

Climate

Turning the corner on climate change



“With realistic actions in key countries, the world’s greenhouse gas emissions can start to go down by 2020. This can be done with current technology at reasonable cost.”

Gwen Ruta

Senior VP Climate and Energy

EDF has a vision for a clean energy future: to stop once and for all the centuries-old rise in global greenhouse gas emissions, and to reach the turning point where emissions level off and begin to decline. It can happen in the next five years—if countries around the world contribute.

“This is a generational challenge,” says Gwen Ruta, senior VP for climate and energy. “Whenever I need a lift, I spend some time with our Climate Corps fellows.” Ruta founded EDF’s Climate Corps program, which taps young leaders to find energy savings. “I’m inspired by their optimism, smarts and unwavering belief that every one of us can make a difference.”

Our work in 2015 made clean energy choices easier for tens of millions of people. EDF is helping to sweep away obsolete rules that encourage pollution and replacing them with policies that reward innovation. Last year, the U.S. clean energy market grew 14%—nearly five

times the rate of the overall economy—to \$200 billion. That’s roughly the size of the U.S. pharmaceutical industry. In response, we’re helping modernize the power grid so it can support the coming surge of renewable energy.

No group can solve these challenges alone. That’s why EDF has formed a strategic alliance with The Nature Conservancy to position the United States as a global leader on climate change. This work focuses on building non-partisan alliances, developing federal policies that speed the pace of emissions reductions and aiding in the transition to clean energy.

We’re optimistic about climate, because the world’s economies are already showing that they can grow and decarbonize at the same time. Strong commitments by the United States, China and other nations helped usher in a new global agreement in Paris. And the ambitious national goals are being bolstered by decentralized action in states, provincial capitals and businesses. EDF and its allies are at the forefront of these changes.

With our partners, we have identified high-impact actions in key countries and sectors that will be enough to reverse the rise in global emissions of both long-lived and short-lived climate pollutants by 2020.



Breakthroughs in 2015

U.S. Clean Power Plan. EPA’s bold plan to cut power plant emissions shows that the United States can deliver on its climate commitment. EDF and its allies played a key supporting role.

Methane. EDF successfully advocated federal rules that represent a first step in cutting emissions of methane, a potent short-lived pollutant.

China. EDF helped lay the groundwork for Beijing’s pledge to limit carbon pollution, breaking a decades-long impasse and inspiring other nations.

Rainforests. To slow deforestation, EDF helped advance a mechanism for rewarding countries such as Brazil that protect their forests.

Tomorrow's energy today

To help transform how America makes and uses electricity, EDF is working in nine states that make up half the U.S. electricity market. “With \$2 trillion in grid investment coming in the next 20 years, we have **a once-in-a-generation opportunity** to build a resilient system that wastes less energy and gives people clean energy choices,” says Rory Christian, who directs our New York clean energy program.

EDF's Rory Christian (*right*) visits a solar installation with Con Edison VP Matthew Ketschke. We've teamed up with the utility and state officials to help New York remake its energy system, paving the way for community microgrids and other innovations.



Training a new generation of business leaders

EDF Climate Corps trains MBA and grad students to spot energy savings during fellowships at companies and institutions. They have found ways to save **\$1.5 billion** in energy costs while preventing emissions equal to taking 420,000 cars off the road. Our 2015 projects ranged from skyscrapers in Chicago to a shoe factory in Shanghai. “The investment is a no-brainer. Our EDF fellows far exceeded expectations,” says Scott Tew of Ingersoll Rand.

Climate Corps fellow Devashree Ghosh helped develop a microgrid to provide backup power for critical buildings like fire stations, pharmacies and senior housing in Hoboken, NJ, which lost most of its power during Superstorm Sandy. The microgrid provides a template for other cities, like Chicago (*seen here*).



Ending the era of unlimited climate pollution



The Clean Power Plan covers 1,000 plants including the oldest and dirtiest, many located near residential neighborhoods.

President Obama made history on August 3, 2015, when he unveiled EPA's Clean Power Plan, the first-ever national standards to cut climate pollution from new and existing power plants. The plan sent a clear signal to the world that the United States is serious about climate change.

