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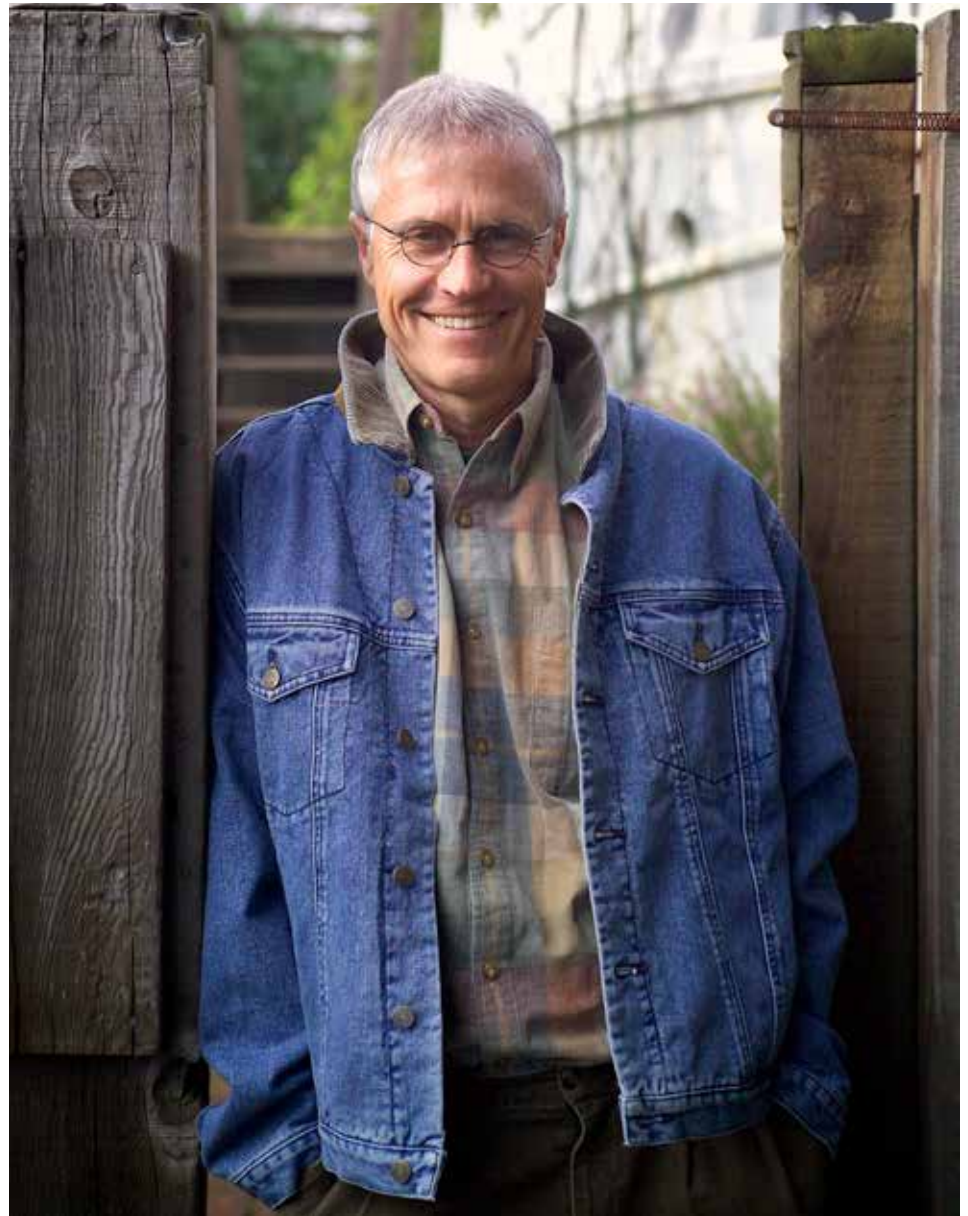
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Terrence McCarthy

Bestselling author Paul Hawken and a team of 200+ experts have created a detailed plan to not only curb but *reverse* the climate crisis. And yes, they say, it's possible. (page 14)



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There is no denying this year has been heart-breaking. But my purpose isn't to remind you of our broken political system. Instead, I want to share the extraordinary progress you and I have made.

Together, we are powerful agents of change.

You and I are protecting communities and the environment, getting the dirtiest corporations to make clean-energy commitments (p. 13). We're advancing regenerative agriculture, a key to reversing climate change (p. 11). We're protecting people, taking the sweatshop conditions and toxins out of electronics and clothes manufacturing so millions of workers are safer (p. 12). We're standing up to hate, working with communities and businesses around the country to say #EveryoneIsWelcomeHere!

These victories are your victories. This is what we do together. It's our economic activism that gets these results—shifting a destructive economy to one that protects the environment, communities, and human health.

And in this season of hope, we're especially excited to bring you the Drawdown feature in this issue (p. 14). Our friend and ally Paul Hawken and his global team of scientists put a framework together for reversing the climate crisis—and creating abundant healthy food for all, clean air and water, empowerment for women and girls, environmental justice, a productive economy, and a thriving planet for generations to come.

There are two essential strategies: The first is to stop putting greenhouse gases into the air. The second is to vacuum all the carbon already up there out of the atmosphere. And the best way to do so is through the power of plants and healthy soil.

As we all learned in grade school, photosynthesis captures carbon for plants to grow. Soil microorganisms in healthy soil play the key role in helping plants use carbon—and, it turns out, put carbon back into the ground. It also turns out that the fewer chemicals used in agriculture, the healthier the soil, and the more carbon it can store.

For the past few years, Green America's sustainable food and agriculture teams have been focusing on developing the plans, the networks, and the campaigns to tap into plant power, through regenerative agriculture, to vacuum 120 ppm of carbon out of the air, enough to get us from the 400+ that we're facing now to 280 ppm—preindustrial levels of carbon. And get all the amazing food, water and biodiversity benefits that come with healthy soil.

I'm so excited, so hopeful, I can hardly sit still. The answer lies beneath our feet. And you can start this revolution with your fork, demanding food grown to regenerate soil.

So turn the pages of this issue—and put a bright dose of hope and joy in your holiday season and for the life-affirming work ahead.

Together we are powerful,



Alisa Gravitz, President/CEO



ALISA GRAVITZ

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The Green American magazine (ISSN: 0885-9930) is free with Green America Individual Membership (starting at \$20/year) or Green Business Network® Membership (starting at \$130/year).

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Investors Pressure Starbucks Over Unequal Family Leave Policies



Rosa Irene Betancourt / Alamy Stock Photo

Investors are asking Starbucks to make its family-leave policies more equitable. Currently, in-store employees receive less family leave than corporate employees, and fathers and adoptive parents receive less time overall than mothers.

There is no national policy for paid leave when a new child joins a family. That means for many parents and guardians, having children forces a choice between being home with them during their critical first few weeks or getting a paycheck. Many companies have their own paid-leave policies, but those can differ depending on one's job title and status with the company.

Responsible investment companies are pushing several corporations to create fair family leave policies. Zevin Asset Management , Pax World , Arjuna Capital, and Friends Fiduciary Corporation, sent letters to 11 major companies in October, including Starbucks, Target, Amazon, Apple, and AT&T, warning them that their family leave policies are unfair.

The investors then filed shareholder proposals at the non-responsive companies. These proposals asked the companies to report on the risks of one or more of these three situations: 1) family leave policies not existing or being so small as to not be meaningful, 2) discrepancies between leave allowed to white-collar and blue-collar employees of the same company, and 3) policies that leave out dads and adoptive parents, which affect LGBTQ employees disproportionately.

The first of those filings, at Starbucks, made a splash in the national media, says Pat Miguel Tomaino, associate director of socially responsible investing at Zevin. Starbucks allows mothers who are corporate employees to receive up to 18 weeks

of paid leave, and fathers or adoptive parents to receive up to 12 weeks. For in-store employees, mothers and adoptive parents may request only six weeks.

Starbucks' website says that its "parental leave benefits exceed what most retailers provide full- or part-time workers."

The proposal filers counter it should make its parental leave policy more equitable among all workers. Tomaino notes that companies are better bets for investors if they have better family-leave policies, because employees tend to stay longer, which lowers training costs.

The investors also worry that the discrepancy between leave for executives and hourly employees amounts to discrimination. Companies are vulnerable to lawsuits if their leave policies are deemed discriminatory, which can affect their bottom lines.

"We want to make sure the board has eyes on this issue and understands the ways in which poor paid family-leave policy puts workers and ultimately the company at risk, and understands the opportunities that it can seize," Tomaino says.

Starbucks has already made a change to its policy since receiving the letter, allowing adoptive parents who work in retail locations to request leave (they were previously left out of the policy). But Zevin will continue to push Starbucks until it addresses the major gaps between its corporate employees' and in-store employees' leave time.

Contact: For updates on the Starbucks proposal and others, visit zevin.com/in-the-news/.

Elections Bring Signs of Hope

The November elections delivered a shot of hope for a better future, with diversity and sustainability issues moving forward.

Most notably, Danica Roem became the first transgender person in the VA House of Delegates (see p. 30). Roem will be joined by Hala Ayala and Elizabeth Guzman, who just became the state's first Latina Delegates.

Justin Fairfax also prevailed to become the state's second Black lieutenant governor. And Sheila Oliver is now New Jersey's first Black lieutenant governor.

Hoboken, NJ, just got its first Sikh mayor, former city councilmember Ravi Bhalla. Jenny Durkan won her race and is now Seattle's first openly lesbian mayor. And the newly elected mayor of Helena, MT, Wilmot Collins, is a Liberian refugee.

In addition, Montgomery County, MD, passed a \$15 minimum wage law, which will be fully implemented by 2024. Maine voted to expand Medicaid coverage to tens of thousands of people. And Denver passed a law requiring new large buildings in the city to sport climate-cooling green roofs.

People of Color More Likely to Live Near Oil and Gas Facilities

In 2012, the NAACP's groundbreaking *Coal Blooded* study showed that communities of color—particularly Black communities—breathe in 40 percent more polluted air than white communities across the US. Now, the NAACP's latest study demonstrates the specific health risks to African-American communities from airborne pollutants caused directly by oil and natural-gas development.

The study, *Fumes Across the Fence-Line: The Health Impacts of Air Pollution from Oil and Gas Facilities on African-American Communities*, was conducted with the Clean Air Task Force (CATF) and supported by the National Medical Association (NMA). It found that oil and gas facilities are built near or currently exist within a half-mile of over one million African-Americans, exposing them to an elevated risk of cancer, asthma, and other health risks.

The study also found that there are 91 counties across the US that are building oil refineries or where refineries exist close to more than 6.7 million African-Americans, disproportionately exposing them to toxic and hazardous emissions such as the neurotoxicant sulfur dioxide and the carcinogens benzene and formaldehyde.

People of color are more likely to live in the shadow of polluting facilities than white households, as demonstrated by several environmental-justice studies over the years. However, Black communities

are often hit the hardest overall. The report found that African-Americans are 75 percent more likely to live near oil and gas facilities than the average American, and they are 38 percent more likely to be exposed to polluted air than white Americans. The study did not further break down the populations near the fence-lines of oil and gas facilities by demographic, but it did note that communities of color in general and low-income communities are at a higher risk for having an oil or gas facility located nearby than white communities.

The report notes that companies often site polluting facilities like oil and gas refineries near communities of color to "take advantage of communities that have low levels of political power." Companies operating in these communities may benefit from lower costs for needed permits, and they may be able to more easily influence local governments, according to the report.

"Energy companies often deny responsibility for the disproportionate impact of polluting facilities on lower-income communities and communities of color," said Kathy Eglund, NAACP's Environmental and Climate Justice Sub-Committee board chair, in a statement. "[Companies claim] that, in most cases, the potentially toxic facilities were built first, and communities knowingly developed around them. However, studies of such areas show that industrial polluting facilities and sites have frequently been built in transitional neighborhoods, where the demographics have shifted from wealthier white residents to lower-income people of color. Polluting facilities also reduce nearby property values, making them more affordable areas to live in for people who do not have the means to live elsewhere."

Dr. Doris Browne, NMA president, added that her organization is seeing evidence of the report's findings: "The effects of oil and gas pollution are disproportionately afflicting African-Americans, particularly cancer and respiratory issues, and the trend is only increasing. Our membership is seeing far too many patients in communities of color suffering from these diseases. It is our goal to fight to reverse this dangerous trend."

The EPA in 2016 finalized strong standards for methane and ozone smog-forming volatile organic compounds (VOCs) emitted by new and modified oil and gas facilities. Doing so would have the additional benefit of cleaning up other pollutants including air toxins such as benzene, formaldehyde, and sulfur dioxide. It also began to address the 1.2 million

existing sources of methane and other airborne pollutants. However, the Trump Administration has attempted to roll back these protections, as well as those governing methane emissions on public lands. These rollbacks are currently being challenged in courts across the country.

"Green America's work in fighting coal plants and natural gas, including methane emissions from fracking and pipelines nationwide, is driven in large part by the devastating impacts these projects have. We often work with local groups nationwide, many of which are led by people of color, to fight these projects that are particularly devastating to African-American communities," says Todd Larsen, Green America's executive co-director. "The NAACP's latest study makes it even more critical that people speak out to preserve these important protections from oil and gas development that are needed for human and environmental health as we move to renewable energy."

Contact: Read the study at naacp.org/climate-justice-resources/fumes-across-fence-line/. And see p. 29 for a related article by Jacqui Patterson, the NAACP's director of environmental and climate justice.

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Source My Garment™ connects North American clothing designers and manufacturers with overseas factories that are committed to fair trade and to environmental responsibility from fabric to finished product.

In Search of Ethical Fashion

On brand websites from H&M to Gap to Gucci, you'll find phrases like "innovative materials," "sustainably sourced," and "enhancing transparency." But when it comes to finding out whether companies actually walk their sustainable talk, there may still be problems behind their promises. In short, consumers still need to do research when shopping their values.

When you need clothes, first consider buying secondhand (see greenamerica.org/UsedClothingShops/ for some online stores to try). If you need to shop new, use the tips below to make your purchases better for workers and the Earth.

Note: While we've detailed the strongest third-party certifications that help prove a company has taken significant steps to care for workers and the environment, some but not all companies will display these certification labels on clothing tags. In addition to clothing tags, look for proof of certification on company websites, or call your favorite companies to ask if they hold the certifications on p. 7.

