




An Expert Network

2009 Annual Report



The ClimateWorks Foundation supports public policies that prevent dangerous climate change and promote global prosperity.

ClimateWorks' goal is to limit annual global greenhouse gas emissions to 44 billion metric tons by the year 2020 (25 percent below business-as-usual projections) and 35 billion metric tons by the year 2030 (50 percent below projections).

These ambitious targets require the immediate and widespread adoption of smart energy and land use policies. ClimateWorks and its network of affiliated organizations promote these policies in the regions and sectors responsible for most greenhouse gas emissions.

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WELCOME LETTER

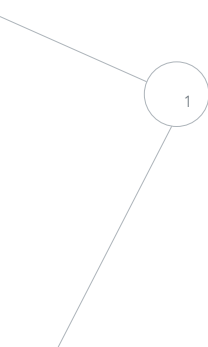


GOVERNMENTS ACROSS THE WORLD are ramping up their domestic efforts in the battle against dangerous climate change. Nations at every stage of development—from developing countries with small, inefficient factories to modern, knowledge-based economies—are beginning to recognize that the policies that reduce carbon dioxide emissions also save money, create jobs, give birth to thriving new industries, and enhance national security and economic prosperity.

This slow but noticeable shift in national policies—such as enhanced vehicle fuel economy standards, renewable energy standards, and industrial energy efficiency targets—is critical. No nation will be spared the harm caused by catastrophic climate change, and so every emitting nation must take action. The stakes in the battle to reduce greenhouse gas emissions are stark: Either we all win, or we all lose.

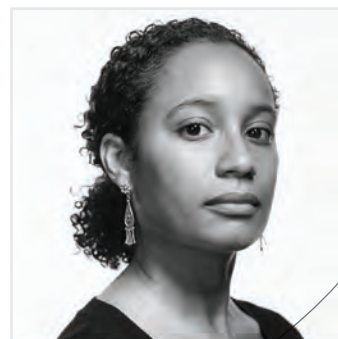
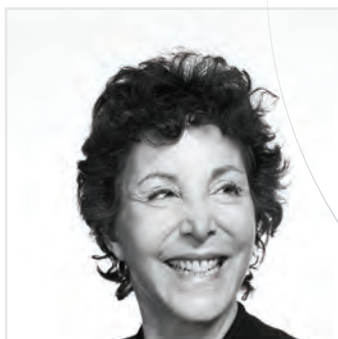
Unfortunately, the planet is already experiencing the warning signs of climate change. As we write this, European Russia is on fire, its major cities filling with smoke; floods in Pakistan, China, and the American Midwest have caused tens of billions of dollars in damages and displaced millions of people from their homes; an iceberg four times the size of Manhattan cleaved off Greenland; and a phytoplankton die-off in the world's oceans threatens the maritime food chain.

These are the headline events of a single summer's worth of climate-related calamities. What happens if these extreme events become the norm? What happens if we fail to reduce carbon emissions to sustainable levels, and these types of events grow more severe, more frequent, and more devastating to human communities around the planet?



Across the global ClimateWorks Network, teams of experts collaborate to help decision makers put countries on the path to long-term, sustainable economic opportunity.

The people who work in the ClimateWorks Network have a deep understanding of the policies, technologies, and practices that can reduce carbon emissions while enhancing economic growth. These experts focus on the regions and sectors responsible for most greenhouse gas emissions; they collaborate to share best practices.



THE CLIMATEWORKS FOUNDATION: AN EXPERT NETWORK

The ClimateWorks Foundation exists to help nations choose a path of low-carbon prosperity. We do this by promoting public policies that are proven to reduce carbon emissions while enhancing economic growth.

Many of these policies are well known: Vehicle fuel economy standards save money for consumers while enhancing a nation's economy and energy security; building codes reduce energy expenses for tenants; renewable energy standards create markets for clean sources of electricity.

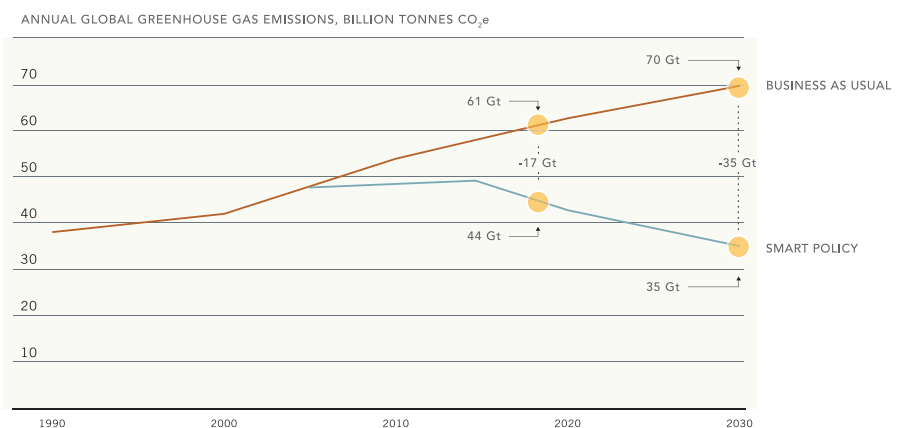
To achieve these policy objectives, ClimateWorks helps build and sustain an international network of affiliated organizations—the ClimateWorks Network—that works in the geographic regions and economic sectors that have the greatest potential for reducing greenhouse gas emissions.

Our expert partners collaborate on strategy, share technical expertise, and allocate financial resources for the greatest impact. The Network's goal is to inspire adoption and implementation of effective policies to limit annual global greenhouse gas emissions to 44 billion metric tons by the year 2020 (25 percent below business-as-usual projections) and 35 billion metric tons by the year 2030 (50 percent below projections).

These targets require immediate and widespread adoption of smart policies that improve energy efficiency, scale up clean energy technologies, and slow the destruction of tropical forests. To achieve these goals, the ClimateWorks Network:

- Provides nonpartisan, analytically rigorous support to policymakers and regulators
- Targets our efforts in the geographic regions and economic sectors that have the greatest potential for reducing greenhouse gas emissions
- Allocates resources based on expected reductions in emissions, and the potential to achieve those reductions

BUSINESS AS USUAL VERSUS SMART POLICY



LOOKING BACK: A YEAR OF PROGRESS, TEMPERED BY SETBACKS

Climate policy headlines over the past year reflect two great disappointments: The climate conference in Copenhagen, in December 2009, failed to produce the results many had hoped for, and the U.S. Congress has failed to produce a meaningful U.S. energy or climate policy.

But that is not the whole story. Across the world, countries are enacting national policies that reduce energy waste. The renewable energy industry is booming, prices for clean technologies are dropping, and the development of new energy technologies is starting to flourish. Consider:

- In China, a massive push by the central government to develop renewable energy has turned that country into the world's leading market for wind power; similar efforts have made China the world's leading manufacturer of photovoltaic solar panels. China's industrial efficiency efforts are the single largest climate success story on earth (see the case study on page 21).
- In Europe, strong fuel economy standards for cars have made European automakers the leading manufacturers of low-carbon vehicles, while strict building codes reduce emissions from the building sector. Europe's history of climate leadership has helped set a baseline for global efforts to slash carbon emissions.
- In India, new efficiency programs at electric utilities promise to dramatically reduce local air pollution and carbon emissions, and may resolve the country's endemic blackouts. India's leaders have also made an aggressive commitment to solar power and are developing efficiency standards for buildings and vehicles.
- In the United States, renewable energy standards have given birth to a \$60 billion domestic industry, creating thousands of jobs and negating the need for new fossil-fuel power plants; state-level policies are further establishing the trend toward clean energy and away from coal and oil.

At ClimateWorks, our mission is to make sure this trend continues, speed it up, and provide the technical support governments need to complete the transition to a low-carbon, prosperous future. Our grantees and partners play a direct role in accelerating this trend by working with elected officials, regulators, and industry leaders to craft smart, effective policies.

BUILDING CAPACITY FOR LOW-CARBON PROSPERITY

It's difficult for any organization to provide this kind of technical policy support when demand for services is high and organizational resources are limited. In 2009, ClimateWorks focused heavily on helping our partners to grow their institutions and expand their capacity to meet this pent-up demand. In cases where no such capacity existed, we invested in new institutions—such as the Institute for Industrial Productivity and the Shakti Sustainable Energy Foundation—that can bring these services to the regions and sectors where they're needed most.

In addition to building institutions, in 2009 ClimateWorks organized teams of experts from across our Network to encourage the sharing of ideas and expertise. For example, the European vehicles team includes leading political thinkers from the European Climate Foundation's offices in Brussels, Berlin, and The Hague who work closely with top vehicle technology and regulatory experts from the International Council on Clean Transportation. As a team, they supported the E.U.'s adoption of the world's most stringent vehicle fuel economy standards.

Across the global ClimateWorks Network, teams of experts collaborate to help decision makers put countries on the path to long-term, sustainable economic opportunity. We are proud to pay tribute to our Network, with words and images, in these pages.

William K. Reilly, Chair of the Board

Hal Harvey, Chief Executive Officer

Mark Burget, President & Chief Operating Officer

*We believe that a low-carbon,
prosperous future is still within
our reach, and that rapid action
to reduce carbon emissions
can prevent a climate catastrophe.*

POLICIES THAT WORK

HAL HARVEY AND SONIA AGGARWAL

FROM THE RECORD DOWNPOURS in Pakistan and China to persistent droughts and fires in Russia, our planet is already experiencing the early effects of climate change. Climate models predicted that we would start to see such extreme weather conditions, and they predict that these once-rare events will become much more frequent if we fail to reduce carbon emissions. In order to prevent dangerous climate change, we must enact smart policies that slash these emissions while allowing economic growth and development to continue.

The energy field is replete with advocates who are enamored of particular policy approaches and push them with an almost ideological fervor. Some argue that a price on carbon will motivate market forces to select ever-cleaner technologies, and that's all we need. Others focus solely on good building codes (or fuel efficiency standards for cars, or renewable portfolio standards for utilities) to shift that entire sector to a low-carbon future. Others insist that technology R&D will create vast new clean energy options, solving all of our energy and emissions challenges.

All of these arguments have merit, but it is neither wise nor useful to champion one at the expense of the others. Each approach—economic signals, performance standards, and technology R&D—delivers a different result. Each is highly effective for some parts of the energy economy and fairly weak in others. And each, well done, complements the others.

Based on extensive analyses of energy policies worldwide, we have identified the advantages and disadvantages of each approach; we have also drawn some lessons in policy design.

