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REPORT | JANUARY 2024

THE PROMISE OF GENDER INCLUSIVE CLIMATE ACTION

An Introduction to the Gendered Impacts of Climate Change and Recommendations for Action in California

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Executive Summary

As the earth warms, all people will suffer the harms caused by climate change. But the impacts will not fall equally. Women are disproportionately suffering the burdens and impacts of climate change, according to the scientific consensus which has emerged in the last fifteen years. In recognition of this fact, in 2019 the parties to the United Nations Framework Convention on Climate Change (UNFCCC) adopted a Gender Action Plan, enshrining the principles of gender equity and equality in global climate agreements.

Unfortunately, this key international equity-enhancing protocol has yet to reach California. While California has made substantial progress in integrating racial and economic equity in climate research and policy, an awareness of how women are differently and disproportionately affected by climate change and a commitment to gender-inclusive climate action—perspectives which are common in global climate governance and in most of our peer nations—are largely absent from state and national climate considerations.

The Promise of Gender Inclusive Climate Action is intended as an introduction to the current global research and frameworks on climate and gender.[1] It features our original demographic analysis, showing how the geographic distribution of women across California's climate regions could affect their exposure to climate change impacts. We review the extensive academic and institutional research on the gendered dimensions of climate change on women and provide examples of model policies and planning frameworks to integrate gender considerations within climate action. The report concludes with recommendations on ways to advance gender equity in climate action in the California context. While California is the focus herein, many of our methods, findings, and recommendations are applicable to climate research and policymaking elsewhere in the United States.

Climate change exacerbates all forms of inequality, and inequality between men and women remains one of the fundamental social divides globally, in the U.S., and in California. Two principal dynamics are at the root of women's greater exposure, sensitivity, and vulnerability to climate change, no matter where they live: 1) economic inequality and 2) women's disproportionate responsibility for caregiving and domestic labor.

One, on average, women earn lower wages, possess less wealth and savings, and are employed in lower-paying occupations than men. Women are more likely than men to be poor.[3] They are underrepresented in high-paid management and leadership roles and

KEY FINDINGS

Women's greater vulnerability to climate change stems from two primary dynamics—gendered economic inequality and women's disproportionate responsibility for caregiving.

GEPI's analysis of data relevant to disparate climate impacts reveals that in California:

- **1 in 3** women-led households are energy burdened and **2 in 3** are rent burdened
- Women spend **2x** as much time as men caring for children
- **72%** of healthcare workers are women
- **58%** of Californians aged 75+, the group most sensitive to health impacts from the climate crisis, are women
- **7 in 10** Latinas live in areas where extreme heat is intensifying
- Women are paid just **66 cents** for every dollar paid to White men
- **8 in 10** paid care workers are women
- Native American women are nearly **3x** as likely as White men to be poor.[2]

have less access to capital for business formation. The jobs most likely to be created by public investment to advance the transition to clean energy and a green economy—such as in infrastructure, construction, energy and water systems, and public safety—are ones in which women are grossly underrepresented. For example, only 32% of renewable energy jobs in the U.S. are held by women.[4]

Two, women do a disproportionate share of caregiving and domestic work in the home. And, as importantly, women make up the overwhelming majority of paid caregivers and domestic workers.[5] The gender gap in care, also known as the care burden, often reinforces women's economic disadvantages; taking care of children, older parents, or ill or disabled relatives leaves women with less time for paid work. The COVID-19 pandemic, which saw a plunge in women's labor force participation, illustrated that when emergencies strike, women are the ones most likely to forego paid work to handle the increased burden of care.[6]

In sum, gendered economic inequality and caregiving disparities amplify women's sensitivity and vulnerability to the impacts of climate change and reduce their adaptive capacity. Racial and gender inequality intersect, resulting in greater vulnerability for women of color.

The research is clear, as we document in section 4. Women make up a sizable majority of the elderly, the population most sensitive to climate impacts. Women are more likely to struggle economically to pay energy bills and more likely to live in homes with poor energy efficiency.[7] Women and girls are particularly vulnerable to gender-based violence during climate-driven disasters like wildfires and floods. Numerous studies have documented worse maternal and neonatal health outcomes associated with climate-driven droughts, heat waves, floods, and vector-borne disease. As crucially, women are less likely to be included in the benefits of climate action, whether through investments or job creation.[8]

California is a global leader on climate action and is uniquely poised to model innovations in the U.S. on climate and gender. Under the administration of Governor Gavin Newsom, California has already achieved success on one of the UNFCCC's priority areas, the equal participation and leadership of women in climate decision-making. Applying a gender lens to climate change assessments and setting gender equity goals are well aligned with the state's expressed principles of climate action and can be incorporated relatively seamlessly into many of California's action plans and policies.[9] In California, there is supermajority public support, particularly among women, for bold climate action.[10]

How California innovates to tackle the climate crisis is widely influential in the U.S. and abroad. Making a commitment to advance gender equality while addressing climate change could unlock enormous untapped opportunities for the California economy and the well-being of Californians. Promoting gender equity within climate action and guaranteeing that women can participate fully in building a climate ready economy has the potential to be a force multiplier for meeting California's ambitious climate goals.

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Section 1: A Gender Analysis of Climate Impacts on California's People

Every Californian has already experienced the effects of climate change, from extreme heat and wildfire to drought and floods. Yet the particular source and severity of climate impacts vary substantially across the diverse ecosystems and social geographies of the nation's most populous state.

Simply put, where Californians live and work plays a determinative role in how they personally experience climate change and, consequently, what strategies and solutions will be most critical to protect their health, safety, and livelihoods.

Women and girls, to be sure, live in communities with men and boys. But our current frameworks of analysis tend to ignore their distinct gendered experiences. Consider that the state of California defines climate vulnerability to include "race, class, sexual orientation and identification, national origin, and income inequality." Gender and sex are not explicitly called out. As this illustrates, women tend to be invisible or overlooked—unless and until a gender perspective is consciously integrated into the framework of analysis.[11]

To identify who will be impacted by what types of climate-driven events and impacts, we conducted an original demographic analysis of the nine climate regions delineated in California's Fourth Climate Change Assessment.[12] (See Methodology.)

California is home to 39.2 million people, of whom 19.6 million are women and girls.[13] Its population is concentrated in the southern part of the state, as seen in the map in Figure 1.

The regions vary enormously by population size and racial and ethnic diversity.

Fully 45% of Californian women and girls live in the Los Angeles region, which includes Los Angeles County, Ventura County, and western Riverside and San Bernardino Counties. The Los Angeles region is majority women and disproportionately female relative to the state population as a whole. (See Table 1.)

A majority of Latina (53%) and Black women (51%) live in this one climate region, as do four in ten Asian American Pacific Islander (AAPI) and one in four Native American women. An additional 11% of Californian women and girls live in the two other southern California climate regions, the San Diego (8%) and Inland Deserts (3%) regions.[14]

The next largest concentration of women can be found in the San Francisco Bay Area region, which is home to 19% of the state's women and girls. One third of all Californian AAPI women and girls live in this region. An additional 3% of Californian women and girls live in the neighboring coastal areas to the south, the Central Coast region.[15]

Roughly 17% of Californian women and girls live in the inland Sacramento Valley and San Joaquin Valley regions. The Sacramento Valley is majority women, while the San Joaquin Valley is majority men.[16]