Consider Laborers

The source of Americans' clothes has shifted during the past 30 to 40 years, from factories stateside to ones in China, Vietnam, Bangladesh, and other Asian, Pacific Island, and some Central American nations, as companies follow the lowest possible costs for their goods.

Subcontractors hired by major US and European brands, including luxury brands, must make clothing quickly to meet demand for ever-changing trends. Too often, factory owners disregard safety and fair pay to meet deadlines and turn a profit, as was the case with the Rana Plaza factory collapse that killed 1,100 garment workers in 2013.

The big brands have the power to improve the lives of the workers across their supply chains.

Find Better Fabrics

Fortunately, there are textiles that are good for workers and the Earth. Look for clothing made from certified organic fabrics, including organic cotton, hemp, soybean fiber, and linen. They're grown

without synthetic pesticides or fertilizers and cannot come from genetically modified (GM) seed.

Organic cotton now makes up an estimated eight percent of all cotton grown. However, it may be hard to spot in some cases. Only 17 percent of organic cotton is marketed as such, according to the nonprofit Solidaridad.

Another good fabric option is Lyocell/TENCEL® (the same product by conventional and brand name), which is made from wood pulp from Forest Stewardship Council® (FSC)-certified forests, using a low-waste, closed-loop process. Lyocell made from bamboo, eucalyptus, or algae (called SeaCell) is also a good choice.

Also look for VISCOSE® and MODAL®, but only as trademarked brand names, which means Lenzing, the company that manufactures TENCEL, made them from FSC-certified beech trees using an eco-friendly process.

Raw wool requires no chemical inputs. To ensure animal welfare, look for ZQ certification on New Zealand wool.

Avoid These Fabrics

Conventional cotton is often doused with tons of toxic pesticides, poisoning workers and wreaking havoc on the planet. Cotton is grown on 2.5 percent of arable land in the world but uses 6.2 percent of pesticides.

The worst of the top three pesticides commonly used on cotton is a nerve agent that could kill an adult if applied to the skin. While most pesticides wash out before they get to the consumer, workers in cotton fields are exposed to these chemicals at life-threatening amounts.

The documentary *The True Cost* found that in the Punjab region of India, where most of the country's cotton is grown, numbers of children with severe learning disabilities, physical handicaps, and terminal illnesses like cancer have skyrocketed, which experts attribute to an increased use of pesticides.

Petroleum-based synthetics—like nylon, polyester, rayon, acrylic, and spandex—aren't great alternatives either. Because they're essentially made from oil, they're not biodegradable or renewable. Worse, manufacturing these materials releases nitrous oxide, a

greenhouse gas stronger than CO₂.

Tree-based fibers are a mixed bag. Rayon, small-v viscose, and small-m modal may come from trees that weren't harvested sustainably, combined with toxic chemicals to make the fabric.

Also, avoid fabrics containing nanoparticles. Labels won't mention nanoparticles directly but will tout the "anti-bacterial" or "anti-odor" properties nano-silver provides, or the sun-blocking capabilities of nano-titanium dioxide. Because of the ways products are regulated in the US, manufacturers aren't required to test nanoparticles for safety to humans or the Earth, so little is known about their effects. However, nano-silver may contribute to bacterial resistance to silver as an antibiotic, and it's toxic to aquatic life.

Proceed with caution: Hemp and linen are often grown without copious amounts of chemicals, but you'll either need to look for organic certification or contact the manufacturer to be sure.

Animal fabrics like wool, angora, and cashmere, while not requiring chemicals, likely weren't procured with animal welfare in mind.

Beware of Toxic Dyes and Finishes

The dyes that are used in a majority of clothing are made from harmful synthetic materials. Azo dyes, commonly used in clothing, break down into chemicals called aromatic amines, some of which have been linked to cancer. Other dyes contain heavy metals like the neurotoxicants lead and mercury.

After they're dyed, clothing is often treated with water-, stain-, and fire-proofing chemicals. Those affect both workers and wearers, as some can linger even after several washings. These can also persist a long time in the environment and have been linked to hormone disruption and liver and reproductive toxicity. Clothes advertised as wrinkle-free are often coated in formaldehyde, a known carcinogen.

For more information on finding ethical clothing, see the "Detox Your Closet" issue of the *Green American*, online at greenamerica.org/DetoxYourCloset/.

—Caroline Chen, social justice campaigns manager, & Eleanor Greene, associate editor

Green America's Clothing Pocket Guide

Clip this handy guide out, or snap a photo with your cell phone, and take it with you when you shop for new clothing.

FABRICS

Eco-friendly fabrics: Bamboo lyocell • Certified organic soy, cotton, hemp, and linen • Lyocell, a.k.a. TENCEL® • MODAL® with a trademark symbol • SeaCell • Silk VISCOSE® with a trademark symbol

Purchase with caution: Angora • Cashmere • Wool • Conventional hemp • Conventional linen

Avoid these fabrics: Bamboo rayon • Conventional cotton • Small-m modal • Nylon • Polyester • Rayon • Non-organic soybean fiber • Small-v viscose

CERTIFICATIONS

Some clothing manufacturers don't put these on their labels, so check websites or contact the manufacturer and ask questions.



BLUESIGN

Ensures that clothing is not exposed to a list of harmful chemicals throughout the supply chain, from raw materials to finished product.



CERTIFIED ORGANIC

Ensures that the raw materials used to make the clothing were grown without chemical fertilizers and pesticides. However, it doesn't prevent clothing from being coated with toxic finishes.



FAIR TRADE (Fair Trade Certified[™], Fair Trade Federation[™])

These independent certification and membership systems ensure that workers who grow raw materials or make clothing earn a living wage and labor under healthy conditions.



GREEN BUSINESS NETWORK

Green America screens clothing businesses to ensure a commitment to fair labor, environmental stewardship, use of eco-fabrics, and no toxic dyes or finishes.



GOTS & GOTS ORGANIC

The Global Organic Textile Standard (GOTS) requires that clothing bearing its regular label contain 70 percent organic fibers, and those bearing the GOTS Organic label be 95 percent organic. Clothing with either label must have no prohibited toxic dyes or finishes, and all suppliers must comply with standards to minimize waste and ensure that workers labor under fair conditions.



OEKO-TEX 100

This independent certification system limits the use of toxins in everything from raw materials to finished clothes.



SA8000

A designation from Social Accountability International (SAI), applied to factories and farms that uphold standards for social responsibility and labor rights.



ZQ MERINO WOOL

Certifies wool from New Zealand farms that meet its standards of animal welfare and environmental sustainability.

UNION-MADE PRIVATE LABELS

Indicate that your clothes were made by workers who were allowed to organize and advocate for better wages and working conditions.



courtesy of Self-Help Credit Union

Rocio Jimenez opened her first-ever savings account with Self-Help Credit Union. She used Self-Help loans to start her education as a nursing assistant. Self-Help has become increasingly involved in assisting immigrants with the educational and financial resources they need to achieve financial wellness.

2017 in Review: Social Investing Victories

Impact investors and responsible banking institutions across the country have made a big difference this past year, advancing causes ranging from climate change to board diversity to immigration justice. Green America celebrates these 2017 victories and identifies how you can keep the economy moving in a greener direction.

Shareholders Win Big

Every year, shareholders have the ability to put forth requests to company management, in the form of shareholder proposals, on which all investors vote either in person at the company's annual meeting or remotely via a paper or electronic proxy ballot.

While shareholder proposals don't need to earn a majority vote to push a company to change, the 2017 proxy season saw a number of high and even majority votes on environmental and social-justice proposals.

"What was different this year was

an increase of support on a few climate proposals," says Sustainable Investments Institute executive director Heidi Welsh. "The high votes at oil and gas utility companies on climate-related resolutions were very substantial."

At ExxonMobil and Occidental Petroleum, a majority of investors (62 percent and 67 percent respectively), urged the companies to share more information about how action taken by governments around the world to cut greenhouse-gas emissions will affect the market for fossil-fuel products. Exxon also appointed an atmospheric scientist to its board last year—following several shareholder requests that it do so.

Investors also successfully pressed several companies to take action for people and the planet. In January, the world's third largest consumer-goods company, Unilever, announced that it would transition to 100 percent recyclable, reusable, or compostable packaging by 2025. As You Sow, a nonprofit cor-

porate-responsibility organization, had urged the company behind the scenes to incorporate recyclable packaging for several years. Likewise, in response to a proposal filed by As You Sow, KFC agreed to only purchase chicken raised without antibiotics deemed important to human medicine by the end of 2018.

"Proxy season is usually a mirror of public-policy debates in society at large. I think all the resolutions focused on economic inequalities and pay disparities illustrate that point," says Welsh.

Workplace diversity was also a major focus, as shareholders at Aflac, Dentsply Sirona, EOG Resources, Fifth Third Bancorp, Jones Lang LeSalle, Verisk Analytics, and Visa all successfully withdrew proposals due to companies' agreement to take action on the issue. Aflac, Fifth Third, Jones Lang LeSalle, and Visa committed to increased workplace-diversity data reporting. Dentsply, EOG, and Verisk agreed to include protections against sexual orientation or gender discrimination in company policy.

Take Action: If you own company stock, vote your proxy ballot to let executives know your stance on important issues. Look for your proxy ballots to arrive by mail, usually in the spring.

If you are unsure about how you can become engaged in shareholder activism, consult Green America's *Guide to Social Investing & Better Banking*. You can also view our annual Shareholder Resolution Focus List at greenamerica.org/shareholderlist/. Look for it to be updated for 2018 in the spring.

Putting a Dent in DAPL

In spite of fierce opposition, Energy Transfer Partners and its development company Dakota Access, LLC have been given the green light from the US Army Corps of Engineers to continue with the construction of the Dakota Access Pipeline (DAPL)—a crude-oil pipeline that threatens to endanger the water supplies of millions, as well as traditional sacred sites of the Standing Rock Sioux.

Green America and allies have been calling on the 40-plus banks financing the DAPL to pull out—and calling on the

banks' customers to divest from them until they do so. In the last year, two banks helping to finance the DAPL have bowed to this pressure. In November 2016, Norway's largest bank, DNB, announced that it sold its assets in the DAPL and would start its own fact-based investigation of Indigenous rights' abuses. In March 2017, the Netherlands' ING Group also sold its loan to the DAPL.

Take Action: You may have seen hashtags like #DefundDAPL circulating around social media in the last few months. That's because several major banking corporations like Wells Fargo, Bank of America, Chase, Citi Bank, and Goldman Sachs are still funding DAPL.

Breaking up with your mega-bank is a sure way to make your voice resonate. The best way is to move your money and write them a letter telling them why. Visit defunddapl.org and Green America's BreakUpWithYourMegaBank.org for further steps on breaking up.

To view a full list of DAPL-supporting mega-banks, visit greenamerica.org/DontSupportDAPL.

Supporting Young Immigrants

The Deferred Action for Childhood Arrivals (DACA) is an immigration policy, formed by the Obama administration via executive order, that guarantees protection to undocumented immigrants who were brought to the US as children. In September, President Trump announced his decision to repeal DACA while giving Congress the green light to come up with a replacement immigration policy before some DACA recipients—the ones whose authorization expires before March 2018—become eligible for deportation.

Trump's unsympathetic decision forced DACA recipients into a race against the Department of Homeland Security's hard October 5th deadline to renew their DACA applications. In response, green credit unions stepped up to ensure that individuals who needed to renew their DACA application were not turned down because of a lack of funds.

The DACA application fee was \$495 dollars, an amount many young people do not have just lying around, and

the extremely short notice offered by Trump's administration created a greater strain for individuals and families. So, Self-Help Credit Union[™] introduced the DACA Loan, which offers undocumented immigrants a way to pay for their DACA application without any interest or fees.

According to its company website, Self-Help has granted over 1,200 loans to people renewing their DACA applications. In addition, it has made 4,605 loans amounting to over \$132 million to immigrant members last year for first-time home buys and other major purchases. The North Carolina-based credit union has become increasingly involved in assisting immigrant borrowers with the educational and financial resources they need to achieve financial wellness and live the American Dream. In addition to providing affordable loans, Self-Help also offers checking accounts and wire services.

"We believe it is critical to provide access to affordable, high-quality banking and credit services to all families, particularly those that are typically left out of the financial mainstream," says Self-Help's vice president and director of secondary marketing, Deborah Momsen-Hudson, who is also a member of Green America's board. "Self-Help has spent the last 37 years furthering our mission of creating economic opportunity and especially working to shrink the wealth gap in this country."

The NYC DREAMer Loan Fund, 21 Progress, Latino Community Credit Union, and a handful of others have also provided loans for DACA recipients.

Take Action: Trump left the fate of 800,000 DACA recipients to Congress, which only has a few months to pass legislation before young undocumented immigrants become eligible for deportation. Trump has said that he wants the DACA deal he strikes with Congress to include funding for a US/Mexico border wall, which, in addition to promoting hate, will cost an estimated \$21.6 billion, according to the Department of Homeland Security. Other sources say it could cost twice that much.

Tell Congress not to back a wall built

THE PARIS AGREEMENT: WHO'S STILL IN?

Leaders from businesses, local and state governments, and colleges and universities are taking on climate change without Washington. Since June 2017, over 2,500 of them, representing \$6.2 trillion of the US economy, have signed the We're Still In declaration, which aims to re-affirm America's commitment to the Paris Agreement and reducing gas emission. (Green America's Green Business Network[®] is also a signatory.) The declaration, spearheaded by a coalition of groups including the American Sustainable Business Council and Ceres[™], comes as a defiant response to the Trump Administration's plans to withdraw from the Paris Agreement, announced last fall.

The We're Still In group has launched several additional initiatives, such as having businesses incorporate emissions-reduction targets and commit to 100 percent renewable energy, forming networks between local governments to create protective environmental policies, and designing the National Energy Efficiency Registry, which documents state achievements of environmental goals, as well as testing of clean-energy technologies at colleges and universities.

on anti-immigrant sentiment, and remind them that they *can* pass the Development Relief and Education for Alien Minors (DREAM) Act, which would reinstate DACA protections. Find contact info at Senate.gov and House.gov.

Green America is ready to call for divestment of any company contracting with the government to build the border wall, should construction begin. Visit our website, greenamerica.org, and sign up for our e-mail newsletter at greenamerica.org/signup/ to keep informed of our efforts.

—Sytonia Reid, editorial fellow

As Washington Guts Financial Protections, Green America Helps You Find a Better Bank



Sipa USA via AP

Wells Fargo recently has been under fire for opening fraudulent accounts in customers' names, as well as funding the Dakota Access Pipeline.

