



# Climate Change & Health Equity ISSUE BRIEF

“For public health, climate change is the defining issue for the 21st century.”

—Margaret Chan, World Health Organization<sup>1</sup>

## CLIMATE CHANGE WILL MAGNIFY EXISTING HEALTH INEQUITIES

Climate change threatens the health and well-being of California’s diverse population of nearly 38 million people and poses immense challenges for achieving health equity.

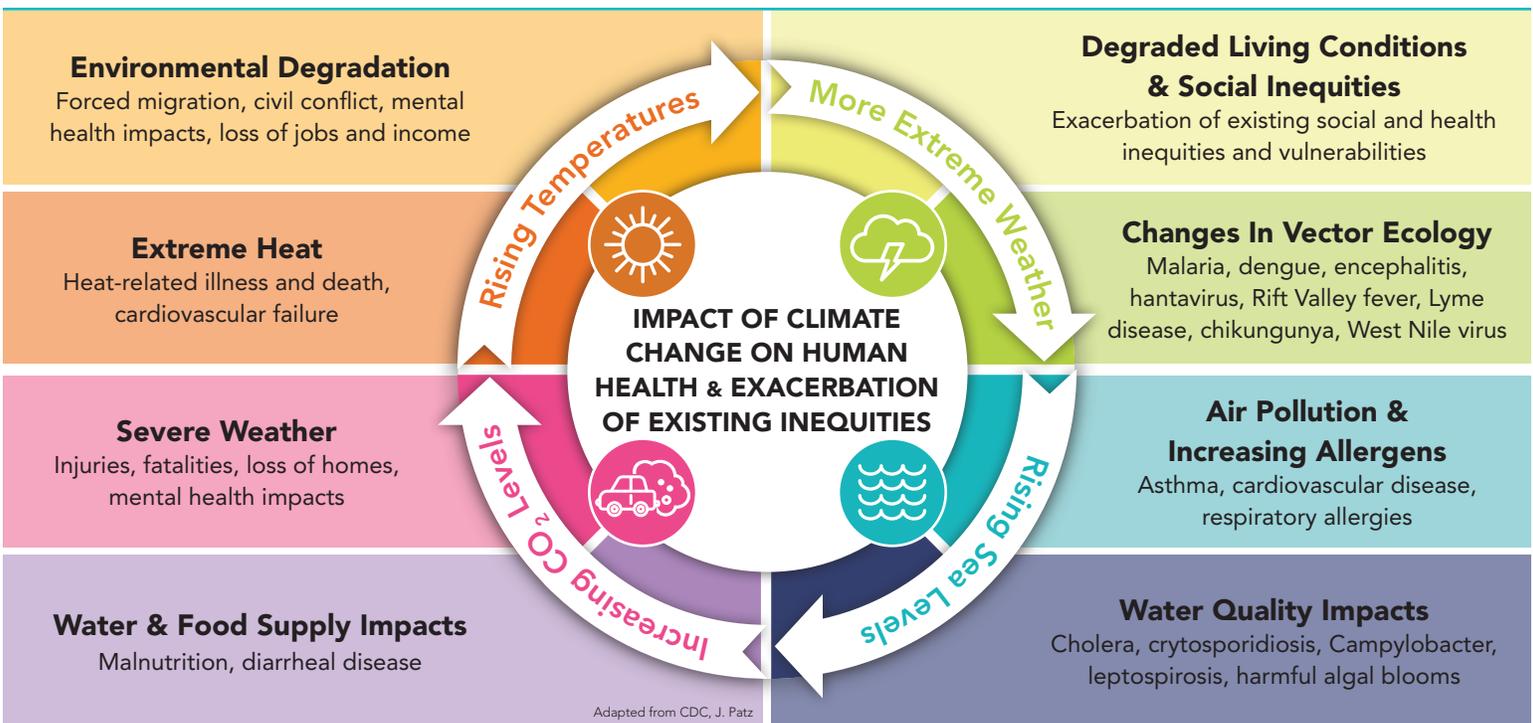
While all Californians are impacted by climate change, the populations most vulnerable to the health impacts of climate change are the same communities that experience health inequities, or systemic differences in health status that are preventable and unfair. Low-income families, some communities of color, people with existing health conditions such as chronic diseases and mental health problems, children and seniors, people experiencing homelessness, outdoor workers and farmers, immigrants, especially those with undocumented status, tribal nations, and isolated people are most vulnerable to the impacts of climate change.<sup>2</sup>

Climate change and health inequities share similar root causes: the inequitable distribution of social, political and economic power. These power imbalances result in systems (economic, transportation, land use, etc.) and conditions that drive both health inequities and greenhouse gas (GHG)

emissions. As a result, we see communities with inequitable living conditions, such as low-income communities of color living in more polluted areas, facing climate change impacts that compound and exacerbate existing sensitivities and vulnerabilities.<sup>2</sup> Fair and healthy climate action requires addressing the inequities that create and intensify community vulnerabilities.