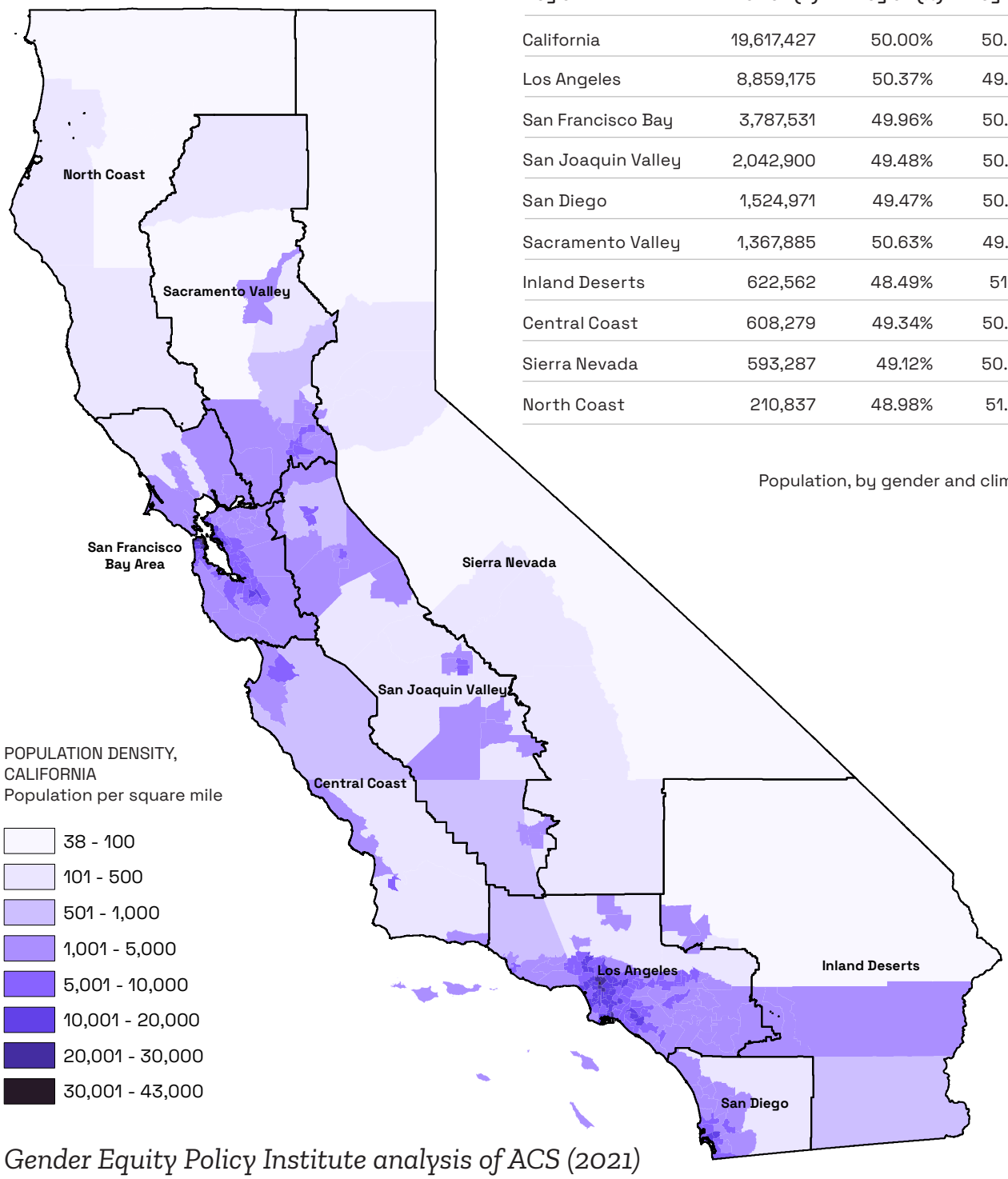
The state's largest regions by land area, the Sierra Nevada and North Coast regions, are sparsely populated, containing only 3% and 1% of the state's women and girls respectively. These two regions are majority men; they are disproportionately male relative to the state population as a whole.[17]

Due to the concentration of women and girls in places projected to experience more frequent, longer, and severe heat waves, women and girls in California are particularly at risk from extreme heat. This is of particular concern because extreme heat is the most dangerous and deadliest impact of climate change.[18] Temperature extremes are most severe in southern California and in dense urban areas.[19] Regions which have always been hot will experience longer and more intense heat events.

Extreme heat increases morbidity and mortality, increases the risk of occupational health problems, and negatively affects mental health and student performance. One study estimates that under some climate scenarios, an additional 6,700 - 11,300 deaths in California could result from rising heat.[20] The elderly are particularly vulnerable to heat-related illness and death; women make up 55% of Californians over the age of 65 and 58% of Californians over 75.[21]

California climate regions vary enormously by population size, race and ethnicity, and gender

FIGURE 1



Region	Women (#)	Share of women in region (%)	Share of men in region (%)	Share of CA women in region (%)
California	19,617,427	50.00%	50.00%	100%
Los Angeles	8,859,175	50.37%	49.63%	45%
San Francisco Bay	3,787,531	49.96%	50.04%	19%
San Joaquin Valley	2,042,900	49.48%	50.52%	10%
San Diego	1,524,971	49.47%	50.53%	8%
Sacramento Valley	1,367,885	50.63%	49.37%	7%
Inland Deserts	622,562	48.49%	51.51%	3%
Central Coast	608,279	49.34%	50.66%	3%
Sierra Nevada	593,287	49.12%	50.88%	3%
North Coast	210,837	48.98%	51.02%	1%

TABLE 1:
Population, by gender and climate region, California

Gender Equity Policy Institute analysis of ACS (2021)

A substantial share of Californian women and girls live in communities particularly exposed to extreme heat. Nonetheless, other climate impacts and climate-driven extreme events also result in gendered effects.

Climate-driven droughts and floods degrade water supplies. Nearly 1 million Californians already lack regular access to safe and clean drinking water.[22] The evidence from other nations, as well as from U.S. cases such as the Flint water crisis, shows that the burden of providing clean water for drinking, bathing, and cooking, typically falls more heavily on women.[23] Devastating and more frequent wildfires have destroyed homes, forced evacuations, and subjected residents to dangerous wildfire smoke. During evacuations and recovery from climate-driven disasters like wildfires and floods, women and girls are at heightened risk of gender-based violence. Numerous studies have shown worsening maternal and neonatal health outcomes associated with climate-driven events. (See section 4.1.) More research is needed to understand the intersection of gender and sea level rise in the context of California.

TABLE 2:
Population, by race/ethnicity and California climate region

Region	Population (#)	Share of people of color in region (%)	Share of white population in region (%)
California	39,512,223	66%	34%
Los Angeles	17,588,815	72%	28%
San Francisco Bay	7,580,831	64%	36%
San Joaquin Valley	4,128,836	71%	29%
San Diego	3,082,657	57%	43%
Sacramento Valley	2,701,615	51%	49%
Inland Deserts	1,283,984	67%	33%
Central Coast	1,232,788	58%	42%
Sierra Nevada	1,207,849	42%	58%
North Coast	430,461	34%	66%

People of color includes people who identify as Asian American Pacific Islander, Black, Latino, Multiracial, or other race. White population includes people who identify as non-Hispanic White. See Appendix for a full race/ethnicity breakdown of Californian population. GEPI analysis of ACS 2021.

Section 2: The Global Commitment to Gender Inclusive Climate Action

Before 2009, gender considerations were largely absent from international climate change debates, frameworks, and policies. Likewise, global gender equality frameworks, such as the 1995 Beijing Declaration, recognized women's role in sustainable development but nevertheless overlooked the potential gendered impacts of climate change for women's equality.

In 2009, the Committee on the Elimination of Discrimination against Women addressed this oversight by highlighting the gender-differentiated impacts of climate change and the pivotal role of women in climate strategies. It called for gender equality to be included as a guiding principle in future UNFCCC agreements.[24] The 2010 Cancun Agreement, reached at COP 16, marked progress toward this objective. It acknowledged the importance of gender equality to effective climate action and urged a gender-responsive approach to climate policy.[25]

From 2012 onwards, the UNFCCC began to weave gender considerations into climate change policies, with an important step taken in the Lima Work Program on Gender (2014). In 2019 at COP 25, the parties adopted an enhanced Lima Work Program and a Gender Action Plan which identified five priority areas of work: 1) capacity-building, knowledge management, and communication; 2) gender balance, participation, and women's leadership; 3) coherence, or ensuring members of constituted bodies were well-versed in gender-related mandates; 4) gender-responsive implementation, promoting technological solutions and engaging women's groups in climate policy; and 5) monitoring and reporting on progress.

