing was to reframe the GHG emissions as "climate pollution," seeking to make the point that community overexposure to air and water pollution is from the same industries that are also large GHG emitters (59).

This narrative and organizing work has both built on and contributed to the tendency of California EJ communities to be more concerned than white communities about climate change. A series of polls conducted by the Public Policy Institute of California (PPIC) between 2005 and 2022 covers most of the period of policy development we discuss above (60). Fig. 1 shows the share of white, Latino, and Black Californians who identified climate change as a "very serious" threat to the economy and quality of life. Except for the post-COVID era (in which other concerns may have dominated), both Black and Latino respondents exhibit substantially higher concern about climate change than white respondents.

The reasons why Black and Latino Californians consistently report more concern about climate change than their white counterparts are complex and likely due to the disproportionate exposures they endure, including heat waves, droughts, sea level rise, flooding, and wildfire-related air pollution (61–64). For example, there is an untold story in our national conversation about the incredible hardships climate fueled disasters inflict on California's Latino and Latin American Indigenous migrant communities, particularly those who are undocumented and who put their lives on the

line to maintain the national food and beverage supply during COVID (65, 66). The persistence of this climate gap along with temporally consistent polling data illustrates how the political viability of California's climate change policy is inextricably linked to power-building among constituents of color and the need to incorporate robust EJ elements in overall climate policy initiatives. This is an important lesson for national policy and politics since the same patterns of higher concern about climate change for Latino and Black respondents are evident in national polls as well (67).

3.2. Incorporating Labor. Another key constituency for climate change policy is labor, especially unions and their allies who worry about how decarbonization could hurt the workers and communities who are economically reliant on fossil fuel extraction and use. These labor constituencies stress that any jobs created in low-carbon industries must be good jobs that pay family sustaining wages, benefits, and provide career ladders (68). Poor-quality, low-carbon jobs deepen labor opposition to an energy transition as workers fear losing one of the few remaining employment opportunities that offer a middle-class wage for workers without higher education qualifications.

As part of the reauthorization of California's cap-and-trade program, the legislature included a requirement for the state Workforce Development Board to publicly report on its strategies for workers, communities, and industries to transition equitably into a low-carbon future (69). The reporting requirement covers several industries, including energy, water, and transportation, and the charge for the research is to identify practices that would create high-quality jobs, help transition displaced workers, ensure access to these jobs for people from disadvantaged communities, and provide workers with the skills needed for the jobs of the future. This specific charge is targeted toward identifying not just any decarbonization opportunity but so-called "high-road" practices, and it allows for contractors to include higher wages and targeted hiring for disadvantaged communities in their bids for public procurement without risking competitiveness. These efforts can address the concerns fossil fuel workers have with respect to future opportunities and reduce opposition workers may have toward decarbonization (70).

At the same time, high-road practices cannot focus only on fossil fuel workers. Many low income communities and communities of color suffer from the pollution caused by fossil fuel extraction and use but do not have access to jobs in that industry because of the legacies of labor market segmentation; for these communities, transitioning away from fossil fuel extraction and refining is a top priority (71). Integrating the environmental and economic needs of marginalized communities of color along with those of workers who are transitioning out of fossil fuel-dependent industries can work to dismantle rather than reproduce these historical forms of occupational segregation.

Effectively harmonizing labor and EJ interests in climate policy is not always straightforward. For example, while the retirement of a refinery in Northern California may have improved local air quality in the surrounding community, workers who were laid off experienced nearly a 24% pay cut in their new employment (72). Even when there are promising

opportunities from transition, there can be divergent interests between labor and EJ organizations. For example, labor unions prefer large utility-scale solar projects because they create more jobs with higher wages than residential solar. EJ groups, however, prefer distributed and more decentralized solar projects because they tend to be community-rooted and more economically accessible for disadvantaged communities (68). Addressing these labor/EJ tensions—along with other general tensions in the balance between "jobs and the environment"—requires broadening policies to allow for income protection, job creation, and environmental benefits that include EJ communities.

3.3. Operationalizing EJ in Practice. Passing equitable climate change policy is only a first step. Proper implementation of new laws as well as forecasting potential inequities that may arise are also essential. Hard lessons related to the implementation of California's climate change programs point the way to considerations at the national level.