Three kinds of carbon (or energy) policy

1. Get the price of carbon right. Economists agree that accurate prices are an efficient way for society to make good choices. To reduce global warming, then, energy prices should reflect the full cost of each energy source, including damage caused by pollution. Businesses and consumers will then choose more-efficient technologies and less-carbon-intensive activities. The carbon price approach has several advantages:

- It lets the market find the lowest-cost solution. For example, the U.S. acid rain program reduced pollution by 50 percent at half of the projected cost.
- Carbon prices do not require governments to intervene in individual economic sectors to choose technology or alter behavior.
- Prices influence both technology choice and behavior, and these reinforce each other.

But a price-only approach has three weaknesses:

- Some sectors are profoundly resilient to price signals. New homes are rarely occupied by the architects or builders whose design and construction decisions lock in patterns of household energy consumption. Many factors affect homebuyers' choices—price, schools, crime, floor plan, countertops, and so on—and buyers rarely make decisions based on a home's energy consumption.

- Some consumers are simply indifferent to energy prices. In many countries, energy is so heavily subsidized that waste is expected. In some regions, energy is a very small part of homeowners' and businesses' budgets, so price increases have little impact.
- Setting a price—whether through a cap-and-trade system or a tax—can be politically challenging.

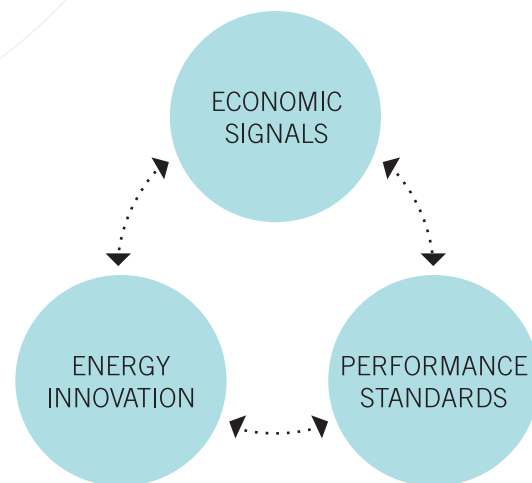
2. Set smart performance standards. Worldwide, the most successful energy-saving policies have been performance standards, such as building codes, appliance energy standards, and vehicle fuel efficiency standards. Effective performance standards can induce rapid technology improvement, quickly achieve 100 percent market saturation, and cut energy use by as much as 75 percent.

Of course the reverse is also true: Bad performance standards can induce unreasonable prices, freeze technologies at suboptimal levels, or miss large opportunities for potential improvement. Performance standards also do little to encourage consumers to change their behavior—and can even have the opposite effect. Reducing the amount of fuel used by a nation's fleet of cars can lower—and, in fact, has lowered—fuel prices, thereby sending a price signal that encourages consumers to use more fuel.

Performance standards can be designed to overcome or avoid most of these problems, as discussed below.

3. Kick-start energy innovation. Most of our prosperity is driven by technology innovation. Our energy choices are based on the cost and performance of current energy technologies. Changing the menu of available choices—to include super-efficient refrigerators, zero-carbon wind turbines, and the like—can solve energy problems without profound economic or social trade-offs.

For various structural reasons, the energy sector does not typically invest in technology innovation without a push from public policy. This can include public funding of energy R&D and public-private partnerships for the deployment of new energy technologies.



Not surprisingly, there is great symbiosis between these three policy realms. They reinforce each other, accelerating the deployment of new technologies and lowering the cost of carbon abatement. **Economic signals** trigger investments in energy innovation and boost the impact of performance standards; support for **energy innovation**, in turn, reduces the cost of new technologies and the financial impact of economic signals, enabling increasingly stringent performance standards; and **performance standards** create a market for new technologies and reduce the price impact of economic signals. Arguing that one or another of these policies is the most important misses the point. Each does things the others cannot, and they are intrinsically connected.



MIRKA DELLA CAVA, Program Officer, Efficiency,
ClimateWorks Foundation

SMART POLICY DESIGN

Economic signals, performance standards, and energy innovation can all be wisely or badly engineered. We have analyzed energy policies enacted in many nations over the last couple of decades. From this assessment, we have distilled several general rules for getting policy right.

Set policy goals and let the market work out the details

Policymakers should set performance standards or emissions limits and let the market find the cheapest way to meet those goals. The best policies leave technology risk, market risk, price risk, and performance risk in the hands of the private sector. The advantage of this approach is simple: The number of strategies to reduce emissions is large, the combinations are even larger, and no policymaker can know in advance which strategies are best. The market is an excellent machine for sorting this out.

Many policies designed to stimulate new technology set a fixed price for a subsidy. For instance, Germany's feed-in tariff offered an initial subsidy of 48.1 cents per kilowatt-hour for solar energy.¹ This has produced prodigious amounts of solar power and driven down the price of the technology—which is terrific—but the subsidy was far costlier than necessary. A more recent example is the U.S. Cash for Clunkers program, which offered \$4,500 to auto owners who traded in inefficient cars and purchased more-efficient models.² This program was oversubscribed within a week.

A better approach is to auction off the subsidy in a series of reverse auctions, in which clean energy producers, for example, bid for a subsidy and the lowest bid wins. The subsidy is then paid out on a produced kilowatt-hour basis. If a project fails to produce energy, it receives no subsidy. As technology improves, subsequent auctions should reveal lower subsidy requirements. In practice, this would produce far more low-carbon power per public dollar than a fixed-price feed-in tariff.

California's refrigerators provide another example of how policymakers can take advantage of the market to select the best technology. In the mid-1990s, three utilities offered a \$25 million reward to the manufacturer that produced the most efficient refrigerator. Three manufacturers competed; the winner developed a markedly more efficient refrigerator.

How to get policy right:

Set goals and let the market work out the details;

capture 100% of the market;

stimulate private-sector innovation;

support technology R&D;

reward performance and beware

unintended consequences.

But two interesting things followed. First, the two runners-up marketed their new refrigerators to compete with the winner. Second, after a few years, the California Energy Commission locked this new performance level into the state appliance standards, because it was now clearly feasible to achieve. In this example, a goal was defined, the market responded, and policymakers took advantage of the market's power.

More recently, India's Perform, Achieve, and Trade mechanism assigned energy efficiency targets to the country's most energy-intensive industrial facilities. Those that exceed the target can sell permits to enterprises that haven't met their goals, tempering the impact on cost.

A pure market competition for renewables—such as a renewable portfolio standard—will typically incentivize the technologies that are cheapest today, even if others have greater future potential. Thus renewable portfolio standards in the U.S., for example, are met almost exclusively with onshore wind power.

Several policy approaches can make promising new technologies such as solar more competitive. Some U.S. states have established a solar tranche within their renewable portfolio standards, in which solar bids only against solar. In addition to its renewable obligation, the U.K. established a feed-in tariff for small-scale generation. And India established a national goal of generating 20 gigawatts of solar power by 2022, which will also be stimulated by a feed-in tariff.

Go upstream and capture 100 percent of the market

Energy policy can be aimed at changing individual behavior—through consumer rebates, labeling programs, price signals, mortgage incentives, or other mechanisms. This approach raises awareness, but it is expensive and inefficient, and it rarely achieves significant market penetration.

Instead, policymakers should go upstream—to energy companies, utilities, or even energy sources, such as oil wells and coal mines. This allows policymakers to focus on a smaller set of market participants and shift the decision making from less knowledgeable consumers to managers who make energy choices for millions of people.

When policymakers aim upstream, they have a much greater chance of capturing 100 percent of the market. Fleet-wide standards for vehicle fuel efficiency will affect far more vehicles than preferential parking for green cars.

As a rule, programs that capture only a fraction of the market create inefficient distortions. The European carbon trading system, for example, covers only about half of the CO₂ emissions in Europe, so it leaves many sources unregulated and inflicts a disproportionately high price on those that are regulated. This can push emitters to move from regulated sectors into unregulated ones—in a process known as “leakage”—making it increasingly difficult to control total emissions.

Going upstream can also save costs. A recent study by the Prayas Energy Group in India found that going upstream:

Reduces transaction costs: As the point of intervention moves from the customer to the manufacturer and from the utility to the national level, the number of transactions is reduced, lowering their cost.

Reduces program cost: Intervening upstream, at the manufacturer level, avoids the marketing and sales markups that occur at the retail level.

Increases bargaining power: One entity negotiating with manufacturers on behalf of all utilities has greater bargaining power than dozens of utilities negotiating separately.

Improves effectiveness: National programs that cover an entire sector allow policymakers to develop more effective programs, including monitoring and evaluation, and reduce problems such as leakage.

Design policies that stimulate private-sector innovation...

Policymaking has a snapshot character. When a bill or regulation is finally put into effect, it reflects the state of technology, the price of fuel, and the political fears, hopes, and aspirations of that moment. Unfortunately, what works one year might stifle future improvements.

Consider U.S. standards for auto fuel efficiency, called corporate average fuel economy (CAFE) standards, which were initially set in 1974. These standards doubled the average efficiency of new automobiles sold in the U.S., from about 13 miles per gallon in 1974 to more than 25 mpg a decade later.³ But this was followed by more than two decades of stagnation in fuel efficiency.⁴

The reason? CAFE standards, which were designed as a “floor” for vehicle performance, turned into a de facto cap on fuel economy for most manufacturers, which opted not to exceed the standards. The result: Fuel economy stagnated. Even though the performance of engines, tires, chassis, and the like improved dramatically, these advances were canceled by other developments. Over the ensuing 20 years, cars doubled in power and their weight ballooned 50 percent.⁵ During the same period, Detroit fiercely (and, as it turns out, very unwisely) fought any proposed improvements to the standards.

Imagine if, instead, fuel economy standards had grown just 2 percent per year. U.S. cars would have reached an average of 44 mpg in 2010, Detroit would be a technology leader, the U.S. would consume 35 million fewer barrels of oil per day, and (assuming a \$70 per barrel oil price) we would have saved \$893 billion in 2009 alone and avoided much of the impact of recent oil price shocks.⁶

Japan provides a case study in the design and implementation of performance standards that encourage continuous improvements in vehicle technologies. Japan’s Top-Runner system divides the Japanese auto fleet into classes by weight. The most fuel-efficient vehicle in each weight class is designated the “top runner.” At set intervals, all cars sold in that weight class must achieve this top-runner standard, and a new top runner is designated.

