

Climate Change and Health Equity

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Public Health Impacts

■ Catastrophic Impacts/Existential Threat

“Climate change is one of the most serious public health threats facing our nation. Yet few Americans are aware of the very real consequences of climate change on the health of our communities, our families, and our children.”

– Georges Benjamin, Executive Director, American Public Health Association

■ Governor’s priority

“It’s time for courage, it’s time for creativity and it’s time for boldness to tackle climate change . . . The risk is real, the cost is huge and growing, and therefore taking a sequence of realistic steps just makes sense, and that’s what we’re going to do in California“

– Jerry Brown, Governor of California

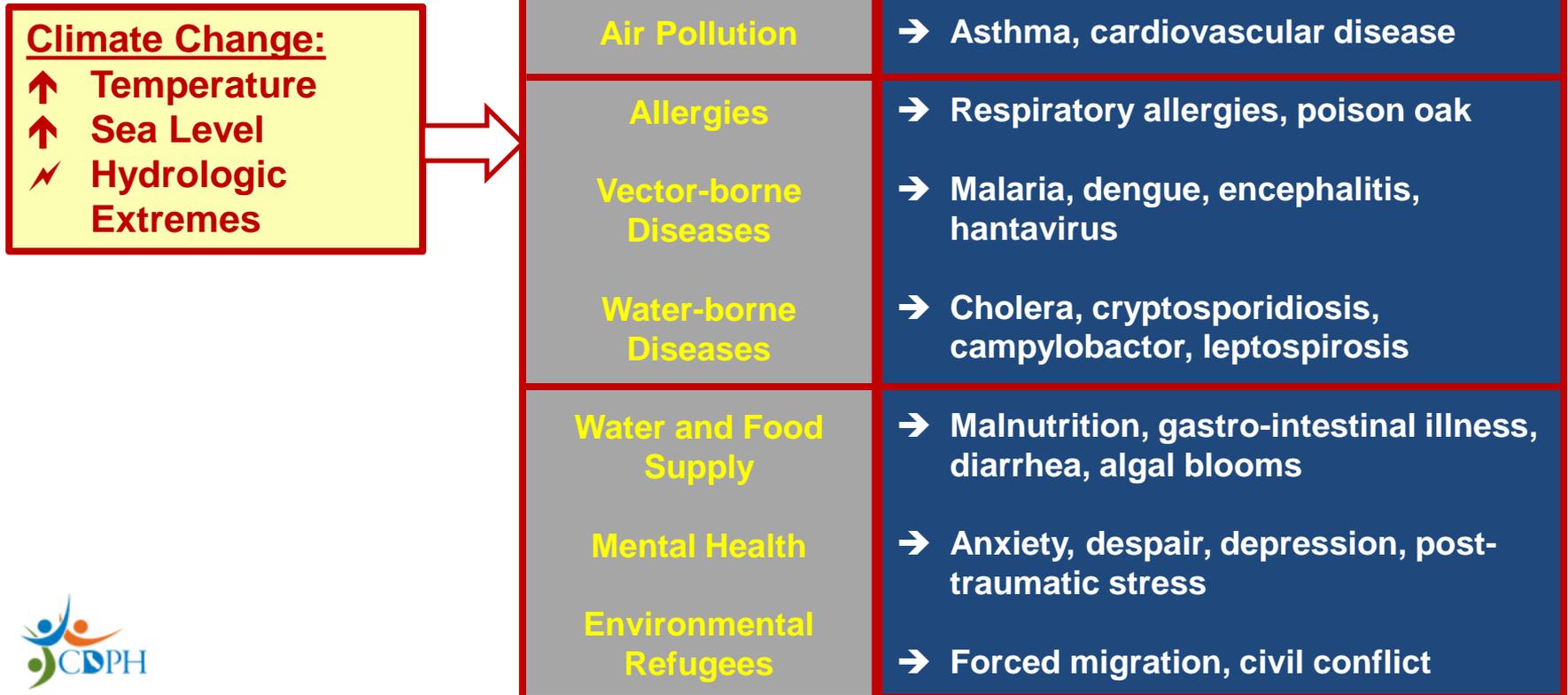
■ Amplifier of Health Inequity

“Climate change will, absent other changes, amplify some of the existing health threats the nation now faces. Certain people and communities are especially vulnerable, including children, the elderly, the sick, the poor, and some communities of color.”