In October, Congress struck down a proposed Consumer Financial Protection Bureau (CFPB) rule that would have protected customers' rights to sue unscrupulous mega-banks and other financial institutions in cases like last year's Wells Fargo mega-fraud.

From 2002 to 2016, Wells Fargo employees opened up more than 3.5 million fake bank and credit card accounts in customers' names, in a frantic attempt to meet what the company admitted were "unrealistic sales goals." At the same time, the company had also slapped those unwitting customers with unnecessary fees related to the false accounts. Since its fraud was discovered in 2016, Wells Fargo has been in the process of doling out a \$6.1 million refund to the victims, plus a \$142 million class-action settlement.

The proposed CFPB rule would have prevented companies from including fine-print clauses in agreements for bank accounts, credit cards, payday loans, and more—clauses that force customers to forgo their right to take financial companies to court

or to take part in class-action lawsuits against them. Instead, most have customers agreeing to mandatory arbitration in cases of disputes.

"The use of arbitration agreements in such contracts has become a contentious legal and policy issue due to concerns about whether ... arbitration has proved to be a fair and efficient dispute resolution mechanism," the CFPB stated in its final rule document.

In fact, a November 2015 investigation by the *New York Times* found that arbitrators often have "no experience as a judge," may have serious conflicts of interest, and may "have twisted or outright disregarded the law" when issuing rulings. Arbitration also bars plaintiffs from appealing decisions.

The CFPB noted several other problems with arbitration, such as customers often being forced to pay a \$200-\$250 "administrative fee" to initiate arbitration, and customers being barred from banding together for class-action arbitration, which can help establish a pattern of shady corporate behavior. Also, unlike court proceedings,

arbitration is a private process, which eliminates public transparency.

Protect Your Finances

As Congressional Republicans and the Trump administration take aim at dismantling CFPB protections, it's crucial to safeguard your finances and join Green America's Break Up with Your Mega-Bank campaign.

Our campaign has made finding a responsible bank or credit union easier than ever. Our newly updated database at GreenAmerica.org/FindABetterBank has all you need to make the switch to a better financial institution.

"It's more important than ever that people continue to vote with their dollars by moving their money to a bank that matches their values," says Fran Teplitz, executive co-director for business, investing, and policy at Green America. "Green America is committed to helping people make the switch to financial institutions that build local communities responsibly and sustainably."

On the site, you can find better banks and credit unions close to where you live. The database includes green banks certified by our Green Business Network®, as well as community development banks and community development credit unions. The database also includes financial institutions that are members of the National Federation of Community Development Credit Unions, the Community Development Bankers Association, the Global Alliance for Banking on Values, and the CDFI Fund-certified list.

All of these banks and credit unions make it their mission to lift up low- and middle-income communities through fair loans and financial practices—not hobble them with predatory loans and fees or, for that matter, fake accounts.

The site also has tools to find responsible credit cards and loan funds, so you can go green no matter what your financial needs are.

Beyond the database, the site also links you to financial-wellness content like Green

America's most recent *Guide to Social Investing and Better Banking*, and articles including "10 Steps to Break Up with Your Mega-bank," which will give you the exact steps to take to make the switch.

Find a green or community development bank or credit union at greenamerica.org/FindABetterBank.

Introducing Green America's New Re(Store) It! Campaign

Green America is proud to announce our latest program to address the climate crisis: The Re(Store) It! campaign aims to give a big boost to regenerative agriculture, a type of farming that turns dead dirt into rich soil that acts as a carbon sink. Instead of just curbing the climate crisis, widespread adoption of regenerative agriculture could actually help reverse it (see p. 18). A paper by the Rodale Institute says that humans could sequester 100 percent of current annual carbon-dioxide emissions with a worldwide switch to regenerative agriculture.

The Earth's soils used to be rich in carbon, but decades of industrial agriculture have left fields degraded. Massive tilling compacts soil so few air pockets exist, meaning it retains much less water and is more susceptible to drought and erosion. Chemical inputs kill off soil microbes that digest carbon and naturally fertilize the soil.

The transformation of rich soil into dead dirt means that the carbon that was once sequestered in the ground is now in our atmosphere as climate-warming CO₂. Regenerative agriculture provides a solution to the twin issues of climate change and feeding the growing global population. Employing age-old techniques like crop rotation, conservation tillage and mulching, composting, and more removes carbon from the air and stores it in the ground. It also builds rich soils, which, in turn, increases farm production. According to the UN Food & Agriculture Organization, the world could produce 58 percent more food through regenerative farming.

The Re(Store) It! campaign aims to educate the public about these benefits, so conscious consumers can support the farmers and businesses that use regenerative agricultural methods. It also works to create a better understanding of farmers as important stewards of the land. And it helps individuals get involved in the solution as well, by helping them locate nearby restorative "climate gardens" and start their own.

"In the last century, we've been reliant on industrial agriculture that has harmed our lands, water, and people," says Anna Meyer,



courtesy of the Regenerative Design Group

Hayfield and pollinator meadows are part of a regenerative family farm master plan in central New Jersey. Farm plan by the Regenerative Design Group (regenerativedesigngroup.com).

food campaigns director at Green America. "Regenerative and organic agriculture is the way forward, as it brings ecology, climate science, and human well-being to the forefront of farming. When it's implemented widely, it will ensure a hospitable planet for generations to come."

The campaign will officially launch December 5th, for World Soil Day, to celebrate the potential of this climate-change solution that promotes life in the soil and on our planet. Re(Store) It! joins our Carbon Farming program, which works on building the supply chain for agriculture that reverses the climate arrow in a powerful demand and supply strategy.

Learn more and keep up to date on this campaign at greenamerica.org/Restore-It.

And view our "Living Soil vs. Dead Dirt" infographic at greenamerica.org/LivingSoil.

GMO Inside Maps Organic Alternatives to Starbucks

Since 2014, Green America has had an active campaign asking Starbucks to use organic milk, and 150,000 people have taken action with us on the topic. Starbucks hasn't budged, so we're taking things a step further. This coming January, in direct opposition to Starbucks, GMO Inside will launch an online resource mapping coffee shops around the country that offer organic milk, fair trade

coffee, and organic coffee.

When you think of Starbucks, you undoubtedly think of coffee, and maybe snack foods. But the coffee giant actually sells more dairy than it does java. It's one of the largest dairy purchasers in the country, buying 140 million gallons of milk a year.

That's a lot. And it comes with major environmental impacts. Industrial dairy is a major source of greenhouse-gas emissions and water and air pollution. It also requires GMO grain to feed cattle. USDA organic standards for dairy require that farmers adhere to protocols that lead to healthier cows and lower environmental impacts.

"Starbucks has had more than enough time to address the negative impacts of the industrial, conventional dairy supply chain," says Anna Meyer, food campaigns director at Green America. "Starbucks's switching to organic would have a big effect on animal welfare and environmental health. But since it hasn't taken action, we want to show people they have options."

Along with the map, GMO Inside will simultaneously re-release our *Crop to Cup Report*, which highlights the full extent of harm caused by the supply chain that brings milk to a Starbucks coffee cup.

Find our coffee shop map in January/early February at OrganicMilkCoffeeMap.com.

*And view the *Crop to Cup* report at GMOInside.org/StarbucksCropToCup/.*

A Year of Green America Victories!

FAIR LABOR

Unionized Garment Workers in Bangladesh Released from Jail

greenamerica.org/labor



lionel derimais / Alamy

The Problem: Much of the clothing sold by major US retailers is made under sweatshop conditions in developing countries. In Bangladesh, 35 garment workers making clothes for US companies were arrested and 1,500 were fired in late 2016 for staging nonviolent protests over their poverty-level wages.

Victory: In 2017, the Bangladeshi government ordered the release of all 35 workers. In April 2017, the factory owners agreed to local unions' demands to reinstate all dismissed workers and end harassment of unions.

Our Fair Labor Campaign

Mobilized:

- 1 coalition of allies*
- + More than 10,000 petition signatures
- + Numerous social media posts and views

What's Next?: In 2018, our Fair Labor campaign will:

- Demand transparency on labor conditions at American Eagle, Carter's, Forever 21, Ralph Lauren, and Walmart, and push for improvements.
- Pressure Samsung to remove all toxic chemicals from its supply chain.
- Push Godiva to end child labor in its cocoa supply chain.

GOOD FOOD

Three More Major Companies Start Offering Non-GMO Options

GMOinside.org



The Problem: Many processed foods include genetically modified organisms (GMOs), which result in increased use of toxic pesticides on farms.

Victories: In 2017, three companies began offering non-GMO products:

- DanoneWave introduced the first Non-GMO Project Verified yogurts, in whole-milk quarts, plain quarts, and Danimals smoothies.
- Mars launched non-GMO Nutro-brand pet food.
- Smuckers debuted non-GMO Uncrustables sandwiches.

Our GMO Inside Campaign Mobilized:

- 1 coalition of allies*
- + Thousands of Facebook messages
- + Over 30,000 petition signatures
- + Hundreds of mentions in major media outlets

What's Next?: In 2018, our GMO Inside campaign will:

- Push Starbucks to offer organic milk.
- Tell Dean Foods to shift to non-GMO cattle feed.
- Fight to stop the spread of GE apples and GE wheat in US markets.

Walmart and True Value Phase Out Bee-Killing Pesticides

greenamerica.org/food



cam3957 / Shutterstock

The Problem: Many agricultural and gardening pesticides belong to a class called neonicotinoids. These pesticides have been implicated by several studies in mass honeybee die-offs. Without bees and other pollinators, world agriculture could face a massive crisis.

Victories: In 2017, two major retailers agreed to stop selling "neonics":

- Walmart eliminated neonics from about 80 percent of its garden plants and nearly all gardening products.
- True Value agreed to phase out neonic products by spring 2018.

Our Take Back Our Food Campaign Mobilized:

- 1 coalition of allies*
- + Over 400,000 petition signatures
- + Thousands of social media mentions

What's Next?: In 2018, our Take Back Our Food campaign will:

- Pressure Ace Hardware to eliminate neonicotinoid pesticides.
- Educate about the benefits of regenerative organic agriculture through our new Re(Store) It! campaign.
- Launch corporate campaign to push major food companies for transition to regenerative organic agriculture.

Mobilizing pressure from multiple angles—individuals, green business members, shareholders, allied organizations, and the media—Green America has been moving multiple industries closer to embodying a truly green economy that works for all.

Join us as we celebrate several of our big 2017 victories.

CLIMATE ACTION

Amazon Builds New Jersey's Largest Solar Array

climateaction.org



Gorodenkoff / Shutterstock

The Problem: The majority of Amazon's operations are powered with a mixture of dirty coal, nuclear, and natural gas. In particular, Amazon Web Services (AWS) dominates the cloud-services marketplace, with clients including Adobe, Netflix, Spotify, and many more.

Victory: Three years ago, Amazon committed to 100 percent clean energy. In 2017, as part of that effort, Amazon flipped the switch on what it says is the largest rooftop solar array in New Jersey.

Our Climate Action Campaign Mobilized:

- + More than 50,000 petition signatures
- + Numerous social media posts and views
- + Major media coverage

What's Next?: In 2018, our Climate Action campaign will:

- Push Verizon and AT&T to "Hang Up on Fossil Fuels" and use clean energy for their servers.
- Work for climate justice in communities of color.
- Mobilize individuals and businesses against fracking and pipelines.

US Preserves Methane Regulations on Public Lands

climateaction.org



Mike Eisenfeld / WildEarth Guardians

The Problem: Republican members of Congress attempted to undo Obama-era legislation that prohibited methane emissions from oil and gas operations on public lands. Methane is roughly 30 times more potent a greenhouse gas than carbon dioxide.

Victory: In 2017, the Senate voted on and defeated a measure aimed at striking down the methane rule. Therefore, oil and gas facilities on public lands are still legally required to use the latest technologies to prevent methane leaks.

Our Climate Action Campaign Mobilized:

- 1 coalition of allies
- + Over 10,000 petition signatures
- + Thousands of phone calls to Congress

What's Next?: In 2018, our Climate Action Campaign will also:

- Help universities switch their alumni magazines to recycled paper through our One Million Trees campaign.
- Pressure retailers to switch to digital receipts or "Skip the Slip" to save forests and minimize toxins.
- Continue to pressure *Smithsonian Magazine* to switch to recycled paper.

RESPONSIBLE FINANCE

Shareholders Vote for Corporate Change

greenamerica.org/finance



wk1003mike / Shutterstock

The Problem: Many companies need to vastly improve their social and environmental records and practices.

Our Victory: Shareholders are filling record numbers of social and environmental resolutions—and are getting record high votes. In 2017, 62 percent of ExxonMobil shareholders and 67 percent of Occidental Petroleum shareholders voted in support of resolutions asking companies to report on how climate change will affect their bottom lines.

Our Responsible Finance Campaign:

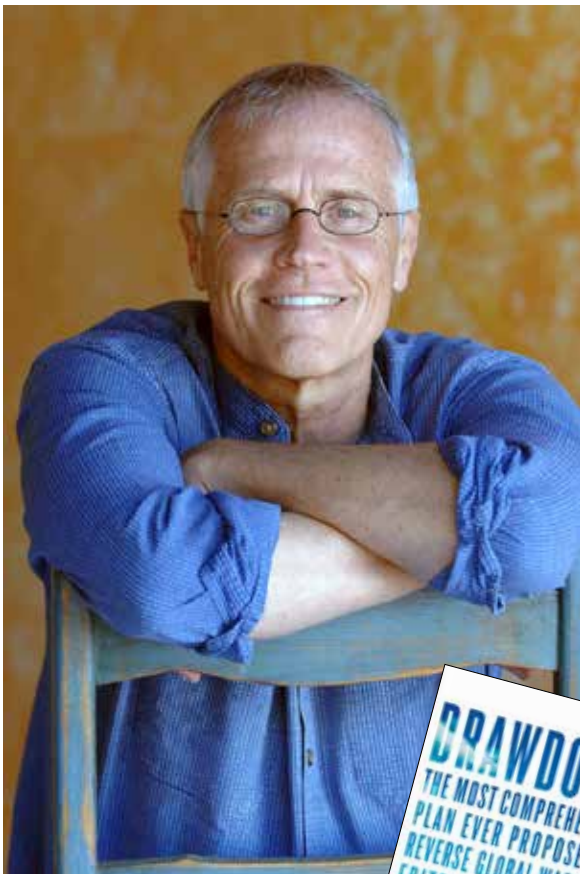
- + Mobilized thousands to oppose the Financial CHOICE Act, which attacks the shareholder-resolution process.
- + Educated thousands on socially responsible investing and proxy voting.
- + Helped people across the US break up with their mega-banks and move their money to community investing.

