

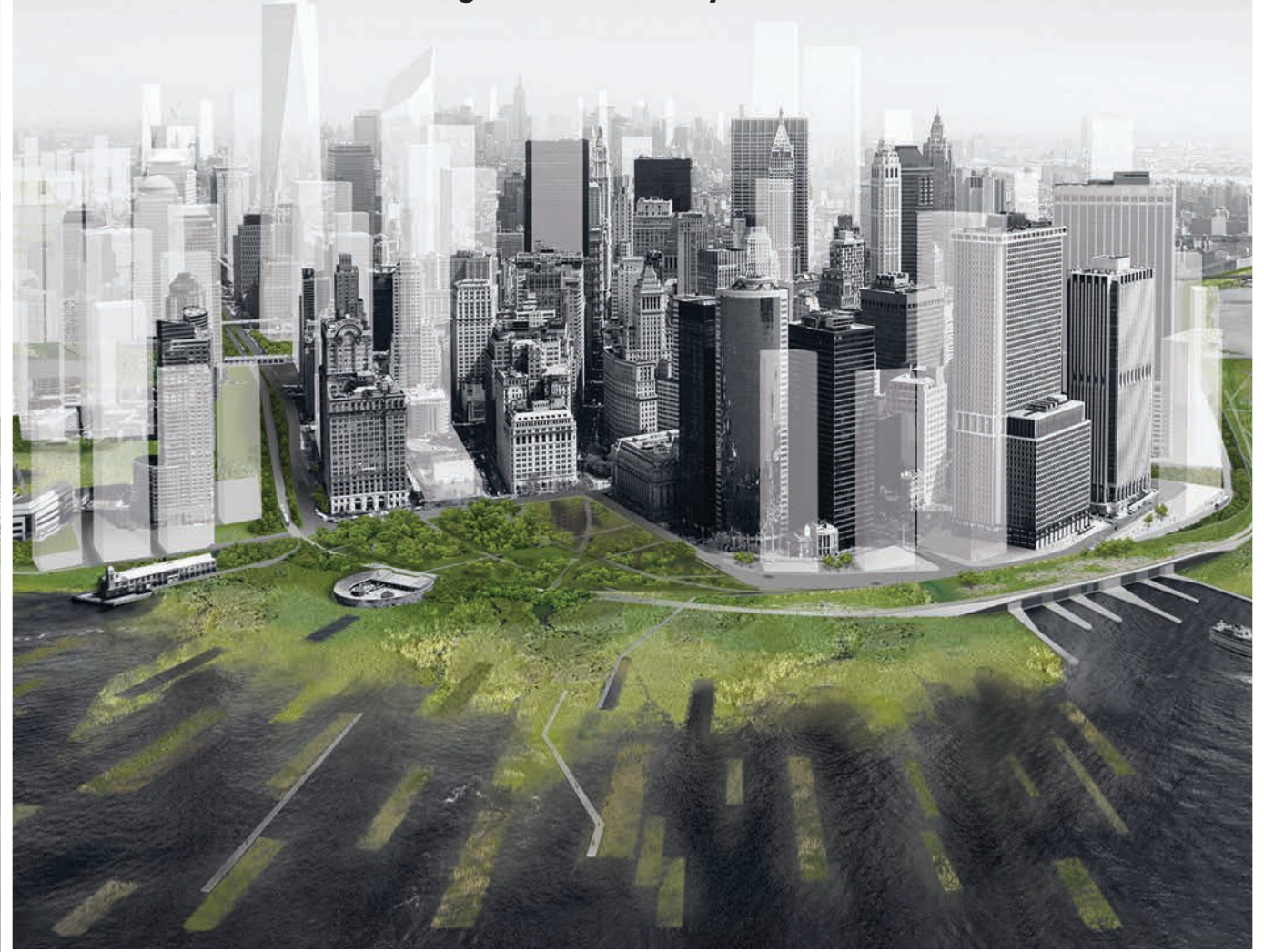
Solutions



Vol. 53, No. 4 / Fall 2022

Water, water everywhere

Climate change promises a stormier future. Ten years after Sandy, New York and New Jersey are still seeking innovative ways to live with water.