EDF had been working toward this moment for years, alongside allies like the American Lung Association and the Natural Resources Defense Council. The plan requires that the nation's 1,000 fossil fuel power plants—which cause roughly a third of U.S. greenhouse gas emissions—cut their emissions 32% below 2005 levels by 2030. EDF members submitted 481,000 public comments.

EPA estimates that by 2030 the Clean Power Plan will cut about \$8 a month from the average residential utility bill and create tens of thousands of jobs. “States are in the driver's seat,” says EDF general counsel Vickie Patton. EPA has given states the flexibility to deploy solutions that reflect local priorities while minimizing costs. Many states and power companies have indicated they can meet the standards and are already making clean energy investments.

The fight is far from over. Twenty-seven states have filed lawsuits, and there are ongoing attempts in Congress to derail the plan. “We're in for a



Opponents of EPA's Clean Power Plan have sued, but in the heartland the transition to clean energy is already underway.

Projected annual health benefits
from the Clean Power Plan in 2030

As many as
↓ 3,600
fewer premature deaths

↓ 90,000
fewer asthma attacks
in children

political fistfight,” says Jeremy Symons, associate VP for climate policy, “but we have the public on our side.” EDF is committed to supporting and defending the plan—in the courts and in outreach to policy makers and the public. EPA’s authority to act was established in a series of court cases in which EDF played a key role, including at the U.S. Supreme Court.

“The rhetoric is out there that the Clean Power Plan is bad for business,” says Mark Buckley, VP for environmental affairs at Staples, “but that is absolutely not the case.” Staples is one of 365 companies to send a letter to governors requesting finalization of state plans.

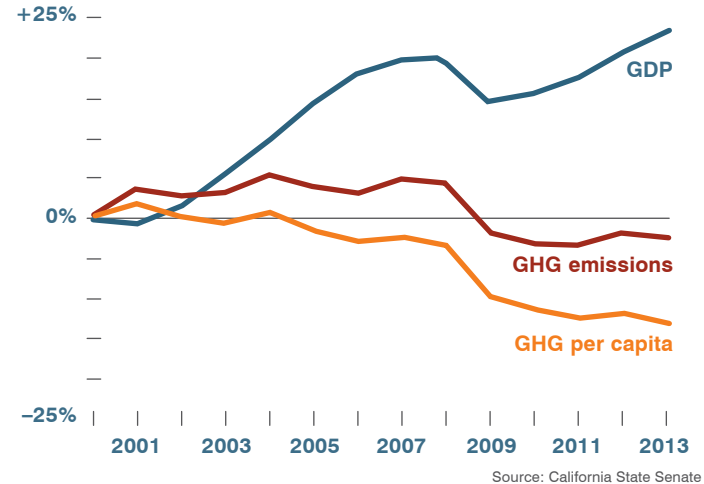
Among its many benefits, the plan is accelerating an energy revolution that’s underway but needs to go faster. That’s why our clean energy team is working in key states such as Illinois, Pennsylvania and Texas, and with power companies like Xcel Energy. We’re unleashing markets for clean technology by eliminating rules that favor outmoded dirty energy and replacing them with ones that foster a modern, efficient grid.

With the Clean Power Plan and investments in clean energy, the era of unlimited carbon pollution from U.S. power plants is finally coming to an end.

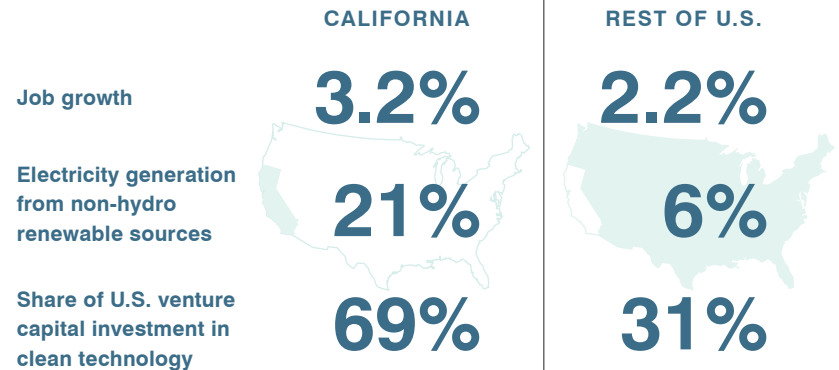
Climate action shines in the Golden State

California's Global Warming Solutions Act, cosponsored by EDF in 2006, has reduced greenhouse gas emissions even as the state's economy has surged. The law's centerpiece is a cap-and-trade program covering nearly 450 of the largest polluters. California also has set rigorous environmental standards spurring changes in how automakers design cars, utilities generate electricity and refineries make fuel.