What's Next?: In 2018, our Responsible Finance campaign will:

- Create new resources on responsible investing and banking.
- Identify shareholder resolutions to support in 2018, and promote to our members and the public.

A Plan to Reverse the Climate Crisis

Think the idea of reversing global warming is a pipe dream? Bestselling author and activist Paul Hawken and a team of hundreds of top scientists and climate experts assure us that it can be done.



Raymond Baltar

If you're part of the movement for a just and sustainable future, chances are you've heard of Paul Hawken. To say that Hawken has an interesting background is a bit of an understatement.

You might know him as a green entrepreneur. Starting in the 1960s, he founded several pioneering green businesses, starting with the Erewhon Trading Company, one of the first natural-food companies in the US to rely solely on sustainable agricultural methods.

You might know him as a bestselling author. He's published several books on the green economy, five of which have become national bestsellers—including *The Ecology of Commerce* (HarperCollins, 1993), which professors from 67 business schools voted as the number-one college text on business and the environment. His 1987 book, *Growing a Business* (Simon & Schuster), was the subject of an acclaimed 17-part PBS miniseries, which he hosted and produced.

You might know him as a compelling public speaker. In addition to being a regular on our Green Festival circuit, Hawken has given hundreds of talks around the world, at colleges and universities, to government agencies, and before world leaders.

But what he'd like you to know him for now is as a champion of 100 scientific solutions that can solve the climate crisis.

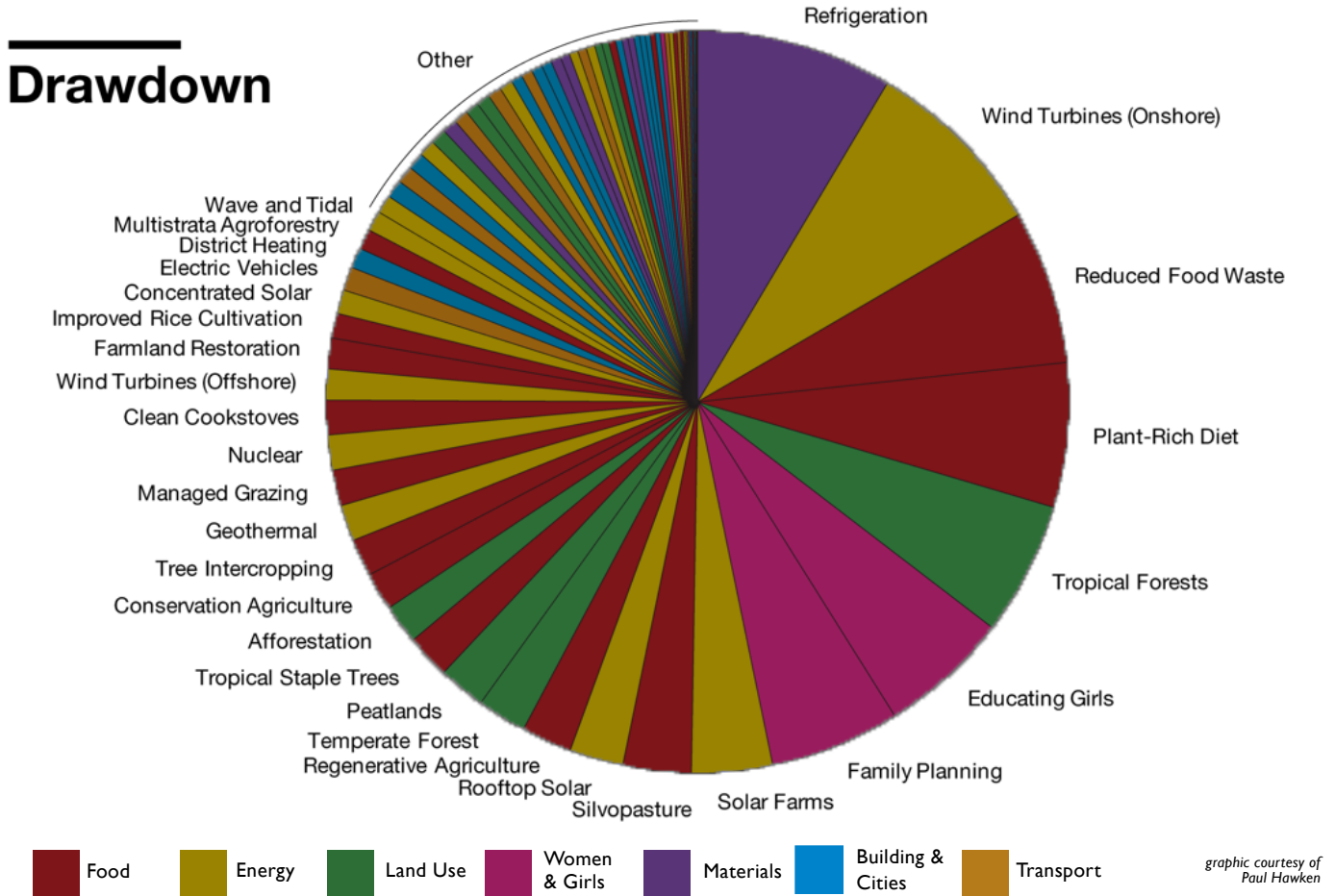
Hawken's latest New York Times bestseller, *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming* (Penguin Books, 2017), is the compilation of research from more than 200 scientists, policymakers, and experts, detailing 100 bold solutions that could get the world to "drawdown"—or the point where greenhouse gases in the atmosphere peak and then begin to decline—and beyond. He's also launched a new organization, Project Drawdown (drawdown.org), to help get us there.

His optimism that we can reverse the climate crisis sounds much like Green America president/CEO Alisa Gravitz, who has been encouraging us all that together, we can reverse the climate crisis, starting with your fork (see p. 3).

Green America editor-in-chief Tracy Fernandez Rysavy talked with Hawken about Project Drawdown and what everyone can do to help it succeed.

100 REASONS FOR HOPE ON CLIMATE

Project Drawdown created climate and financial models for 80 solutions to climate change, and examined 20 more solutions that are forthcoming in the future. The researchers found that if the world implements the initial 80 solutions over a 30-year period using a “reasonable yet optimistic forecast,” the total amount of CO₂ avoided and sequestered amounts to 1,051 gigatons by 2050. To achieve “drawdown,” or the point where greenhouse gases in the atmosphere begin to decline, we’d need to ramp them up a bit more, particularly renewable energy, to get to 1,442 gigatons by 2050.



Green American/Tracy Fernandez Rysavy: What is Project Drawdown, and how did it come about?

Paul Hawken: Drawdown started at two different times: In 2001, the Third Assessment of the IPCC [United Nations Intergovernmental Panel on Climate Change] came out. [Editor’s note: *The IPCC Third Assessment Report is widely known for establishing a scientific near-consensus that unnatural levels of global warming are occurring and are caused by human activity.*] I began to ask people, “Where do we stand? Do we have the solutions at hand? Can we reverse this? Why are we not talking about reversal?”

Then, as now, the discussion was about slowing, stabilization, and mitigation. I said we should do the research and find out what technologies we have at hand that can reduce emissions or sequester them. Everybody I talked to at big NGOs [non-governmental organizations] thought it was a great idea but didn’t have the expertise. And I said, “I don’t either.”

For a couple of years, I was trying to induce somebody to do the work, and nobody wanted to. Eventually, I stopped asking.

Then Bill McKibben’s piece in *Rolling Stone* came out in July

of 2012. The title was “Global Warming’s Terrifying Math,” based on Mark Campanale’s research at the Carbon Tracker Initiative. Mark had been a financial analyst, so he analyzed the balance sheets of all the gas and oil companies, and basically pointed out that they had assets that are called unburnable carbon. In other words, if those assets were combusted, the Earth would be more like Venus—we wouldn’t even be here to combust them. According to Mark, Bill turned that data into poetry.

I had many friends come to me in despair after reading Bill’s piece. Many of them independently said, “It’s game over. We’ve lost.”

I remembered what I’d been proposing in 2001. I also thought that when people give up, it’s an opening, not a closing. Surrender is usually an opening.

So with a few friends, we created Project Drawdown to map, measure, and model the most substantive solutions to global warming in terms of impact. These are solutions that are currently in place, at hand, and that are all scaling. We wanted to know what we can do with what we have now.

We ended up with 100 solutions that, if we continue to scale them at a reasonable level, achieve “drawdown,” that point in time when greenhouse gases peak and go down on a year-to-year basis.

Green American/Tracy: What was so exciting for me in reading your book is that for the first time, experts are talking about reversing climate change, not just mitigating it.

Paul Hawken: Exactly. “Mitigation” means to reduce pain, severity, and seriousness. Can we make global warming less severe? What an underwhelming goal that is. Mitigation is for triage in an ER, but it’s not for civilization and the Earth.

The science on climate change is an extraordinary problem statement. The headlines that come out about extreme weather, fire, ocean acidification, and so on, all validate the problem statement. But what’s happening is that we keep immersing ourselves in the problem statement rather than accepting it and saying, “Got it. The problem statement is correct. Now let’s work on the solutions.”

Today, we have knowledgeable people constantly repeating the idea that what we need is solar, wind, Elon Musk, and cutting back on how many burgers we eat. The implication is that if we move to clean energy and electric vehicles, we get a hall pass to the 22nd century. That’s a scientific howler. It’s not true. Of course, those are crucial solutions, no question—we can’t achieve drawdown without them, but it requires more than that. The system caused the problem, so it’s the system that heals it. That means we need all of the solutions, large and small.

Project Drawdown did the math on the most impactful solutions, pure, straight, and simple. Without bias. Without a foregone conclusion. Without the idea that we knew what the most substantive solutions are.

Over 230 people are involved—we are a coalition. We are a “we.” We didn’t try to be right. We just tried to do the math.

When you look at the back of book (or website) and see the bios of who is involved, you meet some wonderful, knowledgeable people.



NASA

NASA has long been the leading experimenter in future aircraft design (Drawdown solution #43). They believe new designs could reduce fuel and pollution by 70 percent. Adopting the latest and most fuel-efficient aircraft, retrofitting existing aircraft, and retiring old aircraft early could prevent the release of 5.1 gigatons of CO₂-equivalent by 2050.

Green American/Tracy: Tell me more about the math.

Paul Hawken: There are only two things we can do about global warming: Stop putting greenhouse gases up there, and bring them back home to Earth.

With a group of Research Fellows from 22 countries—all with extensive academic and professional experience from some of the world’s most respected institutions—we gathered comprehensive lists of climate solutions and winnowed them down to those that had the greatest potential to reduce emissions or sequester carbon from the atmosphere. We then compiled literature reviews and devised detailed financial and climate models for each.

The analyses were put through a three-stage process including review by outside experts, who evaluated the inputs, sources, and calculations. We also engaged a 120-person advisory board made up of diverse and prominent engineers, agronomists, politicians, writers, economists, climatologists, biologists, botanists, financial analysts, architects, and activists who reviewed and validated the final text.

With respect to greenhouse gases, we relied completely on peer-reviewed science, using the more conservative data where there is a spread. On the financial side, the measurement of cost and return, we only used data from the most respected international organizations: the IEA, FAO, World Bank, IPCC, etc. And again, we were conservative on costs and the rate at which costs would go down. The data employed in the models is not our data. We are transparent about where it comes from. We reflect back to the world what the world actually knows. It’s just that no one had ever put it together so that we could see it.

Green American/Tracy: I’m still stunned by how optimistic the results are—which I think could go a long way toward moving people in a productive direction.

Paul Hawken: People do say it’s optimistic. We think of it as a reality project. What we know and what we are actually doing has been obscured. Ninety-eight percent of the news about climate is bad news; it is about doom, fear, and threat. What do individuals feel like when they’re inundated with bad news? They disengage; they become numb. We’re all the same in that way.

What we know about how the brain works, from neuroscience and the study of ourselves, is that how global warming is being communicated by the climate establishment defies what we know about how the mind works. We hear over and over again that we must not exceed 2° C of warming, and if we go past that temperature, we enter some kind of wormhole, where something terrible is going to happen. That kind of rhetoric is guaranteed to turn people off. And the fact is, terrible things are already happening, *i.e.* Puerto Rico.

The truth is, that’s not a science-based number. That number was made up by Hans Joachim Schellnhuber in 1994. He was trying to communicate to German government officials the dangers of climate change, and they were having trouble understanding the science. So he said, “Think of it this way. We can’t go past 2° C.” It was pulled out of the air, and we’ve been using it ever since as if it’s enshrined like the Virgin Mary.

Even if it was a science-based target, it’s a future existential threat, which human beings don’t relate to. The human brain isn’t

wired to respond to future existential threats. The people who did that are not in the gene pool. The people who live here today have ancestors who thought about *current* existential threats. That's evolution.

Basically, the communication that is currently practiced is guaranteed not to work.

People come together around opportunity and possibility, not the probability of disaster. The way to reverse global warming is to address current human needs.

Going back to Drawdown, 98 of the 100 solutions are regenerative development. If you do them, we're better off with respect to life in a measurable way, whether it's water, food, grassland, soil health, marine life, pollinators, etc. In other words, the development, when completed, leaves the world better off than when we started.

We currently practice degenerative development. We're stealing the future, selling it in the present, and calling it gross domestic product.

What global warming is inviting us to do is heal the future and sell that in the present. We can monetize the healing just as we can the stealing of the Earth.

If you break down the solutions in Drawdown, they create jobs and almost all are profitable. If we tax carbon and stop subsidizing everything that's harmful, they are virtually all profitable. They create social stability, crop productivity, and better food. They increase soil health, biodiversity, water retention, and clean air. They reverse marine desertification and coral bleaching. The list goes on and on.

Every one of these solutions—other than two of them—are no-regrets solutions. If we were clueless about extreme weather (“Well, that was a hell of a hurricane!”), we would want to do 98 percent of these solutions regardless, because they have so many benefits and no downside.

Drawdown is not about trying to fight climate change. That's an unfortunate phrase. It makes the need to address climate change into a war metaphor. We have enough war metaphors, and wars for that matter.

In any case, we're not going to “fight” the atmosphere because it is impossible. It would be like fighting wind, sunshine, and ocean currents. The climate is supposed to change—that's what climates do.

Green American/Tracy: What were some of the most surprising solutions you found?