– Human Health chapter of the 3rd U.S. National Climate Assessment

What is Climate Change and its Public Health Impacts?

- Rising of the earth's temperature due to increased release of greenhouse gases (GHG) produced by burning of fossil fuels and deforestation
 - ✓ Population growth and fossil fuel-intensive economy are key drivers



Climate Change & Mental Health

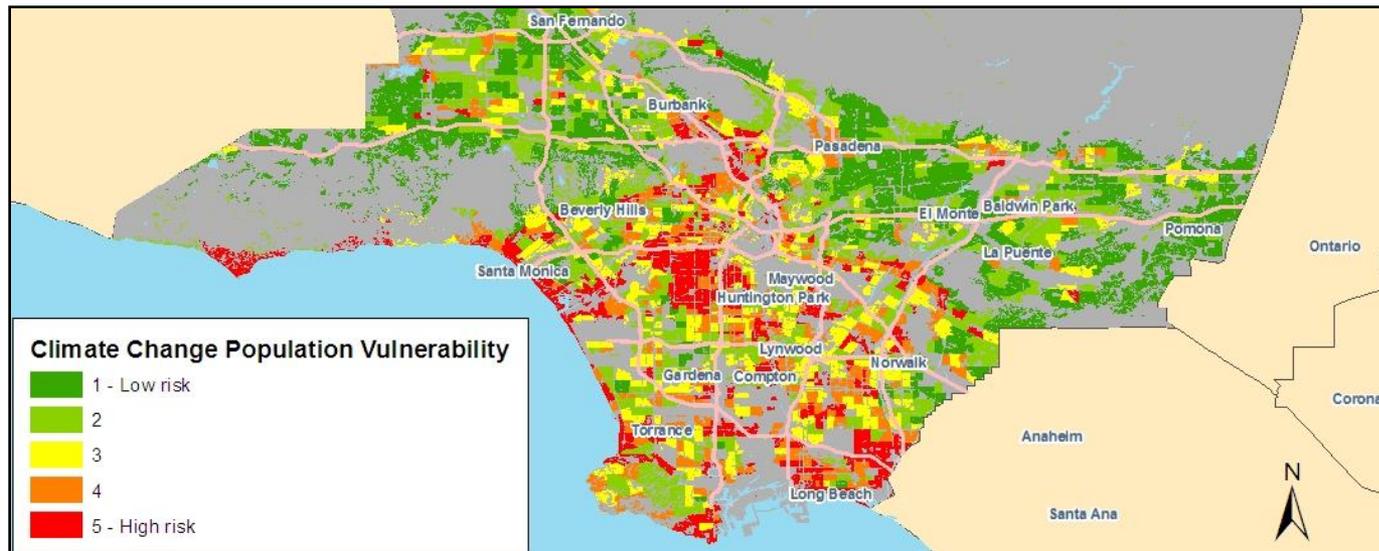
- Post-disaster mental health (e.g. extreme weather events like hurricanes/storms Katrina, Sandy, and Irene)
 - Complicated grief regarding loss due to injury or death
 - Displacement
 - Post traumatic stress
 - Existing illness and medication interactions
 - ✓ Unknown effects of threat of climate disruption on mental health, youth
 - ✓ Stress, anxiety
 - ✓ Hopelessness
- Social Service programs not as engaged on climate and health issues
- Increase number, severity, and duration of the pre-disaster mental health problems (e.g. ongoing 2 ½ years post Irene, Vermont social service agencies still working with mental health consequences)

Populations Vulnerable to Impacts of Climate Change Risks

- Elderly
- Young
- Pregnant
- Pre-existing medical conditions that impair thermo-regulation (e.g. heart disease, obesity)
- Pre-existing mental health conditions
- Poly-pharmacy
- Linguistically isolated
- Socially isolated (elderly living alone)
- Mobility and transportation limited
- Low income
- Outdoor workers
- Race/Ethnicity

Climate change will impact all Californians but the most vulnerable will suffer the most

- Climate change will magnify existing health inequities rooted in social determinants of health
- In LA County, more African-Americans and Latinos live in high risk areas compared to whites and average incomes are about 40% lower



Public Opinion and Climate Change

- Climate change is very or somewhat serious threat to state's future and quality of life (79%)
 - Very Serious threat?
 - Latinos, 67% (group with highest belief that its happening now – 73%)
 - African Americans, 63%
 - Asians, 38%
 - Whites, 40%

Source: Californians and the Environment: Public Policy Institute of California , Survey, June 2013

How is California Responding to the Threat of Global Warming?