For example, AB 617, the Community Air Monitoring Program discussed above, attracted great interest and some degree of praise, at least for the intention of the program (32). Interviews with community activists, however, suggest that the program has not been sufficiently action-oriented, partly due to highly bureaucratic processes, and there are frustrations with its primary focus on supporting existing local air quality regulations and monitoring systems rather than developing new and innovative pollution reduction strategies. Moreover, while activists do want localized studies, they also worry that such a localized approach can impede forming regional or statewide efforts to reduce climate pollution and enhance cobenefits, particularly given competition between localities to obtain status as a community to be monitored under the program (32, 73, 74).

Another concern relates to the temporal dimensions of equity. Indigenous and racial justice scholars, climate justice advocates, and public health researchers aver that addressing fundamental and enduring causes of racialized and social inequities requires reparations that address the damage of the past (75); the full and equal participation of historically marginalized groups, including Native American communities, to design current policy (76); and efforts to anticipate and avoid inequalities that might emerge from new policies (77).

Climate reparation and recognition justice frameworks—looking to the past to set the terms for the future—focus on interconnections between historical forms of structural racism, including systemic wealth and land dispossession, and the disproportionate and intergenerational impacts of climate change on communities of color (78, 79). For example, colonization and land dispossession forcibly moved Indigenous peoples to areas in the United States that are now more susceptible to climate extremes, including higher temperatures and wildfire risks (80) and the suppression of Indigenous land management practices in California has further worsened wildfire risks (81). Similarly, in Louisiana's Cancer Alley, the legacy of slavery is intertwined with today's petrochemical "riskscapes," built upon former plantations, where Black communities now endure the cumulative impacts of toxic emissions from industries nearby (82, 83).

Because of this history, new climate change policies should include the restoration of Indigenous land and stewardship practices, as well as investment vehicles in mitigation and decarbonization strategies that eliminate historically intractable, racialized wealth and environmental health inequities that have persisted for generations. Such reparation frameworks can enhance climate resilience for historically marginalized and vulnerable populations (84), and both elevate and respect a contemporary concern: the centrality of community-based decision-making at local, regional, state, and federal levels in the formation of climate policy and the research that informs its regulatory implementation (85, 86).

Climate equity also calls on policymakers and other stakeholders to understand how success in one arena may impede progress in another. For example, the Strategic Growth Council, the California agency in charge of Transformative Climate Communities and four other California Climate Investment programs, has faced pressure by EJ advocates to deal with issues of green gentrification and displacement when climate-friendly upgrades (e.g., renewable energy projects, tree planting and parks, closer transit, better electric charging infrastructure) increase the attractiveness of “disadvantaged” locales for higher-income residents. With California facing a dire housing crisis, this situation underscores why protections for affordable housing should be integrated into climate change policy (87, 88).

Similarly, California’s electric vehicle (EV) mandates to have all new vehicles sold be zero emission by 2035 raise equity concerns (36); unless there are subsidies targeting the less affluent, and serious investment in expanding community charging infrastructure as well as the existing public transit system, EVs will become the preferred cars of the upper middle class with gas-guzzling and heavy polluting vehicles trickling down through the second-hand vehicle market. The result will be unevenness in local pollution reduction as well as vulnerability to volatile oil prices for Californians who can afford it the least. Finally, renewable energy projects, if not undertaken in collaboration with Indigenous communities, may impact cultural sites and culturally important species (e.g., salmon, golden eagles).

These examples show why effective climate change policy must address the past, understand the contours of privilege and disadvantage, and forecast EJ concerns with strong community-based input that can highlight considerations that may otherwise be overlooked. This must be combined with comprehensive planning that includes ripple effects and multiple factors (46). Communities who bear the burden of these challenges can provide valuable insight about both what to do and what to avoid, which can shape more effective policy.

4. What’s Next?

What is next on California’s climate equity agenda and what might be gleaned from the state’s nearly two-decade experience of conflict and collaboration on integrating EJ into climate change policies?