Under this system, manufacturers have a strong incentive to get out ahead of the standards, develop technologies that cut fuel waste, and bring products to market earlier. It is no wonder that Japanese manufacturers dominate auto markets today, or that Toyota’s market capitalization is 10 times that of General Motors’.

...and provide long-term public support for technology R&D

When designing policies that keep up with technology improvements or force technology innovation, it's important to adopt incentives for that technology innovation. The performance standards described above can help spur private-sector research and development of new technologies that comply with ever-tightening standards. This has the ultimate, indirect effect of making new low-carbon technologies cheaper. But it is also useful to directly change the cost of these new technologies through large-scale research and development programs.

Robust commitments to research and development can drive down the cost of low-carbon technologies, making it easier to achieve emissions objectives. Technology innovation often has a long time horizon, so our future technology options depend on the R&D that is being done now. Many nations understand this. The European Union has set a goal to spend 3 percent of the region's total GDP on energy R&D. Similarly, the Indian government has set up a publicly backed venture capital fund to invest in promising new energy efficiency technologies.

In fact, governments must play a role in supporting energy technology R&D, for several reasons. Reduced pollution is a public benefit that is typically not recognized by markets. In addition, huge costs—and risks—are associated with developing new energy technologies. The risk-reward calculus does not make sense for the private sector; policies must therefore be designed to incentivize innovation. Using revenue from carbon taxes or carbon-cap permits for R&D can keep costs down while ensuring an appropriate use of the funds.

Reward performance and beware unintended consequences

Early incentives for wind energy in the U.S. state of California provided tax credits for investment in renewable energy. The idea was to reduce the capital costs of renewable energy, which requires high initial investments but has low fuel costs compared with conventional sources. Because of this, renewables are at a disadvantage when capital is expensive and fuel is cheap.

But these incentives rewarded investments in renewable energy projects regardless of whether they produced any actual power. Incentivizing investment instead of performance had the unintended consequence of littering the hills of California with fantastical windmills that never ran very well but were nonetheless profitable.

Incentives should therefore be awarded based on actual kilowatt-hours generated from renewable energy sources, units of appliances or equipment sold, or actual reductions in energy use for utility-scale energy efficiency projects. Put simply, rewarding performance encourages performance.

Beyond California's windmills, many other seemingly smart policy ideas have bad side effects. For example, restricting prices on natural gas can result in less drilling and, ultimately, higher prices. Price controls also limit energy efficiency investments.

Energy price subsidies seem like a useful way to help poor people with basic commodity expenses, but by creating a good with no accurate price, they encourage waste. The rural poor in India, for example, pay no electric bill—and hence efficient equipment like pump sets is used inefficiently.

Training programs can help ensure that smart policies are implemented effectively. For instance, China's new building code could obviate the need for 15 large (1,000-megawatt) powerplants,⁷ and save 92 metric megatons of CO₂ in 2010 alone. But resources are needed to train officials and help ensure successful code enforcement and implementation.



FANTA KAMAKATÉ, Program Director,
International Council on Clean Transportation

A HOLISTIC APPROACH

Good policy begets good results—in the form of new technology, more economically efficient choices, and reduced climate and energy problems. These will, in turn, create the political conditions for even more ambitious energy and climate goals. Conversely, bad policy naturally provokes a backlash.


Well-designed performance standards, economic signals, and innovation policies are the key components of a holistic approach to policy; they can work together to transform our global economy and avoid the most dangerous effects of climate change. Getting these policies right, and implementing them quickly, is imperative. ■

NOTES

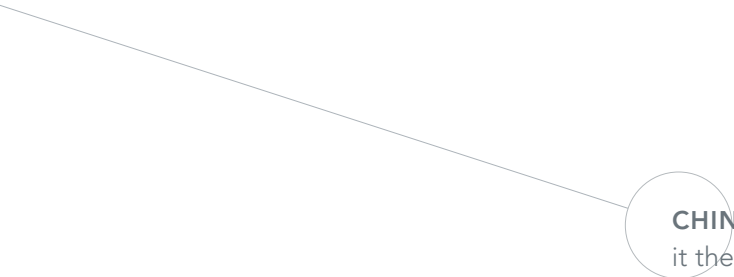
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PATTY FONG, Chief Operating Officer and Program Director
for Energy Efficiency, European Climate Foundation



CASE STUDY: CHINA'S INDUSTRIAL EFFICIENCY PROGRAM



CHINA'S RAPID ECONOMIC GROWTH and urbanization have made it the world's top source of greenhouse gas emissions. As the rural poor seek greater economic opportunities in China's burgeoning cities, and as the central government continues its focus on alleviating poverty, demand has skyrocketed for concrete, steel, iron, aluminum, and other energy-intensive commodities.

China manufactures the vast majority of these commodities itself; in fact, contrary to popular perceptions of China as primarily an exporter, most of its manufacturing activity—like most of its economic activity—is focused on creating products to satisfy domestic demand.

Among all economic activities in China, the industrial sector is by far the largest energy user, responsible for two-thirds of the country's energy use and an even greater share of its carbon emissions. This makes the emissions from the Chinese industrial sector one of the greatest opportunities on earth for carbon reductions.

The Chinese government is aware of this opportunity and is aggressively pursuing strategies that can help reduce China's industrial carbon emissions while maintaining economic growth.

*Watch a video
about China's efforts
to reduce industrial
emissions at
<http://bit.ly/dgogiF>.*

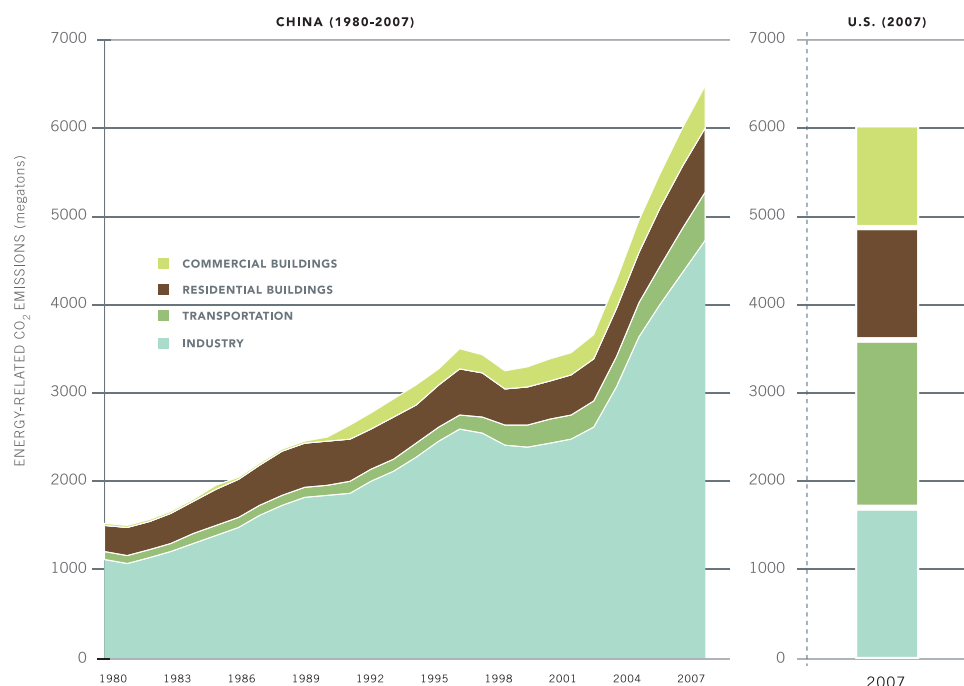
A CONCRETE EXAMPLE OF LOW-CARBON PROGRESS

In 2008, China produced and consumed nearly half of the world's cement, an industrial staple that is responsible for 5 percent of global carbon dioxide emissions. But not all cement plants are created equal: The most efficient, modern facilities use significantly less energy, and have lower carbon emissions per unit of production, than the inefficient older factories. The same can be said of other industries like steel, chemicals, and paper.

To improve industrial efficiency, as well as air quality and economic competitiveness, China's leaders laid out an ambitious target in 2005 as part of the country's 11th Five-Year Plan: By 2010, China would reduce the energy intensity of its economy by 20 percent, meaning that it would use one-fifth less energy to produce the same amount of gross domestic product.

Addressing industrial emissions is at the core of this goal; China's leaders have turned to members of the ClimateWorks Network for technical assistance. The China Sustainable Energy Program and the Lawrence Berkeley National Laboratory—both ClimateWorks grantees—have worked with Chinese officials to design a successful program to reduce energy use and emissions from a variety of industrial facilities.

ENERGY-RELATED CO₂ EMISSIONS IN CHINA & THE U.S.

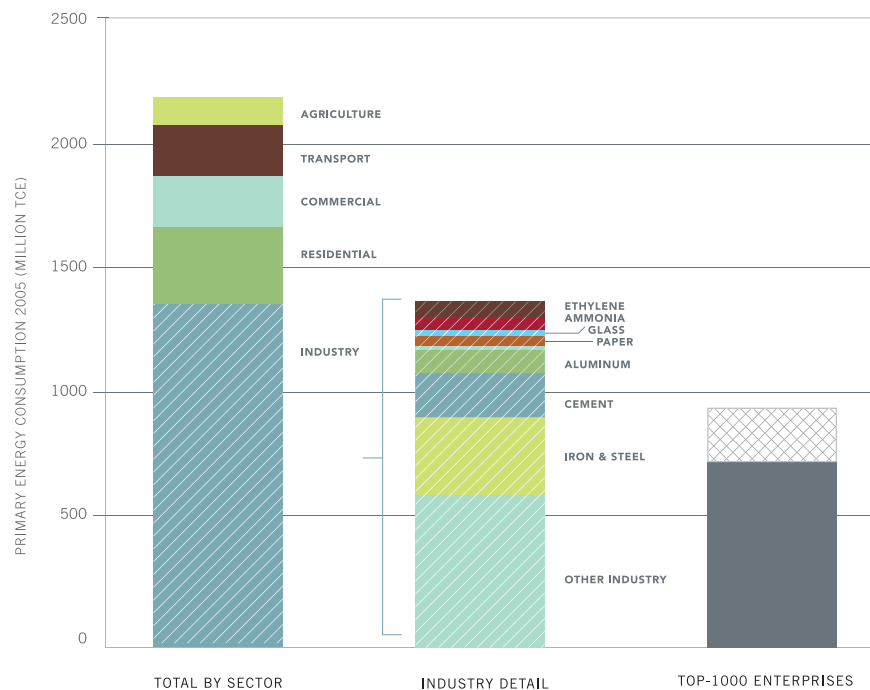


TARGETING CHINA'S 1,000 LARGEST ENERGY CONSUMERS

The Top 1,000 Energy-Consuming Enterprises Program targets the Chinese companies that use the most energy. Combined, these 1,000 firms account for one-third of China's total energy use, so making them more efficient can deliver carbon reductions that are equal to the total energy-related emissions of other large nations. "It's a relatively easy way for China to get big savings, versus convincing individual homeowners and businesses to make many smaller changes," said Lynn Price, a staff scientist at Lawrence Berkeley National Laboratory who helped develop the program.