## OPPORTUNITY TO IMPROVE PUBLIC HEALTH

The good news is, addressing climate change could represent the greatest opportunity to improve public health in our time.<sup>3</sup> Many actions that limit climate change also improve the health of families and communities and reduce health inequities. The capacity for climate resilience is significantly driven by living conditions and the forces that shape them, such as income, education, housing, transportation, environmental quality, and access to services. Thus, strategies such as alleviating poverty, increasing access to opportunity, improving living conditions, and reducing health and social inequities will result in more climate-resilient communities. Public health engagement in climate change is essential to ensure that climate action strategies promote optimal health, well-being, and equity.<sup>4</sup>



## A Closer Look: Climate Change Impacts and Health Equity

### CLIMATE CHANGE AND HEALTH IMPACTS

Climate change impacts health through environmental changes, including more extreme heat and other severe weather events, a decline in air quality, more frequent wildfires, increases in allergens, and altered environmental conditions that foster the spread of communicable and other diseases. Climate change also threatens the basic life support systems on which humans depend—water, food, shelter and security. The resulting human health impacts include increases in the risk of asthma, allergies and other respiratory ailments, cardiovascular disease, vector-borne diseases, mental health impacts, civil conflicts and migrations, malnutrition, injuries, and heat-related illness and death.<sup>5</sup> These challenges amplify health inequities among the state's most vulnerable populations, making climate change a threat multiplier.

### DROUGHT

Increasing temperatures and changes in precipitation brought on by climate change contribute to longer, more severe droughts.<sup>6</sup> Higher temperatures also cause earlier snowmelt and less snowpack. By 2050, California is projected to have a loss of at least 25 percent of the Sierra snowpack, a primary source of California's water. Droughts contribute to water shortages and declines in crop yields, compromising the health and quality of life of California populations, especially for rural, low-income, farmers and farm workers, and other vulnerable communities.<sup>7</sup>

Health impacts of drought may include deterioration of the quality and quantity of drinking water and food, reduction of the air quality due to increased wildfires and dust storms, and diminished living conditions due to scarce energy, sanitation, and increased incidence of disease and illness. In Tulare and Mariposa Counties, hard hit by several years of drought, 10–20% of residents surveyed reported that the drought had impacted their health.<sup>8</sup>



### HEAT WAVES

Climate change results in more severe and frequent heat waves that last longer and occur earlier in the season. Prolonged exposure to extreme heat can result in heat stress, heat exhaustion, heat stroke, or even death. Populations at risk include: elderly, children, women, infants, pregnant women, people with pre-existing chronic health conditions, people who engage in vigorous physical activity or work outside, people with mental or physical disability, people with low incomes, socially or geographically isolated populations, and some racial or ethnic groups, particularly African Americans.<sup>9</sup> During the 2006 California heat wave, there were 655 excess deaths, 16,166 excess emergency department visits, and 1,182 excess hospitalizations.<sup>10</sup>



### Reducing the Urban Heat Island Effect

Temperatures in most urban areas are significantly higher than less urbanized areas because pavement and building materials absorb sunlight and heat. This is known as the urban heat island effect. The most intense effects are often in neighborhoods where impervious paved surfaces predominate, and trees, vegetation, and parks are less common. For example a study using national data found that African-Americans were 52% more likely, Asians 32% more likely, and Hispanics 21% more likely than Whites to live in areas where impervious surfaces covered more than half the ground, and more than half the population lacked tree canopy.<sup>11</sup> These tend to be the same neighborhoods where residents are less likely to have air conditioning, more likely to have one or more chronic conditions, and less likely to own cars to escape from climate related events such as extreme heat.<sup>11</sup> Strategies that can reduce the urban heat island effect include increasing urban greening (such as trees, parks, gardens, and green roofs), and using lighter-colored materials that reflect heat (such as cool roofs).<sup>9</sup>