CALIFORNIA ECONOMY IS GROWING WHILE EMISSIONS FALL



LEADING THE NATION



All percentages for 2014



In 2015, California approved a protocol for rice growers, designed largely by EDF, that rewards farmers who reduce methane. It's one example of the important role agriculture can play in solving the climate challenge.



“California is helping set the stage for carbon pricing programs globally, including by linking directly with Quebec’s carbon market today.”

Dr. Nathaniel Keohane
VP Global Climate



China pledges a limit on carbon

The road to stabilizing the world's climate leads through China, which is the world's largest greenhouse gas emitter, burning as much coal annually as all other countries combined. After years of growth, a rising middle class is calling for a shift to clean, sustainable development. EDF is engaged at every level to help Beijing deliver.

In 2014, President Xi Jinping joined President Obama in making historic commitments to curb climate pollution. China promised to peak its carbon emissions by 2030 and expand the use of alternatives to fossil fuels to at least one-fifth of the nation's energy mix. In 2015, China pledged to launch a national cap-and-trade program for carbon by 2017, based on a set of seven pilot programs that EDF helped develop.

Twenty-five years ago, Beijing called on Dr. Daniel Dudek, now EDF VP for Asia, to participate in the country's first pilot projects with economic incentives for pollution control.



EDF's Daniel Dudek (*left*) serves on China's highest international advisory body on environmental affairs, which reports directly to Premier Li Keqiang (*right*).

Most recently, EDF provided technical assistance as China launched carbon-trading programs in five cities and two provinces, home to 250 million people.

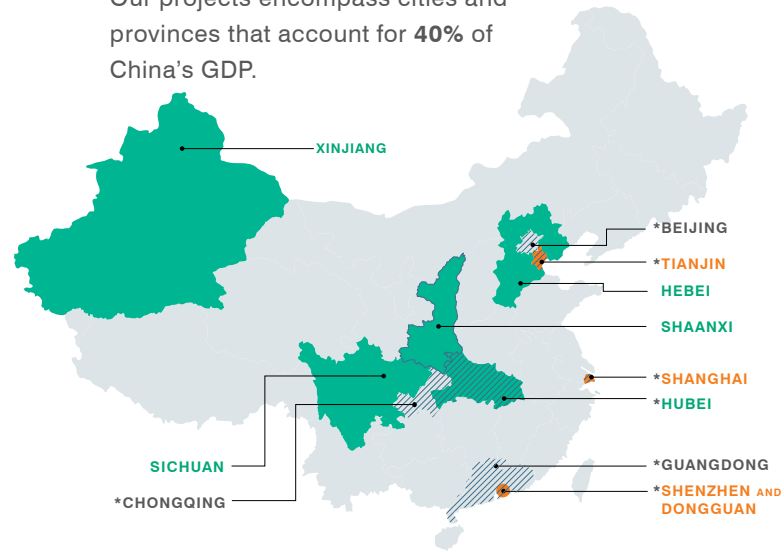
EDF's goal is to help China develop infrastructure, policies and regulations needed to shift the country's economy as quickly as possible toward a low-carbon future. China's environmental transformation is being implemented by a new generation of enforcement officers, many trained through a program EDF set up with Peking University. So far, 29,000 professionals, more than one-third of enforcement officers nationwide, have graduated from our program and fanned out across the country to enforce compliance with environmental laws.

Since much of China's pollution comes from factories that export goods, we also began a green supply chain initiative, endorsed by the 21-member Asia-Pacific Economic Conference, that uses the purchasing power of the government and multinationals to improve energy efficiency and cut carbon pollution.

"By finding these leverage points, we can rapidly scale change," says Dudek.