Paul Hawken: We were just surprised, period. Like anybody, if we had made a list of what we thought were the top solutions, renewable energy would have been at the top. Transportation would have been way up there, too. In the office, we all had our own pets and guesses, and we were pretty much all wrong.

The very top one, refrigerant management, surprised us. We wished something sexier was number one, but that was how it turned out.



Neil Ever Osbourne

Bepkaeti of the Kayapo Tribe in Brazil sits on a mountain overlooking Kayapo territory—and also one of world's largest protected rainforests. Indigenous communities are creating some of the most effective climate solutions through land management (Drawdown solution #39). If the world stops encroaching and allows Indigenous peoples to manage the 909 million acres of land they live on but do not have secure rights to globally, it could reduce greenhouse emissions by 6.1 gigatons (GT) by 2050.

Number two is onshore wind—not a surprise. But number three was reduced food waste and number four, adopt a plant-rich diet. Those surprised us not as solutions, but as rankings that were so high. Also, food waste doesn't include the methane impact of landfilled food. Put that in, and food waste could be number one.

When it comes to a plant-rich diet, it's really about getting the world to adopt a diet where a significant part is plant-based, and a diet where we are eating proper amounts of protein. We overconsume protein in the west, much to the detriment of our health and the health of the planet.

Number five is protecting tropical forests. Tropical forests are sitting on more CO₂ than is in the atmosphere. Destruction, deforestation and degradation pose a huge threat to us. Number five is about protection, preventing it from being a growing problem.

Number six was a surprise: educating girls. As was seven, clinics to support family planning and women's reproductive health—not just in the developing world but here in places like Alabama.

Both issues are intertwined: If you leave girls in school and support their education, they tend to plan their families very differently. When they're married off early, which happens all over the world for cultural and religious reasons, their choices are made for them. Educated girls become women who make different family choices: they'll have an average of two children rather than five or six. It's the difference between high and median world-population predictions.

Put six and seven together, and it becomes the number-one solution.

We think it's a solar panel that's going to save the world. It's not a panel—it's a woman!

I just want to make clear that by measuring impact in terms of carbon, we're not trying to be reductionist. We should educate girls based on a list as long as your arm. Education has cascading



Martin Bond / Alamy

As cities around the world become denser and city planners invest in making those cities walkable (Drawdown solution #54), five percent of trips currently made by car could be made by foot, resulting in the avoidance of 2.9 GT of CO₂-equivalent.

benefits for them, for society, for communities, for the future. Having said that, no one had looked at the impact of doing so in terms of climate. We did.

Green American/Tracy: The two “regrets solutions” you mentioned are nuclear and waste-to-energy, correct? Why include those?

Paul Hawken: Yes, that’s right. They’re there because we set out to measure most substantive solutions. If, in the process of doing that, we started weeding things out because we didn’t support them, our objectivity would have been called into question. The fact is, for many people, nuclear and waste-to-energy [WTE] are solutions.

Personally, I think nuclear is the most absurd way humanity has ever invented to boil water. Generating and guarding radioactive waste is dangerous and complex. That’s my opinion, right? But as a research institution, we wanted to make sure everybody thought we had done our homework, which was to be objective. This is science. The fact is that nuclear energy is less carbon intensive than coal and natural gas. So we mapped, measured, and modeled it.

The problem with WTE is that it doesn’t go upstream, to who made the waste. It stops a better solution, which is zero waste.

WTE is done in a very clean way in Europe, but even if it’s just spotless, we shouldn’t be making crap and burning it. We should be making everything in such a way that it can be returned through biological processes.

[Editor’s note: Green America is against expanding WTE and nuclear power for the reasons Paul Hawken describes above. In addition, when it comes to nuclear, mining and enriching uranium, constructing power plants, and dealing with processing and storing nuclear waste all generate carbon pollution. For more on our position, see our article, “10 Reasons to Oppose Nuclear Energy” at greenamerica.org/OpposeNuclearEnergy.]

Green American/Tracy: I want to go back to the idea that some of the Project’s solutions have other benefits. Can you talk a bit more about those?

Paul Hawken: Take number 11, regenerative agriculture, for example. When you restore soil health, you’re increasing water retention. You’re taking carbon out of the air, creating humus and more life in the soil, which gives resiliency to crops in drought years. You reduce runoff/floods. You’re eliminating nitrous oxide. You’re increasing pollinators, because you’re planting cover crops. You’re not tilling soil, so you’re not releasing CO₂.

You’re increasing productivity, so you’re making money. That’s good for farmers. They’re not making much money now; thus, they’re getting more dependent on chemicals to try to squeeze out one last little bit of productivity on their exhausted soil, which is becoming dirt. Big Ag is basically like a drug dealer.

You’re introducing animals as a way to fertilize. You’re not using mineral fertilizers. You’re not making things out of natural gas to put on soil. The amount of inputs is reduced, if not eliminated.

These farms exist, and these farmers are not progressive, liberal Democrats. They’re farmers. But they’re focused on one thing: soil health. Which leads to healthy animals, people, air, water. It’s a virtuous circle, and everyone benefits.

That’s just one example.

[Editor’s note: Green America has two new programs on regenerative agriculture. See p. 11 for details.]

Green American/Tracy: Can you tell our readers about some of the newer technologies that are part of the solutions list?

Paul Hawken: 80 of them are well in hand, and we have lots of data. The 20 that we called “coming attractions” are valid scientifically, but there’s not sufficient data to model them. *[Editor’s note: See one such solution, smart highways, in the photo on p. 19.]*

With the solutions that are in place, well understood and practiced, we can achieve climate reversal. However, what we’re trying to show is that things aren’t static. There are companies, engineers, designers, bioneers, people all over the world who are innovating, creating, and imagining new solutions and technologies. It’s not all that’s going to happen in the next 20 to 30 years. But reinforcements are on the way—extraordinary breakthroughs in design and technology and practice that are going to enhance the ones we modeled. We wanted to give people a sense of what’s coming.

Green American/Tracy: America is so politically divided right now. Are the Project’s solutions more things that Democrats embrace, or are they like regenerative agriculture, able to cross current political party lines?

Paul Hawken: Well, let’s be honest. Washington never did much about climate, whether Democrat or Republican.

These solutions aren’t coming from Washington. Could they be greatly accelerated by Washington? Yes. You see it in countries like Germany and even in non-democratic countries like China, who have taken the lead. But just because government doesn’t take the lead doesn’t mean it’s not going to happen. The poster boy for wind energy is Georgetown, TX—which has a Republican mayor and is a conservative town. It’s a Trump town. But the whole town

is 100 percent renewable.

This is not a liberal or conservative agenda. This is the human agenda. When people stop for a minute and look at the solutions for what they are themselves, they're not political. They're actually about energy, food, water, housing, costs, etc. About safety, human health. People vote with their dollars for what protects them, their family, their children, for what serves them.

In this book, we don't make people wrong. We don't demonize. It's about the future. Nobody is right about the future. It's about having some humility and the capacity to learn and listen. The problem isn't Congress. It's our conversations—how we talk to each other.

Because most of the news we get is about the corruption, ignorance, and perfidy of human beings in power, it obscures how extraordinary we are. We wanted to bring a different message—we're actually really good people.

Green American/Tracy: Going back a bit, I loved what you said about global warming being an invitation. It's a whole new mindset that's very empowering.

Paul Hawken: Generally, we think of global warming as happening to us. We screwed up in the past, and we're still screwing up. There's an implied guilt of individuals and shaming of companies.

But we need to ask ourselves this question: Is global warming happening to us or for us? If it's happening to you, you're the victim and disempowered. You probably will fight or think that way. Or be angry. Or be resigned.

Or you can think about it happening for us, for you. This Earth is a system—beautiful, miraculous, intricate, extraordinarily sacred. When the weather changes, there's feedback. Anytime you ignore feedback from a system, the system perishes. Global warming is feedback. It's actually a gift. It's an offering. It's a gentle nudge.

Okay, it doesn't feel very gentle. But if you step back, it's a slight variation in global temperatures. Addressing it is a pathway to transformation, creating a far better civilization than the one we live in now. Far kinder, more compassionate, more inventive, cleaner, restorative.

Once you think of it as for you, you can take 100 percent responsibility. It's totally liberating to be the person who is going to address and solve something. The point is that it invites creativity, imagination, celebration. It invites you to be an extraordinary human being. It's also about knowing that you can't do it alone.

I've had the same editor for 25 years. I adore my editor, and he adores me. And my publisher, Penguin Random House, was hesitant to publish the book because climate books do not sell. The concern was that it's another book about what global warming is and how fast it's getting worse, that is was too expensive, a full-color book with 100 percent post-consumer waste paper. The concern was that they were going to get stuck with these books. The reason it's out now is because the publisher at Penguin, Katherine Court, said to her people, "If we don't publish this book, why are we here?"

It became a bestseller its first week. It went into its seventh printing in six months. The last printing was 31,000 copies—we're printing more copies than when we started.

What it tells us is that people want to do something. We want to know what to do, and we want to do it together.

Green American/Tracy: So, if I'm wondering what to do to support Drawdown, where do I start?

Paul Hawken: Do whatever is important to you on an individual level. What we're seeing is people getting together in different ways: They're coming together to help us research data—we have experts and organizations from universities around the world.

People want to game-ify it for kids, so they learn how to reverse global warming. There's been tremendous curriculum development by educators, K-12 and college.

Cities and local communities are organizing Project Drawdown action plans. There's Drawdown Marin, Drawdown Nova Scotia. Faith communities are putting together groups. People are doing TV shows, and there's a documentary film in the works.

We're working with people who are making solution accelerators, developing platforms and products that are leading us to drawdown and beyond.

Then there are impact investors and family funds who are working together to seek out investments—where should we and shouldn't we put our money to achieve drawdown.

What lights you up? Where do you go wow? Maybe it's educating girls or literacy overall. Wherever it is, that's where you're understood, respected, where you have friends, and you can start there.



CAPMAN Vincent / Getty Images

While the 100 Project Drawdown climate solutions are all technologies available now and scalable, the researchers also included “coming attractions,” or technologies that are currently in development. One of those technologies is smart highways. The Wattway solar road, pictured above and developed in France, is made of solar tiles that adhere to existing roadways to produce electricity. A 10-by-20-foot section can supply the electricity requirements for an average French home.

Drawdown Solutions

A closer look at Project Drawdown's top ten (of 100) solutions to get to drawdown—the point where greenhouse-gas levels in the atmosphere start to decline.



Unsplash / Dmitry Anikin

Paul Hawken and the Project Drawdown experts thought they knew what to expect when they modeled and ranked 80 solutions that could reverse global warming. But the data had some surprises in store.

Most prominently was that even when the solutions are modeled in terms of what they call a “Plausible Scenario”—a conservative measure of projected solution implementation that is “reasonable yet optimistic”—society still makes great strides toward achieving drawdown, the point where greenhouse-gas levels in the atmosphere begin to decline.

Together, all 80 reduce or sequester carbon by 1,051 gigatons by 2050 in the Plausible Scenario. Using the scenario that gets us to drawdown—which requires ramping up the solutions a bit more than the conservative measure, particularly renewable energy—they reduce or sequester carbon by 1,442 gigatons by 2050.

Below are the top ten solutions, ranked in terms of emissions reduction potential over a 30-year period. For the other 90 solutions, we highly recommend you read *Drawdown: the Most Comprehensive Plan Ever Proposed to Reverse Global Warming* (Penguin Books, 2017), edited by Paul Hawken.

—the Green America editors

I. Refrigerant Management

The problem: Every refrigerator, supermarket case, and air conditioner contains chemical refrigerants that absorb and release heat, making it possible to chill food and keep buildings and vehicles cool. Refrigerants, specifically chlorofluorocarbons (CFCs) and hydrochlorofluorocarbons (HCFCs), were once key culprits in depleting the stratospheric ozone layer, which is essential for absorbing the sun's ultraviolet radiation. Thanks to the 1987 Montreal Protocol on

Substances that Deplete the Ozone Layer, CFCs and HCFCs have been phased out of use.

It took two short years from the discovery of the gaping hole over the Antarctic for the global community to adopt a legally mandated course of action. Now, three decades later, the ozone layer is beginning to heal.

Refrigerants continue to cause planetary trouble, however. Huge volumes of CFCs and HCFCs remain in circulation, retaining their potential for ozone damage. Their replacement chemicals, primarily hydrofluorocarbons (HFCs), have minimal deleterious effect on the ozone layer, but their capacity to warm the atmosphere is 1,000 to 9,000 times greater than that of carbon dioxide, depending on their exact chemical composition.

Solutions in progress: In October 2016, officials from more than 170 countries gathered in Kigali, Rwanda, to negotiate a deal to address the problem of HFCs. Despite challenging global politics, they reached a remarkable agreement. Through an amendment to the Montreal Protocol, the world will begin phasing HFCs out of use, starting with high-income countries in 2019 and then expanding to low-income countries—some in 2024, others in 2028. HFC substitutes are already on the market, including natural refrigerants such as propane and ammonia.

Unlike the Paris Climate Agreement, the Kigali deal is mandatory, with specific targets and timetables.

Work to be done: The process of phasing out HFCs will unfold over many years, and they will persist in kitchens and condensing units in the meantime. According to the Lawrence Berkeley National Laboratory, 700 million air conditioning units will have come online worldwide by 2030.

Refrigerants currently cause emissions throughout their life cycles, but 90 percent of emissions happen at disposal. After being carefully removed and stored, refrigerants can be purified for reuse or transformed into other chemicals that do not cause warming.

The Kigali Accord ensures a step change is coming, and other practices focused on existing stocks could reduce HFC emissions further.

IMPACT

Project Drawdown analysis includes emissions reductions that can be achieved through the management and destruction of refrigerants already in circulation.

Greenhouse gas (GHG) reduction (Plausible Scenario): 89.74 gigatons (GT) of reduced CO₂-equivalent (CO₂-e—the common measure for all greenhouse gases) by 2050.

GHG reduction (Drawdown Scenario—requires greater refrigerant management): 96.49 gigatons of reduced CO₂-e by 2050.

Cost (Plausible Scenario): Data too variable to be determined.

Savings (Plausible Scenario): The costs to establish and operate recovery, destruction, and leak avoidance outweigh the financial benefit: -\$902.8 billion net savings.

Green America resources: Get tips on reducing your need for air conditioning and saving energy at home in our article, “Ten Easiest Ways to Cut Your Energy Use in Half,” at greenamerica.org/CutEnergyUse.

2. Wind Turbines (Onshore)

The problem: Fossil fuels sidelined zero-emission wind energy during the mid-twentieth century.

