

SOLUTIONS

Vol. 41, No. 2 / Spring 2010



> **A GREENER
WALMART?**

In search of a more sustainable future, the retail giant focuses on China.

PAGE 6

AT LAST! CLIMATE BILL INTRODUCED IN SENATE PAGES 2 & 4

WHERE WE STAND

By EDF President Fred Krupp



A clarifying moment

Once in a long while, a moment comes that galvanizes public opinion on a matter of national importance. The oil disaster in the Gulf of Mexico, which threatens one of America's most productive fisheries and the working men and women who depend on it, is just such a moment.

Fossil fuels, as this event shows us, have a price that goes far beyond what we pay at the pump or in our utility bills. That price comes in environmental devastation, mercury pollution, mountaintop removal, oil spills and loss of human life. Eleven oil workers died on BP's drilling rig, just weeks after 29 coal miners lost their lives at the Upper Big Branch Mine in West Virginia.

The fact is, we haven't yet seen the ultimate cost of fossil fuels: catastrophic climate change that will threaten the world with heat waves, sea level rise and mass extinctions. Unless we change course, these consequences will become inevitable.

There is a way out: Passing the American Power Act, now before the Senate, is the surest way to start down the road to a new energy economy. At the bill's introduction, I noted that never before has such a broad coalition of supporters come together to back climate legislation. With me stood the CEOs of multinational corporations, electric utilities, chemical companies and environmental allies. This is clear proof that the bill strikes a balance, combining strong environmental goals with effective economic protections. Significantly, the bill also gives states new authority to protect their coastlines from oil spills.

It hasn't been easy getting this far, and we would like to see some aspects of the bill improved. In the weeks ahead, opponents will try to weaken the legislation. We're counting on EDF members to help ensure it stays strong. Write your senators today and demand that the Senate pass a strong, declining cap on carbon before the summer recess (see page 4).

The images from the Gulf are a daily reminder of why we must tackle the threat of global warming and build a new energy economy that reduces America's addiction to oil. With a strong national climate bill, we can do this. We need to do it now.



Environmental Defense Fund's mission is to preserve the natural systems on which all life depends. Guided by science, we design and transform markets to bring lasting solutions to the most serious environmental problems.

Our work is made possible by the support of our members.



ON THE COVER:

Walmart is known for its low prices, not its environmental policies. But the giant retailer, working with EDF and

others, has embarked on an ambitious plan to enlist its global web of suppliers in cutting greenhouse gas emissions from the company's operations.

Solutions senior writer Rod Griffin takes readers to China's factories, where Walmart is spreading the gospel of energy efficiency. See page 6.

Cover background photo: Getty Images

SOLUTIONS

Editor Peter Klebnikov

Environmental Defense Fund
257 Park Ave. South
New York, NY 10010

Main number 212-505-2100

Membership questions Call 800-684-3322 or email members@edf.org

Feedback Mail to address above, call 800-927-6464 or email editor@edf.org

Online edf.org

©2010 Environmental Defense Fund.
Published quarterly in New York, NY.
ASSN 0163-2566

New York / Austin / Boston / Boulder / Raleigh / Sacramento / San Francisco / Washington / Bentonville, AR / Beijing, China / La Paz, Mexico

LETTERS AND COMMENTS FROM OUR READERS

Tapping low-tech solar power

Regarding “A new world of energy” in the Winter 2010 *Solutions*, I was flabbergasted to read the example of a clothes dryer in the future being told to run while the sun is shining. I have been drying my clothes on a decidedly low-tech clothesline when the sun is shining for decades, and reserving the electricity for things I can't do so easily for free.

Gordon Beebe, Santa Rosa, CA

Writer Miriam Horn responds:

The dryer in the story is powered by solar panels, so that is why it would cool down briefly when a cloud passes and heat up again when the sun is shining. Drying clothes on a clothesline is, of course, an even more efficient use of solar power!



A state-of-the-art clothes dryer

Walmart's green initiatives fire up readers

A recent blog post by EDF columnist *Dominique Browning* on Walmart's plan to green its supply chain sparked an outpouring of reader opinions and a passionate online conversation. Some comments are excerpted below.



Dominique Browning

I applaud Environmental Defense Fund for engaging Walmart in the effort to develop and disseminate greener business practices. The environmental movement will get nowhere if environmentalists choose only to engage businesses that are already environmentally progressive. Large businesses like Walmart represent the bulk of our national economy, and redefining their business practices is critical.

—Mark Morley

Will you get a grip? Walmart is the king of supply chain managers. Reducing waste in the supply chain will simply lower costs to Walmart. They're not doing this to save the planet, they're doing this to make more money and further crush their competition. Reducing supply chain costs is just good business.

—Klem

Even if we can't get progress from Congress, Walmart can influence across borders in a way Congress can't. When environmental responsibility is good for business, I benefit even when I'm not the consumer.

—Paul Reith

➤ **ONLINE:** Read *Dominique Browning's* latest column, blogs.edf.org/personalnature/

WHAT THEY'RE SAYING ABOUT EDF

“Environmental Defense Fund is one of the few organizations that is willing to come down to the field and the farm level and get to know the farmers and their practices.”

—Tom Morris

Consultant to the Bay Farms On-Farm Network

Our nitrogen work with America's farmers

Excess nitrogen fertilizer from farms flows into the Chesapeake Bay and other bodies of water, causing harmful algae blooms. EDF scientist Suzy Friedman knew that improving water quality would be impossible without enlisting farmers as partners. So she brought farmers and technical experts together through the On-Farm Network to share new information on how to reduce fertilizer use.