## Climate Change and Health Co-Benefits

Health is a strong motivator for climate action. Many climate change prevention (mitigation) and preparedness (adaptation) strategies have beneficial effects on health and quality of life. These are often called health co-benefits, and make actions for climate protection “win-wins.” Some of these win-win strategies include active transportation,

urban greening, mixed use zoning, consumption of locally-grown produce, and affordable, healthy, and energy-efficient housing. Health benefits of these strategies can include reductions in obesity, some chronic diseases, respiratory illnesses, and injury, and improved community cohesion and mental health.<sup>12</sup>

CLIMATE CHANGE MITIGATION AND ADAPTATION STRATEGY	POTENTIAL HEALTH CO-BENEFITS
<b>Reduced vehicle miles traveled (VMT)</b> <i>Active transportation (walking, biking, public transit)</i>	<ul style="list-style-type: none"> <li>Increase physical activity</li> <li>Improve mental health</li> <li>Reduce chronic disease</li> <li>Reduce air pollution</li> </ul>
<b>Reduce emissions through land use changes</b> <i>Transit oriented and infill development</i>	<ul style="list-style-type: none"> <li>Increase physical activity</li> <li>Increase access to services</li> <li>Reduce chronic disease</li> <li>Enhance safety</li> </ul>
<b>Reduce energy intensity in local food systems</b> <i>Buy local, farmer’s markets, gardens, reduce consumption of red and processed meats</i>	<ul style="list-style-type: none"> <li>Increase access to healthy and fresh foods</li> <li>Reduce air pollution</li> <li>Increase resilience</li> <li>Improve cardiovascular health</li> <li>Increase social cohesion</li> </ul>
<b>Urban and community greening</b> <i>Tree planting, parks, green infrastructure</i>	<ul style="list-style-type: none"> <li>Reduce temperature and urban heat island effects</li> <li>Reduce air pollution</li> <li>Reduce noise</li> </ul>
<b>Reduce building energy use</b> <i>Energy efficiency, weatherization, cool roofs/green roofs, water conservation</i>	<ul style="list-style-type: none"> <li>Reduce energy costs</li> <li>Create local green jobs</li> <li>Promote healthy homes</li> <li>Promote cooler communities</li> </ul>

“The health community has a vital part to play in accelerating progress to tackle climate change. ...A public health perspective has the potential to unite all actors behind a common cause—the health and well-being of our families, communities, and countries.”  
 —The Lancet Commission 2015<sup>3</sup>



In California, transportation is one of the biggest contributors to climate change. Reducing GHG emissions from transportation by shifting away from automobiles and towards walking, bicycling, and public transportation is one climate mitigation strategy that can provide additional health benefits through increasing physical activity. Additionally, promoting a transportation system that supports safe, reliable, and affordable opportunities for walking, biking and public transit helps reduce health inequities by providing more opportunities for access to healthy food, jobs, health care, education, and other essential services.<sup>13</sup>

## Climate Action in California

California has passed some of the nation's strongest legislation to mitigate and adapt to the impacts of climate change. The Climate Action Team (CAT) is comprised of a wide range of state agencies, boards, and departments, including the California Environmental Protection Agency (CalEPA), the California Air Resources Board (ARB), the State Transportation Agency (CalSTA), the Department of Food and Agriculture (CDFA), the California Department of Public Health (CDPH), and many others. The CAT works to coordinate statewide efforts to implement greenhouse gas (GHG) emissions reduction programs and the state's Climate Adaptation Strategy. As State Health Officer, Dr. Karen Smith represents CDPH on the multi-agency CAT.<sup>14</sup> There is an unprecedented opportunity for statewide leadership in climate action to reduce GHG emissions and create healthy, equitable, and resilient communities where all people thrive.