In 2023 at COP 28, the United States was one of 68 countries to sign onto a new UNFCCC initiative, the Gender-Responsive Just Transitions and Climate Action Partnership. In addition, the U.S. announced a $1.4 billion investment in the Women in the Sustainable Economy (WISE) initiative.[26]

Section 3: Race, Gender, and Climate change

Gender inequality converges and intersects with other forms of systemic inequities, particularly those rooted in racism. Racial and ethnic disparities in environmental burdens in California are stark, a legacy of decades of discriminatory public policies such as redlining and zoning. People of color make up a disproportionate share of those living in a California Environmental Protection Agency defined disadvantaged communities (DACs).[27] People who live in these communities often lack safe drinking water, have disproportionately high rates of asthma, and are exposed to a higher level of environmental hazards, among other adverse impacts.

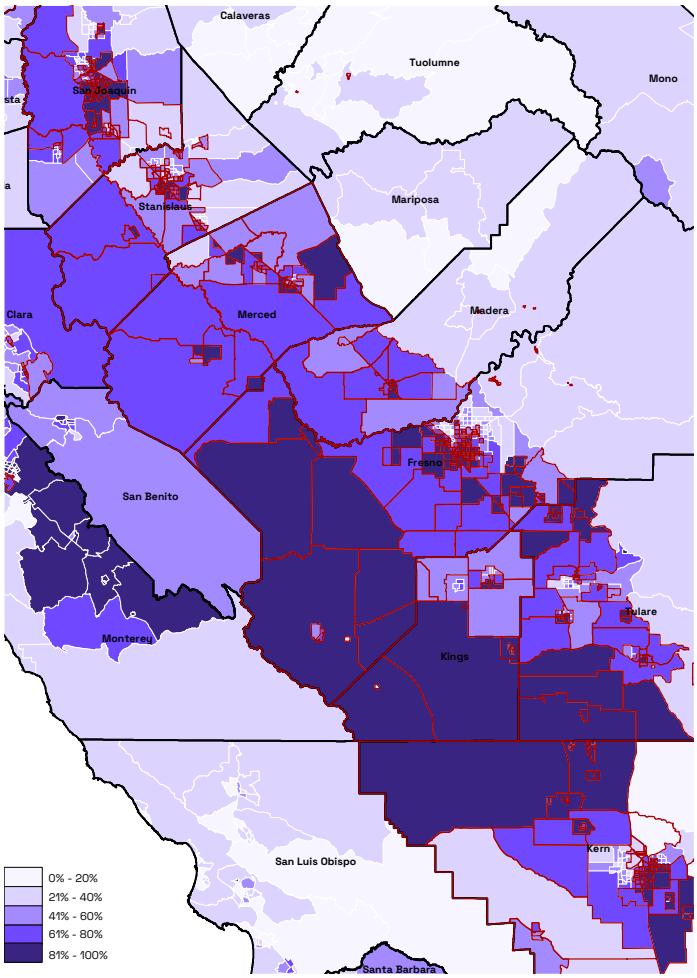
More than seven in ten Black, Latina, and Native American women in California live in a low-income or heavily polluted community, compared to just four in ten White women. The heaviest concentrations of DACs can be found in the Los Angeles region, the San Joaquin Valley, and the East Bay of the San Francisco Bay Area region. (See Figures 2-4.)

Analyzing and merging state and federal datasets, we find that 88% of women living in DACs in southern California are Black, Latina, AAPI, or Native American. More than 3 million women of color in the Los Angeles region live in heavily polluted communities. In the San Francisco Bay Area, about 1.3 million women of color live in low-income communities.[28] People experiencing intersecting forms of marginalization are often disproportionately exposed to harmful climate impacts and have less capacity to adapt. More research that focuses on women of color—where they live and work and their unique vulnerabilities to climate change—is urgently needed.

At least 7 in 10 of Latinas in California live in areas where extreme heat is intensifying.[29]

In many of California's disadvantaged communities, people are already experiencing the cascading effects of climate change. Consider the San Joaquin Valley. Extreme heat in the region is particularly dangerous to health and livelihoods, due to the large share of low-income Latino and immigrant men and women who work outdoors in agriculture or extractive industries. Wildfires in the nearby mountains increase air pollution in an area that already suffers from some of the worst air quality in the nation. Overdrawing of groundwater by agriculture has left many communities with unclean and scarce drinking water. Alternating years of drought and floods lead to damaged homes, lost jobs and productivity, crop destruction, and heightened risk of disease from vector-borne disease and mold.[30]

FIGURE 2:
WOMEN OF COLOR IN DISADVANTAGED COMMUNITIES, SAN JOAQUIN VALLEY



Women of color as share (%) of women, by census tract (2019), San Joaquin Valley region. Counties are outlined in black. Census tracts are outlined in white, with tracts identified in CES 4.0 as disadvantaged communities overlaid with red. GEPI Analysis of NHGIS (2019) and CES 4.0.

More than 3 million women of color in the Los Angeles region live in heavily polluted disadvantaged communities

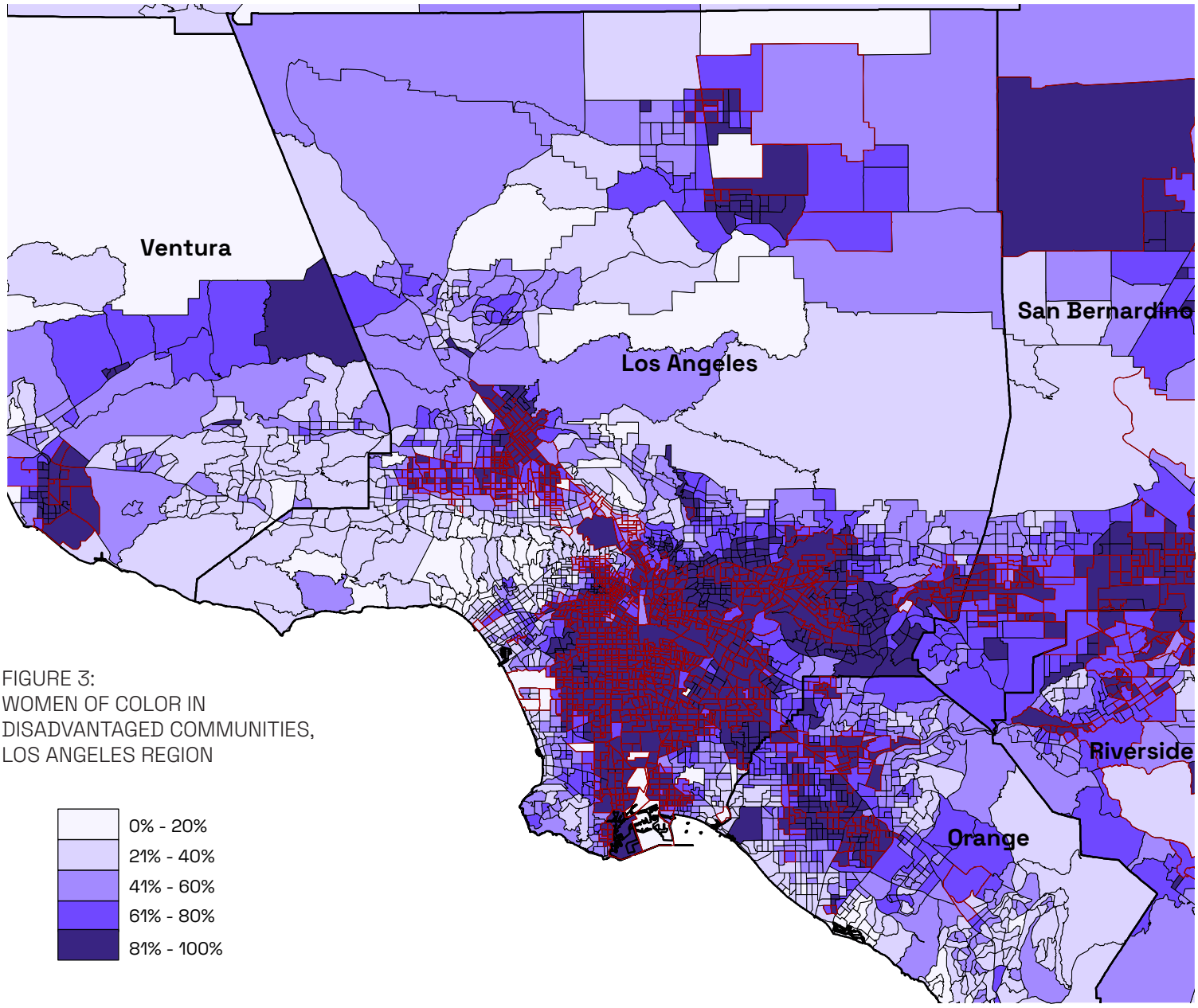


FIGURE 3:
WOMEN OF COLOR IN DISADVANTAGED COMMUNITIES, LOS ANGELES REGION

Women of color as share (%) of women, by census tract (2019), Los Angeles region. Counties and census tracts are outlined in black. Census tracts identified in CES 4.0 as disadvantaged communities are overlaid with red. GEPI Analysis of NHGIS (2019) and CES 4.0.