EDF'S WORK IN CHINA

Our projects encompass cities and provinces that account for **40%** of China's GDP.




***CARBON TRADING:** EDF is providing technical assistance and training to all seven of the government's carbon-trading pilots. These pilots provide the government with the necessary experience to launch a nationwide program by 2017.

LOW-CARBON FARMING: EDF partnered with the State Council's Poverty Alleviation Office to create a program in which 400,000 poor farmers can earn income by reducing carbon emissions through improved agricultural practices, such as turning waste into energy.

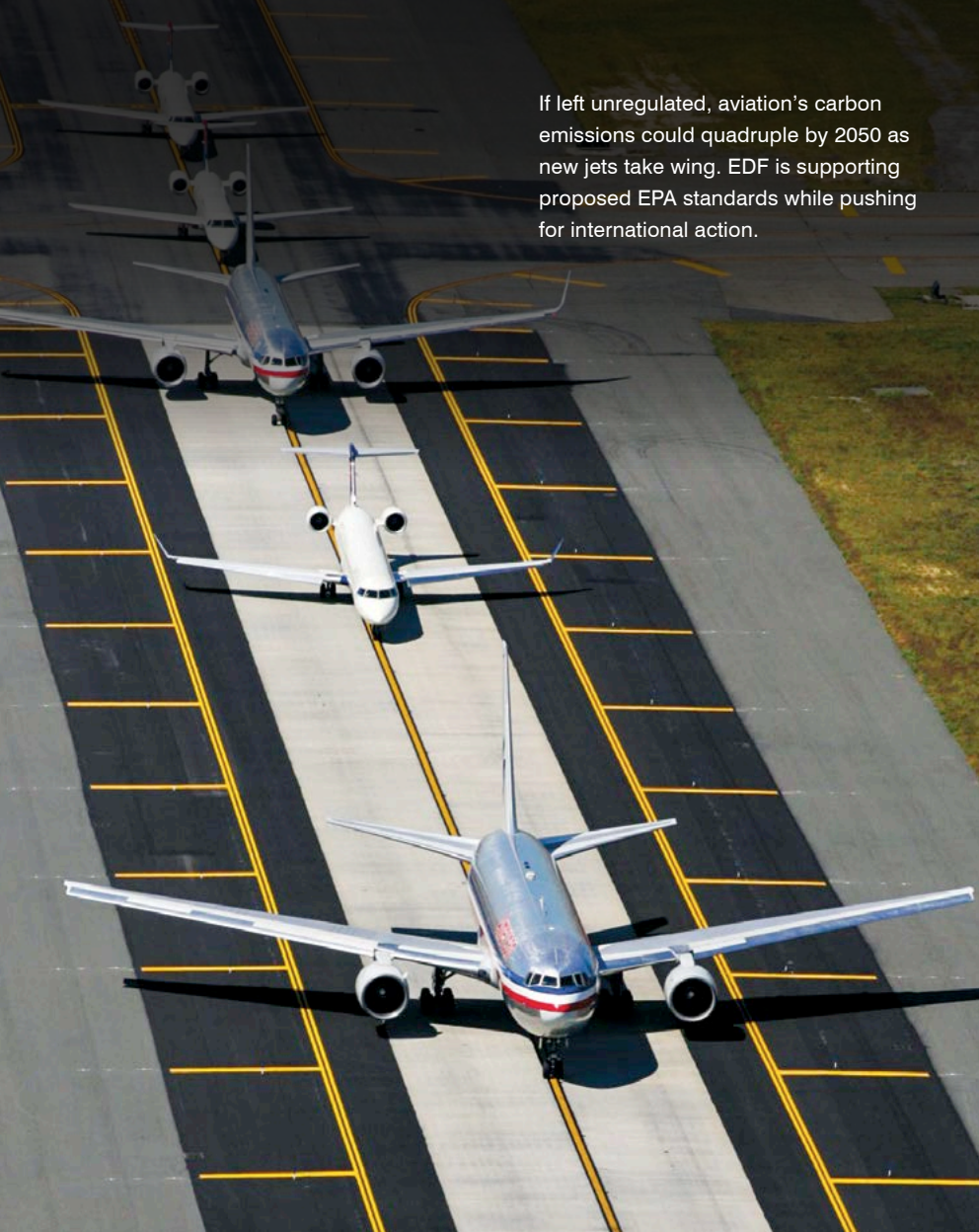
GREEN SUPPLY CHAIN: Our green supply chain initiative gives factories an incentive to slash energy use: a competitive edge when working with big purchasers such as IKEA and Shanghai GM that have strict environmental requirements.