Although the Top 1,000 Program was designed and executed rapidly, it has achieved its target ahead of schedule. Researchers estimate that this one initiative saved almost a half-billion tons of CO₂ emissions by 2010 and could account for 10 to 25 percent of the savings that China needs to meet its energy intensity target for 2020. "I see progress," said He Ping, director of the Industry Program at the China Sustainable Energy Program. "China is moving in the right direction."

CHINA'S TOP ENERGY CONSUMERS



The Top 1,000 Energy-Consuming Enterprises represent a third of China's energy consumption.

Note: Top 1,000 Program energy consumption is typically reported in final energy units (the gray bar on right), whereas China's total and industrial energy consumption (the first two bars) are shown in primary energy terms. The gray cross-hatched area shows the megatons of coal equivalent for electricity generation, transmission, and distribution losses so that the Top 1,000 Program can be compared with the other two bars. Industry subsector breakdown is based on LBNL's Long-Range Energy Alternatives Planning (LEAP) model, not Chinese statistics.

Source: *Energy Policy*, Volume 38: Issue 11, November 2010

FROM PILOT TO PROOF: SPREADING BEST PRACTICES

In China, pilot projects generally precede major new initiatives, and the genesis of the Top 1,000 Program was one such experiment. With support from the China Sustainable Energy Program, experts from the Lawrence Berkeley National Laboratory helped Chinese officials test the approach at two steel mills in Shandong Province, in north-east China.

The program's design was informed by other nations' efforts to make their industries more efficient, such as the U.K.'s Climate Change Agreement Program, the Netherlands' Long-Term Agreements, and Japan's Keidanren Voluntary Action Plan on the Environment. The programs vary, but they center on an agreement between government and industry that sets targets for improving efficiency, reducing energy use, and limiting emissions.

Chinese officials found Europe's experiences with voluntary agreements especially useful. Modifying these approaches to fit the Chinese context embodied a core ClimateWorks strategy: spreading effective policies and best practices and adapting them to local conditions.

Technical assistance to the Chinese included a study tour of similar efforts in England and the

Netherlands. Lawrence Berkeley National Laboratory researchers also provided the steelmakers with a benchmarking and energy-saving tool that measured consumption and highlighted possible efficiency upgrades for each enterprise.

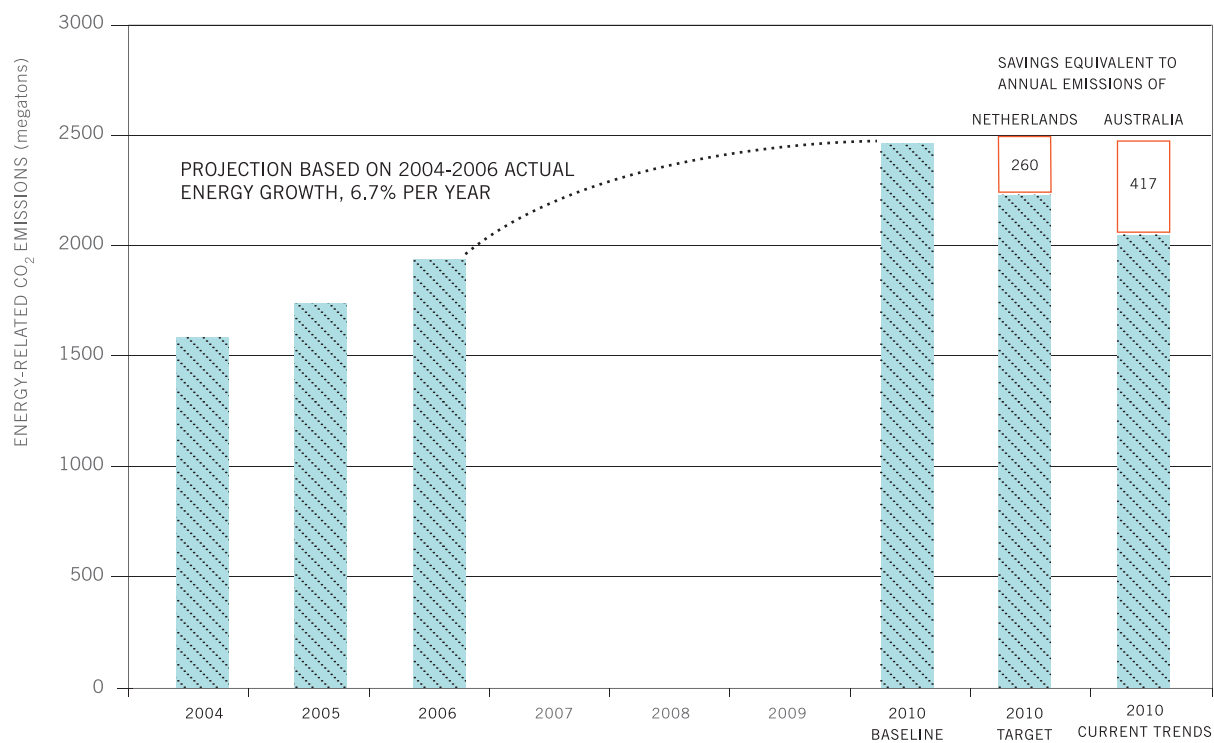
The two steel mills in Shandong Province installed more efficient technologies, adopted energy-monitoring practices, and tracked a series of metrics, including CO₂ emissions, energy used per ton of steel produced, and the cost savings from efficiency improvements. In turn, the Shandong Economic and Trade Commission helped the steel mills obtain loans for the more modern technologies, offered technical assistance, and showered praise on the enterprises for achieving energy savings. In the end, both steel factories met their targets ahead of time, and at a profit.

The Shandong pilot project was such a success that the Chinese central government decided to adopt it nationwide in April 2006. By making industrial production more energy efficient, and by helping some enterprises achieve international best practices in energy management, the Top 1,000 Program aimed to avoid burning 100 million tons of coal equivalent by 2010—almost as much as the Netherlands' total annual energy-related CO₂ emissions.

“As a big energy consumer, we need to look at energy conservation and emissions reductions as an important measure in developing a sustainable economy.”

—Zhao Xudong, deputy director, Energy Conservation Office, Shandong provincial government

TOP 1,000 PROGRAM PROJECTED EMISSIONS



By 2010, the Top 1,000 Program aimed to reduce CO₂ emissions by 240 Gt compared with projections—almost as much as the Netherlands’ annual energy-related CO₂ emissions. Actual results are expected to avoid the release of over 400 million tons of CO₂, roughly equal to Australia’s annual energy-related CO₂ emissions.

Source: *Energy Policy*, Volume 38: Issue 11, November 2010

“With the increased support from ClimateWorks, we can have more impact, improve implementation of the program, and scale up the program so it covers more factories.”

—He Ping, Industry Program director, China Sustainable Energy Program

SENDING THE RIGHT MARKET SIGNALS

The Top 1,000 Program employs both sticks and carrots to improve the energy performance of the targeted enterprises. If a factory doesn't meet its targets, managers won't be promoted as readily or receive other rewards; they can even be fired. Local government officials may see their careers suffer.

To help the firms achieve their targets, the government offers financial incentives, including tax rebates and direct funding, as part of a larger national program to improve efficiency and reduce pollution. Overall, China is expected to invest about \$143 billion in energy conservation measures as part of its 11th Five-Year Plan.

These investments can generate impressive emissions reductions. For every ton of coal equivalent a factory avoids burning because of efficiency improvements, it can receive \$29 to \$36. Because 2.4 tons of carbon dioxide are emitted for every ton of coal equivalent burned in China, this funding effectively reduces greenhouse gas emissions at a price of \$12 to \$15 a ton.

The Top 1,000 Program met its goal for energy savings a year ahead of schedule. According to a review in the journal *Energy Policy*, the program could save as much as 172 million tons of coal equivalent by 2010, 72 percent more than targeted, and avoid the release of over 400 million tons of CO₂, roughly equal to Australia's annual energy-related CO₂ emissions.

How did these factories save so much energy, carbon, and money? For starters, some of the oldest, most inefficient plants were shuttered. “To help achieve our conservation goals, we have restructured the cement industry to promote larger, more modern facilities, and shut down backward facilities that use old technologies,” said Zhao Xudong, deputy director of the Energy Conservation Office of the Shandong provincial government.

The remaining cement plants, steel mills, and other factories became increasingly efficient. Energy managers were hired at more than 95 percent of the enterprises; simply keeping track of consumption inspired new ways of doing business.

"Once you get the attention of upper management by signing a contract that sets out an energy savings or emissions target, you typically get fast action and big savings," said Lawrence Berkeley National Lab's Price. "And that's not just in China. As we've seen around the world, once industry focuses on identifying these measures, managers are usually surprised at what they find." The measures, Price said, may be as simple as sealing a leak. "It's equivalent to closing the refrigerator door," she said, "or getting your teenage kids to turn off the lights."

In some cases, entire industrial processes evolved to cleaner, more modern technologies. With iron and steel, for instance, small sinter machines (used to melt and fuse iron ore particles) and casting converters (used in steel production) were almost totally phased out. Small-scale paper mills were replaced by larger, more efficient factories that could take advantage of newer methods and economies of scale. "Now what really matters is how to scale it to other companies and implement it better," said Julia Reinaud, policy and programs director for the Institute for Industrial Productivity, a ClimateWorks grantee.

In the first years of the Top 1,000 Program, many enterprises carried out small retrofits, such as upgrading fans and pumps, but as time goes on, these firms are expected to invest in more elaborate projects that generate even greater energy and carbon savings. Some of the low-hanging fruit has already been picked, but there are still plenty of opportunities to improve industrial efficiency in China—and elsewhere. "Thirty years ago, California was more efficient than much of China is now," Price said, "and it has still improved its efficiency every year since."

While China's emissions continue to rise, Prime Minister Wen Jiabao has promised to use an "iron hand" to make China more energy efficient. In August 2010, the central government announced that more than 2,000 of the nation's most antiquated and energy-intensive factories would be closed, and 22 provinces would no longer be allowed to provide discounted electricity to some energy-intensive industries.