- GHG Reduction (Primary Prevention)
 - State goals overall and by sector (AB32)
 - State agency coordination in Climate Action Team
 - Coordinated regional planning in housing and transportation sectors to accommodate population growth (SB375)
 - Scores of local communities and nonprofit organizations have created climate (↓GHG) action and sustainability plans (“Mantra: Environment, Economy, Equity”)
- Adaptation to Global Warming (2^o and 3^o prevention)
 - State agency coordination on adaptation strategies
 - Guidance to state, regional, and local government (sea level rise, heat)

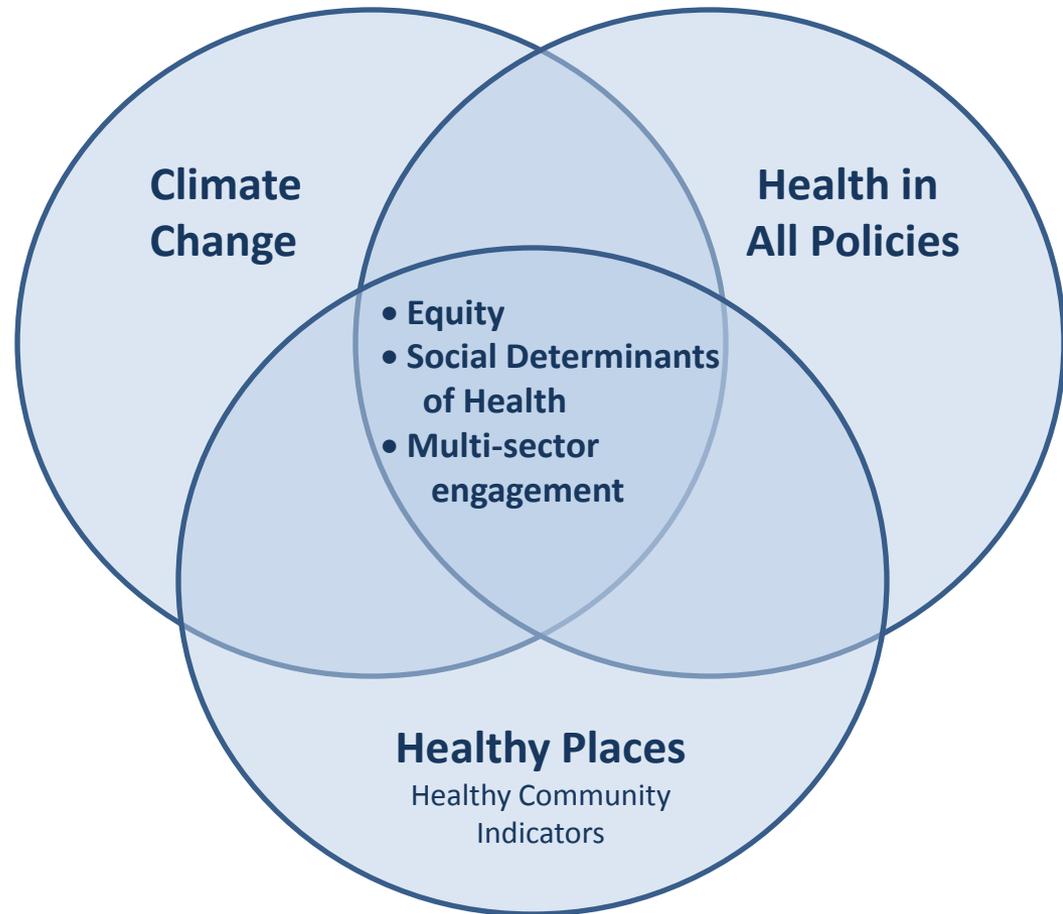
Mitigation Activities: Cap and Trade Investment Plan

- SB 535 and Disadvantaged Communities
 - Funds to be invested in disadvantaged communities
 - Cal EPA's EnviroScreen tool proposed to identify disadvantaged communities
 - What types of investments and projects?
 - How will the investments and their impact be evaluated?
 - How will communities be engaged?