Protecting tropical forests

Deforestation accounts for about **15% of global carbon emissions**, so protecting tropical forests offers one of the biggest immediate opportunities the world has to reduce emissions. EDF is working to help countries that protect their forests to reap the rewards by selling credits in carbon markets.



EDF has been working with state governments and indigenous communities in Brazil to ensure that preserving forests—and their carbon—is more valuable than clearing the land for farming. We're now working with partners like McDonald's to implement strong commitments to ending deforestation.

An aerial photograph showing three large commercial airplanes on a runway. The planes are lined up, with the closest one in the foreground and two others further back. The runway has yellow markings. The background shows a grassy area and a clear sky.

If left unregulated, aviation's carbon emissions could quadruple by 2050 as new jets take wing. EDF is supporting proposed EPA standards while pushing for international action.

Cutting aviation pollution

If aviation were a country, it would be the world's **seventh largest climate polluter**. EDF is working with the International Civil Aviation Organization to cap carbon pollution from all international flights, using carbon markets to help airlines meet that cap cost-effectively.

EDF takes aim at methane, a potent greenhouse gas

The Environmental Protection Agency in 2015 proposed the first national standards to cut methane pollution from oil and gas operations. EDF was central to this important progress. Methane, the main component of natural gas and a byproduct of oil production, accounts for a quarter of the global warming we're experiencing today. Thanks in part to EDF's leadership, this once-ignored climate issue is now on the map.

In 2012, as the shale gas boom accelerated, no one could say exactly how much methane was leaking from the oil and gas supply chain. So EDF launched our most ambitious scientific research ever: 16 peer-reviewed field studies involving nearly 100 partners from academia and industry to measure emissions across the entire U.S. natural gas supply chain. To date, two dozen papers have been published based on the research. It is now becoming clear that

methane emissions are at least 50% higher than previously estimated.

The results of EDF's studies have been key to informing state and federal action. But EPA's rules, if adopted, cover only new and modified sources. More action is needed to reach the White House goal to reduce emissions 40–45% by 2025, so we'll continue the fight. EDF worked with industry in Colorado to enact tough rules that cover both new and existing sources of methane, showing that strong standards need not cost jobs or production. EDF also challenged inventors to design real-time methane detectors, which are now being tested.

"The EDF studies confirm there are cost-effective technologies that will allow us to reduce methane emissions right now," says Southwestern Energy's Mark Boling, "and they are playing a key role in driving change in our industry."





Globally, a 45% cut in methane pollution from oil and gas operations would have the same climate benefit over 20 years as shutting down roughly 1,000 coal-fired power plants.



EDF partnered with Google Earth Outreach to use Street View cars equipped with special sensors to detect methane leaks under city streets. Interactive maps on edf.org make pollution visible, and utilities are starting to embrace our methodology.

LEADING ON SCIENCE: THE ALFRED P. SLOAN FOUNDATION



“EDF’s research has played an important role in elevating attention to the methane leakage issue,” says Paul L. Joskow, president of the Alfred P. Sloan Foundation. The foundation has provided grant support for EDF’s scientific studies on methane leakage across the natural gas supply chain.

“We support scientific research and are not policy advocates,” Joskow says. “EDF stands out in its ability to organize and manage nonpartisan research and to bring stakeholders together to understand and use it effectively.”

It was EDF’s commitment to developing a sound factual basis for environmental policies that brought the organization to the Sloan Foundation’s attention. “Better science means better understanding of the environment and better public policy,” says Joskow.

**“EDF is influential because it is
committed to getting the facts right.”**

Paul L. Joskow
President, Alfred P. Sloan Foundation



“EDF doesn’t just talk
about problems. They
help design smart
government policies,
combine them with
private sector know-how,
and create solutions.”

Michael Bloomberg

Former Mayor of New York City

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