ALSO INSIDE: Rainforest survival guide | Internet lies | Clean trucks, clean air | Be a changemaker
PLUS Celebrating a historic climate win: What's next for the Inflation Reduction Act?

The Marine Mammal Protection Act turns 50

In 1972, public outrage over the slaughter of marine mammals — including hundreds of thousands of dolphins by commercial fishermen — led to the Marine Mammal Protection Act, which made it illegal to harass, capture or kill these animals. In 1977, the law helped EDF win a federal court ruling requiring the tuna industry to improve its operations to reduce dolphin deaths. Since its passage, the MMPA has been instrumental in helping many once-declining populations of marine mammals, including seals and sea lions, to recover.



A climate victory to celebrate



When President Biden was elected, *Solutions* ran the headline, “It’s a new day.” That promise has been realized. The recently enacted Inflation Reduction Act, with its \$369 billion in climate and clean energy investments, is the largest, most comprehensive climate legislation Congress has ever passed.

Independent analyses project that with the added reductions from this law the U.S. could reduce greenhouse emissions some 40% below 2005 levels by 2030 — approaching the president’s goal of halving emissions by 2030. By tackling domestic climate pollution, the U.S. enhances its credibility to lead in international climate negotiations.

Many worked for this victory. When negotiations stalled between Senate Majority Leader Chuck Schumer and West Virginia Senator Joe Manchin, EDF worked tirelessly to restart them. We marshaled economic experts who provided analysis to assure Senator Manchin that the bill would be anti-inflationary. In the days leading up to the agreement, I had the chance to have multiple meetings and conversations with Senators Manchin and Schumer to encourage them to stay the course.

The law will create more than 9 million clean energy and manufacturing jobs, positioning the U.S. economy to compete in a \$23 trillion global clean energy market. It will also bolster energy security and it includes the most extensive amendments to the Clean Air Act since 1990, reinforcing the Environmental Protection Agency’s long-standing responsibility to address climate pollution while giving the agency new tools and funding to protect communities.

The law delivers \$60 billion toward environmental justice, an unprecedented amount, though more is needed to address the pollution burden borne by under-served communities. It also creates a nationwide program to reduce methane emissions and includes more than \$135 billion in tax credits to ramp up solar and wind power (saving households \$500 a year). In addition, tax incentives will jump start adoption of electric vehicles, and \$2.6 billion will aid resilience efforts among imperiled coastal communities (*see cover story, p. 8*).

The bill is not perfect; legislation never is. Our next job is to ensure that all \$369 billion is spent strategically and equitably, maximizing the carbon reductions of every dollar (*see p. 6*).

Last summer, a number of EDF’s extraordinary young interns asked me why they should have hope for the future. Some asked if I would advise them to bring children into the world. These are troubling questions. The IRA sends a clear message that there is hope, that the future can be better. This should re-energize all of us — young and old — as we build a vital Earth for everyone.

Fred Krupp
EDF President

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On the cover: The Architecture Research Office and DLANDstudio worked together to reimagine lower Manhattan in response to rising sea levels. The image proposes a park within the city and a network of absorptive green surfaces or “sponge streets.” Transforming the streetscape and waterfront creates an entirely new relationship between the city and nature.

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Solutions

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EDF’s mission is to preserve the natural systems on which all life depends. Guided by science and economics, we find practical and lasting solutions to the most serious environmental problems.
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FIELD NOTES

EPA weighing stronger limits on fine particle pollution

Tens of millions of Americans breathe so-called fine particle pollution — microscopic airborne bits of material such as dust, soot and drops of liquid with diameters smaller than a human hair. These deadly particles, primarily products of burning fossil fuels, easily bypass the body's defenses to burrow deep into the lungs and even enter the bloodstream.

