

FACT SHEET

PROTECTING PEOPLE FROM THE HEALTH RISKS OF CLIMATE CHANGE: LOCAL EXPERTS TEAM UP IN AHMEDABAD

THE PROBLEM



Credit - Michael Wong

Climate change, extreme heat, and air pollution are all connected. With global temperatures soaring because of climate change, demand for electricity to keep people cool and safe from sweltering heat is critical. Air conditioning cools indoor spaces, protects our bodies from heat stress, and can save lives. But if we power air conditioning by burning dangerous fossil fuels—rather than by harnessing cleaner, renewable energy sources—we increase dangerous air pollution and contribute to the climate crisis.

The World Health Organization estimates that more than 90 percent of the world's population is already exposed to dangerous levels of air pollution,¹ and recent research estimates that about 6.7 million people die early each year due to chronic exposure to polluted indoor and outdoor air.² These health risks will increase as temperatures rise and demand for electricity to provide cooling relief grows unless we take action to shift toward cleaner energy.

How can we keep people cool and reduce dangerous air pollution in a rapidly warming world? Understanding the complex effects of climate change on public health is an urgent task, and innovative work is underway to better understand the problem of how global climate change and our responses affect local health, and shape climate-smart public policy in India.

- 1 Health Effects Institute. Air Pollution's Impact on Health: A Global Snapshot, October 2020. <https://www.stateofglobalair.org/sites/default/files/documents/2020-10/soga-global-profile-factsheet.pdf>.
- 2 Institute for Health Metrics and Evaluation. "Global Burden of Disease Results Tool (Air Pollution in 2019)," October 2019. <http://ghdx.healthdata.org/gbd-results-tool?params=gbd-api-2019-permalink/883b86e17da639bcc924ec1b27af0b38>.

LOCAL HEALTH BENEFITS OF CLIMATE ACTION

Climate change will likely make existing air pollution problems even worse because warmer temperatures make more health-harming outdoor ozone smog form and drive up demand for electricity to run air conditioning.³ A 2018 U.S. study analyzing energy demand, air pollution, and health impacts of mid-century heat waves found that climate change and pollution from increased energy demand for cooling could worsen summer fine particle air pollution by about 60% and ground-level smog by about 16%, compared to current pollution levels.⁴ If today's fossil-fuel heavy mix of energy sources is deployed to meet extra energy demand for air conditioning in the future, nearly 1,000 people could die each year from worsened air pollution – in just one region of the U.S.⁴

India currently must cope with brutally hot weather and dangerous levels of outdoor air pollution. While millions of people in India already breathe unhealthy air, climate change threatens to make this problem even worse unless governments act to stem the problem on a broader scale. India's cooling demand is projected to grow by eight times in the next 20 years,⁵ and the country last year launched the India Cooling Action Plan (ICAP), a comprehensive plan to meet the country's skyrocketing cooling demand.⁶ A major component of the ICAP is an effort to improve understanding of the health and economic implications of increased cooling demand through applied research.⁷ A range of skills and data sources across climate, energy, environmental, and health sectors is needed to quantify these intersecting public health risks.

- 3 Kinney, Patrick L. "Interactions of Climate Change, Air Pollution, and Human Health." *Current Environmental Health Reports* 5, no. 1 (March 2018): 179–86. <https://doi.org/10.1007/s40572-018-0188-x>.
- 4 D. Abel et al. 2018. "Air-Quality-Related Health Impacts from Climate Change and from Adaptation of Cooling Demand for Buildings in the Eastern United States: An Interdisciplinary Modeling Study." *PLOS Medicine* 15 (7): e1002599. <https://doi.org/10.1371/journal.pmed.1002599>.
- 5 International Energy Agency. "The Future of Cooling: Opportunities for Energyefficient Air Conditioning," 2018, 92.
- 6 GOI Ministry of Environment, Forest and Climate Change, India Cooling Action Plan Launched, March 2019, <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1568328>.
- 7 Ministry of Environment, Forest & Climate Change (Government of India). "India Cooling Action Plan Launched," March 8, 2019. pib.gov.in/Pressreleaseshare.aspx?PRID=1568328.