1.3 million women of color live in low-income communities in the San Francisco Bay region. About 300,000 live in heavily polluted disadvantaged ones.

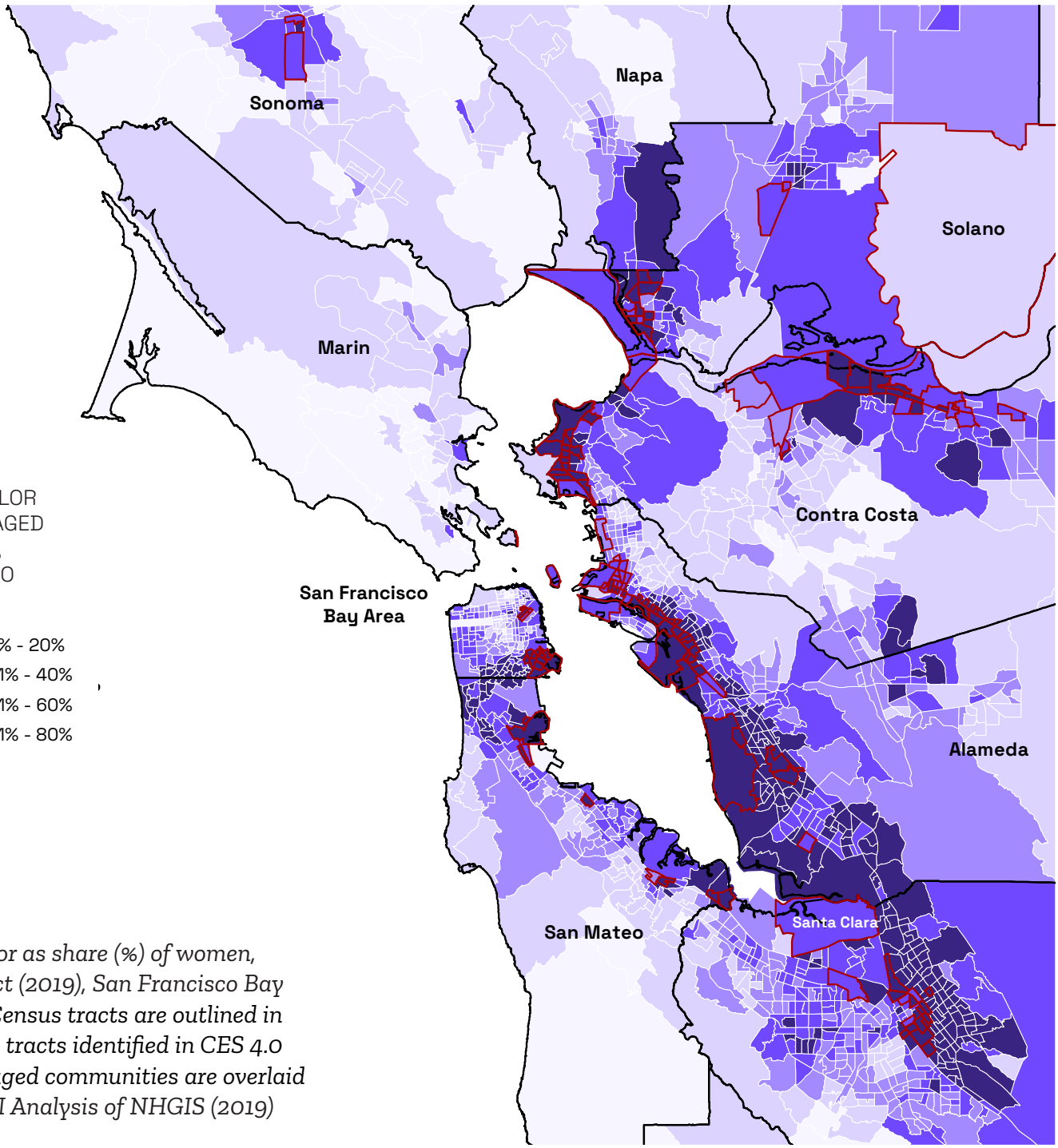


FIGURE 4:
WOMEN OF COLOR IN DISADVANTAGED COMMUNITIES, SAN FRANCISCO BAY AREA

Women of color as share (%) of women, by census tract (2019), San Francisco Bay Area region. Census tracts are outlined in white. Census tracts identified in CES 4.0 as disadvantaged communities are overlaid with red. GEPI Analysis of NHGIS (2019) and CES 4.0.

Section 4: The Gendered Dimensions of Climate Impacts

Gender inequality remains pervasive globally. No nation has achieved gender equality. According to the Global Gender Gap Index, the United States ranks 43rd among the 146 nations.[31]

Women's greater vulnerability to climate change stems from two primary dynamics: economic inequality and women's disproportionate responsibility for caregiving and domestic labor. Women on average are paid less and have accumulated less wealth. Women do a disproportionate share of caregiving and domestic work worldwide; time studies provide evidence that this is equally true in California and the United States overall.

The following statistics about women in California illustrate women's particular vulnerability that can be exacerbated by climate change:

- Women are paid just 66 cents for every dollar paid to White men
- 69% of women-led households are rent burdened, meaning they spend more than 30% of household income on housing costs
- Nearly 2 in 5 single mothers (38%) are energy burdened, paying an unaffordable share of household income for power
- 19% of Black women live below the federal poverty line
- Native American women are nearly 3x as likely to be poor as white men
- Women in California spend 2X as much time as men caring for children[32]
- Women make up 8 in 10 paid care workers in California
- Nearly 4 in 10 farmworkers in California agriculture are women[33]
- Labor force participation among AAPI and Black women declined by as much as 8 percentage points during the COVID-19 pandemic[34]
- 58% of Californians aged 75+ are women

Climate-driven events increase the burden on caregivers, who are disproportionately women

In many wealthy democracies, government support for parental leave, childcare, and early childhood education alleviates the care burden for families; family benefits in most countries are also gender-neutral and available to men and women. Compared to our peers, the U.S. invests a paltry amount in families. Public spending on family benefits accounts for 2.42% of GDP in Germany and 3.3% in Denmark, but only 0.67% of GDP in the United States.[35]

Childcare workers, long-term care workers, nannies, and housekeepers are low-wage workers, who often lack sick days, paid family leave, or basic labor protections. These occupations pay less than ones in which men with similar skill and education levels dominate.

In sum, gendered economic inequality and caregiving disparities amplify women's vulnerability and sensitivity to climate impacts and reduce their adaptive capacity.[36]

In the following sub-sections, we review and synthesize the research in several key areas in which women and men experience the impacts of climate change differently by virtue of gendered social and cultural norms or biological differences, and the implications of these differences for protecting health and livelihoods, saving lives, and building resilience.

On an average day in the U.S., older women (55+) provide 26.6 million hours of unpaid care labor.[37]

Section 4.1: Health

The health consequences and impacts of climate change are markedly gendered. Most importantly, in considering the gendered dimensions of climate change on health, is the fact that the U.S. and California health systems are critically dependent on a woman-dominated workforce. More than seven in ten

healthcare workers in California are women.[38]

The healthcare system is critical infrastructure, just as the electrical grid, water systems, and roads are. Its collapse from extreme climate events would have "cascading impacts," according to the Los Angeles County Climate Vulnerability Assessment. Conducting a network analysis of infrastructure interdependences, the report concluded, "It is people who keep infrastructure running. . . . Workers are a key bridge between infrastructure and community function, making them also a single point of failure."[39] As we witnessed during the COVID-19 pandemic, a worrisome national shortage of trained healthcare workers emerged and threatened to compromise care.[40] The pandemic caused enormous physical and emotional strain on healthcare workers, leading many to retire or leave the workforce. Climate planning must prioritize a gender-sensitive approach to ensuring the resilience of health systems and investing in and supporting these women healthcare workers.