PHILANTHROPY'S ROLE: BUILDING CAPACITY, SUPPORTING EXPERTS

In 2009, ClimateWorks' support for China's efforts to reduce industrial emissions focused on improving the effectiveness and reach of its industrial efficiency program. "From 2005 to 2008, the major focus was on the top 1,000 enterprises," said He Ping, of the China Sustainable Energy Program. "But in 2009, we started to see that the top 1,000 companies were already getting a lot of attention from the government, so our focus shifted a bit to midsize enterprises at the local level."

Now, cities and provinces throughout the country have their own efficiency agreements with industry and can benefit from support in implementing the programs. "At the local level, now they each have their own top 100 or top 200 program," said He Ping, "so if we add them all up, more than 5,000 companies are already involved."

Philanthropic support from the China Sustainable Energy Program was essential for getting the Top 1,000 Program off the ground, because it helped prove the viability of the approach at the two steel mills in Shandong Province. Funding from the William and Flora Hewlett Foundation and the David and Lucile

Packard Foundation, two of ClimateWorks' core donors, allowed the China Sustainable Energy Program to provide world-class expertise to Chinese officials as they designed, implemented, and learned from the pilot project. "With this funding, we could mobilize international expertise and the top experts in the country," He Ping said. "We were also able to help build the implementation capacity of the agencies."

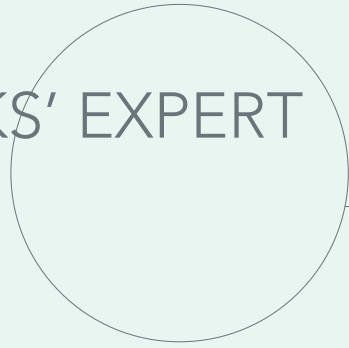
As Chinese leaders consider how to expand and improve the Top 1,000 Program, the China Sustainable Energy Program, Lawrence Berkeley National Laboratory, and other ClimateWorks grantees are providing critical technical support to ensure that it delivers maximum returns—in energy conservation, emissions reduction, and reduced costs. "With the increased support from ClimateWorks," He Ping said, "we can have more impact, improve implementation of the program, and scale up the program so it covers more factories."

PROMOTING LOW-CARBON INDUSTRIES AROUND THE GLOBE

Can the Chinese approach be repeated elsewhere? "Not every country has state-owned enterprises," notes Reinaud. But similar efficiency agreements have become common in capitalist economies, with some governments offering participating companies rebates on carbon-related taxes. ClimateWorks launched the Institute for Industrial Productivity to scan the globe for additional innovative ways to reduce industrial emissions and help decision makers implement effective policies.

One-third of global industrial emissions stem from purchased electricity, so industrial efficiency improvements can reduce demand for new coal-fired power plants. The Regulatory Assistance Project, another member of the ClimateWorks Network, is working with China's electric utilities on utility-scale efficiency projects. Rather than build new power plants, utilities could finance factory upgrades and other major improvements that reduce costs and emissions. "That's the value-add of being part of a network," Reinaud said. "It's the new ideas and all the discussions about how we can collaborate." ■

CLIMATEWORKS' EXPERT NETWORK



OUR GOAL IS to limit annual global greenhouse gas emissions to 44 billion metric tons by the year 2020 (25 percent below business-as-usual projections) and 35 billion metric tons by the year 2030 (50 percent below projections). These goals were set to ensure that atmospheric concentrations of carbon dioxide equivalents (CO₂e) do not exceed 450 parts per million (ppm), which corresponds to an estimated global average temperature increase of 2° centigrade. Most climate scientists consider 450 ppm to be the upper limit for preventing dangerous climate change; if we exceed this limit, we will likely cross a dangerous tipping point.






To meet these ambitious targets, ClimateWorks partners with an international network of affiliated organizations in the geographic regions and economic sectors that have the greatest potential for reducing greenhouse gas emissions. By prioritizing our work in the highest-emitting regions and sectors, we can analyze and identify the policy initiatives with the highest probability of success. This analysis is presented graphically in the “ClimateWorks Sudoku,” on page 32.

The Sudoku (Japanese for “single number”) shows the emissions reductions that are technically feasible in the world’s largest-emitting nations, regions, and sectors, in the year 2030. The total for each row shows the technical potential for emissions reductions by country or region; each column total shows potential emissions reductions by sector. (All figures are presented in billions of metric tons of CO₂e.)

The vast majority of the world’s greenhouse gas emissions originate in five sectors: power, transportation, industry, buildings and appliances, and forests and land use; and in five regions: China, the United States, the European Union, India, and Latin America.

The Sudoku shows the emissions reductions that are technically feasible in the world's highest-emitting nations, regions, and economic sectors, in the year 2030. The total for each row shows the technical potential for emissions reductions by country or region; each column total shows potential emissions reductions by sector. The ClimateWorks Network focuses on the regions and sectors with the greatest potential to reduce greenhouse gas emissions; areas where we do not focus are shown grayed out.

THE CLIMATEWORKS SUDOKU

	 POWER	 INDUSTRY	 BUILDINGS & APPLIANCES	 TRANSPORT ¹	 FORESTS & LAND USE ²	TOTAL
UNITED STATES	1.7	0.6	0.9	0.8	0.2	4.2
EUROPEAN UNION	0.8	0.5	0.6	0.3	0.2	2.4
CHINA	3.5	3.2	0.6	0.4	0.3	8.0
INDIA	1.3	0.9	0.2	0.1	0.1	2.6
LATIN AMERICA	0.3	0.4	0.1	0.2	2.7	3.7
REST OF WORLD	2.3	2.0	1.2	0.5	4.3	10.3
TOTAL	9.9	7.6	3.6	2.3	7.8	31.2

Figures presented in gigatonnes (Gt), or billions of metric tons, of CO₂e avoided per year in 2030.

- 1. The transport figures reflect emissions reductions due to improvements in vehicles and fuels but do not include transportation systems.
- 2. The forests and land use numbers reflect emissions reductions due to decreased deforestation and improved forest management but do not include agricultural and other land use changes.

In the top-emitting regions, ClimateWorks supports **Regional Climate Foundations** that manage a broad portfolio of grants, drawing on deep, in-country political expertise and an understanding of local conditions. These foundations use a mix of grants, contracts, and direct programs to conduct detailed policy analyses, develop advocacy campaigns, and organize coalitions in support of policy solutions.

The Regional Climate Foundations are the largest recipients of ClimateWorks' support, and they manage the bulk of the Network's grants.

For each high-emitting sector, a series of best practices and smart regulatory changes can lead to dramatic reductions in greenhouse gas emissions while enhancing technology innovation and economic growth. To capture these opportunities, ClimateWorks supports **Best Practice Networks** staffed by policy analysts, technology experts, and former regulators who consult with governments to promote policies proved to reduce emissions.

To support our Network's efforts and advance effective climate policies at the national and international levels, ClimateWorks also conducts extensive **research and analysis**. The ClimateWorks research team provides decision makers with a fact base for the national policies and multilateral agreements that can reduce emissions while promoting economic prosperity. Our research initiatives include policy analysis; in-depth evaluations of countries' potential to reduce CO₂ emissions ("cost curves"); and research on non-CO₂ climate-forcing gases, known as "short-lived forcers," which include black carbon, methane, and fluorinated gases ("f-gases").

REGIONAL CLIMATE FOUNDATIONS

Energy Foundation. For almost two decades, the Energy Foundation has been advancing energy efficiency, renewable power, and other low-carbon solutions in the United States. Support from the Energy Foundation allows its large network of grantees to analyze policies, educate decision makers, conduct media outreach, and offer testimony to regulators. The foundation's work includes research on renewable energy, including renewable portfolio standards that will stimulate a \$65 billion market over the next 15 years, and federal fuel-economy standards that will eliminate more than 420 million tons of CO₂ by 2030.

China Sustainable Energy Program. Ten years ago, the Energy Foundation launched the China Sustainable Energy Program (CSEP), which provides technical assistance to Chinese policymakers on energy and pollution issues. The program emphasizes national policies and regional implementation to promote renewable energy sources, strong energy codes for buildings and appliances, ambitious fuel-economy standards for vehicles, and innovative approaches to curb industrial emissions. CSEP's grantees—the vast majority located in China—have worked throughout the nation to reduce the energy intensity and carbon footprint of its growth, help local decision makers develop policies that capture these opportunities, and facilitate knowledge sharing between Chinese officials and energy professionals, and their counterparts in other countries.

European Climate Foundation. The European Climate Foundation was created in 2008 to take advantage of significant opportunities to improve climate and energy policies in the European Union, which has been a leader on global climate issues but still faces serious challenges. In support of these policies, the European Climate Foundation dispatches technical assistance where it is most needed, supports advocacy campaigns, and builds coalitions to advance policies that promote energy efficiency, renewable energy, and other low-carbon solutions.

Shakti Sustainable Energy Foundation. Shakti's mission is to promote a clean, secure, and equitable energy future for India's citizens by supporting policies that promote energy efficiency, sustainable transportation, and renewable energy. Registered under Indian law in 2009 and governed by an Indian board of directors, Shakti supports development and implementation of several key policies highlighted by India's National Action Plan on Climate Change. Shakti and its grantees work with public officials, NGOs, and private companies to support these policies—especially those relating to solar power, energy efficiency, green buildings, sustainable transportation, and rural energy services.

Latin America Program. ClimateWorks collaborates with several organizations, including the William and Flora Hewlett Foundation, to provide Latin American officials with analytical support to help them create sector-specific policies that grow the economy while reducing greenhouse gas emissions. The Hewlett Foundation, one of ClimateWorks' key funders and partners, has a six-year history of funding energy work in Latin America, and has produced strong results. Together, Mexico and Brazil account for 60 percent of power sector emissions in Latin America. For this reason, ClimateWorks' efforts to reduce energy-related carbon emissions are currently focused on these countries.

BEST PRACTICE NETWORKS

The **Regulatory Assistance Project** (RAP) is a global, nonprofit team of experts who focus on the long-term economic and environmental sustainability of the power and natural gas sectors, providing technical and policy assistance to government officials on a broad range of energy and environmental issues.

The **International Council on Clean Transportation** (ICCT) assists with the design, implementation, and enforcement of vehicle efficiency and fuel standards in the countries responsible for 80 percent of the global auto market. ICCT provides policymakers with top-notch technical support and best practices for tailpipe emissions, vehicle efficiency, and fuel economy.