Wind energy has its challenges. The weather is not the same everywhere. The variable nature of wind means there are times when turbines are not turning. Critics argue that turbines are noisy, aesthetically unpleasant, and at times deadly to bats and migrating birds.

Another impediment to wind power is inequitable government subsidies. The International Monetary Fund estimates that the fossil-fuel industry received more than \$5.3 trillion worldwide in direct and indirect subsidies in 2015. In comparison, the US wind-energy industry has received \$12.3 billion in direct subsidies since 2000.

Solutions in progress: Today, 314,000 wind turbines supply 3.7 percent of global electricity. It will soon be much more. In 2015, a record 63 gigawatts of wind power were installed around the world, despite a dramatic drop in fossil-fuel prices. In many locales, wind is either competitive with or less expensive than coal-generated electricity.

In the US, the wind-energy potential of just three states—Kansas, North Dakota, and Texas—would be sufficient to meet electricity demand from coast to coast.

Current technologies make it easier to overcome fluctuations in supply and demand. Interconnected grids can shuttle power to where it is needed. Newer turbine designs address concerns over bird and bat deaths with slower-turning blades and siting practices to avoid migration paths.

Ongoing cost reductions will soon make wind energy the least expensive source of installed electricity capacity, perhaps within a decade.

Work to be done: The ways and means for the United States to be fossil-fuel- and energy-independent are here. What is often missing is political will and leadership.

On the policy side, energy portfolio standards can mandate a share of renewable generation. Grants, loans, and tax incentives can encourage construction of more wind capacity and ongoing innovation.

Wind energy is part of a system. Investment in energy storage, transmission infrastructure, and distributed generation is essential to its growth. For the world, the decision is simple: Invest in the future or in the past.

IMPACT

An increase in onshore wind from 3 to 4 percent of world electricity use to 21.6 percent could result in:

GHG gas reduction (Plausible Scenario): 84.6 GT of reduced CO₂ by 2050.

GHG reduction (Drawdown Scenario—requires greater wind-energy increase): 146.5 GT of reduced CO₂ by 2050.

Cost (Plausible Scenario): \$1.2 trillion, though costs are falling annually and could deliver more savings.

Savings (Plausible Scenario): Onshore wind turbines can deliver a net savings of \$7.4 trillion over three decades of operation.

Green America resources: Green America’s Divest/Invest campaign encourages people to divest from the top 200 fossil-fuel companies and reinvest in sustainability: greenamerica.org/fossilfree/.

3. Reduced Food Waste

The problem: A third of the food raised or prepared does not make it from farm or factory to fork. That number is startling, especially when paired with this one: Hunger is a condition of life for nearly 800 million people worldwide. And this one: The food we waste contributes 4.4 gigatons of CO₂-equivalent into the atmosphere each year—roughly eight percent of total anthropogenic greenhouse-gas emissions.

In places where income is low and infrastructure is weak, food loss is typically unintended and structural in nature—bad roads, lack of refrigeration or storage facilities, poor equipment or packaging, a challenging combination of heat and humidity. Wastage occurs earlier in the supply chain, rotting on farms or spoiling during storage or distribution.

In regions of higher income, unintentional losses tend to be minimal; willful food waste dominates farther along the supply chain. Retailers reject food based on bumps, bruises, coloring—aesthetic objections of all sorts. Other times, they simply order or serve too much, lest they risk shortages or unhappy customers.

Similarly, consumers spurn imperfect spuds in the produce section, overestimate how many meals they will cook in a week, toss out milk that has not gone bad, or forget about leftover lasagna in the back of the fridge.

Basic laws of supply and demand also play a role. If a crop is unprofitable to harvest, it will be left in the field. And if a product is too expensive for consumers to purchase, it will idle in the storeroom.

Regardless of the reason, the outcome is the same. Producing uneaten food squanders a whole host of resources—seeds, water, energy, land, fertilizer, hours of labor, financial capital—and generates greenhouse gases at every stage—including methane when organic matter lands in the global rubbish bin.

Solutions in progress: The United Nations' Sustainable Development Goals call for halving per capita global food waste at the retail and consumer levels by 2030, as well as reducing food losses along production and supply chains.

Work to be done: The interventions that can address key waste

points in the food chain are numerous and varied. In lower-income countries, improving infrastructure for storage, processing, and transportation is essential. Strengthening communication and coordination between producers and buyers is also paramount for keeping food from falling through the cracks. Given the world's many smallholder farmers, producer organizations can help with planning, logistics, and closing capacity gaps.

In higher-income regions, major interventions are needed at the retail and consumer levels. Most important is to preempt food waste before it happens, for greatest reduction of upstream emissions, followed by reallocation of unwanted food.

Standardizing date labeling on food packages is an essential step. Currently, "sell by" or "best before" dates and the like are largely unregulated designations, indicating when food should taste best. Though not focused on safety, these markers often confuse consumers about expiration.

Education is another powerful tool, including campaigns celebrating "ugly" produce and public feasts made from nearly wasted food.

National goals and policies can encourage widespread change, as well.

IMPACT

If the world reduces its food waste by 2050, it would see the following:

GHG reduction (Plausible Scenario): 70.53 GT of reduced CO₂-e by 2050.

GHG reduction (Drawdown Scenario—requires greater food waste reduction): 83.03 GT of reduced CO₂-e by 2050.

Cost (Plausible Scenario): Too variable to be determined.

Savings (Plausible Scenario): Too variable to be determined.

Green America resources: Get ideas from our "Tackling Food Waste" issue of the *Green American*, online at greenamerica.org/FoodWaste/.



courtesy of Candle Cafe

A vegan dessert from Candle Cafe, a vegan, local, and organic restaurant in New York City that also offers frozen vegan meals and vegan cookbooks.

4. Adoption of a Plant-Rich Diet

The problem: The Western diet comes with a steep climate price tag. The most conservative estimates suggest that raising livestock accounts for nearly 15 percent of global greenhouse gases emitted each year; the most comprehensive assessments of direct and indirect emissions say more than 50 percent.

Outside of innovative, carbon-sequestering managed-grazing practices described in another section of *Drawdown*, the production of meat and dairy contributes many more emissions than growing their sprouted counterparts—vegetables, fruits, grains, and legumes.

Ruminants such as cows are the most prolific offenders, generating the potent greenhouse gas methane as they digest their food. In addition, agricultural land use and associated energy consumption to grow livestock feed produce carbon dioxide emissions, while manure and fertilizers emit nitrous oxide. If cattle were their own nation, they would be the world's third-largest emitter of greenhouse gases.

Overconsumption of animal protein also comes at a steep cost to human health. Eating too much of it can lead to certain cancers, strokes, and heart disease. Increased morbidity and health care costs go hand in hand.

Solutions in progress: With billions of people dining multiple times a day, imagine how many opportunities exist to turn the tables. It is possible to eat well, in terms of both nutrition and pleasure, while eating lower on the food chain and thereby lowering emissions.

Work to be done: A groundbreaking 2016 study from the University of Oxford modeled the climate, health, and economic benefits of a worldwide transition to plant-based diets between now and 2050. Business-as-usual emissions could be reduced by as much as 70 percent through adopting a vegan diet and 63 percent for a vegetarian diet (which includes cheese, milk, and eggs). The model also calculates a reduction in global mortality of six to ten percent.

The case for a plant-rich diet is robust. That said, bringing about dietary change is not simple because eating is profoundly personal and cultural. For individuals to give up meat in favor of options lower on the food chain, those options should be available, visible, and tempting.

Meat substitutes made from plants are a key way to minimize disruption of established ways of cooking and eating. Between rapidly improving products, research at top universities, venture-capital investment, and mounting consumer interest, experts expect markets for non-meats to grow rapidly.

Beyond promoting “reducitarianism,” if not vegetarianism, it is also necessary to reframe meat as a delicacy, rather than a staple. First and foremost, that means ending price-distorting government subsidies, such as those benefiting the US livestock industry. Debunking protein myths and amplifying the health benefits of plant-rich diets can also encourage individuals to change their eating patterns.

IMPACT

If the world reduces its meat consumption by 2050, it would see the following:

GHG reduction (Plausible Scenario): 66.11 GT of reduced CO₂-e by 2050.

GHG reduction (Drawdown Scenario—requires further reduction of meat consumption): 78.65 GT of reduced CO₂-e by 2050.

Cost (Plausible Scenario): Too variable to be determined.

Savings (Plausible Scenario): Too variable to be determined.

Green America resources: Read about how the world could eat less meat and the impacts it could have in our “Don’t Have a Cow” issue of the *Green American* at greenamerica.org/DontHaveACow.

5. Tropical Forest Restoration

The problem: In recent decades, tropical forests—those located within 23.5 degrees north or south of the equator—have suffered extensive clearing, fragmentation, degradation, and depletion of flora and fauna. Once blanketing 12 percent of the world’s land masses, they now cover just five percent.

When we lose forests, primarily to agricultural expansion or human



BIOSPHOTO / Alamy

Sustainable forest management in Indonesia. At least 751 million acres of land in the tropics could be restored to intact forests, reducing 62.1 gigatons of CO₂.

settlement, carbon dioxide discharges into the atmosphere. Tropical forest loss alone is responsible for 16 to 19 percent of greenhouse-gas emissions caused by human activity.

Solutions in progress: Restoration of tropical forests, both passive and intentional, is now a growing trend. As forest ecosystems come back to life, trees, soil, leaf litter, and other vegetation absorb and hold carbon, taking it out of global-warming rotation.

In 2011, the Bonn Challenge set an ambitious target of restoring 370 million acres of forest worldwide by 2020. The 2014 New York Declaration on Forests affirmed that aim and added a cumulative target of 865 million acres restored globally by 2030. Should the world accomplish that goal, a total of 12 to 33 gigatons of CO₂ would be removed from the atmosphere and become terrestrial once again.

Work to be done: “More than 4.9 billion acres [of forests] worldwide offer opportunities for restoration—an area larger than South America,” a team of researchers from the World Resources Institute reports. Three-quarters of that land would be best suited to a “mosaic” forest-restoration approach, blending forests, trees, and agricultural land uses. Up to 1.2 billion acres are ripe for full restoration of large forests with dense canopy cover. The opportunities are enormous, and the majority of it lies in tropical regions. In a median time of 66 years, tropical forests can recover 90 percent of the biomass that old-growth landscapes contain.

Given the interconnectedness of people and forests, a particular framework for restoration has emerged: forest landscape restoration. The approach, proposed by the United Nations Food and Agriculture Organization, means “regarding the landscape as an integrated whole ... looking at different land uses together, their connections, interactions, and a mosaic of [restoration] interventions.”

It means there is no single formula for forest restoration. Making restoration a collaborative process can ensure it is done with and for local communities, and that root causes of forest damage are addressed.

The bulk of restoration opportunities lies primarily within low-in-

come countries in tropical regions. Those countries cannot manage the level of investment required, nor should they, since the benefits of restoration provide value and a service to all. The relevant stakeholders are the entire human race, and some bear greater responsibility for the problem of climate change than others.

Because forest restoration is such a potent solution, commitments and funding need to be a global priority. And because restoration efforts have ranged from success to failure, we need to analyze why, scale best practices, and eliminate those that do not work.

Initiatives need to respect land rights and tenure, especially those of Indigenous people.

IMPACT

In theory, 751 million acres of degraded land in the tropics could be restored to continuous, intact forest. Project Drawdown's Plausible Scenario assumes restoration could occur on 435 million acres, resulting in:

GHG reduction (Plausible Scenario): 61.2 GT of reduced CO₂ by 2050.

GHG reduction (Drawdown Scenario—requires more restoration): 89 GT of reduced CO₂ by 2050.

Cost (Plausible Scenario): Data too variable to be determined.

Savings (Plausible Scenario): Data too variable to be determined.

Green America resources: Green America's Better Paper Project protects forests around the world by moving paper use to recycled or online. BetterPaper.org.



U. Roberto Romano / Goodweave

Sunita was once forced to weave carpets and perform domestic work from 4 a.m. late into the night. Now, she attends school through GoodWeave's education program. GoodWeave rescues child weavers from carpet looms in South Asia and invests in their education and rehabilitation. It also certifies carpets and looms as being free from child labor.

6. Educating Girls

The problem: Today, more than 130 million girls are denied the fundamental right to attend school and lay a foundation for their lives. The situation is most dire in secondary classrooms.

Economic barriers include lack of family funds for school fees and uniforms, as well as prioritizing the more immediate benefits of having girls fetch water or firewood, or work a market stall or a plot of land.

Cultural barriers encompass traditional beliefs that girls should tend the home rather than learn to read and write, should be married off at a young age, and, when resources are slim, should be skipped over so boys can be sent to school instead.

Schools that are farther afield put girls at risk of gender-based violence on their way to and from, while other dangers and discomforts are present at school itself. Disability, pregnancy, childbirth, and female genital mutilation also can be obstacles.

The education gap also matters for global warming. According to the Brookings Institution, "The difference between a woman with no years of schooling and with 12 years of schooling is almost four to five children per woman." Women with more years of education have fewer, healthier children and actively manage their own reproductive health.

In the poorest countries, per capita greenhouse-gas emissions are low. From one-tenth of a ton of carbon dioxide per person in Madagascar to 1.8 tons in India, per-capita emissions in lower-income countries are a fraction of the US rate of 18 tons per person per year. Nevertheless, changes in fertility rates in those countries would have multiple benefits for girls and women, families, communities, and society.

Solution in progress: Nobel laureate and girls' education activist Malala Yousafzai has famously said, "One child, one teacher, one book, and one pen can change the world." An enormous body of evidence supports her conviction. For starters, educated girls realize higher wages and greater upward mobility, contributing to economic growth. Their rates of maternal mortality drop, as do mortality rates of their babies. They are less likely to marry as children or against their will. They have lower incidence of HIV/AIDS and malaria. Their agricultural plots are more productive and their families better nourished. They are more empowered at home, at work, and in society.

Education is the most powerful lever available for breaking the cycle of intergenerational poverty, while mitigating emissions by curbing population growth.

Education also shores up resilience to climate change impacts. For example, a 2013 study found that educating girls "is the single most important social and economic factor associated with a reduction in vulnerability to natural disasters." This decreased vulnerability also extends to their children, families, and the elderly.

[Editor's note: Increasing women's involvement in the energy sector also leads to "more effective clean-energy initiatives, greater returns on investment in clean energy, and expanded emissions-reduction opportunities, according to the International Union for the Conservation of Nature.]