In this effort, NRDC is proud to lead a collaboration with leading Indian scientists and policy experts on an applied research project funded by the Wellcome Trust's Our Planet, Our Health Program. The project aims to estimate the local health benefits of climate change response actions at the city level. The team uses linked computer models to estimate the future air quality changes and health impacts of climate change mitigation and adaptation policies in Ahmedabad, India. The collaborating team includes the Indian Institute of Tropical Meteorology (IITM), Gujarat Energy Research and Management Institute (GERMI), Public Health Foundation of India/Indian Institute of Public Health-Gandhinagar (IIPH-G).

Leading Indian scientists at GERMI and IITM are estimating Ahmedabad's electricity demand in 2030, considering changing demand for air conditioning. Experts at IITM and IIPH-G are working to model and compare air quality projections for two climate change response strategies: increasing the share of renewable solar energy in power generation (mitigation); or expanding cool roofs and green landcover in Ahmedabad (adaptation). Working together, our team will apply these air quality projections to estimate the local health benefits in 2030 from these different climate change response strategies relative to a business-as-usual 2030 air quality scenario. Because this research is designed within the context of the ICAP and India's national climate strategy goals, it can help to make the case for expanded



Credit - Emmanuel Dyan

action and ambition to address the climate crisis, and to provide near-term improvements for public health.

Because the threats of climate change to public health are intertwined, so are the solutions. Shifting India even further and faster toward clean energy climate resilience can help to reduce deadly air pollution, keep people cool and healthier, and protect the global climate.

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ABOUT THE ORGANIZATIONS

INDIAN INSTITUTE OF PUBLIC HEALTH, GANDHINAGAR (IIPH-G)

The Indian Institute of Public Health Gandhinagar (IIPH-G) is India's first Public Health University. IIPH-G aims to strengthen the overall health system in the country through education, training, research, and advocacy/policy initiatives. The institute started its operations in July 2008 from with the commencement of its 1st batch of Post Graduate Diploma in Public Health Management (PGDPHM). IIPH-G is India's largest public health university and is the hub for excellence in public health teaching, public health innovation, research and practice. iiphg.edu.in

GUJARAT ENERGY RESEARCH & MANAGEMENT INSTITUTE (GERMI)

The Gujarat Energy Research & Management Institute (GERMI) is a centre of excellence in the energy sector, promoted by Gujarat State Petroleum Corporation Limited, a Government of Gujarat Undertaking. GERMI has 4 mandates: supporting energy sector research and development, consulting on energy analyses, providing training, and providing education on energy topics. To meet its mission, GERMI conducts socially-relevant research, advises governments, industry, and nonprofits on energy sector topics, and trains the next generation of energy experts. GERMI's work advances world class research, development, advisory and training organization in the field of conventional and renewable energy. germi.org

INDIAN INSTITUTE OF TROPICAL METEOROLOGY SYSTEM OF AIR QUALITY AND WEATHER FORECASTING AND RESEARCH (IITM)

Indian Institute of Tropical Meteorology (IITM) is an Institute of the Ministry of Earth Sciences within the Government of India. It functions as a premiere research institute that advances scientific knowledge in the fields of meteorology and atmospheric sciences, with application in various fields including agriculture, economics, public health, water resources, transportation, and risk communication. IITM leads implementation of the System of Air Quality and Weather Forecasting and Research (SAFAR), which monitors local air quality and forecasts conditions for select Indian cities in near real-time. safar.tropmet.res.in

NATURAL RESOURCES DEFENSE COUNCIL (NRDC)

The Natural Resources Defense Council (NRDC) is an international environmental organization with more than 3 million members and online supporters. Since 1970, our scientists, lawyers and other environmental specialists have worked to protect the world's natural resources, public health, and the environment. NRDC works in the United States, China, India, Canada, Latin America, as well as on global initiatives to address climate change, protect nature, and promote healthy people and thriving communities. In India, NRDC works with local partners on transformative solutions to advance clean energy and climate resilience. www.nrdc.org