The **Institute for Transportation and Development Policy** (ITDP) promotes sustainable, equitable transportation policies that offer alternatives to driving, reduce local air pollution, and limit carbon emissions. ITDP helps local officials around the world create high-quality, low-cost mass transit systems, bike paths, and pedestrian-friendly cityscapes.

The **Collaborative Labeling and Appliance Standards Program** (CLASP) serves as the leading international voice and resource for energy standards and labeling for commonly used appliances. CLASP promotes policies that save consumers money, reduce power demand, and slash greenhouse gas emissions.

The **Institute for Industrial Productivity** (IIP) focuses on design, implementation, and enforcement of policies to promote energy efficiency, cogeneration, and reduced process emissions in the industrial sector. IIP provides expert analysis and research and disseminates low-carbon practices that improve companies' competitiveness and productivity.

The **Global Buildings Performance Network** (GBPN) focuses on the design, implementation, and enforcement of building codes for new buildings, as well as the retrofit of existing buildings.

The ClimateWorks **Forests Program**—in partnership with the David and Lucile Packard Foundation, the Ford Foundation, and the Moore Foundation—supports strong financial incentives to keep trees standing. The program focuses on removing the drivers of deforestation and promoting land use changes that enhance agricultural productivity while reducing terrestrial emissions.



DAVID WOOLEY, Vice President and Power
Utilities Program Director, Energy Foundation

OUR GRANTEES' WORK

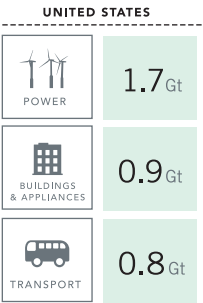
To maximize the impact of our philanthropic investments, we prioritize our grants based on their potential to reduce greenhouse gas emissions. Following are highlights of our work in these regions and sectors:

United States

Despite the Senate's failure to pass national climate legislation, sectoral policies, historically driven at the state and regional level, continue to offer important opportunities to reduce global warming pollution. Preventing construction of new coal-fired power plants, advancing vehicle fuel economy standards, improving energy efficiency, and promoting renewable energy remain critical to propel new technologies that enable economic growth with dramatically less pollution.

The need to cut U.S. CO₂ emissions is clear; the country is responsible for 21 percent of the world's annual total and, until recently, was the leading source of emissions. To meet our 2030 emissions target, 13 percent of necessary global CO₂ reductions must be found in the United States.

Nearly half of these reductions can be achieved at a cost savings. Measures such as improving vehicle fuel efficiency, retrofitting buildings, and enhancing industrial efficiency reduce CO₂ emissions and save money. Changes in the power sector, such as expanding renewable energy sources and implementing carbon capture and storage, tend to be more costly but are effective and necessary ways to slash emissions.



POWER


The ClimateWorks Network and its grantees support policies that expand renewable power, improve energy efficiency, and reduce reliance on coal-fired power plants. In 2009 alone, grantees helped defeat 15 proposed coal-fired power plants. If constructed, these plants would have produced 60 million to 80 million metric tons of CO₂ annually for approximately 60 years. The American Recovery and Reinvestment Act's economic stimulus package included an estimated \$21 billion for renewable power. Renewable portfolio standard laws were adopted or expanded in several states.

BUILDINGS AND APPLIANCES

ClimateWorks supports energy efficiency standards for buildings and appliances to save money for homeowners and businesses, and reduce air pollution and CO₂ emissions. Network grantees promote increasingly stringent building codes and energy-efficiency appliance standards and labels. These codes and standards can ensure that builders and manufacturers create products that utilize the most innovative, energy-efficient techniques and technologies to reduce carbon emissions and save money for end users. Product labels further promote energy efficiency by helping consumers understand the benefits of more-efficient models.

TRANSPORT

ClimateWorks Network grantees work together to encourage progressively stronger vehicle fuel-economy standards that reduce global warming pollution. They provide expert technical support so policymakers can design effective standards that promote advanced clean vehicle technologies.



JIANG LIN, Director, China Sustainable Energy Program,
and Senior Vice President, Energy Foundation



China





As the world's fastest-growing nation with abundant opportunities to improve energy efficiency, China yields the highest carbon reductions per dollar invested. China's booming industrial, buildings, and power sectors offer great opportunities for low-carbon development—and a symmetrical risk of locking in high-carbon choices. In each realm, the Chinese government has taken note of best practices and is encouraging reform in enterprises and regional governments.

Half of the world's new buildings are being built in China, and vehicle sales continue to soar (China's 2009 vehicle sales outpaced U.S. sales). China is the second-largest oil consumer, after the United States, and the world's biggest producer and consumer of coal.

China's growth highlights the critical importance of rapidly tightening building codes, improving fuel economy standards, and expanding clean power and energy efficiency. Its central government is currently working to address these issues in its 12th Five-Year Plan, covering the years 2011–2015. The right plan will drive billions of dollars in new clean technology investment, as did the last five-year plan.

China is taking important steps to increase energy efficiency and curb emissions growth. It plans to cut energy intensity (per unit of GDP) by 20 percent by 2010 and increase the share of renewable energy to 10 percent by 2010 and 15 percent by 2020. China ranks third in the world in installed wind power capacity and is the world leader by far in installed solar thermal capacity.

The greatest challenge Chinese officials face in achieving their goals on climate and energy is effective implementation. The saying in China “the mountains are high, and the emperor is far away” deftly illustrates the political and policy gap that often exists between the central government and the far-flung provinces.

CHINA	
 POWER	3.5 Gt
 INDUSTRY	3.2 Gt
 BUILDINGS & APPLIANCES	0.6 Gt
 TRANSPORT	0.4 Gt

POWER

ClimateWorks Network grantees support large-scale development and utilization of renewable energy in China, including feed-in tariffs and subsidies that support strong targets. They share the latest international best practices in renewable energy policies and utility-scale energy efficiency projects. Our grantees also collaborate to provide technical assistance and analysis, build agencies' capacity, conduct seminars, design pilot projects, and survey China's carbon capture and storage potential.

INDUSTRY

Our Network grantees are helping to expand and implement China's Top 1,000 Energy-Consuming Enterprises Program (see "Case Study: China's Industrial Efficiency Program," page 21). They provide technical assistance, training, and tools to reduce energy use and CO₂ emissions from energy-intensive industries.

BUILDINGS AND APPLIANCES

Our Network grantees support aggressive standards for the most popular consumer appliances, such as desktop computers and air conditioners. They also support product labels that list energy information, consumer subsidies for energy-efficient appliances, and expanded enforcement of efficiency standards and building codes.

TRANSPORT

Network grantees work to reduce carbon emissions and air pollution in Chinese cities by promoting sustainable urbanization and transportation system development. They provide technical support for smart urban planning that encourages sustainable modes of transportation, including bus rapid transit systems and pedestrian- and bicyclist-friendly pathways. Grantees also conduct detailed analyses of vehicle fuel economy standards.



KATHERINE BLUMBERG, Program Director
International Council on Clean Transportation

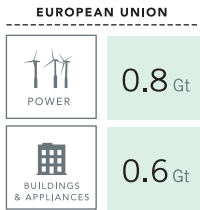


MEG GOTTSTEIN, Principal,
Regulatory Assistance Project

European Union

Europe has a history of leadership in energy and climate policy. European Commission legislation commits E.U. countries to reduce their emissions by 20 percent from 1990 levels—30 percent if an equitable international agreement is reached—by 2020, and 80 percent by 2050. To meet these ambitious targets, the European Commission is developing a plan for total decarbonization of the power sector by 2050. Time is of the essence, because Europe must implement policies in the next five years to meet these goals.

Despite these significant gains, European policies are still not capturing cost-effective energy efficiency in many sectors. The region has seen significant growth in CO₂ emissions from cars, trucks, and planes. Renewable energy has boomed in many countries, but it lags far behind in eastern Europe. Energy use in many central and eastern European countries remains very inefficient and heavily reliant on coal; in several nations, utilities are seeking to build new conventional coal-fired power plants.



POWER

Our Network partners and grantees support strong renewables and energy efficiency targets. They work to block unabated coal plants and develop the potential of carbon capture and storage. They are also working with European Commission leaders to analyze and chart a path to a decarbonized power sector.

BUILDINGS AND APPLIANCES

Network grantees support the ambitious recast of the Energy Performance of Buildings Directive, which covers new buildings and major retrofits. They also collaborate to analyze products covered by the Ecodesign Directive, including lighting, electric motors, and televisions, and to support strong energy labeling for appliances.

India

India's per capita energy consumption is very low, as are its per capita emissions of greenhouse gases (1.2 metric tons of CO₂ per person each year, compared with the world average of 4.5 metric tons). But India, currently the world's fifth-highest emitter of greenhouse gases, responsible for 4.8 percent of the world's annual total, is poised for substantial growth. The country must increase its power generation capacity significantly to meet its aggressive goals for poverty alleviation and human development.

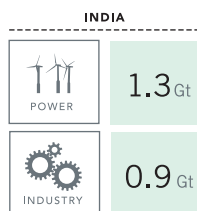
Under business as usual, India's CO₂ emissions are projected to increase dramatically over the next decade. India's leaders are acutely conscious of the need to provide a more reliable—and climate-friendly—energy system. They have enacted the comprehensive National Action Plan on Climate Change, which includes targets for solar energy, energy efficiency, and sustainable cities. Opportunities for low-carbon growth in India are plentiful, such as improving the energy efficiency of industrial processes and modernizing the power sector by expanding solar and wind power.

POWER

Several of our Network grantees work with civil society and government partners to help develop a utility-driven demand-side management strategy for the five most energy-intensive household appliances. They also provide technical and economic analysis for India's National Solar Mission, and they help establish collaborative relationships between researchers and policymakers.

INDUSTRY

Our Network partners and grantees support India's National Mission on Enhanced Energy Efficiency, and they provide analytical and design support for Perform, Achieve, and Trade, an energy-efficiency trading scheme for Indian industries.



*By prioritizing our work
in the highest-emitting regions
and sectors, we can identify
the policy initiatives with the highest
probability of success.*

Latin America

In Latin America, ClimateWorks focuses its work in Brazil and Mexico, which together account for 60 percent of the region's power sector emissions. Both countries have shown strong leadership in reducing their emissions and are working to develop international best practices in several industries.