Our participating farmers use 20% less fertilizer, on average, without reducing crop yield—and save money, too. The program has grown to 270 farmers on nearly 300,000 acres, expanding to Western Lake Erie, North Carolina and the Mississippi River Basin.



RECKONING TIME IN THE SENATE ON CLIMATE



istockphoto.com

When the House passed its historic climate bill last June, political observers predicted a tough fight to get Senate action. They were right. Following ten months of difficult negotiations, the American Power Act was assembled by Senators John Kerry (D-MA), Lindsey Graham (R-SC) and Joe Lieberman (I-CT). On May 12, the legislation was finally unveiled by Kerry and Lieberman. The bill has significant support from a broad array of businesses and environmentalists, but no one is predicting an easy road ahead.

“We’ve argued about oil dependence and producing more clean American

A climate bill must hold oil companies accountable for the pollution they cause.

power for decades,” said EDF president Fred Krupp, who spoke at the Capitol Hill press conference announcing the bill. “Over the next eight weeks we’ll see who is serious about solving this problem.”

The catastrophic oil spill in the Gulf of Mexico has focused the nation on the need to confront our reliance on fossil fuels. And

that has renewed hope for swift Senate action on the bill. Kerry and Lieberman appeared at EDF’s May board meeting in Washington, where they spoke of their commitment to climate legislation.

“I’m very, very confident,” said Sen. Kerry. “The world is waiting for us to stand up.”

EDF played a critical, behind-the-scenes role in constructing the Senate bill. In Senator Lieberman’s words: “We relied on EDF for big picture counseling, for strategic and tactical advice, and for the substantive legislative and modeling assistance that we needed so much.”

The Senate bill, like the House one, puts a declining cap on emissions from the largest sources of carbon pollution and aims to reduce emissions 17% by 2020 and 80% by 2050. It also contains significant consumer protections against cost increases.

Whereas the House bill favors an economy-wide cap-and-trade mechanism, the Senate bill opts for a sectoral approach under which a variety of methods for limiting emissions will be applied to

electric utilities, transportation and manufacturers. The Senate bill also gives states powers to veto new offshore drilling that could pollute their waters.

Still, the goals of both bills are the same:

- Reduce dependence on foreign oil
- Create jobs by developing a clean-energy economy
- Affirm American leadership in the global effort to stem climate change

“Our litmus test for climate legislation is: Does it reduce emissions enough, and quickly enough?” said Krupp. “We believe the Senate bill will do that.”

What comes next? It’s time for President Obama and Majority Leader Harry Reid (D-NV) to build bipartisan support and round up the 60 votes needed

“The world’s waiting for us to stand up.”

—Senator John Kerry

to defeat an expected filibuster. EDF will spare no effort to get a strong bill passed, and we’ll need the help of EDF members. Said Krupp: “This is the best opportunity we’ve ever had” to combat global warming.

> CALL YOUR SENATORS: Urge them to support a strong climate and energy bill today. Every call is worth more than 100 emails. Go to edf.org/climatevote



Sharon Kasper

“This bill is America’s best hope to lead the world toward a safe, sustainable future,” said EDF president Fred Krupp.



TRAGEDY STRIKES THE GULF

The sea of oil that poured from BP's ruptured well in the Gulf of Mexico was a stark reminder that America's reliance on fossil fuels is not cost-free, and a warning that we must make fundamental changes in our national energy policy.

"This is an unprecedented ecological and human tragedy," says EDF chief oceans scientist Dr. Douglas Rader. "It's a body blow both to marine ecosystems and fishing communities."

EDF has worked in the Gulf for decades and responded immediately. We're working with our local partners to aid recovery efforts and provide economic assistance to fishermen. We've joined federal and state agencies to accelerate the restoration of coastal wetlands (*see box*). And in Washington, we're developing tough guidelines which we want to apply to all 4,000 existing offshore oil rigs.

The massive oil slick threatens fragile wetlands that serve as nursery grounds for fish and shellfish. This area produces half of the nation's wild shrimp, 35% of its blue claw crabs and 40% of its oysters. From whales to sea turtles to songbirds, the array of life that depends on a healthy Gulf and coastal estuaries is stunning.

"The impacts we see on the surface—oil-covered seabirds and dead sea turtles—are only part of the problem," says Rader. "Oil also threatens vulnerable but unseen life forms, ranging from fish larvae traveling on currents near the surface to ancient deepwater corals."

It is especially sad that the spill

threatens Gulf fishing communities, which are leaders in the effort to make ocean fisheries sustainable. Working with EDF, commercial snapper and grouper fishermen have adopted market-based systems to manage their catch, helping reef fish populations to recover.

"We have an obligation to put in place safeguards to prevent this kind of tragedy from ever happening again," says Elgie Holstein, our ecosystems senior director for strategic planning. "This disaster is a

powerful reminder that America must make the transition to a clean energy future."

HOW YOU CAN HELP

See videos, get the latest updates on the oil disaster from EDF experts and find out how to volunteer: edf.org/oilspillcrisis

Tell the Senate we need a strong climate and energy bill, now more than ever. Send messages from edf.org/cleanenergynow

Donate to help support our Gulf Coast Response Team: edf.org/gulfcrisis

A DECADES-LONG MISSION TO RESTORE WETLANDS

Since the 1930s, Louisiana has lost 2,300 square miles of wetlands—an area larger than Delaware—and loses



Before the disaster: A roseate spoonbill wades in a Louisiana marsh.

another football-field-sized parcel every 48 minutes. These losses are largely due to the dredging of navigation canals and the construction of levees, which starve wetlands of the sediment and fresh water they need.

For more than 20 years, EDF has worked to restore these wetlands, which act as buffers against storms like Hurricane Katrina. Now, we've called on the Obama administration and Congress to accelerate restoration efforts. An emergency appropriations bill now being considered in Washington could help pay for five restoration projects we helped develop.