Threats to human health posed by climate change affect women differently, and in some areas, disproportionately. A large body of research documents the adverse physical and mental outcomes for women due to climate change. For example, one study on the 2008 wildfires in California found that among those over age 65, women were more likely than men to visit the emergency room for asthma-related conditions.[41] Lack of cooling during heat waves increases mortality rates, particularly among elderly women.[42] Women showed a greater risk of mental health-related emergency room visits during heat waves, a study in the American Journal of Epidemiology concluded.[43]

Social and cultural norms are the main drivers of gendered climate effects, but biological sex differences also play a role in the different health impacts of climate change on women and men.

Extreme heat has a greater impact on human health than any other climate impact.[44] And it poses significant health risks for pregnant women and newborns.[45] Heat waves have been linked to poor maternal and neonatal outcomes, including eclampsia, low birth weight, preterm birth, and miscarriage, with women of color being disproportionately affected.[46] One study found a 16 percent increase in preterm births during heat waves, with Black and Latina women facing higher risk of preterm birth or stillbirth compared to White women.[47] A 2010 study of California births found an 8.6% increase in preterm delivery associated with a 10 degree Fahrenheit increase in weekly average temperature, with a greater association observed for Black, Asian American, and younger mothers.[48]

Numerous studies have demonstrated adverse outcomes from climate-driven floods, wildfires, and vector-borne disease for pregnant women, new mothers, and babies. Floods have been found to be associated with low birthweight and stillbirth.[49] Wildfires have been linked to low birth weight and increased preterm births.[50] Physiological changes during pregnancy make women particularly vulnerable to vector-borne diseases.[51]

The increasing incidence of climate change driven illness, injury, and adverse mental health outcomes is likely to exacerbate women's disproportionate burden of care, both at home and at work. When smoke advisories warn people to limit physical activity and stay indoors, or schools and other care facilities close because of hazardous air quality or floods, primary caregivers are the ones who must step in to care for children, the elderly, and the chronically ill.

Racial and ethnic disparities in income, wealth, and exposure to pollution exacerbate the vulnerability of Black, Latina, and Native American women, placing them at a significantly higher risk of detrimental health outcomes.[52] People of color suffer from higher rates of asthma, cardiovascular disease, and other diseases, which increase their sensitivity and vulnerability to wildfires, extreme heat, and floods.[53] Women of color are more likely to reside in a census tract characterized by a higher intensity of surface urban heat island during summer daytime hours, compared to their White counterparts.[54] They are more likely to live in poorly insulated houses with limited capacity to mitigate extreme temperatures or air pollution.[55]

Section 4.2: Energy

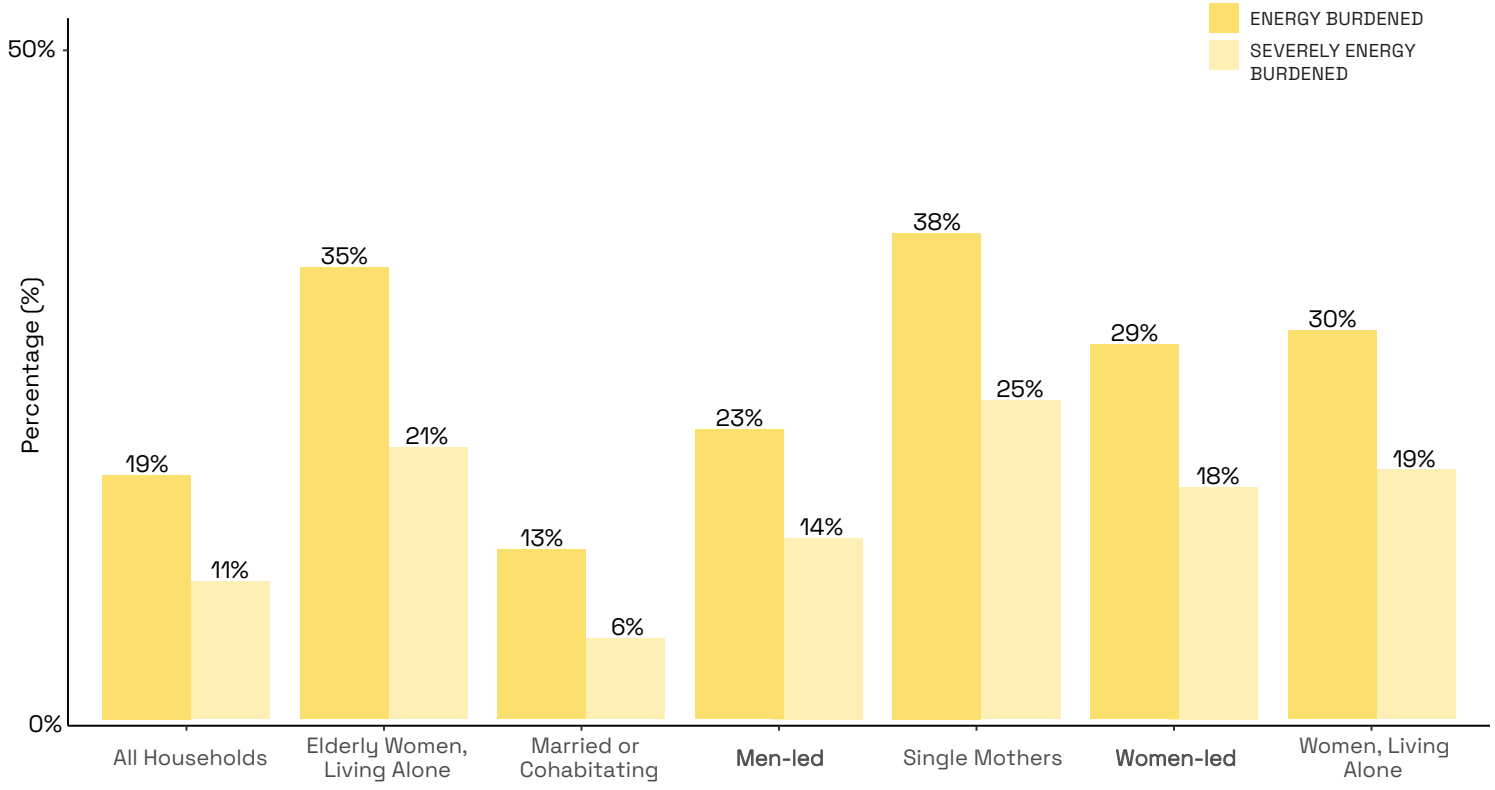
The ability to afford energy is a critical determinant of well-being, according to the World Health Organization. As temperatures rise in California due to climate change, the cost of cooling can make up a significant chunk of household energy expenses, particularly for low-income families, who tend to live in homes with poor energy efficiency.[56]

Women are at greater risk of being energy burdened, defined as spending over 6% of household income on energy costs. GEPI's analysis of energy costs finds that 29% of women householders in California face high energy burdens, roughly 10 percentage points higher than the state overall. Nearly four in ten single mothers (38%) are energy burdened.[57]

At times compelled to choose between paying utility bills or paying for basic needs like food and medication, the repercussions for the health and well-being of energy burdened household members can be substantial. They include debt, utility service disconnections, and poor indoor air quality, which can cause or exacerbate respiratory illnesses.[58] High energy costs can increase care burdens of women in energy poor households, forcing them to expend considerably more time on household tasks when access to labor-saving electrical appliances is limited.[59]

Energy-burdened households can take advantage of programs that offer incentives for efficiency upgrades, but women-led households are less likely to benefit from such programs. Women-headed households show lower adoption rates of energy-efficient technologies like heat pumps and smart thermostats compared to other households.[60]

WOMEN-LED HOUSEHOLDS ARE THE MOST LIKELY TO BE PAYING UNAFFORDABLE SHARES OF FAMILY INCOME ON ENERGY



Energy burdened households spend more than 6% of their income on energy costs. Severely energy burdened households spend more than 10% of their household income on energy costs. GEPI analysis of ACS 2021.