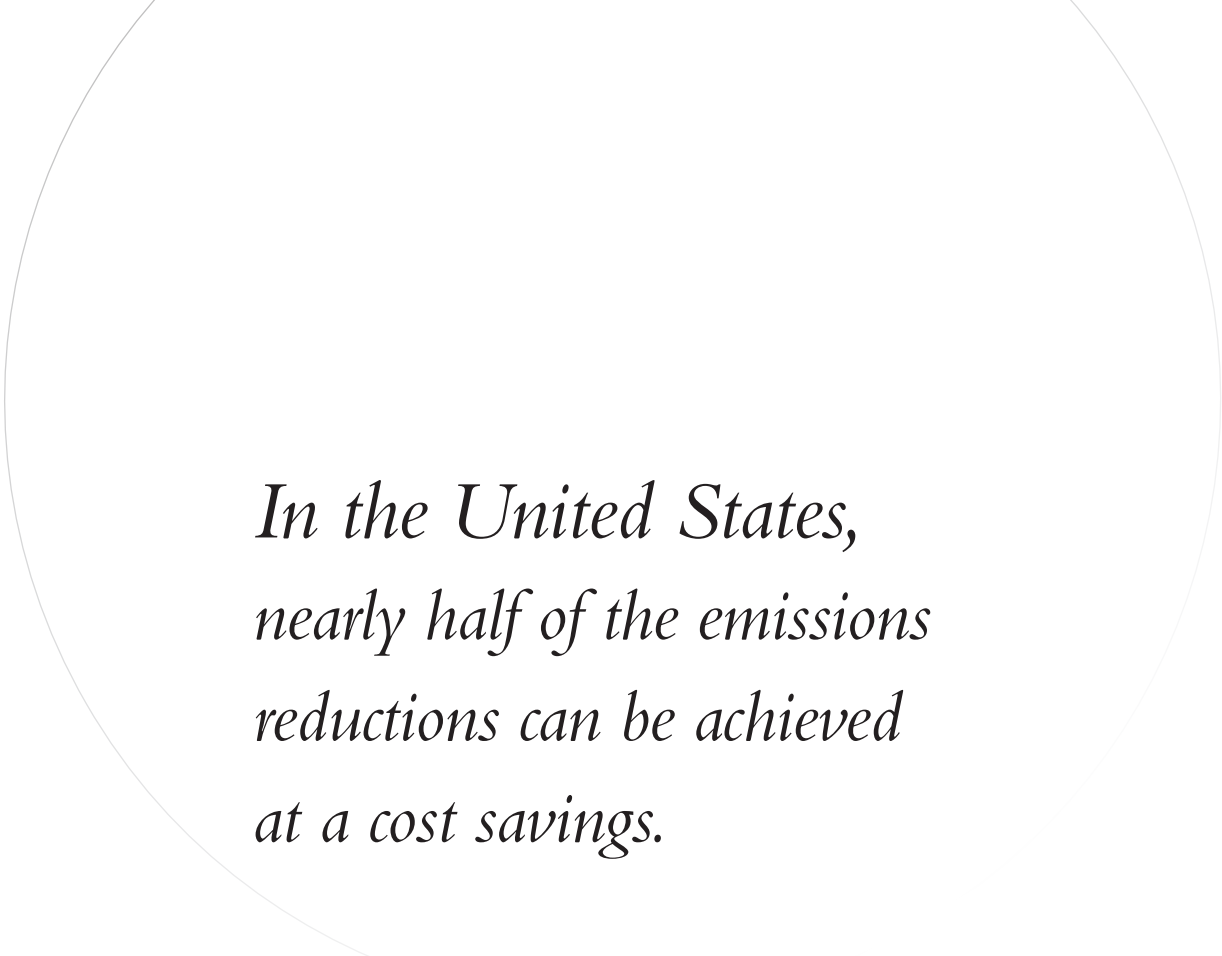
Mexico is currently the highest emitter of energy-related greenhouse gases in Latin America and the 13th highest in the world. It is also the first developing country to set an emissions-reduction target: 30 percent below 2002 levels by 2020. Mexico has significant opportunities to reduce its emissions by improving vehicle fuel-economy standards, making buildings and industry more energy efficient, expanding solar energy, and reforestation.

In 2009, Brazil committed to reducing its emissions by 36 to 39 percent from 1994 levels by 2020 and pledged to reduce deforestation in the Amazon region by 80 percent by 2020. Brazil also created the Amazon Fund, which receives international financing to achieve this goal.

FORESTS AND LAND USE

Our grantees that work on forest-related issues in Latin America concentrate primarily on Brazil; they work to shift land use patterns to reduce greenhouse gas emissions and enhance carbon stocks. This includes efforts to establish international finance mechanisms to address the forces that drive agricultural practices and expansion into forested areas.





*In the United States,
nearly half of the emissions
reductions can be achieved
at a cost savings.*

GLOBAL INITIATIVES + RESEARCH

Through its grantees, ClimateWorks supports effective climate policies, such as imposing a price on carbon, enacting effective international treaties, and encouraging national emissions reduction targets, that can help shift the global economy away from carbon-intensive practices and toward low-carbon alternatives.

ClimateWorks supports adoption of a binding post-Kyoto international treaty that sets aggressive carbon reduction goals; we also provide research and rigorous economic analysis to support several other international initiatives:

- » Facilitating low-carbon growth planning in developing and newly industrialized countries
- » Developing a mechanism for reduced emissions from deforestation and degradation (REDD)
- » Creating short- and long-term climate finance mechanisms
- » Supporting research, policy analysis, and action on non-CO₂ greenhouse gases known as “short-lived forcers,” such as methane and black carbon ■



CHARLOTTE PERA, Senior Vice President
and Director of U.S. Programs, Energy Foundation



FINANCIAL STATEMENTS

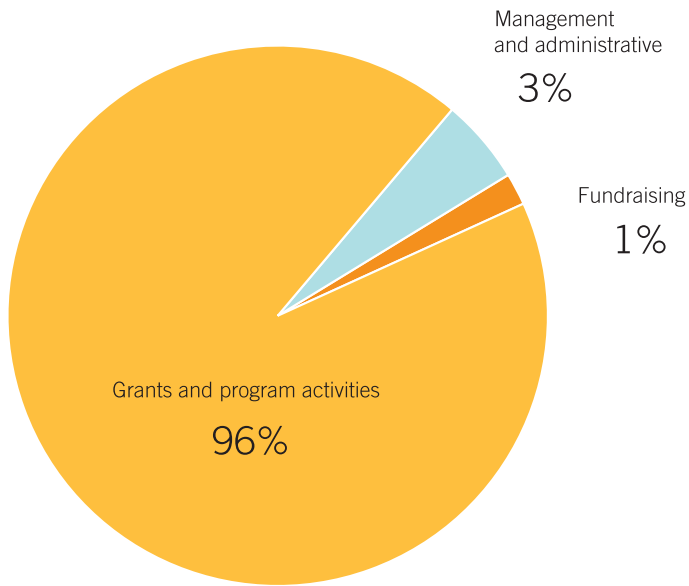
THE CLIMATEWORKS FOUNDATION'S AMBITIOUS GOAL is to limit annual global greenhouse gas emissions to 44 billion metric tons by the year 2020 and 35 billion metric tons by the year 2030. Achieving these reductions requires a substantial philanthropic investment to support institutions that promote smart climate policies in the nations and economic sectors responsible for most greenhouse gas emissions. Our donors have made substantial commitments to ensure that these investments match the scale of the challenge; ClimateWorks is grateful for their generous gifts.

As the hub of an international network of affiliated nonprofit institutions, the ClimateWorks Foundation coordinates efforts to reduce greenhouse gas emissions and works to ensure that our Network partners' work is efficient, effective, and greater than the sum of the individual organizations' efforts. In 2009, ClimateWorks also focused on helping our partners expand their institutional capacity. In cases where no such capacity existed, we invested in new organizations—such as the Institute for Industrial Productivity and the Shakti Sustainable Energy Foundation.

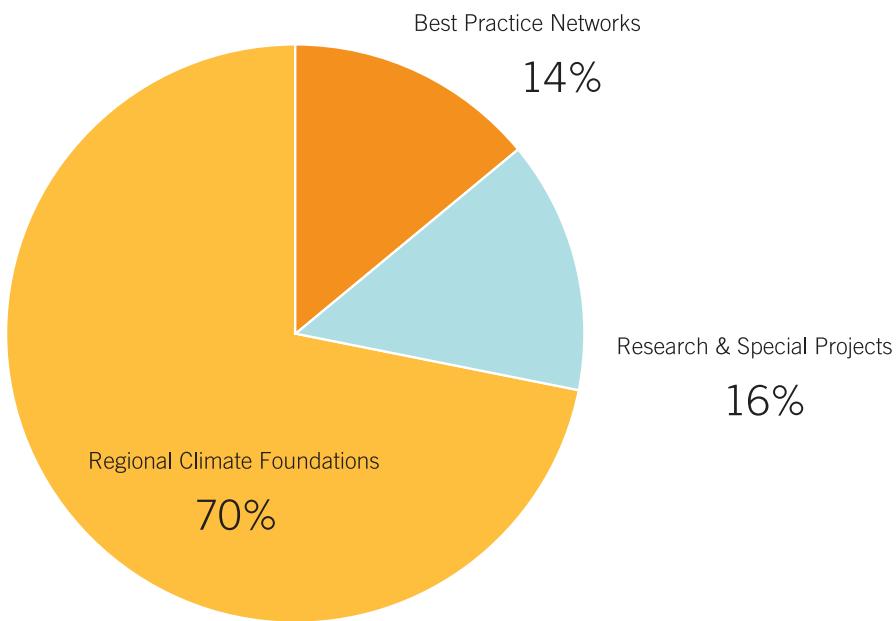
ClimateWorks prioritizes its philanthropic expenditures based on expected reductions in emissions and on an assessment of the probability of achieving these reductions. We act as a wholesale grantmaker, distributing funds primarily to other grantmaking organizations. In addition to awarding grants, ClimateWorks provides nonpartisan analysis and technical support to policymakers.

The vast majority—96 percent—of our expenditures supported our programs and grantees. (A list of our 2009 grants follows the financial statements.)