4.1. Looking Forward from the Golden State.

4.1.1. Climate resilience. California and other states have been devastated by wildfires, droughts, heatwaves, and severe storms in recent years—and while such disasters may seem like equal opportunity affairs, research suggests that communities

of color and the poor are often the most at risk and disparately impacted because of past and present discriminatory practices (89). In California, for example, a 2019 State Auditor’s report concluded that emergency officials that plan for foreseeable wildfires, floods, and other crises, routinely overlook marginalized populations, in particular undocumented residents who comprise approximately six percent of the state’s population (90, 91). Research in Sonoma, Ventura, and Santa Barbara counties found that undocumented migrants are rendered invisible by systemic racism and US citizenship requirements that exclude some from vital government support (92). Additionally, many undocumented individuals are afraid to seek public assistance (i.e., food or shelter) during disasters for fear of deportation or risk to their livelihoods and their families’ safety (66).

In the last few years, local immigrant rights and EJ groups in California have stepped up to provide essential services to undocumented and migrant communities when disaster recovery resources have primarily been funneled to wealthy and privileged populations. These groups provide access to emergency information in Spanish and Indigenous languages, advocate for labor protections for farmworkers threatened by heavy smoke, extreme heat, flooding, and droughts and raise philanthropic and state-supported disaster relief funds for undocumented migrants who are ineligible for federal aid (93). Advocates in California also helped lead the charge for the passage of AB 2238 that will create the nation’s first statewide ranking and early warning system for heat waves to help residents prepare for the inevitable in ways that will be equitable (94).

4.1.2. Decarbonization and resource extraction. As the largest source of GHG emissions in the United States, the transportation sector is a critical target for decarbonization. California and New York have banned the sale of gas-powered cars by 2035, and the 2022 Inflation Reduction Act is creating significant incentives to electrify transportation. As a result, consumer demand for electric vehicles is rapidly increasing, with over half of the nation’s light-duty and heavy-duty vehicle sales predicted to be electric by 2030 (95). Already in California, roughly one quarter of all new cars sold are zero-emission vehicles, with about 85 percent of those being battery electric vehicles (96, 97). This surge in demand for electrified transportation is driving global demand for metals, in particular lithium, for electric vehicle batteries.

As it turns out, California’s Imperial County, located on the border with Mexico, is home to geothermal reserves that include concentrations of lithium critical to the development of an electrified system of mobility (98). This region—being redubbed the “Lithium Valley”—is one of the poorest counties in state, with a median household income about a third that of the Silicon Valley, a population that is nearly 85 percent Latino with a sizeable share of undocumented immigrants, and a history of acute environmental health challenges, including some of the worst air quality in the country and high rates of childhood asthma (99–101). As a result of these challenges, the Imperial Valley has been an epicenter of EJ organizing.

With a potential lithium boom looming, conflicts have emerged between community and corporate actors over the size and structure of a lithium tax designed to bring benefits to region’s residents from mineral extraction (102). In addition, the rush for energy transition metals in the United

States and globally raises significant EJ and sovereignty challenges for tribal nations, given the location of many these mineral reserves on or near Indigenous land, cultural sites, and drinking water resources (103). Finally, given the history of environmental inequities in the region, not all are convinced that the clean technology promised by corporations seeking to extract lithium will not have adverse effects on water resources, local emissions, and waste disposal (104). As with the evolution of climate justice policies more generally in California, what happens in Imperial Valley and the lithium extraction industry will be determined by contention as well as collaboration.

4.1.3. Emerging carbon management technologies. In addition to electrification, carbon dioxide removal strategies, including direct air capture and carbon capture and sequestration (CCS), designed to capture carbon dioxide emissions from industrial sources and pump them deep underground, have been deemed to be essential policy tools to limit global warming to 1.5 °C, based on models by the Intergovernmental Panel on Climate Change (105). On the bright side, the Tribal and Indigenous Communities Summary for California's fourth climate assessment highlights opportunities to support Indigenous forest management and land stewardship strategies that can sequester carbon through cultural burning, for example (23, 25)

More controversial is California's new plan to achieve carbon neutrality by 2045, approved by CARB in 2022, which includes CCS, suggesting that it will be a key tool to attain the state's ambitious GHG reduction goals (106). Adding to the mix: Federal spending on research, development, and demonstration projects for these carbon removal technologies has grown from \$11.5 million in 2019 to \$32.5 million in 2020 (107), with additional tax credits and funding streams flowing from the Bipartisan Infrastructure Law and the Inflation Reduction Act, respectively.