Work to be done: In 2011, the journal *Science* published a demographic analysis of the impact of girls' education on population growth. It details a "fast track" scenario, based on South Korea's actual climb from one of the least to one of the most educated countries in the world. If all nations adopted a similar rate and achieved 100 percent enrollment of girls in primary and secondary school by 2050, there would be 843 million fewer people worldwide than if current enrollment rates sustain.



Kenya has made significant gains in education, with more than 80 percent of all boys and girls currently enrolled in primary schools, and 50 percent of boys and girls in secondary schools. Poverty is the main reason for low enrollment, and boys receive priority for higher education when there are financial constraints.

courtesy of Project Drawdown

The encyclopedic book *What Works in Girls' Education* maps out seven areas of interconnected interventions: 1) Make school affordable. 2) Help girls overcome health barriers. 3) Reduce the time and distance to get to school. 4) Make schools more girl-friendly. For example, offer child-care programs for mothers. 5) Improve school quality. 6) Increase community engagement. 7) Sustain girls' education during emergencies. For example, establish schools in refugee camps.

IMPACT

Because educating girls has an important impact on family planning (#7), Project Drawdown allocated 50 percent of total potential emissions reduction to each solution.

GHG reduction (Plausible Scenario): 59.6 GT of reduced CO₂ by 2050.

GHG reduction (Drawdown Scenario—requires helping more girls attend school): 59.6 GT of reduced CO₂ by 2050.

Cost (Plausible Scenario): By closing an annual financing gap of \$39 billion, universal education in low- and lower-middle-income countries could be achieved.

Savings (Plausible Scenario): The return on investing in girls is incalculable.

Learn more: Green America's Fair Trade and End Smartphone Sweatshops programs promote solutions that raise family income, get children out of factories and fields, and allow more children to go to school. Visit FairTradeAction.org and greenamerica.org/end-smartphone-sweatshops/.

7. Family Planning

The problem: Securing the fundamental right to voluntary, high-quality family-planning services, so women can have children by choice rather than chance and can plan their family size and spacing, is a matter of autonomy and dignity. 225 million women in lower-income countries say they want the ability to choose whether and when to become pregnant but lack the necessary access to contraception—resulting in some 74 million

unwanted pregnancies each year. The need persists in some high-income countries as well, including the US, where 45 percent of pregnancies are unintended.

Challenges to expanding access to family planning range from basic supply of affordable and culturally appropriate contraception to education about sex and reproduction; from faraway health centers to hostile attitudes of medical providers; from social and religious norms to sexual partners' opposition to using birth control.

Currently, the world faces a \$5.3 billion funding shortfall for providing the access to reproductive health care that women say they want to have.

After being silent on the topic of family planning for more than 25 years, the UN Intergovernmental Panel on Climate Change included access to reproductive health services in its 2014 synthesis report and pointed to population growth as an important factor in greenhouse-gas concentrations. (See #6 for statistics on per capita emissions.) Growing evidence suggests that family planning has the additional benefit of building resilience—helping communities and countries better cope with and adapt to inevitable changes brought by global warming.

Solutions in progress: The success stories in family planning are striking. Iran put a program into place in the early 1990s that has been touted as among the most successful such efforts in history. Completely voluntary, it involved religious leaders, educated the public, and provided free access to contraception. As a result, fertility rates halved in just one decade.

In Bangladesh, average birth rates fell from six children in the 1980s to two now, as the door-to-door approach pioneered in the Matlab hospital spread across the country: female health workers providing basic care for women and children where they live.

Family planning requires social reinforcement—for example, the radio and television soap operas now used in many places to shift perceptions of what is “normal” or “right.”

Work to be done: Honoring the dignity of women and children through family planning is not about centralized governments forcing the birth rate down—or up through natalist policies. Nor is it about agencies or activists in rich countries, where emissions are highest, telling people elsewhere to stop having children. It is most essentially about freedom and opportunity for women and the recognition of basic human rights.

Currently, family-planning programs receive just one percent of all overseas development assistance. That number could double—a moral move that happens to have meaning for the planet.

IMPACT

Because educating girls (#6) has an important impact on family planning, Project Drawdown allocated 50 percent of total potential emissions reduction to each solution.

GHG reduction (Plausible Scenario): 59.6 GT of reduced CO₂ by 2050.

GHG reduction (Drawdown Scenario—requires providing more women with family-planning access): 59.6 GT of reduced CO₂ by 2050.

Cost & savings (Plausible Scenario): Inappropriate to monetize a human right.

Green America resources: Green America's Fair Trade and Clean Electronics programs support solutions that help women earn their own incomes and determine their own futures. FairTradeAction.org and CenterForSustainabilitySolutions.org/clean-electronics/.

8. Solar Farms

The problem: The era of fossil fuels is over, and the only question is when the new era of clean energy will be upon us. Solar photovoltaics are only two percent of the global electricity mix at present.

Solutions in progress: Solar farms are large-scale arrays of hundreds, thousands, or hundreds of thousands, or, in some cases, millions of panels that achieve generating capacity in the tens or hundreds of megawatts. These solar farms operate at utility scale, more like conventional power plants in the amount of electricity they produce.

The first solar photovoltaic (PV) farms went up in the early 1980s. Now, these utility-scale installations account for 65 percent of additions to solar PV capacity around the world.

If Ukrainian officials have their way, Chernobyl, the site of a mass nuclear meltdown in 1986, will house a 1-gigawatt solar farm, which would be one of the world's largest.



courtesy of OCI Solar Power (OCISolarPower.com)

OCI Solar Power's 60-acre Alamo 3 solar farm in Converse, TX, generates 5.5 megawatts (AC) of power for nearly 1,240 homes.

Public investment, tax incentives, technology evolution, and brute manufacturing force have chipped away at the cost of creating PV, bringing it down to 65 cents per watt today. The decline in price has always outpaced predictions, and drops will continue. Informed predictions about the cost and growth of solar PV indicate that it will soon become the least expensive energy in the world. It is already the fastest growing.

Compared to rooftop solar, solar farms enjoy lower installation costs per watt, and their efficacy in translating sunlight into electricity is higher. When their panels rotate to make the most of the sun's rays, generation can improve by 40 percent or more.

Work to be done: No matter where solar panels are placed, they are subject to the diurnal and variable nature of solar radiation and its misalignment with electricity use, peaking midday while demand peaks a few hours later. That is why, as solar generation continues to grow, so should complementary renewables that are constant, such as geothermal, and that have rhythms different from the sun, such as wind, which tends to pick up at night.

Energy storage and more flexible grids that can manage the variability of production from PV farms will also be integral to solar's success.

The International Renewable Energy Agency already credits 220 million to 330 million tons of annual CO₂ savings to solar PV. Could solar rise from two percent of the global electricity mix to meet 20 percent of global energy needs by 2027, as some University of Oxford researchers calculate? Thanks to complementary government interventions and market progress, there are many promising signs.

IMPACT

Utility-scale solar is currently 0.4 percent of global electricity generation. Project Drawdown assumes it will grow to ten percent.

GHG reduction (Plausible Scenario): 36.9 GT of reduced CO₂ by 2050.

GHG reduction (Drawdown Scenario—assumes higher growth): 64.6 GT of reduced CO₂ by 2050.

Cost (Plausible Scenario): -\$80.6 billion. (Solar farms are cheaper to install than fossil-fuel alternatives, so there's actually a savings on implementation.)

Savings (Plausible Scenario): \$5.02 trillion in net savings.

Green America resources: Green America's Solar Catalyst and Solar Circle programs have played a major role in accelerating solar in the US and abroad. Our new campaigns put pressure on AT&T, Verizon, and Amazon (see p. 13) to power their massive servers with clean energy. Read more at greenamerica.org/fight-dirty-energy/.

9. Silvopasture

The problem: In Brazil and elsewhere, headlines condemn ranching as a driver of mass deforestation and attendant climate change. Cattle and other ruminants require 30 to 45 percent of the world's arable land, and livestock produce roughly one-fifth of greenhouse gas emissions.

Solutions in progress: Conventional wisdom says cows and trees do not belong together. The practice of silvopasture challenges this assumption of mutual exclusivity and could help shape a new era for

the acreage dedicated to livestock and their food.

From the Latin for “forest” and “grazing,” silvopasture is just that: the integration of trees and pasture or forage into a single system for raising livestock, from cattle and sheep to deer and ducks. Rather than seeing trees as a weed to be removed, silvopasture integrates them into a sustainable and symbiotic system. Silvopasture is currently practiced on 351 million acres of land globally.

The *dehesa* system of silvopasture, famous for the *jamón ibérico* (Iberian ham) it yields, has been cultivated on the Iberian Peninsula for more than 4,500 years. More recently, silvopasture has taken root in Central America, thanks to the work of champions such as the Center for Research in Sustainable Systems of Agriculture, based in Cali, Colombia. In many places in the US and Canada, livestock and trees can be found intermingling.

That intermingling takes a variety of forms. Trees may be clustered, evenly spaced, or used as living fencing.

Animals may graze in grassy alleys between rows of arboreal growth. Most silvopastoral systems are similar in spacing to a savanna ecosystem. They can be created by planting trees in open pasture, letting those that sprout mature, or by thinning a woodland or plantation canopy to allow for forage growth.

Soil is the other essential component—and key to the potential silvopasture has for mitigating climate change. Silvopastoral systems sequester carbon in both the biomass above ground and the soil below. Pastures that are strewn or crisscrossed with trees sequester five to ten times as much carbon as those of the same size that are treeless.

Moreover, because the livestock yield on a silvopasture plot is higher, it may curtail the need for additional pasture space and thus help avoid deforestation and subsequent carbon emissions.

Some studies show that ruminants can better digest silvopastoral forage, emitting lower amounts of methane in the process.

From a financial and risk perspective, silvopasture is useful for its diversification. Livestock, trees, and any additional forestry products, such as nuts, fruit, mushrooms, and maple syrup, all come of age and generate income on different time horizons. Because the land is diversely productive, farmers are better insulated from financial risk due to weather events.

Silvopasture can also cut farmers’ costs by reducing the need for feed, fertilizer, and herbicides. Because the integration of trees into grazing lands enhances soil fertility and moisture, farmers find themselves with healthier, more productive land over time.

Work to be done: Though the advantages of silvopasture are clear, its growth has been limited by both practical and cultural factors. These systems are more expensive to establish, requiring higher up-front costs in addition to the necessary technical expertise. There is less incentive to plant trees and protect them where pastures are plentiful, fire poses a risk, or land ownership is unclear.

Layered on these challenges is the stubborn belief that trees and pasture are not compatible—that trees inhibit the growth of pasture fodder rather than enrich it. Farmers may ridicule one another for shifting to an alternate approach.

These social impediments make peer-to-peer engagement and direct experience of silvopasture’s benefits key accelerants. To address economic obstacles, international organizations such as the World Bank and NGOs such as the Nature Conservancy are making loans to enable silvopasture installation—loans a typical bank would not provide.



A silvopasture field in Sweden, combining pastureland with climate-cooling trees.

Bo Jansson / Alamy

As the impacts of global warming progress, silvopasture can help farmers and their livestock adapt to erratic weather. Trees create cooler microclimates and more protective environments, and can moderate water availability. Therein lies the climatic win-win of silvopasture.

IMPACT

Project Drawdown estimates adoption of silvopasture expanding to 554 million acres by 2050 out of 2.7 billion theoretically suitable:

GHG reduction (Plausible Scenario): 31.19 GT of reduced CO₂-e by 2050.

GHG reduction (Drawdown Scenario—requires higher rate of adoption): 47.5 GT of reduced CO₂-e by 2050.

Cost (Plausible Scenario): \$41.6 billion net cost.

Savings (Plausible Scenario): \$699.4 billion net savings.

Learn more: Green America’s Re(Store) It! and Carbon Farming programs are accelerating the shift to regenerative agriculture, including silvopasture practices: greenamerica.org/restore-it/ and centerforsustainabilitysolutions.org/carbonfarming/.

10. Rooftop Solar

The problem: The era of fossil fuels is over, and the only question is when the new era of clean energy will be upon us. Solar photovoltaics are only two percent of the global electricity mix at present.

Solutions in progress: Solar photovoltaics (PV) have seen exponential growth over the past decade. In 2015, distributed systems of less than 100 kilowatts accounted for roughly 30 percent of solar PV capacity installed worldwide.

While the production of PV panels, like any manufacturing process, involves emissions, they generate electricity without emitting greenhouse gases or air pollution. When placed on a grid-connected roof, they produce energy at the site of consumption, avoiding the inevitable losses of grid transmission. They can help utilities meet broader demand by feeding unused electricity into the grid, especially in summer. This “net metering” arrangement can make solar panels financially feasible



courtesy of Project Drawdown

An Uros mother and her two daughters live on one of the 42 floating islands that the Uru constructed from totora reeds on Lake Titicaca. This solar panel replaced kerosene and provided electricity to the family for the first time.

for homeowners, offsetting the electricity consumers buy at night, when the sun is not shining.

Rooftop PV is accelerating access to affordable, clean electricity and thereby becoming a powerful tool for eliminating poverty. It is also creating jobs and energizing local economies. In Bangladesh alone, 3.6 million home solar systems have generated 115,000 direct jobs and 50,000 more downstream.

Roof modules are spreading around the world because of their affordability. Solar PV has benefited from a virtuous cycle of falling costs, driven by incentives to accelerate its development and implementation, economies of scale in manufacturing, advances in panel technology, and innovative approaches for end-user financing.

Small-scale PV already generates electricity more cheaply than it can be brought from the grid in some parts of the US, in many small island states, and in countries including Australia, Denmark, Germany, Italy, and Spain.

Work to be done: See #8 “Solar Farms.”

IMPACT

Project Drawdown estimates that rooftop solar PV can grow from .4 percent of electricity generation globally to 7 percent by 2050.

Carbon reduction (Plausible Scenario): 24.6 GT of reduced CO₂ by 2050.

Carbon reduction (Drawdown Scenario—requires more solar rooftops): 43.10 GT of reduced CO₂ by 2050.

Cost (Plausible Scenario): \$453.1 billion net cost.

Savings (Plausible Scenario): \$3.46 trillion net savings.

Learn more: Join with your neighbors to drive down the costs of rooftop solar. Read our “Community Solar for All” issue of the *Green American* at greenamerica.org/magazine/growing-community-solar/.

—Adapted with permission from *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming* (Penguin Books, 2017), edited by Paul Hawken.