Office of Health Equity: Climate Change, Health in All Policies, and Healthy Places Share a Common Foundation

From: CDPH Strategic Map

- Achieve Health Equity Through Public Health Programs (cross cutting theme)
- Use Determinants of Health in Policy and Decision Making (strategic priority objective)
- Expand and Strengthen Collaborations and Partnerships (cross cutting theme)



OHE Climate Change and Health Projects

- Assess climate impacts on public health and vulnerable populations and promote strategies which maximize health co-benefits
- Provide training, tools, metrics and technical assistance for local health departments, local and regional planners and other organizations on climate and health
- CDC grant: Building Resilience Against Climate Effects (BRACE)—to develop plans to reduce risks of climate impacts and enhance resilience at the state and local level

Climate and Health Communications

Focus Group Report

“Exploring Community Health Leaders’ Knowledge & Attitudes on Climate Change as a Public Health Issue”

- Summer 2013
- 6 Focus Groups in 3 Regions
 - Bay Area, Southern CA, Central CA
- 3 English and 3 Spanish
- Lay “Community Health Leaders”



Focus Group Findings

Awareness of Climate Change

- Extreme weather
- Pollution
- Increased Vulnerability



“The extreme weather changes are hard when you don’t have air conditioning, and we see asthma and bronchitis and chronic illnesses. What’s going on is dangerous.”

Concern about Climate Change

- Air Pollution
- Water Supply
- Violence and Crime
- Public Transportation



“I am personally very concerned about these disasters...I close my eyes and I see children in the future and I see me as an old woman in my community and I don’t think we will be able to handle it...”

Quantifying Health Co-Benefits: Integrated Transport and Health Impacts Model (ITHIM)



- Premature Deaths
- Years of Life Lost
- Years Living with Disability
- Reduced Greenhouse Gas Emissions

Predicted Change in the Burden of Disease with an Increase in Walking and Biking from 4.4 min/d to 22 min/day, SF Bay Area

	Change in disease burden		Change in premature deaths/yr
Cardiovascular Dis.	15%	↓	1895
Diabetes	15%	↓	189
Depression	6%	↓	<2
Dementia	10%	↓	218
Breast cancer	5%	↓	48
Colon Cancer	6%	↓	53
Road traffic crashes	19%	↑	113
GHGs	15%	↓	