"This is the time for Congress to fund restoration," says Paul Harrison, a senior director of EDF's ecosystems program. "We should not countenance another acre of wetlands loss."



THE GREENING OF WALMART

Working with EDF, the retail giant hopes to shrink its environmental footprint

By Rod Griffin

With 8,400 stores worldwide, Walmart has the power to influence everything from the price of seafood to the market for organic cotton. Now EDF is helping the retailer improve energy efficiency in factories half a world away. Will Walmart succeed?

At the sprawling ShinCrest furniture factory in China's Guangdong Province, EDF consultant Terry Foecke braves 98-degree heat as he probes air shafts and peers into cavernous, paint-drying ovens.

Soon, Foecke discovers that the factory's air compressors have been running full bore nonstop, wasting millions of kilowatt hours of energy. He recommends installing frequency converters, which adapt to demand. The factory, a manufacturer of patio furniture for Walmart, makes the change—and cuts energy use by 20%.

At 6'4" and more than 250 pounds, Foecke stands out wherever he goes. But in

China, it's his skill finding ways to cut waste and increase energy efficiency that has made the biggest impression. He's visited more than 125 factories there in the past two years, and many engineers refer to him simply as *laoshi* (teacher), a term of great respect.

"The manufacturing setting in China is very similar to the United States. In the 1950s and 1960s," says Foecke. "Many of the factories have old equipment and poor management systems, but they know what they are doing." Simple changes in ventilation, lighting and motors can bring huge savings, as much as 50% in some cases.

An ambitious goal

The company behind this drive for energy efficiency is Walmart, better known for low prices than green practices. Over the past five years, the retailer has been working with outside experts, including EDF, to implement an ambitious sustainability policy that reaches around the globe.

In February, the company took a

“To maintain our objectivity, EDF accepts no funding from any corporate partner.”

—Elizabeth Sturcken, EDF managing director for corporate partnerships

big step forward in its green push. At corporate headquarters in Bentonville, AR, Walmart CEO Mike Duke stood alongside EDF president Fred Krupp to announce a goal of eliminating 20 million metric tons of greenhouse gases from the company's global supply chain by the end of 2015. That's the equivalent of taking more than 3.8 million cars off the road for a year.

“The biggest opportunity for creating environmental change is the estimated 90% of Walmart's environmental footprint attributed to its 100,000 suppliers worldwide,” says our project manager Dr. Andrew Hutson.

The company plans to achieve its goal, in large part, by pressing its suppliers to rethink how they source, manufacture, package and transport their goods. Walmart's initiative will consider every step of a product's life, from the raw materials that go into the product to how the customer will use it. For instance, suppliers could develop fabrics that dry faster and label clothes to be washed in cold water instead of hot.

The pollution reductions will be monitored and assessed by independent auditors, including ClearCarbon and PricewaterhouseCoopers.

“We need to get ready for a world in which energy will only be more expensive, and there will only be a greater need to operate with less carbon in the supply chain,” says Duke.

That's where China comes in.

Focus on China

As the single largest importer of Chinese consumer goods, Walmart has the leverage to change the way energy and natural resources are used at the tens of thousands of factories it buys from in China. Working with us, the retailer has targeted its top 200 Chinese suppliers to improve energy efficiency 20% by 2012.

Supplier participation is voluntary. But Walmart, with sales of more than \$400 billion last year, has made it clear that it is interested

in doing business with suppliers that share its environmental goals.

Companies that clean up their act will be rewarded with new contracts and preferential product placement on store shelves. For example, Walmart has mandated that by the end of this year the flat-screen TVs it carries be 30% more energy efficient than 2008 models.

“Before, Walmart only cared about price and quality, so that encouraged companies to race to the bottom on environmental standards,” says Ma Jun, director of the Institute of Public and Environmental Affairs, a Beijing-based group. “Now that's changed. Companies that fail to adjust to Walmart's environmental standards could soon be out of business.”

Although focusing first on energy, Walmart also will look at air pollution, wastewater discharges and handling of toxic substances. “We're showing suppliers that through this lens of sustainability, there are actually cost-saving opportunities,” says Matt Kistler, Walmart's senior VP for sustainability.



Peter Arnold

A doll's life: By examining every step in the manufacturing cycle, Walmart aims to cut the energy required to produce its goods.

Little changes add up. A slight reduction in the packaging of one of Walmart's toy lines, for example, saved the company \$2.4 million by cutting trucking costs, while saving 1,000 barrels of oil and 3,800 trees.

Our partnership with Walmart began in 2005 after then-CEO Lee Scott accompanied Krupp to the highest peak in the Northeast. At New Hampshire's Mt. Washington Observatory, where



THE BIGGEST BIG BOX

Walmart's annual sales exceed those of all its main competitors combined.



source: Walmart and Google Finance

scientists measure atmospheric changes, Scott and Krupp discussed global warming and air pollution and what Walmart could do about these problems.

Since then, EDF opened an office just down the road from Walmart's headquarters in Arkansas and helped the company set aggressive goals to reduce its environmental impacts. Recently, Walmart began rolling out plans for a "sustainability index" to measure how green their products really are.

"To maintain our objectivity, EDF accepts no funding from Walmart or any other corporate partner," says Elizabeth Sturcken, our managing director for corporate partnerships. "The environment

"Companies that fail to adjust to Walmart's environmental standards could soon be out of business."

—Ma Jun, Director, Institute of Public and Environmental Affairs, Beijing

is our only client."