HOW GREEN AMERICA CAMPAIGNS STACK UP

We thought it would be fun to see where Green America’s climate-related campaigns stack up on the Project Drawdown top 100 climate-change solutions. The solutions are ranked by the amount of greenhouse gases they reduce by 2050 (see p. 15). Here’s how our efforts came out:

Climate Action: Growing Renewables: A big part of our Climate Action program aims to grow renewable energy generation in the US. In 2002, our Solar Catalyst project mapped out the future of solar power in the US. Today, Climate Action supports tax incentives for solar and wind, and helps investors move their money into companies coming up with climate solutions. We also developed the idea for Clean Energy Victory Bonds, which would allow individuals to invest in green energy for as little as \$25, through a government Treasury bond. *Ranking: Rooftop solar: #10, with 24.6 gigatons (GT) CO₂-equivalent (CO₂-e) reduced. Solar Farms: #8, with 36.9 GT reduced. Wind Turbines: #2, with 84.6 GT reduced.*

Re(Store) It! and Carbon Farming: These campaigns (see p. 11) aim to promote regenerative agriculture—through encouraging farmers to practice it, retailers to sell products farmed in this manner, and consumers to look for products grown through regenerative methods. *Ranking: Regenerative Agriculture is #11, with 23.14 GT of CO₂-e reduced.*

Better Paper Project: Our Better Paper Project aims to conserve the world’s forests by advocating for recycled paper use. Currently, we’re working with magazine publishers to switch them from virgin-pulp paper to paper with at least some recycled content—particularly *Smithsonian Magazine* and college and university alumni magazines. The Project’s new “Skip the Slip” campaign asks retailers to offer digital receipts and consumers to skip paper receipts. *Ranking: Recycling is #70, with 0.90 gigatons of CO₂-equivalent reduced. Saving tropical forests ranks #5 (see p. 23), and saving temperate forests ranks #12, with 22.61 GT of CO₂-e.*

Fair Trade: Our Fair Trade program empowers women and girls by increasing family income, allowing girls to go to school (see #6).

Green Living: Our website and publications are filled with practical articles on many of the Project Drawdown solutions, including the ones corresponding to our program areas mentioned above, as well as ride-sharing (#75), investing in women (#62), composting (#60), saving water (#46), buying an electric car (#26), eating less meat (#4), reducing food waste (#3), and more.

In addition, our “Climate Justice for All” issue of the *Green American* highlights leaders around the world who are working to reduce climate-change impacts to communities of color, who are often hardest hit by them.



Power to the People: Fueling the Revolution for Energy Justice

As we work toward Drawdown, it's critical to address the impacts of climate change in communities of color, which are often hit "first and worst." Jacqui Patterson, director of the NAACP's Environmental and Climate Justice program, says we all need to work toward energy justice for everyone in our communities.

People often ask why the NAACP, a civil rights organization, is working on energy. All they would have to do is visit the communities with whom I work every day to know why energy is one of the most universally impactful civil rights issues of our time.

We see energy as a civil rights issue when nationwide, 78 percent of African-American children live near a coal plant—with their emissions of mercury, arsenic, lead, sulfur dioxide, nitrogen oxide, and particulate matter. African-American children are three to five times more likely than white children to visit an emergency room due to an asthma attack and two to three times more likely to die of an asthma attack.

We see energy as a civil rights issue when the oil industry has numerous disasters from oil drilling from Exxon Valdez to the BP oil drilling disaster in the Gulf of Mexico. A couple of years ago there was an explosion of an oil train, which obliterated a section of a town in Quebec to such an extent that remains of several of the residents were never recovered as they were completely incinerated.

We see energy as civil rights issue when African-American communities and others put so much into their electricity bills but get so little out of it, with the chief output being the disproportionate pollution burden.

According to the American Association of Blacks in Energy, African Americans spend on average \$41 billion on energy, yet only hold 1.1 percent of energy jobs and gain less than .01 percent of the revenue from the energy sector. On average, African Americans also pay a higher proportion of their income on energy than the general population.

Meanwhile, the fossil-fuel industry uses its profits gained from the bills we pay to fight against safeguards for public health and well-being, with recent examples being suing the EPA for the Mercury and Air Toxics Rule and Clean Power Plan under the Clean Air Act, and Haliburton lobbying for an exemption for its fracking practices from the Safe Drinking Water Act.

When the fossil-fuel industry is using the very profits from the \$41 billion in extraction from our communities to then suppress the advancement of policies that safeguard and protect the very health and well-being of our communities, we see distributed generation of energy as an issue of democracy.

We as the NAACP have determined that it is critical that we



RosalreneBetancourt | | Alamy

shift away from an industry that is responsible for so much harm and transition to an energy-efficient, clean energy economy. We see this not only as a way to have clean air, clean water, and healthier communities, but we also see this as being intersectional with our economic justice and democracy agendas. We can build individual or community wealth through co-ownership of our energy infrastructure, as well as introduce new job/business opportunities for communities whose previous

relationship was largely extraction of income and receiving pollution in return.

For the African-American community alone, combined with strong institutions, savvy business entrepreneurs, skilled workers, promising students and more, not to mention untapped Latino, Indigenous, and Asian-American communities, the potential is vast, if we work smartly together! To that end, the NAACP recently launched Power to the People, a new campaign aimed at "fueling the revolution for energy justice."

"Energy justice is about ensuring our communities benefit fully from green jobs, clean air, and an energy-independent future," says Jo Ann Hardesty, president of the NAACP's branch in Portland.

The national campaign uplifts the work of the state and local branches of the NAACP who are fighting as frontline communities who are hit first and worst with energy injustice. Already, communities from Fairbanks, AK, to Alachua County, FL, are launching community solar projects. Communities in Maryland and Ohio are engaging in Community Energy Purchase Agreements. In Mississippi communities are working on democratizing their rural electric co-ops and increasing focus on energy efficiency and clean energy.

In the coming days and weeks, the NAACP will be releasing its Just Energy Policies Toolkit, hosting an Energy Justice Training in conjunction with the EPA Hearings on the Clean Power Plan, as well as hosting a Black Labor Convening on Energy Justice—all with an aim of strengthening and supporting local leadership in advancing a just and sustainable energy landscape rooted in principles of economic justice and true democracy.

To learn more about this work, visit our campaign: naacp.org/power-to-the-people/.

—Jacqui Patterson is the director of environmental and climate justice at the NAACP (naacp.org/issues/environmental-justice/.)

In It Together

Green America is an important resource to my husband and me during these very challenging political times. I recently got my sister, who is a high school science teacher, her own membership, and I share my publications with friends and family.

It sure seems like an uphill battle these days for social justice, but your expert research and interviews with fearless leaders give me hope! Thanks for fighting the good fight!

*Christy Hoekzema Banke
Cincinnati, OH*

No Back Forty

I just signed Green America's petition against the Back Forty Mine (Fall 2017 *Green American*). Your plea to do so is so very compelling that I'm writing to say thank you and to indicate my support.

I just looked at the HudBay Minerals website, and I found a commitment to move ahead and sell its 51 percent interest back to Aquila Resources.

*Margaret Stoner
Troy, NY*

TRACY: Thanks so much for your note and for taking action on the Back Forty Mine!

And thanks for checking out HudBay. According to Aquila Resources' 2017 investor report, while HudBay did sell its majority stock in Aquila (the company behind the Back Forty mine) back in 2013, as you note, it retained some of its holdings. HudBay still owns 13 percent of Aquila stock, which still makes it one of the top three outside Aquila shareholders.

Women and People of Color Rise Up

As our editorial team was getting ready to send this issue of the *Green American* to press, we were overjoyed to get the diversity news from the November elections. While Green America is nonpartisan, we couldn't help but cheer the number of women, LGBTQ candidates, and people of color who celebrated wins—some after facing hate from a subsection of voters and opposition party members. Here are three of my favorite stories:

Days before the elections in New Jersey, an unknown hate-monger distributed fliers around Hoboken that stated, "Don't let TERRORISM take over our town." It wasn't difficult to see who the flier was directed at—Sikh mayoral candidate Ravi Bhalla, who wears a turban as part of his spiritual practice. The Sikh community has unjustly been the target of terrorism accusations, racial profiling, and hate crimes around the country, including the 2012 shooting by a white-supremacist terrorist at a Sikh temple in Oak Creek, WI, which killed six people.

Bhalla became Hoboken's first Sikh mayor.

New Jersey's Atlantic County freeholder John Carman drew fire when he posted memes on Facebook mocking last January's Women's March. One showed a woman in the kitchen with the words, "Will the women's protest be over in time for them to cook dinner?" Carman was also spotted wearing a Confederate patch in the shape of New Jersey in October, which he called "a south Jersey rebel patch."

March participant Ashley Bennett saw the memes and got angry. So she showed up with several other women at Carman's office to protest his sexism. Then, even though she "never thought" she'd run for office, she went after Carman's county freeholder seat, condemning the "symbol of hatred" he wore during the campaign. And she won.

Finally, as mentioned on p. 5, Danica Roem just became the first transgender person elected to the Virginia House of Delegates. She unseated Bob Marshall, who campaigned on "conservative family values," called himself the state's "chief homophobe," and consistently referred to Roem using male pronouns. During his term in office, Marshall had also introduced a bill that would have made it illegal for transgender students to use the bathroom of their choice.

After her win, Roem went viral, after a reporter asked her about Marshall, with this gracious response: "I don't attack my constituents. Bob is my constituent now."

Our votes and our wallets have power. To help you take economic action against hate, we've put our Spring 2017 *Green American* online at greenamerica.org/ActionAgainstHate/. And we'll be bringing you more stories throughout the next year so we can all use our economic power to rise up together against injustice.

—Tracy Fernandez Rysavy, editor-in-chief



**TRACY
FERNANDEZ
RYSAVY**

Since we published our article on the mine ("The Back Forty Mine: Is It the Next Standing Rock?"), Aquila officially filed with the Michigan Dept. of Environmental Quality (DEQ) for its fourth and final permit to build the mine. In October, the DEQ responded with requests for further information from the company.

Community protests are still in full force, and, on November 6th, the Menominee Tribe, represented by the legal nonprofit Earthjustice, filed a 60-day notice of its intent to file a federal lawsuit under the Clean Water Act to protect the Menominee River and portions of its sacred traditional lands.

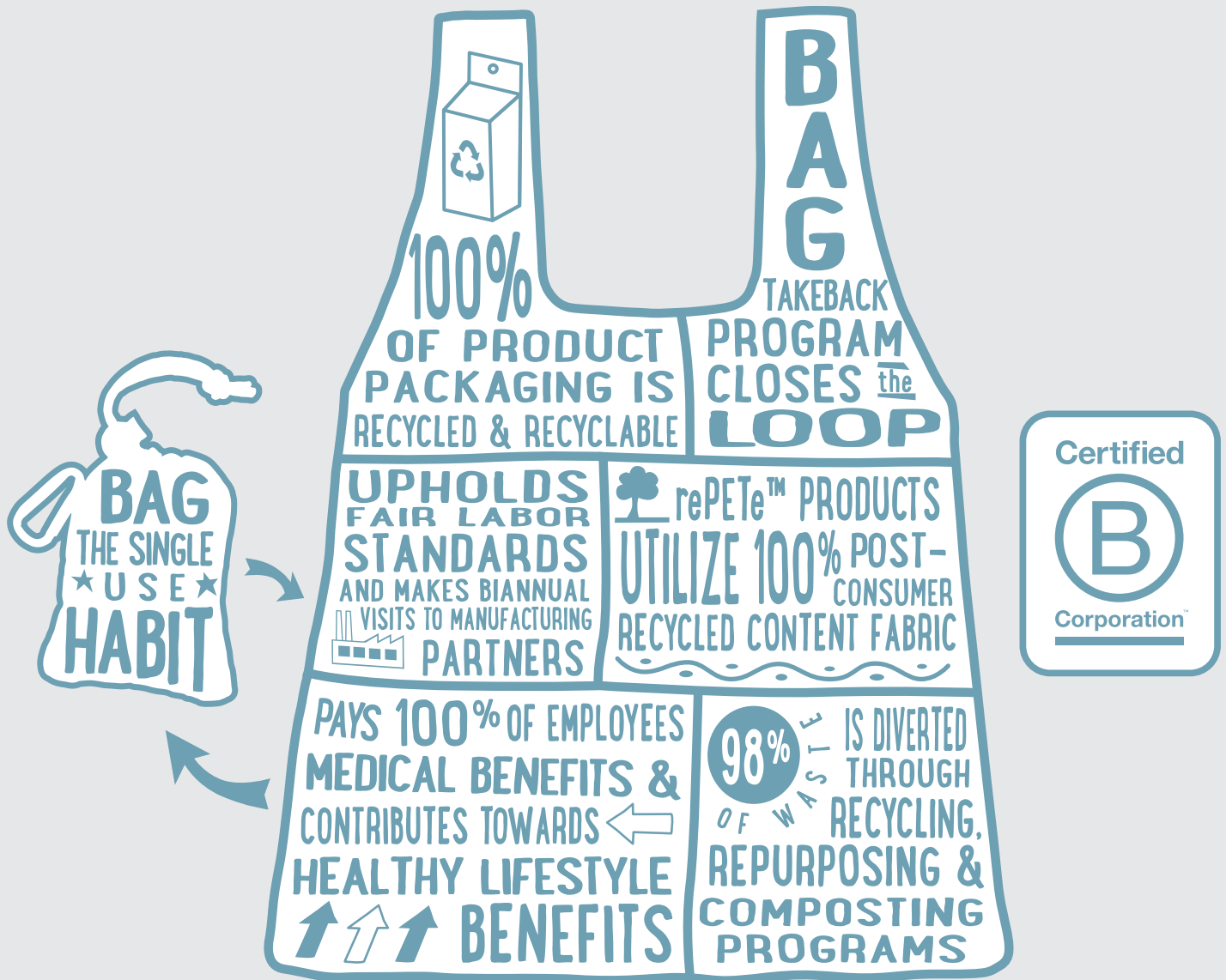
"The Tribe has made our opposition [to the mine] known to the company, the investors, the state and federal governments—yet our concerns have been ignored thus far," said Menominee Tribal Chair Gary Besaw in a statement. "This 60-day notice puts the federal government on notice that we expect meaningful consultation and federal regulatory agency action on this important issue. If we continue to be ignored ... we are prepared to pursue federal litigation."



Please send your letters to: Editors, Green America, 1612 K St. NW, Ste. 600, Washington, DC 20006.
Or e-mail tracy@greenamerica.org. Letters used in this column may be edited for length and clarity.
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