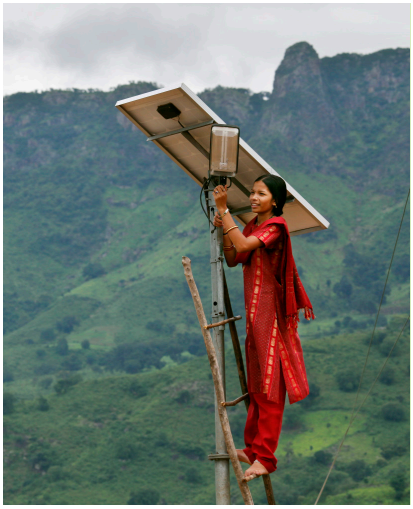
Climate Action for Healthy People, Healthy Places, Healthy Planet: Energy, Climate Change and Health



Climate change is the greatest health challenge of the 21st century. It threatens our air, food, water, shelter, and security — the basics on which human life depends. Climate change exacerbates health inequities by disproportionately impacting people living in poverty and communities of color.

At the same time, action on climate change provides one of our greatest health opportunities because many climate change solutions improve community environments and the public's health and reduce health inequities. Everybody benefits.

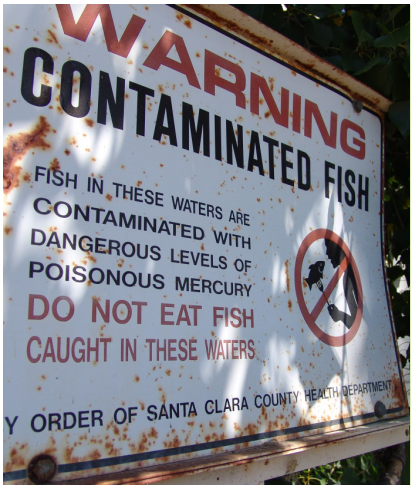
In this brief we explain the health and health equity benefits of reducing climate pollution from the energy sector. For other **"Climate Action for Healthy People, Healthy Places, Healthy Planet"** briefs see http://www.usclimateandhealthalliance.org

Key Messages

- Switching from coal combustion and other fossil fuels to clean, safe, renewable energy - like wind, solar and hydroelectric -is one of the most important things we can do for our health and for the climate.
- Energy efficiency and clean renewable energy have substantial benefits for health, including reductions in asthma and other respiratory disease, cardiovascular disease and premature deaths.
- Energy production is the largest source of climate pollution in the U.S., responsible for nearly 1/3 of greenhouse gas emissions.
    - Coal-fired power plants release 3.5 million tons of CO_2 per year, the most significant climate pollutant.
- Energy production is also a major source of air, water, and soil pollution, and harms our health in many ways.
    - Air pollution from burning coal causes over 13,000 deaths and 20,000 heart attacks in the U.S. each year.
    - Coal power plants are disproportionately located in low-income communities and communities of color.
- Increased energy efficiency (in homes, offices, and industry) allows us to meet our energy needs at lower cost and with less climate and air pollution.

Health, environment and energy

Energy and electricity production has greatly improved our quality of life, providing for lighting, heating, cooling and the manufacture of many helpful products. But the way in which electricity is currently produced — mainly through burning of fossil fuels — comes at a high cost to our health and to the environment.



DID YOU KNOW?

Coal power plants are the largest single source of mercury that contaminates waterways and makes its way into our bodies from the fish we eat.

- Coal still provides about 33% of U.S. energy, although its use is declining due to the cheap cost of natural gas.[5] Coal combustion is a major source of toxic air pollutants.
    - Burning coal to produce electricity releases tons of toxic chemicals into the air, including nitrogen oxides, sulfur oxides and particulate matter (PM).[1]
    - Coal power plants are the largest single source of mercury that contaminates waterways and makes its way into our bodies from fish we eat. Mercury is a potent neurotoxin that can cause developmental problems and learning disabilities, particularly in the fetus and young children.[6]
    - Coal air pollution is also associated with heart disease, asthma and chronic lung disease, with the greatest impacts affecting children, the elderly, low-income communities, people of color and communities downwind of power plants. [3 7]
    - In the U.S., nearly six million African Americans live within three miles of a coal-fired power plant.[3]
    - The cumulative health costs of coal-based electricity in the U.S. have been estimated to fall between $62 billion and $523 billion annually.[8]
    - Coal miners suffer from occupational hazards, such as black lung disease, injuries and fatalities.[9]
    - Coal mining can cause significant water contamination and mudslides.
- Recent studies estimate significant reductions in illness and deaths if we switch from dirty fossil fuels to renewable energy.[10]
- Other energy sources are also associated with health risks:
    - Natural gas — extraction, storage, and transport are associated with methane emissions. Large concentrations of methane may displace oxygen, causing dizziness, weakness, nausea, and vomiting.[11] Gas extraction, storage, and combustion may also release benzene, which has been associated with leukemia[12], and other volatile organic compounds, which contribute to the formation ground-level ozone (smog).[13]
    - Hydroelectric — Construction of large dams for hydroelectric power has often caused displacement of large numbers of families. [14]
    - Nuclear power — The use of nuclear power poses a very small risk of accidental releases of radiation, though accidental releases could be catastrophic. Nuclear workers face risks from chronic low-level radiation exposure, with attendant cancer risks, and uranium miners have a high risk of lung cancer. Even the remote possibility that nuclear waste could be obtained to produce a "dirty bomb" raises significant security concerns.[15]
- For many low-income families, "fuel poverty" due to high energy costs means choosing between paying for energy to cook, heat, or cool homes, versus other essential necessities such as food.[16] Fuel poverty is associated with increased risk for cold-related illness, and use of unsafe heat sources that can cause carbon monoxide poisoning or fires.[17] Concerns about high-energy costs may reduce the use of air conditioning during heat waves, increasing the risk of heat illness and deaths among low-income families (as 18% of households below the poverty line do not have air conditioning).[18]