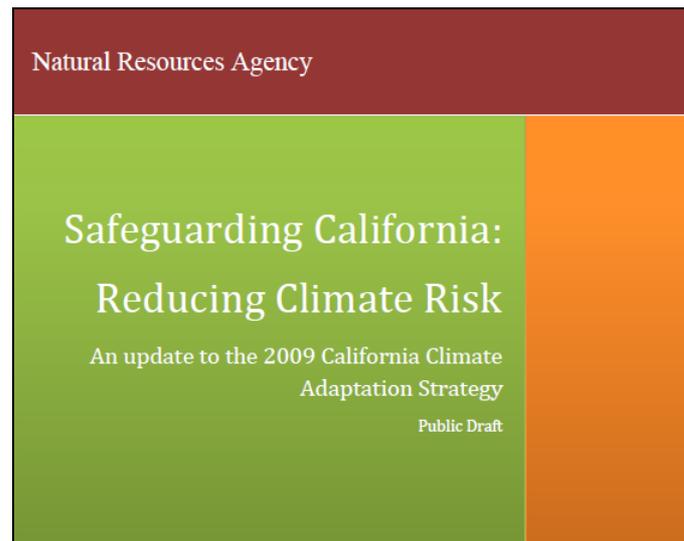
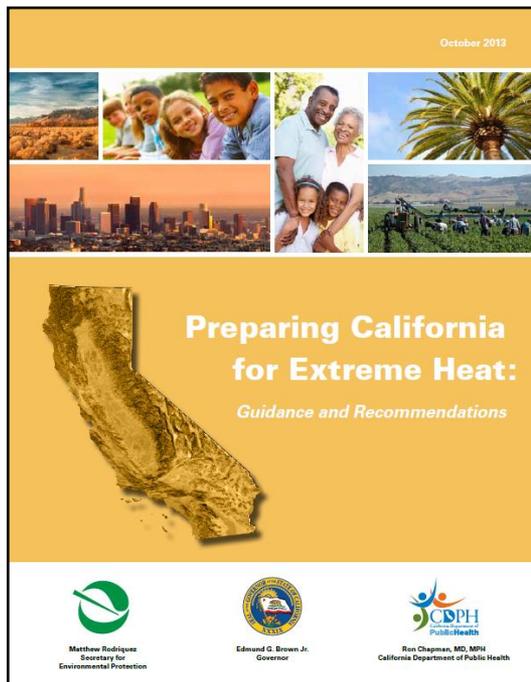
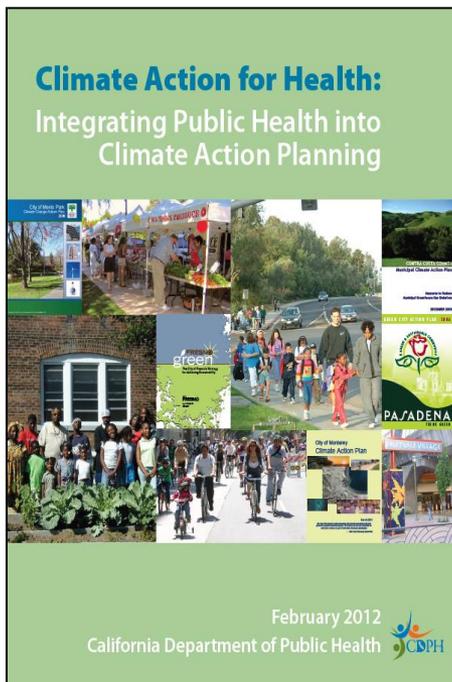


Maizlish NA, Woodcock JD, Co S, Ostro B, Fairley D, Fanai A. Health cobenefits and transportation-related reductions in greenhouse gas emissions in the San Francisco Bay Area. *Am J Public Health.* 2013; 103:703-709

Accumulated greenhouse gas emissions health impacts now and the foreseeable future: Role of Adaptation

- Public Health Adaptation Strategies in Overall State Adaptation Plan (Safeguarding California)
 - Maintain surveillance capabilities
 - Increase community resilience
 - Educational outreach and community partnership
 - Improve preparedness and response
 - Identify/promote strategies with health co-benefits
 - Conduct research
 - Promote policy changes
- Each of these strategies has an health equity dimension

Recent Projects



| RESEARCH AND PRACTICE |

**Health Cobenefits and Transportation-Related Reductions
in Greenhouse Gas Emissions in the San Francisco Bay Area**

Neil Maizlish, PhD, James Woodcock, PhD, Sean Co, MS, Bart Ostro, PhD, Amir Farai, CEng IMechE, and David Fairley, PhD

Greenhouse gas emissions (GHGE) linked to global warming and climate change are the most significant threat confronting public health in the 21st century.¹ Approximately 7% of US GHGE are generated in California, which is the 12th largest emitter worldwide.^{2,3} California's transportation sector is the single largest source (38%)² and personal passenger vehicles account for 79% of that sector's

Objectives. We quantified health benefits of transportation strategies to reduce greenhouse gas emissions (GHGE).

Methods. Statistics on travel patterns and injuries, physical activity, fine particulate matter, and GHGE in the San Francisco Bay Area, California, were input to a model that calculated the health impacts of walking and bicycling short distances usually traveled by car or driving low-emission automobiles. We measured the change in disease burden in disability-adjusted life years (DALYs) based on dose-response relationships and the distributions of physical activity, particulate matter, and traffic injuries.

Health Impact Assessment of a Cap-and-Trade Framework

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