"Fine particle air pollution is responsible for roughly 110,000 deaths in the U.S. each year from heart attacks, strokes, diabetes and respiratory diseases," says Ananya Roy, an EDF health scientist. "And those harms are not distributed equally."

A recent EDF report found that fine particle pollution is most highly concentrated in Black, Hispanic and low-income communities. In fact, Black seniors are three times more likely to die from exposure to it than any other group.

This is no coincidence. In urban America, discriminatory zoning policies and political underrepresentation typically placed highways, power plants and other sources of pollution closer to Black, Hispanic and low-income communities. This inequity is further aggravated by poor housing, limited access to health care and other factors that contribute to increased sickness and suffering caused by air pollution.

The good news is that the U.S. Environmental Protection Agency is reviewing the standard. EDF scientists estimate that reducing allowable concentrations of fine particle pollution to eight micrograms per cubic meter — down from 12 micrograms — would save at least 19,600 lives per year and reduce incidents of heart and lung disease.

"Stronger national protections against fine particle pollution have significant health benefits for all of us and take a step toward fighting environmental inequity," says Roy.



What's in your air? The Air Tracker knows.



EDF scientists have unveiled Air Tracker, an online tool that lets users see in real-time what's in their air and — importantly — the likely source of any pollution. Air Tracker is currently available in Houston, Salt Lake City and Pittsburgh, with more cities to come. "Standard air quality monitors can't tell us what's causing pollution," says EDF scientist Tammy Thompson who created the tool. "With Air Tracker, we're able to see likely sources of pollution hotspots, which is especially helpful in cities where a variety of emitters contribute to overall air quality."

Learn more Visit globalcleanair.org/air-tracker

Otterly amazing!



GETTY

For the first time in a century, a river otter was spotted in the Detroit River — a sighting made by Eric Ste Marie, a marine ecologist studying at Windsor University in Windsor, Ontario. Other wild species, including beaver, lake sturgeon, peregrine falcons and bald eagles have also returned to the once heavily-polluted river, which separates the cities of Detroit and Windsor.



GETTY

80%

A national survey found that more than 80% of Americans had glyphosate, the world's most widely used herbicide, in their urine. The World Health Organization lists glyphosate as a probable human carcinogen. The EPA says it poses no human risk, but a federal court recently ordered the agency to review the evidence that led to that determination.

Source: Centers for Disease Control and Prevention



45%

A U.N. report found that wild species — animals, edible plants, trees for firewood — are crucial to the survival of almost half the world's population, some 3.5 billion people.

Source: U.N.



GETTY

Tamsin Weatherly

Executive Assistant to the Executive Director, Europe

With two “executives” in your job title, what do you actually do?

I support the Executive Director and our boards on accelerating Europe’s transition to a zero-emissions economy.

What drew you to EDF?

I like the way EDF uses science and economics to find solutions tailored to each country it works in.

What did you do before joining us?

Many things! I worked for a circus school in London, certified as a mountain guide and trained as a yoga teacher in India. Later, in Costa Rica, I led young people on 19-day treks across the country and taught yoga at a retreat in the middle of a jungle.

How have your travels changed your outlook?

Living in remote villages in Colombia, the Philippines and Myanmar opened my eyes to the ways people really can live in harmony with nature.

Did that alter how you live?

Absolutely! I try to live lightly on the land. That’s why my home is a narrowboat moored in a sustainable community on Regents Canal in London.



26,000

The years since the oceans were as acidic as they were last year. Ocean acidification happens as the water absorbs more carbon dioxide.

Source: WMO



GETTY

Fighting back on phthalates

Health and environmental organizations have vowed to fight on after the U.S. Food and Drug Administration denied petitions brought by EDF and a number of allies to ban ortho-phthalates, chemicals linked to infertility, birth defects, developmental delays – and, according to a major new study, premature birth – from food handling equipment and packaging.