FAST FACT:

The World Bank has stopped funding construction of coal-powered fire plants, rejecting the notion that coal energy is the answer to fuel poverty.

Energy and the Developing World

Over one billion people around the world still lack electricity or gas for lighting, cooking, or heating, with the overwhelming majority living in sub-Saharan Africa or developing countries in Asia. Many of these families rely on the use of indoor household cook stoves that burn biomass such as dung or charcoal, which can release large amounts of black carbon particulate matter into their houses and the environment. These indoor air exposures can result in childhood pneumonia, asthma, chronic respiratory disease, and lung cancer. The World Health Organization attributes about 4.3 million deaths each year to indoor air pollution. For the many people living in extreme poverty without access to secure energy, it is critically important that wealthier nations support development assistance that will allow them to meet basic needs using safe and clean renewable energy.[17]

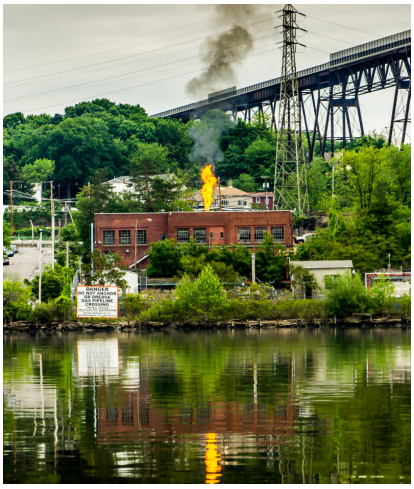
The World Bank has stopped funding construction of coal-powered fire plants, rejecting the notion that coal energy is the answer to fuel poverty. Says Rachel Kyte, the Bank's climate envoy, "Do I think coal is the solution to poverty? There are more than 1 billion people today who have no access to energy… If they all had access to coal-fired power tomorrow their respiratory illness rates would go up, etc… We need to extend access to energy to the poor and we need to do it the cleanest way possible because the social costs of coal are uncounted and damaging, just as the global emissions count is damaging as well."[19]

Climate change and energy

- The energy sector is responsible for 30% of U.S. greenhouse gas emissions (GHGE), almost all of which is associated with the burning of dirty fossil fuels.[20] Fossil fuels — coal, oil, and gas — are fuels that were formed when prehistoric plants and animals died and were gradually buried by layers of rock.[21]
    - Coal produces more carbon dioxide per unit of energy than any other energy source, producing nearly 71% of CO_2 from U.S. electricity production,[22] but only 33% of electricity.[23]
- Natural gas has been proposed as a "bridge fuel," as its end-use results in significantly lower CO2 emissions than that of coal.[21] But recent findings suggest that the methane released during the lifecycle of natural gas use may have a climate impact even greater than that of coal. Methane is a potent short-lived climate pollutant with a global warming potential far higher than that of CO2.[24,25]
- Electricity generated from renewables releases about 1/20th the GHGE of coal over the full life-cycle.[26] Switching from fossil fuels to clean, renewable energy is a critical path to the reduction of greenhouse gas emissions.
- Advances in renewable energy technology have helped reduce implementation costs — making renewable energy ever more cost-competitive — and increased market shares.[27]
    - Since 2011, electricity from solar power has increased tenfold, and wind generation of electricity has increased by 50%.[28]

Clean Power Plan

The Clean Power Plan (CPP) aims to reduce carbon pollution from power plants. These are the first national standards that address carbon pollution from power plants. The CPP requires states to develop a plan that will significantly cut carbon and air pollution, advance clean energy development, and provide the foundation for long-term strategies to tackle climate change. In a study conducted by Harvard University using a scenario that resembled the CPP, they found that health benefits would outweigh the estimated costs of the Plan, with an estimated net benefit of $38 billion per year. Unfortunately, the CPP has been challenged by some states and the Supreme Court issued a hold on its implementation (Summer, 2016) until the lawsuit is heard in U.S. District Court. (Summer, 2016). [29 30]



FAST FACT:

Recent findings suggest that the methane released during the lifestyle of natural gas may have a climate impact even greater than that of coal.