Working with EDF and other nonprofits, Walmart has cut greenhouse gas emissions at existing stores by 5% and improved the efficiency of its truck fleet by 60%. Through better trip planning, reduced idling and truck upgrades, the company is cutting greenhouse gas emissions by 450,000 tons

a year. Walmart has also become the top U.S. buyer of organic cotton clothing and is selling more organic food, which reduces pesticide use by growers.

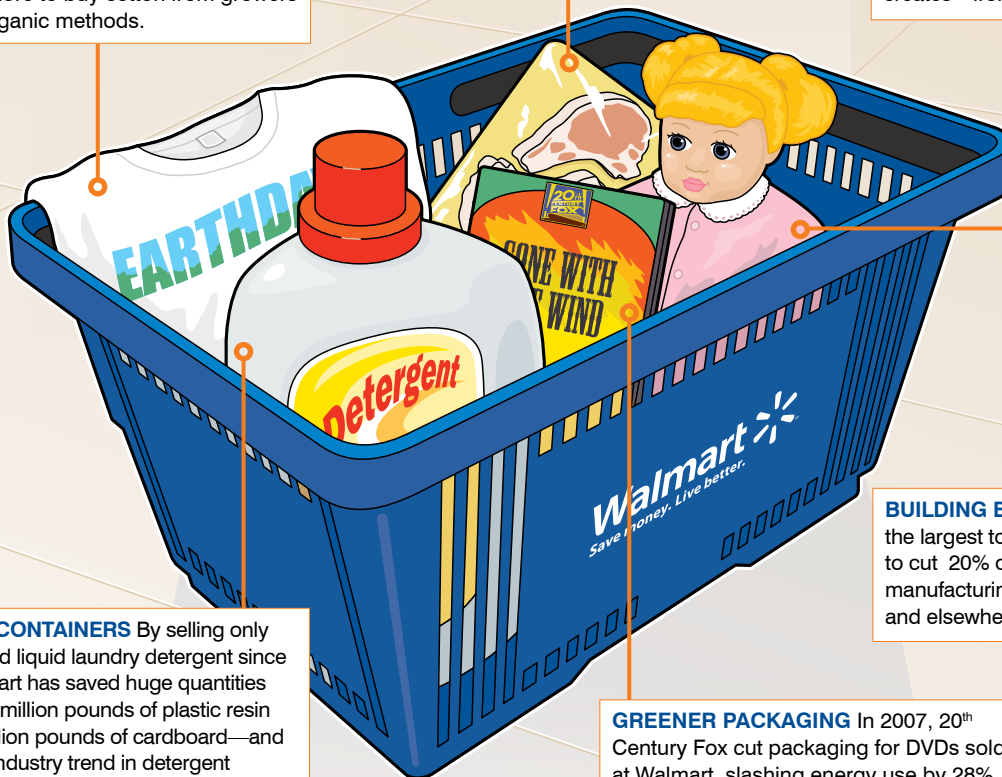
The company still has its critics, who say its low-cost business model fosters a disregard for labor and environmental standards. But EDF's Hutson argues,

WALMART GOES SHOPPING FOR THE PLANET

The company is so big that it can alter entire industries to benefit the environment and human health. Here are some examples:

GOING ORGANIC As the No. 1 buyer of organic cotton clothing in the U.S., Walmart has helped add some 43,000 acres of organically farmed land by paying suppliers more to buy cotton from growers who use organic methods.

LESS HOGGISH Walmart sells more than 2 billion pounds of pork a year. It has begun a pilot project to reduce the amount of greenhouse gas emissions this product creates—from farm to family table.



SMALLER CONTAINERS By selling only concentrated liquid laundry detergent since 2008, Walmart has saved huge quantities of water, 95 million pounds of plastic resin and 125 million pounds of cardboard—and has set an industry trend in detergent packaging.

BUILDING BETTER DOLLS Walmart, the largest toy seller in the U.S., hopes to cut 20% of the energy used in doll manufacturing by getting factories in China and elsewhere to retool.

GREENER PACKAGING In 2007, 20th Century Fox cut packaging for DVDs sold at Walmart, slashing energy use by 28%. EDF and Walmart are searching for similar savings throughout the supply chain.



Getty Images

Miles of aisles: Walmart is supplied by tens of thousands of Chinese factories.

“Walmart and other big-box retailers are here to stay. Our goal is to use their economic power to drive environmental improvements worldwide.”

The ripple effect

Because of its size (one out of every three Americans shops at Walmart at least once a week) and purchasing power, Walmart has a unique capacity to influence its suppliers—with industry-wide implications.

It works like this. Most factories that sell to Walmart supply other retailers as well—seldom is more than 20% of a factory’s capacity devoted to any one retailer—and stores like Home Depot and Target will want their goods produced more efficiently, too. Hence, the ripple effect.

One particularly encouraging sign in China is that young factory managers have become advocates for environmental protection. “They get it,” says EDF consultant Foecke. He has trained dozens of Walmart “ethical sourcing associates,” who have visited 250 factories to help them become more energy efficient. “They want a cleaner future for China. I was worried that factories would be evasive. Instead, the most common question is: ‘Where do we start?’”

The changes won’t happen overnight, of course, but Walmart is putting its suppliers on the path toward greater energy efficiency and lower pollution. Working

with EDF, Walmart is also developing a chemical screening process, called GreenWERCs, to help suppliers use more environmentally preferable chemicals in their products.

Eventually Walmart hopes to use the “sustainability index” to label products with information on ecological impacts so shoppers can make choices that are best for the environment.

If the retail giant can succeed at shrinking its environmental footprint and lowering prices for green products, both the planet and the company will profit.