The obstacles to the adoption of cost-saving improvements are aggravated in California, with its disproportionately high share of renters and rent burden. Landlords often have less incentive to invest in energy efficiency upgrades, because tenants typically are responsible for utility bills. Some incentive programs are only available to homeowners, not renters. In California, 69% of women-led households and 77% of single-mother led households are rent burdened, leaving little disposable income for home improvements.[61]

Section 4.3: Extreme Climate Events and Emergency Preparedness and Response

In the wake of natural and climate-disasters, women bear a significantly higher risk of harm than men. Globally, women and children face a death rate 14 times as high as men.[62] For example, in the 2004 Southeast Asian tsunami, 70% of victims were women. During the 2003 heat wave in Europe, fatalities were higher among women.[63]

Natural disasters often lay bare and intensify the prevailing gender inequalities in society. On average, women have fewer economic resources to see them through emergencies and recover and adapt in their aftermath. They are at greater risk of food insecurity, displacement, or impoverishment following disasters and extreme events.

Disaster-related evacuation, emergency sheltering, and relocation place a particularly acute burden on caregivers to children, older adults, and disabled people. The disruption to healthcare access can be particularly dangerous to pregnant people and new mothers.

Women tend to be less prepared for emergencies than men, studies have shown. A national survey conducted by FEMA found that men were more likely than women to report they had been prepared for a disaster for at least one year. Other studies found women less likely to report having a three-day supply of water, food, and medicines.[64] Women's saving rates are lower than that of men, leaving them with limited resources to recover after a disaster.[65] For example, after Hurricane Katrina, women were more likely to request loans from the Small Business Administration.[66]

Women, especially those with low-incomes or in marginalized groups, suffer more severe mental health impacts in the aftermath of natural and climate-driven disasters. Women are more likely than men to suffer from mood disorders such as depression and anxiety and post-traumatic stress disorder (PTSD)—although they also show signs of greater post-disaster resilience compared to men.[67]

One study on the impacts of Hurricane Katrina found that the loss of financial and personal resources, combined with severe hurricane exposure, was associated with postpartum depression.[68]

Case Study:
Caregiver Resiliency Teams Project, California

In 2022, the California Workforce Development Board created a pilot program in collaboration with SEIU Local 2015 and the Center for Caregiver Advancement to train nurse aids and home care workers on emergency preparedness and response for their clients and themselves.

The work of paid caregivers takes place in the homes of people particularly vulnerable to extreme weather events and climate driven disasters, whose needs are often not well integrated into evacuation and emergency planning and delivery. Care workers often "become the connection point for fire and police," SEIU executive vice president Kim Evon told *The 19th*. "The program is important, because it's actually targeting the providers who live and work in communities that are more susceptible to these extreme weather events."

The program is an excellent example of how intersectional gender-awareness—which takes into view gender, race, age, and disability—can lead to better policy that saves lives and empowers its participants to be agents of change.[69]

Disasters place children at particular risk for anxiety, lingering PTSD, and other mental health problems. Studies have shown that a significant predictor of child mental health is the mental health of the primary caregiver: Children fare better if the mental health needs of their caregivers are addressed.[70]

Many studies show adverse reproductive health outcomes from climate-driven disasters and extreme events like floods and heat waves. (See section 4.1) As significantly, extreme events and disasters can lead to disruptions in access to reproductive health care. Pregnant women and new mothers may find it difficult during these times to access prenatal care, emergency obstetric services, postnatal care, and breastfeeding support. Studies have shown that after disasters, contraception can become more difficult to access, particularly for women of color.[71]

The American College of Obstetricians and Gynecologists (ACOG) has issued guidance for emergency preparations for hospitals and for health care providers to help reproductive healthcare patients develop emergency plans. Specifically, ACOG recommends that "hospitals with maternity services should develop specific strategies for stabilizing and transporting obstetric patients, managing surge capacity and the need for consultative services, sheltering-in-place, and incorporating regional facilities that do not provide maternity services."[72]

Disasters heighten women's risk of intimate partner violence and gender-based violence.[73] A meta-analysis published in *The Lancet* found that most studies on the subject showed an increase in one or several forms of gender-based violence during and after extreme events.[74] Women and girls often find themselves in unsafe, overcrowded emergency shelters, making them susceptible to sexual and interpersonal violence. Numerous studies of Hurricane Katrina (2006) have shown an increase in gender-based violence, with one study finding a more than threefold increase in intimate partner violence compared to U.S. baseline rates.[75] Increased post-disaster vulnerability to gender-based violence is particularly pronounced among women of color.[76]

Section 5: Recommendations for Embedding a Gender Perspective in Climate Work—Four Foundational Elements

Understanding differences in women and men's experience of climate change is the first step to crafting policy that addresses gender inequities and ensures that women and men can benefit equally from climate solutions. Governments at all levels should strive to implement gender inclusive and responsive policies to address climate-change exacerbated gender inequality and promote intersectional gender equity.

This section explores the foundational elements of gender-responsive climate policy. It is followed by specific policy recommendations in the final section of the report.

1. When performing climate change impact assessments, include gender analysis

The first foundational step for advancing gender equity in climate change policy is to include a gender analysis in policy formulation and planning. In this way, existing gender disparities can be identified early on, allowing for mitigation or remediation to be built in. Likewise, gender assessments can reveal opportunities to accelerate equity as a co-benefit of climate action and, as a consequence, promote more effective and sustainable results.

Such *ex-ante* analysis is already a required component of policy development in many of our peer nations and currently integrated in international climate analyses. While agency and legislative staff and planners will likely need training in gender equity analysis and gender-responsive policy solutions, planners have the expertise and skills to perform the typical components of gender assessments.

As California agencies update climate plans, such as CARB's Scoping Plan, CNRA and OPR's Extreme Heat Action Plan, and CNRA's California Climate Adaptation Strategy, there will be many opportunities to integrate gender impact assessments in the state's planning process.

Many tools and protocols have been developed by international agencies and peer nations. The European Union has called for enhanced gender analyses of climate policies, focusing on report preparation, the incorporation of gender-climate connections in the Gender Equality Index 2023, and the development of a communication package for member states. UN Women has published many toolkits with step-by-step explanations of how to put a gender lens on climate.[77]

2. Mandate collection, analysis, and reporting of gender and race/ethnicity disaggregated data

To harness the opportunities decarbonization, mitigation, and adaptation offer and to protect Californians from climate change, it is essential to first understand who is affected by specific climate impacts and extreme events.

The Fourth Climate Change Assessment Regional analyses reflected a nuanced understanding of the ways climate change is unfolding in the diverse ecosystems of California. But the Fourth Assessment reported only aggregate population counts. In doing so, it missed the opportunity to address the fundamental equity questions: who exactly is impacted by what, and how do the effects differ across various identities and demographic groups.

At Gender Equity Policy Institute, we have conducted detailed demographic analysis of the nine climate regions and have identified meaningful gender, race, and ethnicity differences between the regions. The regions vary enormously by population size, proportions of racial and ethnic groups within, and in some cases and years, show statistically significant gender differences. (See Section 1.) Given these regional gender differences, state climate policies and investments will benefit men and women differently, depending on the region to which action is directed.

California's Fifth Climate Change Assessment, currently underway, is updating regional boundaries. It is critical that a detailed intersectional demographic analysis of California's population by climate region is included. While the regions are undoubtedly helpful for geographical purposes, if used to apportion or distribute resources to communities across the state, the results will be grossly imbalanced.

California's innovative climate policies have been designed to apply universally, as well as to advance equity for vulnerable communities. But gender and women are currently missing from the definition of vulnerability and, for the most part, overlooked in the debate on climate impacts and solutions. More research is needed to determine if this oversight results in women being passed over or excluded from protections and benefits. Gathering, analyzing, and making public the relevant data is the first step to evaluating how fair current policies are, as well as where effort should be directed to advance intersectional gender equity in the future. In sum, collecting and reporting data disaggregated by gender and race/ethnicity will help California establish baselines to enable the state to measure progress on equity.

3. Empower women as agents of climate action

Gender-balanced leadership in climate governance and equal representation for women-led groups in stakeholder participation is a priority in the UNFCCC Gender Action Plan. Historically, on the global level, women have been underrepresented in global climate leadership.