In hopes of reversing the agency’s decision, EDF requested a public hearing, noting that the same chemicals contaminating food in the U.S. are already banned by the FDA from children’s toys. “It’s outrageous that the FDA decided chemicals banned from children’s toys should remain in the food we eat,” said Tom Neltner, EDF’s director for chemical safety. “Families deserve better.”



JUSTIN SETTERFIELD/GETTY IMAGES

Greening the Winter Olympics

During the six years of planning prior to the Winter Olympic Games in Beijing last February, EDF worked with China to help minimize the Games’ environmental and climate impacts. In recognition of its efforts, EDF recently received a letter from the Beijing Olympics Organizing

Committee, thanking us for helping it to develop carbon offset criteria for the Games, including those for international aviation emissions. The success of the Olympics, the letter said, was “contributed [to] by the whole society and the active participation of EDF”

IN THE COURTS

EDF, joined by five other leading environmental groups, is defending federal fuel economy standards, finalized last spring, that raise the average efficiency of passenger vehicles to 49 miles per gallon by 2026 — up from 39 mpg in model year 2021. The government estimates that the standards will keep hundreds of millions of metric tons of climate pollution out of the air and significantly reduce unhealthy, smog-forming pollution, as well as saving Americans \$1,280 on gas over the life of their cars. An oil and gas industry trade association and a coalition of anti-environment attorneys general are challenging the standards in federal court.

Can't stop, won't stop

The Inflation Reduction Act is a huge victory for the climate. Here's what comes next.

By Vanessa Glavinskas

IN AUGUST, CONGRESS PASSED THE BIGGEST PACKAGE OF CLIMATE INVESTMENTS in U.S. history. The Inflation Reduction Act of 2022 includes \$369 billion in funding to tackle climate change and brings America closer to President Biden's goal of cutting climate pollution in half from 2005 levels by 2030.

More than a year ago, EDF's political affairs team made this bill their top priority — and they never gave up — even when Capitol Hill negotiations were perplexing and sometimes frustrating.

“Work on this bill is best described as a year-long roller coaster,” says Elizabeth Gore, who leads EDF's political affairs team. “It is amazing that when we got to the end of the legislative process we had such a transformational and ambitious bill. And just like a roller coaster, this process was exciting and exhilarating — and occasionally a little nauseating!”

In the end, Gore says it was a combination of preparation and persistence that pushed the bill across the finish line. “EDF staff and others across the community and across Capitol Hill worked on various provisions for months and months,” Gore says. “So when the window of opportunity opened, the legislative language was ready to go and the hard negotiations had already happened.”

While EDF staff persevered on the Hill, EDF Action mobilized you, our members, to call and write to your leaders. Looking back on several critical weeks in July, there's little doubt that public pressure helped get this legislation through the Senate.

Now the law needs to deliver results on the ground, and EDF experts are rolling up their sleeves to ensure it's a success. We outline a few key efforts on the next page.

“It is amazing that when we got to the end of the legislative process we had such a transformational and ambitious bill.”

— Elizabeth Gore, EDF's senior vice president of political affairs



MOM'S CLEAN AIR FORCE



Measuring methane

Several years ago, EDF-led research revealed a startling fact: Methane pollution from the oil and gas industry was 60% higher than the U.S. Environmental Protection Agency had estimated. Given that about 30% of today's global warming is driven by methane, including easy-to-fix oil and gas equipment leaks, this was a big deal.

"Most of the focus had been on carbon dioxide," says EDF climate scientist Tianyi Sun. "But methane has more than 80 times the warming power of carbon dioxide during the first 20 years it's in the atmosphere."

So EDF began a crusade to help both the public and policymakers understand this other, potent greenhouse gas. "Because cutting methane is the fastest way to slow the rate of global warming right now," Sun explains.