WALMART BY THE NUMBERS

8,400 Stores worldwide

100,000 Suppliers worldwide

200 million Customers per week

90% Americans who live within 15 miles of a Walmart

350 million Number of compact fluorescent lightbulbs sold since 2006 with EDF’s help

KEEPING A WATCHFUL EYE ON WALMART

When Andrew Hutson was finishing his Ph.D. at the University of North Carolina, he said to his girlfriend and now wife Meaghan, “My ideal job would be to work at Walmart.”

Hutson, a former comedian, was only partly joking. His dissertation was on how multinational companies can influence suppliers’ environmental behavior. Where better to test his theories than the world’s largest retailer?



John Rife

Two worlds: Hutson shuttles between Arkansas and China.

So in 2007, he jumped at the chance to become a project manager at EDF’s new office in Walmart’s hometown of Bentonville, AR. Since then, he has been a trusted presence at Walmart meetings. “In order to influence Walmart, you have to be in the room,” he says.

Hutson travels regularly to China, where he’ll spend this summer identifying “hot spots” in Walmart’s supply chain—places with high potential for environmental improvement.

“Without Andrew and EDF, we couldn’t have moved as fast as we have,” said Sandy Qin, a sustainability specialist at Walmart’s China office.

Ultimately, Hutson wants to help transform how the entire retailing world makes, moves and sells its products. “This is more than about Walmart,” he says. “The idea is to change the industry.”

GEOENGINEERING: A 'CURE' WORSE THAN THE DISEASE?

Scientists and policymakers, alarmed by the prospect of global warming disasters, are starting to think about ways to deliberately cool the planet's climate.

Imagine seeding clouds with sea salt so they deflect more sunlight. Or creating tiny bubbles on the ocean's surface to make it more reflective. Or spraying sulfur in the stratosphere to block some sun.

Welcome to the world of geoengineering, the calculated manipulation of Earth's climate to offset global warming. It's what Jeff Goodell, author of *How to Cool the Planet*, calls "the mother of all engineering projects." Some scientists, concerned that climate change could be approaching dangerous tipping points, say we need to understand geoengineering as a possible last resort.

"It would be irresponsible not to investigate and constrain the risks of geoengineering," says EDF chief scientist Dr. Steven Hamburg. At an international conference Hamburg helped organize in March (see box), scientists and others began exploring ways to minimize the risks of research in this area.

Geoengineering falls into two categories, both being explored by researchers and by a handful of startup companies:

Removing excess carbon dioxide For example, Columbia professor Klaus Lackner has proposed synthetic trees—machines that chemically bind carbon

dioxide—to take CO₂ out of the air as a way to supplement real trees.

Deflecting sunlight One idea is to inject sulfur into the stratosphere to mimic an effect of large volcanic eruptions, which can cool the planet temporarily by reflecting the sun's rays.

EDF INVESTIGATES A RISKY TECHNOLOGY

Who decides how to tinker with the planet, if at all, and who should do the tinkering? What if China and the United States want to try their own geoengineering experiments? Should field testing be banned? Should a new high-level international governing authority be created? How would compliance be enforced?

"We need to come up with ideas for governance of this nascent field before a rogue nation—or an individual company—does large scale experiments on its own," says EDF chief scientist Dr. Steven Hamburg.

The need for governance was the focus of a conference EDF helped organize this spring at Asilomar on California's Monterey peninsula. Known as the International Conference on Climate Intervention Technologies, it marked a first step toward coming to grips with the many scientific, ethical and



John Rae

EDF chief scientist Dr. Steven Hamburg is spearheading international efforts to monitor geoengineering research.

political issues raised by geoengineering.

EDF also is a convening partner in the Solar Radiation Management Governance Initiative, along with The Royal Society, the UK's national academy of science, and TWAS, the academy of sciences for the developing world. Our joint initiative will hold its first conference in November. The mission: to develop consensus among nations on how to monitor and enforce controls on geoengineering research.

“These techniques must never be a substitute for reducing our emissions of greenhouse gases.”

—Dr. Steven Hamburg
EDF chief scientist

The potential for large-scale unintended consequences from sunlight-deflecting technologies is greater than from removing CO₂. For example, to sustain sulfur’s cooling effect, it would need to be added continually. This could undermine progress made in healing the ozone layer and disrupt regional weather patterns—possibly weakening the monsoon circulation on which Asia and Africa’s agriculture depends, as Rutgers professor Alan Robock has noted.

Deflecting sunlight wouldn’t remove any carbon dioxide, so it would do nothing to slow ocean acidification, a growing problem caused by excess CO₂ dissolving in seawater, forming carbonic acid.

“If we do nothing about our carbon emissions,” says EDF scientist Dr. James Wang, “the consequences for the oceans would be devastating. Many coral reefs would die, shellfish would have difficulty forming shells, and the food chain for some fish and marine mammals could completely fail.”

Too risky to deploy?

Would people use geoengineering as an excuse not to reduce greenhouse gas emissions?

Stanford scientist Ken Caldeira says that would be like saying, “Now that I’ve got the seatbelts on, I can just take my hands off the wheel and turn around and talk to people in the back seat.” A policy of neglecting CO₂ buildup, he adds, would permanently alter life on Earth as we know it.

Nonetheless, if climate lurches into a new and destabilizing pattern as greenhouse gases increase, the pressure to take drastic action would be intense.