By contrast, California and the Biden administration have already achieved near parity in climate leadership. Women are heads or deputy heads of key agencies in California, and at the federal level, they are cabinet secretaries of pivotal federal departments and agencies. Importantly, women lead many influential non-governmental and community-based environmental justice and climate organizations, particularly in California.

A robust research literature in the social sciences demonstrates that representation of marginalized groups leads to more inclusive and equitable policy. Nevertheless, the responsibility for gender inclusive

climate work cannot rest solely on women's shoulders. All people in leadership—men, women, and gender non-conforming people—should cultivate knowledge of the gendered impacts of climate change and be committed to pursuing gender inclusive climate action.

To ensure California remains on the right track on women's leadership, the state should track and report demographics of people elected or appointed to leadership positions in agencies and commissions. Developing and deploying trainings on gender analysis and policy can develop the intragovernmental commitment and expertise needed to implement effective gender-inclusive climate policy.

4. Integrate gender expertise in governance and approach public investments in climate solutions holistically

California is a global leader in pursuing a systematic, whole-of-government approach to climate solutions—a stance that is appropriate to meet the scale and severity of the climate crisis. Yet it entails enormous challenges in coordinating siloed bureaucracies and supporting stakeholder participation across a diverse array of institutions, communities, and interest groups. In whatever way the coordinating function is refined and institutionalized in state government, the coordinating bodies must include high level gender expertise. In addition, agencies with substantial responsibility for California climate policy should employ experts to provide technical assistance on gender to departments and commissions under their purview.

Unintended consequences can result from coordination challenges. Absent an intentional effort to evaluate the state's climate and sustainability portfolio, especially state and federal public investment, there is a risk that some groups will gain disproportionate benefits and other groups will be left behind. The state's dedication to equity and to protect the most vulnerable communities are important checks against this result. Thus far, however, consideration of gender equity has not been included in decisions regarding California's climate investments.

Section 6: Policy Recommendations to Reduce Gender Disparities and Advance Gender Equity in Climate Action

This section explores some examples of how a gender perspective can be integrated into current and future climate policy, while at the same time delivering on California's core climate priorities and principles. In each recommendation, we explore the gender dimension of the problem, explain the climate benefits of acting from a gender perspective, and recommend ways to accelerate gender equality through small modifications to existing programs and policies.

Amplify Co-benefits of Broad-based Climate Action

Many climate solutions are designed to have broad, equal, or universal benefit. Through application of a gender lens to these issues to identify feasible and cost-effective additions, these universal actions can also target specific sources of women's disproportionate vulnerability to climate change.

Mitigate extreme heat by investing in cooling solutions in urban areas

- **The gender dimension:** GEPI's demographic analysis indicates that a large majority of Californian women live in regions where the most likely and frequent climate impact will be extreme heat events of greater intensity and longer duration.
- **Climate benefits:** Protect human health and economic productivity from extreme heat. Preserve ability of people to live in California's densely populated urban areas and reduce pressure on natural lands. Cool neighborhoods, schools, and workplaces and send solar radiation back into space, helping to reduce the earth's energy imbalance, the fundamental problem behind climate change. Achieve GHG reductions through reduced energy demand per capita.

- **Strategies to accelerate gender equity:** Target cooling solutions to schools, dense multi-family residential neighborhoods, renters, and public spaces to build community resilience. Apply gender impact analysis when planning and designing solutions to extreme heat, in order to ensure benefits are directed to the most vulnerable and are balanced for all. Use the upcoming update of California's Extreme Heat Action Plan as the starting point for developing science-based analysis of and solutions for the gendered dimension of the urban heat island effect.

Urban greening

- **The gender dimension:** More likely to be the primary caregivers—as parents or care workers—women are more likely to be using public space, parks, and public transit throughout the day. They are more likely to rely on parks for recreation, social connection, and cooling, and to benefit from tree cover and cool pavements when performing their daily activities.

- **Climate benefits:** A nature-based solution for decarbonization and water management. Urban parks enhance climate resilience, by providing shade and hydration during extreme heat events. All people gain physical and mental health benefits from access to green space.

- **Strategies to accelerate gender equity:** Empower women to participate in community processes to ensure parks are designed to fulfill needs of users of all genders, ages, and abilities. Include gender aware and inclusive planning in designing parks, tree canopy, and other natural infrastructure.

Questions to consider: Have trees been selected not only for their suitability to the local climate, but also to ensure that when mature, sidewalks will remain accessible to strollers and wheelchairs? Are processes in place to guarantee that girls and boys sports teams will have equal time and access to fields and facilities?

Invest in robust public transportation infrastructure

- **The gender dimension:** Women are the majority of public transit users. Women are more likely to use public transit throughout the day, not solely for commuting to work. Low-income people, who are disproportionately women, are less likely to own cars and are more dependent on public transit to meet basic needs and stay in the workforce.[78]

- **Climate benefits:** Private vehicle use is the largest GHG emitter in California and a major source of air pollution. Providing better options for public transit entails significant climate, public health, and equity benefits. Achieve GHG reductions through reduced vehicle miles traveled.

- **Strategies to accelerate gender equity:** Small improvements, such as safe, lighted, and shaded bus stops, and better accessibility for strollers, wheelchairs, and bikes, can boost equity and produce greater incentives for women to use public transportation. Security against sexual harassment and assault is critical. Integrate gender impact assessment at the earliest stage of transit infrastructure planning.

Retrofit existing housing stock and develop new multifamily, transit-oriented, infill housing

- **The gender dimension:** Women are more likely to be time-burdened, energy-burdened, and housing-cost burdened. Women, particularly Black and Native American women, are struggling with high rents more than anyone else in California.[79]

- **Climate benefits:** Reductions in commuting and home energy use reduces GHG emissions. Increasing infill housing supply lessens demand pressures to build housing in WUI and on natural lands, thus contributing to reduced wildfire risk and advancing California's 30-30 goals.

- **Strategies to accelerate gender equity:** Housing is an area where many gender-inclusive policies have been proven effective in similarly situated cities and nations. Existing programs, like energy

efficiency weatherization incentives, can include elements that boost participation by women householders. Gender-inclusive design in new housing development can bolster social cohesion and reduce gender disparities.

Create Opportunity for All in California's Climate Ready Economy

There are enormous opportunities for California's workers, entrepreneurs, and businesses in the work to build California's green and climate resilient economy. The state can take measures to guarantee these opportunities are open to all, including women and other marginalized groups.

Boost gender diversity in jobs in energy, resilience, infrastructure, and other key sectors

- **The gender dimension:** Under the business-as-usual scenario, approximately 9 in 10 new jobs created through public investment will go to men. Women will be almost entirely left out of the immense economic benefits of California's infrastructure investments in decarbonization, water systems, transportation, electrification, and the like.

- **Climate benefits:** Higher participation of women in the skilled trades and construction could help address the nationwide skilled worker shortage and allow the state to make timely progress on its ambitious climate goals.[80]

- **Strategies to accelerate gender equity:** If California is to make real progress in opening the jobs of the future to women, attention should be directed to policies that lead to the retention of tradeswomen, as well ones that open opportunities for women apprentices in construction and the skilled trades. The state can play a catalytic role through data-collection, incentives, oversight mechanisms, and transparency measures.

  In addition, invest resources in public health, healthcare, occupational safety and health, and environmental science to spur job creation in sectors which are critical for climate resilience and have more gender-balanced workforces.

Provide for equal access and equity in contracting opportunities

- **The gender dimension:** Business formation by women in the United States has grown tremendously over the past two decades, yet a large body of research shows that women-owned businesses have significantly less access to capital. The relationship between climate finance and gender has become an important area of focus in global climate governance.

- **Climate benefits:** Research has shown that businesses with a higher representation of women and women-owned firms tend to have higher environmental scores, adopt energy-efficient practices, and invest in renewable energy.[81] As this report has documented, recent opinion surveys show that California women are more supportive than men of climate action. Enlisting women as actors and agents in the work of climate action and including them in its benefits has the potential to accelerate the state's achievement of its climate goals.