The Benefits of Energy Efficiency: Good for our Health and Good for the Planet

- Energy efficiency and energy conservation are extremely important tools for tackling climate change. They reduce the need for energy production, can decrease indoor air pollution, and help to significantly reduce the health and climate impacts mentioned above.[31] In San Francisco, a health impact assessment found that standard energy efficiency upgrades would likely reduce deaths attributed to ambient particular matter 2.5 by 4%.[32]
- Energy efficiency also reduces energy costs, saving families and businesses money, which can be invested back into the local economy.[26 33]
- Improved energy efficiency and savings benefit populations sensitive to volatile energy prices, such as those with fixed or low incomes.
- A number of programs are available to ensure that energy efficiency upgrades are available to those who need them the most, such as the Low Income Home Energy Efficiency Plan (LIHEAP)[34] and the Weatherization Assistance Program (WAP). [26 27 35]
- Key strategies for energy efficiency include:
    - Zero net energy homes and commercial buildings
    - Industry adoption of energy efficiency
    - Deployment of energy-efficient appliances and light bulbs
    - Strengthened energy efficiency standards for buildings and appliances

What can we do?

Public health professionals play a critical role in building healthy, equitable, sustainable, and climate resilient communities. You can help to promote an increase in energy efficiency and clean renewable energy:

- Share information about the health harms of dirty fossil fuel energy from coal, oil, and natural gas and the health benefits of clean energy with your colleagues, patients, policy-makers, and community.

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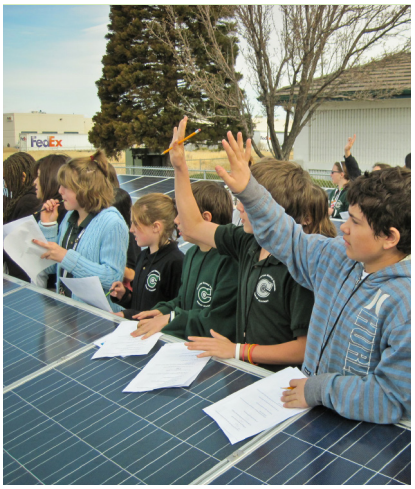

- Support local, state, and federal policies and standards that:
  - Encourage increased energy efficiency, such as California's Building Energy Efficiency Standards[36] or the U.S. Department of Energy's Appliance and Equipment Standards Program.[37]
  - Regulate GHGE and pollutants from electricity production, such as through the Clean Power Plan.
  - Expand the installation of clean renewable energy, such as through California's Renewable Energy Standards Portfolio.
- Support funding to allow low-income households and those in multi-unit housing to enjoy the benefits of solar energy.
- Advocate for the expansion of low-income energy retrofitting and weatherization programs, and for the inclusion of healthy home components in those programs.
- Support discounted electricity rates for low-income households to help low-income household maintain service. Support rules that ban electricity shutoffs during heat waves.
- Supporting community choice energy (CCE) initiatives, which enable local governments to consolidate electricity demand within their jurisdiction in order to procure clean energy supplies while maintaining existing providers for transmission and distribution services. CCE allows cities and counties the ability to aggregate regional energy demand, negotiate with competitive suppliers and developers, purchase more green power, reduce the cost of electricity, and provide power from more local sources.[38]
- Encourage your local hospitals and other institutions to purchase renewable energy. Many large health care systems have already joined the Health Care Without Harm 2020 Health Care Climate Challenge[39] and made significant gains in procuring clean renewable energy, achieving cost savings and contributing to cleaner air in their communities.[40, 41]

Summary

We can reduce climate pollution and improve health at the same time by supporting improvements in energy efficiency and a switch to safe and clean renewable energy. The biggest gains in health will come from reducing generation of electricity using coal. We know what we need to do to create a healthier, more equitable, and more climate-friendly and climate resilient energy system. We need your help to get there.

For More Information

- Learning more about health and energy: https://www.princeton.edu/~mauzeral/papers/Energy%20ARPH%2013.pdf
- Learning to be more energy efficient: http://energy.gov/energysaver/energy-saver-guide-tips-saving-money-and-energy-home
- Learning how solar energy can benefit you: http://www.gosolarcalifornia.ca.gov/csi/index.php

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FAST FACT:

Coal produces more carbon dioxide per unit of energy than any other energy source.

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Center for Climate Change & Health

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