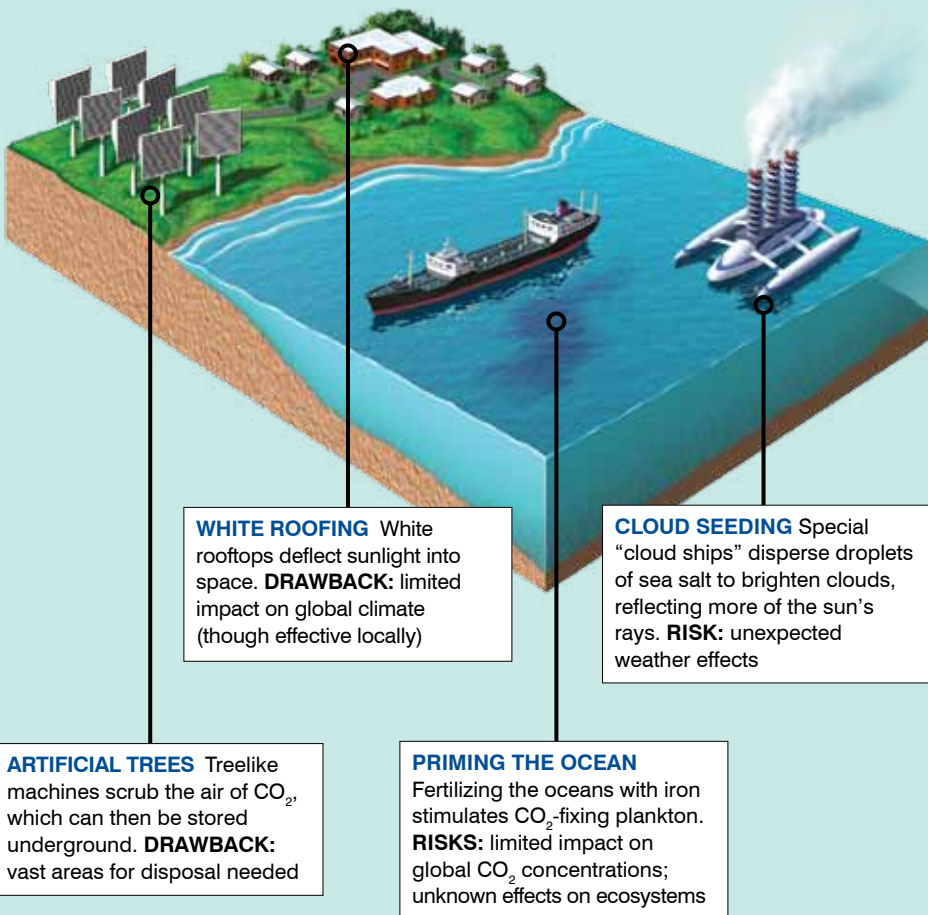
TINKERING WITH THE CLIMATE

Last-ditch technologies now on the drawing board

SPRAYING AEROSOLS

Specially equipped airplanes spray sulfur particles into the stratosphere to block the sun.

RISK: increased ozone depletion; unexpected weather effects; fails to stop acidifying oceans



WHITE ROOFING White rooftops deflect sunlight into space. **DRAWBACK:** limited impact on global climate (though effective locally)

CLOUD SEEDING Special “cloud ships” disperse droplets of sea salt to brighten clouds, reflecting more of the sun’s rays. **RISK:** unexpected weather effects

ARTIFICIAL TREES Treelike machines scrub the air of CO₂, which can then be stored underground. **DRAWBACK:** vast areas for disposal needed

PRIMING THE OCEAN Fertilizing the oceans with iron stimulates CO₂-fixing plankton. **RISKS:** limited impact on global CO₂ concentrations; unknown effects on ecosystems

Imagine, for example, that melting permafrost releases massive amounts of the potent global warming gas methane, causing temperatures to rise rapidly, releasing still more methane.

In the face of such an emergency, world leaders might charge ahead with a massive geoengineering intervention—or a series of uncoordinated actions—whose poorly understood implications could be worse than the problems they were trying to fix.

One thing is clear: As EDF’s Hamburg puts it, “These techniques must never be

a substitute for reducing our emissions of greenhouse gases.” At most, Hamburg says, geoengineering could serve as a temporary “bridging tool” to stave off dangerous impacts long enough to let government regulation and other actions reduce greenhouse gases sufficiently to prevent climate disaster.

“But first,” Hamburg says, “we need to understand which techniques are too risky to consider deploying even in a global crisis.

“With geoengineering, we need to do the science now to be prepared.”



istockphoto.com

BEWARE THE ENERGY VAMPIRES

By Jim Motavalli

The terminology—energy vampires, phantom loads—is kind of spooky, but then so is the problem: wasting money and energy on appliances that aren't even on.

Increasingly, electronic gadgets and household appliances use so-called standby power to keep the clock running, light up LEDs, or provide an instant-on feature. This accounts for 5% to 10% of residential electricity consumption in the United States and other developed countries, says the Lawrence Berkeley National Laboratory. That comes to about \$4 billion annually in wasted energy spending in the United States, the Department of Energy estimates. Standby power—aka phantom loads—is also responsible for as much as 1% of global carbon emissions.

A lot of this waste is attributable to poor design. In fact, up to two-thirds of the energy lost through phantom loads could be saved through improvements to computers, cell phones and other devices, says Alan Meier, a senior scientist in the energy analysis department at Lawrence Berkeley. These improvements, he says,

would pay for themselves. But you don't have to wait for your appliances to be redesigned. The average American home has about 20 energy vampires, and you can conserve energy and save a few bucks just by unplugging them.

For example, a notebook computer in sleep mode can consume 16 watts of electricity, which translates to 140 kilowatt-hours (kWh, the unit by which utility bills are calculated) in a year. At 10 cents per kWh, it means \$14 just for the computer.*

Where to look for waste

Television sets (with CRT tubes) consume an average of three watts when turned off. That means 26 kWh for an older TV or \$2.60 per year. Plasma and LCD TVs use less than one watt in sleep mode, but networking with the Internet and other equipment draws more power. "TVs are increasingly communicating devices," says Bruce Nordman, a Lawrence Berkeley researcher.