- **Strategies to accelerate gender equity:** Transparency is the foundation for achieving equity in state climate investments and contracting opportunities. Collect gender- and race-disaggregated data on contracts awarded by state and local governments. Establish the baseline by identifying the relevant metrics. Set goals and measure progress on an ongoing basis. Models from the private sector on integrating a gender and a climate lens in finance can be consulted for building this capacity within government.[82]

Target Actions to Address Disproportionate Climate Impacts on Women

As this report has documented, men and women experience climate change differently. In some cases, to address the distinct and disproportionate effects on women, policy will need to be tailored to women's specific needs and disadvantages.

Develop capacity for gender-aware emergency and disaster response planning and delivery

- **The gender dimension:** Women are more likely to be caregivers of family members, more likely to be economically vulnerable and have little savings, and more likely to be dependent on public transportation with reduced ability to evacuate during climate-driven or natural disasters. Eight in ten Californian workers caring for the elderly or people with disabilities or chronic disease at home are women. In the midst of extreme events, women might forgo use of emergency services because of legitimate fears about safety in mass shelters. In the aftermath, they are more likely to be subject to violence, fall into poverty, or report poor mental health.

- **Climate benefits:** Ensuring safety, security, and appropriate facilities for women and the people they care for will save lives during climate-driven disasters.

- **Strategies to accelerate gender equity:** Empower and invest in the public health and healthcare workforce. Explore and adopt models from other jurisdictions on gender-responsive emergency response planning and delivery. Work with primary care and ob-gyn doctors to develop and disseminate model emergency and evacuation plans for pregnant people and new mothers and infants. Diversify gender unbalanced emergency response workforce and train current workforce on particular needs and barriers faced by women during climate-driven disasters.

Prioritize women's reproductive health in emergency planning. This includes ensuring the availability of essential services like contraception, abortion care, maternal and prenatal care during extreme events and in the initial recovery period. Develop mobile health units and telehealth services to reach women in affected areas. Identify facilities that can provide prenatal and obstetric services during a disaster.[83]

Support research initiatives to understand and address sex and gender differences in climate-driven health impacts

- **The gender dimension:** Health is the one area where sex differences are a potential source of gendered climate impacts. Pregnant women, new mothers, and babies are particularly vulnerable to health complications from extreme heat and some vector-borne diseases. Women on average live longer than men and make up a large majority of the elderly, a particularly vulnerable population. Research on the social determinants of health shows that gender disparities such as low incomes, inadequate housing, and nutrition have adverse health impacts.

- **Climate benefits:** Protect the health of Californians and the economic productivity of the state's workforce.

- **Strategies to accelerate gender equity:** While it is not the role of the state to be the primary sponsor of scientific and medical research, California can play a catalytic role by convening researchers, policymakers, and stakeholders to highlight emerging research, disseminate findings, and create partnerships to implement best practices which emerge from the process. One important area of focus should be occupations with large shares of women workers (agricultural work, garment work, warehouse workers), where understanding gender-specific climate impacts on health can aid policymakers in designing occupational health and safety standards which protect women's health and equal access to work by preventing discrimination against reproductive age women.

Methodology

The Gender Equity Policy Institute (GEPI) conducted several data analyses using microdata from various sources, including the American Community Survey (2021), the Current Population Survey (2022), the National Historical Geographic Information System (NHGIS 2015 - 2019), California Climate Investments Priority Populations from 2022 (CCIPP) and CalEnviroScreen 4.0 (CES). Our aim was to create a comprehensive demographic and socioeconomic profile of the Californian population to identify the gendered impacts of climate change in California.

All analyses were stratified by gender and race/ethnicity. Additionally, the Institute examined interactions between these variables to examine differentiated impacts in various populations.

Demography of California climate regions

The Institute determined that the climate regions delineated in the Fourth Climate Change Assessment published by the state of California are most relevant to analyzing the impact of climate change on Californians. (For the regional maps and reports, see: https://www.climateassessment. ca.gov/regions/.)

The Institute analyzed microdata from ACS 2021 to explore California's demographic and socioeconomic estimates at the individual level by California climate region. Geo-referenced data from the 2021 American Community Survey, accessed via IPUMS, was used to analyze population and demographics across the climate regions.

Disadvantaged and low-income communities: California

GEPI conducted the analysis found in Section 3 by merging federal and state datasets to develop a demographic profile of low-income and disadvantaged communities in California. Communities were identified at the census tract level using California Climate Investments Priority Populations from 2022 (CCIPP) and CalEnviroScreen 4.0 (CES). To analyze the demographic composition of disadvantaged and low-income communities comprehensively, the Institute used the National Historical Geographic Information System (NHGIS) to produce a dataset of census tracts in California by race, gender, income, and other characteristics. The census tract identifiers (CCIPP and CES) were then merged with the demographic variables (NHGIS) to produce a complete dataset comparing population characteristics across disadvantaged and low-income. The information was aggregated to produce estimates at the county and Climate region level.

Energy burden: California

Microdata from ACS 2021 was analyzed to estimate the share of energy burdened Californian households. Energy-burdened households were defined as those spending more than 6% of their household income on energy expenses (electricity, gas, and fuel). Severely energy-burdened households were defined as those spending more than 10% of their household income on energy expenses. To estimate energy burden at the household level, we used the U.S. Census classification of household types, categorizing households into three main groups: married or cohabitating households, women householders, and men householders. Data was also analyzed considering disaggregated household types, such as single parents and individuals living alone.

Rent burden: California

Similar to the energy burden estimates methodology, the Institute analyzed microdata from ACS 2021 at the individual and household level to examine housing affordability in California. Rent burdened households are defined as those spending more than 30% of household income on rental expenses (rent and utilities). Severely rent burdened households are defined as those spending more than 50% of household income on rental expenses. The Institute used the same U.S. census classification to categorize households in married or cohabitating households, women householders, and men householders. Single parents and individuals living alone household categories were also used in our rent burden analysis.

Occupational and Labor force Participation Analysis: California

To estimate the share of women workers in healthcare, the Institute analyzed microdata from ACS 2021. The ACS 2021 dataset was refined by selecting industry codes 7970 to 84700, corresponding to Healthcare and Social Assistance sector. The dataset was disaggregated by occupation and gender to estimate the share of women in healthcare occupations and in the industry overall.

To estimate trends in labor force participation rates during COVID-19, the Institute analyzed monthly microdata from CPS spanning the years 2019 to 2022.

Appendix

TABLE 3:
Population, by race/ethnicity and California climate region

Region	Population (#)	Asian American and Pacific Islanders (%)	Black (%)	Latino (%)	Multiracial (%)	Native American (%)	Other (%)	White (%)
California	39,237,836	15%	5%	40%	4%	.2%	.5%	34%
Los Angeles	17,588,815	14%	6%	47%	4%	.1%	.5%	28%
San Francisco	7,580,831	28%	5%	24%	5%	.2%	.7%	36%
San Joaquin Valley	4,128,836	10%	5%	53%	3%	.4%	.3%	29%
San Diego	3,082,657	13%	4%	34%	5%	.2%	.8%	43%
Sacramento Valley	2,701,615	13%	6%	24%	6%	.4%	.6%	49%
Inland Deserts	1,283,984	3%	5%	55%	3%	.4%	.2%	33%
Central Coast	1,232,788	5%	2%	47%	4%	.2%	.6%	42%
Sierra Nevada	1,207,849	4%	2%	30%	5%	.8%	.6%	58%
North Coast	430,461	2%	2%	19%	7%	3.1%	.9%	66%

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Notes

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Acknowledgments

The Gender Equity Policy Institute is grateful to all our funders who make our work possible. We would like to thank our colleagues who provided their time and expertise on this report: Sakiko Fukuda-Parr, Kristopher Eclarino, Jonathan Parfrey, Norman Ornelas, Jr., Bliss Parsons, and Luka Marks. Gender Equity Policy Institute is solely responsible for the findings presented in this report.

Recommended Citation

Natalia Vega Varela, Myriam Shiran, and Nancy L. Cohen, "The Promise of Gender Inclusive Climate Action: An introduction to the gendered impacts of climate change and recommendations for action in California," Gender Equity Policy Institute, January, 2024. https://doi.org/10.5281/zenodo.10471541

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