CLIMATEWORKS FOUNDATION SUMMARY OF 2009 EXPENSES



CLIMATEWORKS FOUNDATION SUMMARY OF 2009 GRANTS



CLIMATEWORKS FOUNDATION

STATEMENT OF FINANCIAL POSITION

December 31, 2009 (U.S. dollars in thousands)

ASSETS	
Current assets:	
Cash and cash equivalents	\$21,735
Contributions receivable	152,000
Prepaid expenses and other current assets	963
Total current assets	174,698
Long-term assets:	
Property and equipment, net	3,313
Contributions receivable, net	175,319
Deposit and other assets	189
Total long-term assets	178,821
TOTAL ASSETS	<u>\$353,519</u>
LIABILITIES AND NET ASSETS	
Liabilities:	
Current liabilities	\$3,667
Long-term liabilities	1,133
Total liabilities	4,800
Net assets:	348,719
TOTAL LIABILITIES AND NET ASSETS	<u>\$353,519</u>

STATEMENT OF ACTIVITIES AND CHANGES IN NET ASSETS

December 31, 2009 (U.S. dollars in thousands)

SUPPORT AND REVENUE	
Contributions	\$60,130
Interest and other income	230
Total support and revenue	60,360
EXPENSES	
Grants awarded	92,712
Program activities	24,321
Management and administrative	3,203
Fundraising	1,798
Total expenses	122,034
Change in net assets	(61,674)
NET ASSETS	
BEGINNING OF PERIOD	410,393
END OF PERIOD	<u>\$348,719</u>

CLIMATEWORKS FOUNDATION GRANT AWARDS 2009

REGIONAL CLIMATE FOUNDATIONS

Total \$64,858,769

GRANTEE	PURPOSE	AMOUNT
United States		
Energy Foundation	To support U.S. programs	\$30,420,000
China		
Energy Foundation	To support the China Sustainable Energy Program	\$22,600,000
Europe		
European Climate Foundation	To support E.U. programs	\$10,100,000
India*		
Centre for Science and Environment	To promote transportation policies that reduce greenhouse gases in India	\$459,000
Prayas Energy Group	To support the energy-efficiency coalition developed around the National Action Plan for Climate Change	368,000
Centre for Study of Science, Technology and Policy	To help the Bureau of Energy Efficiency design Perform, Achieve, and Trade targets for the cement industry	291,929
LEAD India	To organize a conference of Himalayan chief ministers to develop a unified response to climate change	95,000
Centre for Science and Environment	To organize a national climate change conference and follow-up activities	79,800
World Resources Institute	To support bus rapid transit (BRT) systems in Indore and ensure a successful launch of the pilot BRT in June 2010	66,000
World Resources Institute	To support BRT systems in Delhi and Indore	60,000
Centre for European Policy Studies	To support outreach to E.U. stakeholders on the state of climate policies in India	53,660
Sanchal Foundation	To support a campaign encouraging sustainable modes of transportation in Delhi	22,680
Prayas Energy Group	To study and document Indian energy trends and policies and their alignment with mitigation of climate change	18,500
Centre for Media Studies	To enhance media capacity to report on bus rapid transit systems	15,000
India total		\$1,529,569
Latin America*		
Collaborative Labeling & Appliance Standards Project (CLASP)	To support energy-efficiency work in Chile	\$101,000
Regents of the University of California at Berkeley	To support the Alternative Energy and the Americas program	75,000
Regulatory Assistance Project	To provide technical assistance to the Chilean government on energy efficiency delivery	33,200
Latin America total		\$209,200
Regional Climate Foundations total		\$64,858,769

* In India and Latin America, we made several grants directly to local grantees because our Regional Climate Foundations were not yet completely established in 2009.

CLIMATEWORKS FOUNDATION GRANT AWARDS 2009

BEST PRACTICE NETWORKS

Total \$12,761,000

GRANTEE	PURPOSE	AMOUNT
Institute for Transportation & Development Policy (ITDP)	To support ITDP's programs	\$5,000,000
Collaborative Labeling & Appliance Standards Project (CLASP)	To support CLASP's programs	3,475,000
Regulatory Assistance Project (RAP)	To support RAP's programs	2,911,500
International Council on Clean Transportation (ICCT)	To renovate ICCT's Washington, D.C., office to obtain LEED certification	700,000
European Council for an Energy Efficient Economy	To help establish the Buildings Performance Institute Europe	420,000
European Climate Foundation	To help develop the Institute for Industrial Productivity	254,500
Best Practice Networks total		\$12,761,000

CLIMATEWORKS FOUNDATION GRANT AWARDS 2009

RESEARCH + SPECIAL PROJECTS

Total \$15,092,025

GRANTEE	PURPOSE	AMOUNT
Project Catalyst		
European Climate Foundation	To develop and manage Project Catalyst's global outreach strategy	\$450,000
World Resources Institute	To develop a strong verification regime for global carbon commitments	400,000
Instituto Tecnológico y de Estudios Superiores de Monterrey (ITESM)	To build institutional capacity to further Mexico's transition to a low-carbon economy	351,540
Sustainability Institute Inc.	To develop a user-friendly CO ₂ calculation tool to analyze complex policy and negotiation scenarios	348,666
European Climate Foundation	To support Project Catalyst's business outreach efforts	250,000
Institute for International Economics	To analyze the financial constraints of China's participation in a global climate agreement	200,000
Bank Information Center	To support a progressive World Bank energy strategy	138,000
Global Humanitarian Forum	To promote and distribute "Human Impact Report: Climate Change"	74,900
European Climate Foundation	To support Project Catalyst outreach in the run-up to the Copenhagen climate conference	60,000
Project Catalyst total		\$2,273,106

CLIMATEWORKS FOUNDATION GRANT AWARDS 2009

RESEARCH + SPECIAL PROJECTS

Continued

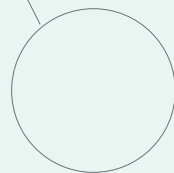
GRANTEE	PURPOSE	AMOUNT
Short-lived climate-forcing gases (SLFs)		
Clean Air Task Force, Inc.	To support Clean Air Task Force programs, measurement of black carbon, diesel-reduction campaigns, and the Arctic Campaign on short-lived climate forcers	\$812,016
Institute for Governance & Sustainable Development	To support an international agreement and domestic/regional actions to reduce black carbon, hydrofluorocarbon, and F-gas emissions	557,537
European Climate Foundation	To support the diesel-emissions-reduction campaign	470,385
Clean Air Cool Planet Inc. (CACP)	To support CACP programs and the Arctic Campaign on short-lived climate forcers	410,000
Energy Foundation	To support the China Sustainable Energy Program's black carbon initiative	100,000
Bund für Umwelt und Naturschutz	To support a campaign to reduce diesel emissions	81,981
Carbon War Room	To support the Shipping Operation to reduce emissions from the marine sector	35,000
International Council on Clean Transportation	To support a workshop on black carbon in Latin America	25,000
	SLFs total	\$2,491,919
Other research		
International Institute for Applied Systems Analysis	To analyze policies and enhance capacity related to sustainable energy	\$350,000
	Other research total	\$350,000
Carbon capture and storage (CCS)		
Third Generation Environmentalism Ltd. (E3G)	To support an E3G project to accelerate global demonstrations of CCS	\$215,000
Energy Foundation	To support the Clean Air Task Force's federal advocacy effort to drive deployment of carbon capture and storage	150,000
Asia Society	To support work in China to spur creation of a joint U.S./China CCS strategy	125,000
The Green Alliance Trust	To accelerate commercialization of carbon capture and storage through structured cross-sector stakeholder dialogue	80,000
World Resources Institute (WRI)	To support WRI's CCS-related work in Copenhagen	10,000
	CCS total	\$580,000
Green Tech Action Fund		
	To support passage of the American Climate and Energy Security Act in the U.S. House of Representatives	\$800,000
	U.S. carbon cap total	\$800,000
Education		
Bipartisan Policy Center	To support U.S. carbon cap project	\$6,530,000
Bipartisan Policy Center	To educate and inform relevant constituencies about climate change impacts and solutions	1,700,000
Aspen Institute	To support the Aspen Institute's Congressional Program	300,000
Commonwealth Club of California	To support ClimateOne programs	67,000
	Education total	\$8,597,000
Research and special projects total		\$15,092,025



RICHARD SEDANO, Director and Principal,
Regulatory Assistance Project



WU PING, Program Associate, Buildings,
China Sustainable Energy Program





THE CLIMATEWORKS FOUNDATION SUPPORTS public policies that prevent dangerous climate change and promote global prosperity. ClimateWorks partners with an international network of affiliated organizations—the ClimateWorks Network—to promote these policies in the geographic regions and economic sectors that have the greatest potential for reducing greenhouse gas emissions. Our Network partners include:

China Sustainable Energy Program

Collaborative Labeling and Appliance Standards Program

Energy Foundation

European Climate Foundation

Global Buildings Performance Network

Institute for Industrial Productivity

Institute for Transportation and Development Policy

International Council on Clean Transportation

Regulatory Assistance Project

Shakti Sustainable Energy Foundation



SEEMA PAUL, Chief Executive Officer,
Shakti Sustainable Energy Foundation



CHRISTINE EGAN, Executive Director,
Collaborative Labeling and Appliance Standards Program

OUR FUNDERS

ClimateWorks was launched in 2008 with the support of three foundations: the William and Flora Hewlett Foundation, the David and Lucile Packard Foundation, and the McKnight Foundation.

We are grateful to our three founding donors for their generous gifts, which include support for the ClimateWorks Foundation as well as for the affiliated organizations in the ClimateWorks Network. We also thank our other forward-thinking donors, including John and Ann Doerr and the Heising-Simons Foundation, whose philanthropy supports our efforts to scale up activities across our global Network.

In addition to support from the ClimateWorks Foundation, our Network partners receive direct funding from many other aligned donors.

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Keep up with the ClimateWorks Network

To learn more about the ClimateWorks Network's ongoing efforts to rapidly improve energy efficiency, scale up deployment of clean energy technologies, and dramatically slow the destruction of tropical forests, please refer to ClimateWorks' other publications:

The **ClimateWorks Network Knowledge Series** spotlights the latest thinking from the world's leading experts on the policies, technologies, and best practices that can transform our energy systems, protect the earth's tropical forests, and prevent dangerous climate change. The Knowledge Series is published bimonthly by the ClimateWorks Foundation.

Policies That Work, an imprint of the Knowledge Series, provides expert insight into the policies that effectively reduce carbon emissions. These reports focus on the top-emitting sectors—vehicles and fuels, buildings, appliances, transportation systems, power, industry, and forests—and provide an analytical framework to help government officials evaluate policy options.

These publications and much more can be found at the **ClimateWorks Web site**, www.climateworks.org, which includes information on our history; our latest news, analysis, and reports; and links to the websites of our Network partners and funders.

If you'd like to be added to our mailing list, please contact us at info@climateworks.org.