Digital set-top box (for cable TV) consume an average of 18 watts when the set's off. That's 157 kWh or \$15.70 annually.

A DVD or VCR consumes an average of five watts when off, or around 44 kWh (\$4.40) in a year. If you leave it on when not in use, energy consumption almost triples to 118 kWh (\$11.80).

A cell phone, left fully charged in its charger, consumes two watts when left idle, or 17 kWh (\$1.70) annually. Left on overnight, the charger will continue to consume energy after the phone is topped off. It's not a lot of money, but think of the waste when multiplied by millions of cell phone users.

Here's how to stop wasting power and money

Unplugging your most power-hungry devices when not in use will cut standby waste by at least 30%. If that's too inconvenient, at least unplug when you go away for a weekend or longer. Or plug multiple devices into switchable power strips, and turn them off and on together.

Energy Stars: An inexpensive meter like the Kill-A-Watt P3 lets you test individual appliances to see how much, if any, power they're using when turned off. Appliances that carry an Energy Star rating often use less standby power than unrated ones, and they use 10% to 50% less energy in operation.

RESOURCE CENTER

The Lawrence Berkeley National Laboratory offers a good guide to standby power, with power usage estimates for products ranging from cellphones to microwaves.

standby.lbl.gov/standby.html

"Unplug for Dollars," *PC World*, November 2008: pcworld.com/article/153245/unplug_for_dollars_stop_vampire_power_waste.html

"You Charged Me All Night Long," *Slate*: slate.com/id/2232195

*All calculations based on average consumption figures from standby.lbl.gov/standby.html

Green Living columnist Jim Motavalli writes for *E/The Environmental Magazine* (for subscription information: 800-967-6572 or emagazine.com). Opinions are the author's and not those of Environmental Defense Fund.

BRAZIL-U.S. PACT PROTECTS RAINFORESTS

As discussion heats up on U.S. climate legislation, it's worth remembering that climate change is a global problem that cannot be solved by any one nation.

One major problem is deforestation. From Brazil to Indonesia, forests today are worth less standing than as timber,

charcoal, farms and ranches. As a result they are being cut down and burned out. Tropical deforestation causes nearly a fifth of all global warming pollution, more than all the world's cars and trucks combined.

Much of that destruction occurs within

Brazil's vast Amazon Basin, which lost about 2,700 square miles of forest in 2009.

To change the commercial incentives that create such destruction, EDF and partners in Brazil developed the REDD program (Reducing Emissions from Deforestation and Forest Degradation), which would reward countries that reduce deforestation below a preset level with carbon market credits.

These credits raise the value of standing forests, and satellite observations will verify that they are actually being protected.

Recently, the United States and Brazil signed an agreement to work together to reduce global warming pollution, including emissions from tropical deforestation. It's the first time the two nations have formally agreed to collaborate in this way to reduce emissions from deforestation.

"REDD could save more than 53,000 square miles of Amazon rainforest by 2020," says EDF tropical forest director Dr. Stephan Schwartzman. "That's an area the size of Florida."



istockphoto.com

Rainforests harbor rich biodiversity. Cutting them down releases more global warming pollution than all the world's cars and trucks combined.

HELP PRESERVE OUR LIVING PLANET



Red-eyed tree frog

Create an environmental legacy

So much natural beauty that we treasure today was preserved through the foresight and passion of previous generations.

An estate gift to Environmental Defense Fund—whether large or small—is a powerful way to make certain that your values endure.

If you have already included EDF in your estate plans, please let us know so we can thank you.

To learn more please contact us:

Toll-free: 1-877-OSPREYS (1-877-677-7397)

Email: ospreys@edf.org / Web: edf.org/plannedgiving



Patti McConville

Soot and the city: Some of New York's most exclusive buildings burn the dirtiest fuel.

How dirty is your building?

A new report by EDF shows that some of New York City's most exclusive buildings—including the famous Dakota—burn the dirtiest sort of heating oil, which resembles sludge. The report, *The Bottom of the Barrel: How the Dirtiest Heating Oil Pollutes Our Air and Harms Our Health*, shows that No. 4 and No. 6 oil, which is burned by just 1% of the city's buildings, produces more pollution than all the city's cars and trucks combined. It creates a rain of toxic soot that aggravates asthma, increases the risk of cancer and can even cause premature death.

Along with the report, EDF produced an interactive online map that revealed the exact addresses of the dirty buildings.

Greening private equity

EDF is advising The Carlyle Group, one of the world's largest private equity firms, on assessing the environmental performance and potential of companies it invests in.

Under the partnership, Carlyle's U.S. and European buyout funds will use a new tool, the EcoValuScreen, to investigate prospective investments (called "doing due diligence"). The screen, developed by Carlyle, EDF and The Payne Firm, looks to improve performance in six areas, including greenhouse gas emissions,

Close to 1,000 people wrote Mayor Michael Bloomberg to demand action, and in his January State of the City address, the mayor responded, promising that his administration will be "greening the heating fuels used in our schools and big buildings."

EDF and other environmental and health groups are advocating new city and state regulations that will phase out dirty No. 4 and No. 6 oil, cutting soot pollution from the city's heating oil by 65% and nickel pollution by 90%. We expect a two-year campaign to have all these changes in place.

▶ INTERACTIVE MAP: New York's dirtiest buildings at edf.org/dirtybuildings

chemicals management and water use. It could set a new due diligence standard for the private equity industry, which represents about 10% of U.S. GDP.

Says our corporate partnerships VP Gwen Ruta: "For the first time, due diligence will be used to improve environmental performance and increase value at the companies private equity firms invest in." EDF receives no funding from Carlyle or other corporate partners.