## Climate Change and Health Equity at CDPH

There are opportunities to incorporate health equity into the state's efforts to address climate change through CDPH's Climate Change and Health Equity Program (CCHEP), which is based in the Office of Health Equity (OHE).<sup>15</sup> The program works to embed health and equity into California's climate change planning, and to embed climate change and equity into public health planning by working with state, local and community-based partners. The California Environmental Health Tracking Program (CEHTP) also works on climate change, focusing on heat-related illness data.<sup>16</sup>

The Climate Change and Health Equity Program works in the following areas:

- Supporting local health departments in climate change and health planning
- Promoting health co-benefits of climate change action
- Developing climate change and health communication strategies
- Evaluating health effects of climate change mitigation and adaptation strategies
- Preparing climate change and health plans for the state
- Working with other state agencies to assure that health and equity are considered in California's climate planning
- Engaging with community groups working to promote health equity and environmental justice

### LOCAL PARTNER: SAN LUIS OBISPO COUNTY

In August of 2014 CDPH and San Luis Obispo County Public Health Department launched the **Outsideln SLO "We Take Health and Climate Change Personally"** campaign pilot. It was designed to highlight the co-benefits between climate change mitigation and health promotion.



### REFERENCES

- 1 Chan M. How Climate Change Can Rattle the Foundations of Public Health. Huffington Post. Available at: [http://www.huffingtonpost.com/dr-margaret-chan/how-climate-change-can-ra\\_b\\_5822950.html](http://www.huffingtonpost.com/dr-margaret-chan/how-climate-change-can-ra_b_5822950.html). Published Sept 15, 2014. Accessed November 5, 2014.
- 2 Shonkoff SB, Morello-Frosch R, Pastor M, Sadd J. The climate gap: environmental health and equity implications of climate change and mitigation policies in California – a review of the literature. *Clim Change*. 2011;109(1):485-503.
- 3 Watts N, Adger WN, Agnolucci P, et al. 2015. Health and climate change: policy responses to protect public health. *Lancet*: 386, 1861-1914.
- 4 Rudolph L, Gould S, Berko J. Climate Change, Health, and Equity: Opportunities for Action. 2015. Public Health Institute, Oakland, CA.
- 5 USGCRP. 2016. The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment. U.S. Global Change Research Program, Washington, DC, 312 pp.
- 6 Griffin, D, and Anchukaitis, KJ. 2014. How unusual is the 2012–2014 California drought?, *Geophys. Res. Lett.*, 41, 9017–9023, doi:10.1002/2014GL062433.
- 7 Safeguarding CA Implementation Action Plans. March 2016. California Natural Resources Agency. Available at: <http://resources.ca.gov/docs/climate/safeguarding/Safeguarding%20California-Implementation%20Action%20Plans.pdf>.
- 8 Community Assessment for Public Health Emergency Response (CASPER) addressing the California drought - Tulare / Mariposa Counties, California. October / November 2015. California Department of Public Health (CDPH); Tulare County Health and Human Services Agency / Mariposa County Health Department.
- 9 Preparing California For Extreme Heat: Guidance and Recommendations: [http://www.climatechange.ca.gov/climate\\_action\\_team/reports/Preparing\\_California\\_for\\_Extreme\\_Heat.pdf](http://www.climatechange.ca.gov/climate_action_team/reports/Preparing_California_for_Extreme_Heat.pdf)
- 10 Knowlton K, Rotkin-Ellman M, King G, Margolis HG, Smith D, Solomon G, Trent R, English P. 2009. The 2006 California heat wave: impacts on hospitalizations and emergency department visits. *Environmental Health Perspectives*: 117(1): 61.
- 11 Jesdale BM, Morello-Frosch R, Cushing L. The racial/ethnic distribution of heat risk-related land cover in relation to residential segregation. *Environ Health Perspect*. 2013 Jul;121(7) 811-817.
- 12 Gould S, MPH, Dervin K, MPH. Climate Action for Health: Integrating Public Health into Climate Action Planning; 2012.
- 13 Maizlish N, Woodcock J, Co S, Ostro B, Fanal A, Fairley D. Health Co-benefits and Transportation-Related Reductions in Greenhouse Gas Emissions in the San Francisco Bay Area. *American Journal of Public Health* 2013.
- 14 California Climate Change Portal. State of California. <http://www.climatechange.ca.gov/>.
- 15 Portrait of Promise: The California Statewide Plan to Promote Health and Mental Health Equity. A Report to the Legislature and the People of California by the Office of Health Equity. In: California Department of Public Health OHE, editor. Sacramento, CA; 2015.
- 16 The California Environmental Health Tracking Program (CEHTP). California Department of Public Health / Public Health Institute. [http://cehtp.org/page/climate\\_change](http://cehtp.org/page/climate_change)