CCS is viewed as a solution to the GHG emission problem for several industrial sectors, including oil and gas development, fossil fuel-powered electricity-generating plants, as well as manufacturers of chemicals, cement, and steel. In the oil and gas sectors of several states, CCS has been used to transport captured carbon dioxide via pipelines to enhanced oil recovery projects where it is injected into oil fields to extract additional oil that would otherwise remain underground. Many EJ advocates, including members of the Biden Administration's White House EJ Advisory Council, have strenuously objected to the rapid embrace of CCS and other carbon management technologies, citing the lack of scientific data regarding their potential environmental and community health impacts and their effectiveness at reducing GHG emissions (108). This concern has been particularly acute in communities of color that bear a disproportionate burden of exposure to oil and gas production infrastructure (109, 110). California advocates have worried that carbon capture will become an escape clause that will allow for persistent localized pollution even as GHGs are spirited away and into the ground (111)

Some scientists have also rejected CCS as a false climate solution citing its diminished viability compared to the potential of renewables (112). The issue of "false solutions" also arises with regard to calls to convert fossil fuel burning power plants to hydrogen which would raise concerns about local NO_x emissions (113). By contrast, meaningful GHG emissions

reductions must include eliminating, or substantially reducing, fossil fuel extraction and use in ways that address climate change and protect community health. In 2022, California passed legislation that would ban new oil and gas drilling within 3,200 feet of sensitive areas, where residences, schools, parks, hospitals, and churches are located, thus a significant step toward limiting fossil fuel extraction. Once again illustrating that contention is part of the journey, a forthcoming ballot initiative, sponsored by fossil fuel industry, seeks to overturn this law, and EJ communities affected by oil and gas development are actively organizing to defeat it (114).

4.2. Takeaways for Climate Change Initiatives in Other States and the Federal Level. What lessons from the California experience might be useful for shaping climate action at the national level and elsewhere? First, a national strategy is different than a federal strategy. A federal strategy assumes that all the action will occur in Washington D.C., such as the recently passed Inflation Reduction Act and its associated climate investments. These policy shifts are important as they provide resources and open the way for significant regulatory change and investments in states and local communities (115). Nevertheless, climate and EJ advocates will need to continue to work at state and local levels, where some of the most novel and forward-thinking policies will continue to be developed and provide viable and scalable frameworks for effective federal action. The success of these efforts will vary across states, given their diverse political and socioeconomic contexts, and depending on the power and coalition strength of EJ, labor, public health, and traditional environmental constituencies (70).

Second, as the history and evolution of California's climate change policy demonstrate, having the right policy is only as effective as its successful implementation. By some estimates, the Inflation Reduction Act increased the funding for EJ initiatives by 250 times (116). Thus, as federal agencies distribute these investments, it will be important to transparently track how those funds are spent, and whether EJ communities are able to access them to implement community-driven climate change solutions at multiple scales. New mapping tools and data collection schemes will be necessary and the debate about the proposed Climate and Economic Justice Screening Tool to guide Justice40 should be robust (45).

Third, the California experience suggests that centering equity in climate change policy makes political sense and can be achieved through coalition-building to negotiate and derive policies that address labor concerns and EJ concerns. Lessons learned from California provide a framework for broader and better-resourced policies at the federal level, including the \$369 billion in climate investments from the Inflation Reduction Act, that seek to enhance access to thermally efficient and gas-free public housing and schools, zero-emission and nonpolluting household energy and public transportation, safe and affordable drinking water and sewage infrastructure, and sustainably produced and nutritious food, as well as opportunities for workforce development related to climate, sustainability, clean energy, housing, and other infrastructure initiatives. Linking decarbonization with economic programs, such as affordable housing, higher

wages, and educational and job opportunities, elevates public support for climate change mitigation, particularly among labor groups in communities of color (117).

Finally, as we have stressed throughout this article, effective climate justice policies will not likely result through deliberations in scientific journals or at academic conferences. While social scientists as well as climate, natural, and public health scientists have much to offer to inform and design future policies, particularly by providing an empirical basis for action, the imperative for considering equity issues comes from disadvantaged and marginalized communities organizing and

elevating their voice. California's leadership on climate justice may be incomplete, but what progress the state has achieved in this arena has emerged from vigorous contention about competing priorities. We must embrace and engage with these challenging debates about viable paths forward that address the multiple and interconnected crises of our times: the legacy of racism and racial exclusion, the reality of economic disenfranchisement, and the threat of global warming.

Data, Materials, and Software Availability. There are no data underlying this work.

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