Cutting carbon pollution at the Shanghai Expo

Shanghai, a congested city of 20 million on the Yangtze River, is bracing for 600,000 additional visitors daily during Expo 2010 Shanghai. Billed as the largest world's fair ever, the Expo recently opened and will run 184 days.

"This is an enormous opportunity to get people engaged in green commuting and talk about global warming," says EDF's Zhang Lingge, director of the Green Commuting Campaign at our Beijing office.

During the Beijing Olympics, EDF worked with 100 companies to encourage 80,000 employees to take environmentally friendly transportation. Subway and bus ridership rose dramatically during the games, and 8,000 tons of carbon pollution was avoided.

That impressed Shanghai, which invited EDF to be its sole partner in creating a similar program for the Expo. Participants are tracking their greenhouse gas reductions on our online calculator.

We and our partners are expanding this program to other cities in the Yangtze River Delta and eventually the rest of the country.



Zhu Limeng

Pedal power: EDF is encouraging green commuting in congested Shanghai.

Defending the nation—and endangered birds

Question: What songbird nests only in central Texas and lives on one of the U.S. Army's largest training bases? Answer: The endangered golden-cheeked warbler.

Fort Hood, home to the largest known warbler population, had set aside part of the 217,000-acre base as warbler territory. But it needed more room for training. What to do?

EDF and its partners developed the Fort Hood Recovery Credit System, which lets the Army pay local landowners to enhance warbler habitat. In return, the Army receives credits it can use to offset

impacts from training in the bird's habitat.

A recent independent review found the program, which has increased habitat by 2,000 acres, to be an effective tool for protecting warblers. Across the bird's full range, the total population has risen from 6,000 birds to 9,000 over the last three years, thanks largely to our landowner partnerships.

"We hope the Army's program will be a model for other bases, since there are almost 150 federally protected species that live on land owned by the military," says EDF scientist David Wolfe.



TPWS

Golden-cheeked warblers use strips of cedar bark and spiderwebs to build their nests.

Money for mass transit

In California, a package of bills, strongly supported by EDF, has reinstated appropriations of at least \$350 million a year to mass transit that were cut from previous versions of the state budget. The cuts would have eliminated all state-level transit funding in California, a state whose automobile-related pollution and congestion problems are well known.

EDF was one of the most vocal critics of these cuts, and we worked closely with other environmental groups, transit agencies and labor unions to get the funds restored.

Austin amps up its smart electric grid

The Pecan Street Project, our "smart grid" partnership with major companies and the City of Austin, TX, is moving into the



America's smartest neighborhood?

STOP
THE TEXAS OIL COMPANIES'
DIRTY
ENERGY
PROPOSITION

Guess who is secretly bankrolling the November ballot initiative to undermine California's landmark global warming law?

EDF uncovered the answer: Valero Energy Corp. and Tesoro Corp., two Texas-based oil companies that operate refineries in the state. Californians for Clean Energy and Jobs, a group EDF helped found, has launched a "No on Valero" campaign to save California's historic clean energy law.

> Support our campaign and help us preserve the nation's most powerful global warming law. Go to noonvalero.com

SAVING THE WILD SALMON

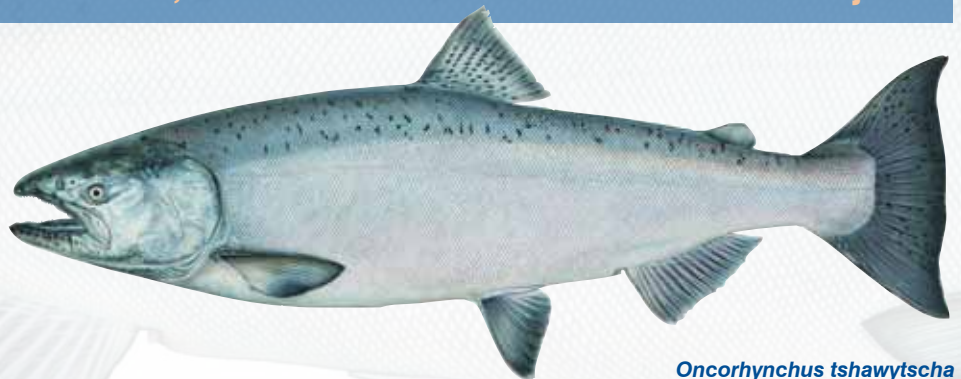
In California, more water for fish also means more jobs

Each fall, Chinook (or King) salmon return from the deep ocean through San Francisco's Golden Gate to swim up the Sacramento River and spawn in the streams where they hatched. Pollution, dams and diversions of water from the



Sacramento-San Joaquin Bay Delta have decimated this spectacular migration. In 2002, 770,000 salmon

passed through the Bay Delta. Last year fewer than 40,000 made it. EDF recently won critical policy reforms that set new rules for agricultural water conservation and assure that enough water is left in the Bay Delta to sustain the salmon.



J. Tomilleri

Oncorhynchus tshawytscha



Michael Quinton/NGS

Chinook fight through rapids and waterfalls and climb thousands of feet to spawn.

EDF advocates water markets as a way to get more water to salmon, preserving fishing jobs.



Rita Harowitz



Brad Lewis/Corbis

Once the backbone of the West Coast fishing industry, the Pacific salmon fishery has been closed for two successive seasons, costing thousands of jobs and \$118 million in lost income.



Columbia University

Most salmon caught off California and Oregon pass through the Bay Delta as they head inland to spawn.



Natalie Forbes

With ever more water diverted from the Bay Delta to farms and cities, these salmon fry may not make it to the sea.