Over the past decade that has meant

meetings with policymakers and corporate leaders, TED talks by EDF experts, and eventually several victories, including critical new EPA rules to cut oil and gas methane pollution.

Now, methane is getting its moment once again — in the Inflation Reduction Act — which creates a program to tackle methane pollution. Administered by the EPA, the Methane Emission Reduction Program charges oil and gas operators for wasteful methane emissions. The fee starts at \$900 per metric ton in 2024, giving companies a big incentive to reduce methane pollution.

EDF's work to track and measure methane pollution will help the new rules have teeth. And EDF subsidiary MethaneSAT will soon launch a satellite that will provide free data for regulators and companies to track pollution.

Support for states and communities

Both the Inflation Reduction Act and the 2021 infrastructure bill will pump billions of federal dollars into environmental efforts across the U.S. while prioritizing environmental justice. How and where that money gets spent is critical, says Steve Cochran, who leads EDF's state affairs department.

"Our federal and state staff will work together to make the system work, because the reality is that the federal government is not set up to address nuance state by state," he explains. Frontline communities can also apply directly to federal agencies for support.

Cochran has been hiring directors across 13 states who will act as conduits to bring in EDF's expertise on climate

issues in consultation with communities. "EDF is a multifaceted, highly knowledgeable organization, so our state directors will tap into that expertise and bring the assets of EDF to bear locally," Cochran explains.

For example, in Cochran's home state of Louisiana, hundreds of thousands of oil and gas wells have been drilled, thousands of which are abandoned and need to be plugged and cleaned up.

"These abandoned wells are basically methane leaks that need to be fixed, and EDF has really good people in the business of doing that," he says. "It's a perfect match: EDF's expertise, the states' needs, and the new federal funding," Cochran adds. "Now we just have to get it done."

Clean trucks

Transportation is the biggest source of U.S. climate pollution, which makes the Inflation Reduction Act's investment in clean vehicles a huge step forward.

Along with tax credits, the legislation allocates billions toward transportation electrification, including \$3 billion for the U.S. Postal Service to electrify its fleet of more than 200,000 vehicles, \$3 billion to reduce pollution at ports and \$1 billion toward clean school and transit buses, garbage trucks and other heavy-duty vehicles.

Electrifying trucks and buses is a key way to fight climate change because even though they only make up about 10% of vehicles on U.S. roads, they are responsible for 30% of the climate-disrupting emissions.

So far, nearly 200 U.S. fleets have deployed or committed to deploy zero-emission trucks, including industry leaders like FedEx and PepsiCo, but upfront costs are still prohibitive for many others.

"The costs are still coming down on this technology," says Jason Mathers, who leads EDF's zero-emission trucks initiative, which works with manufacturers, fleet owners, investors and policymakers to get dirty trucks off the road. "So it's really important to have federal investment to help ramp up the market."

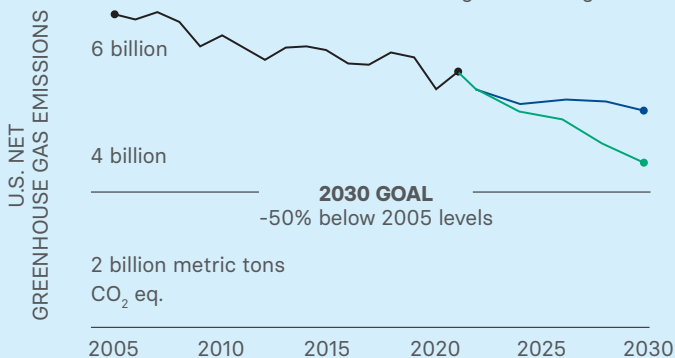
The Inflation Reduction Act, which EDF worked to ensure would cover medium- and heavy-duty trucks as well as light-duty vehicles, provides that investment boost.

To further support fleet owners transitioning to zero-emission vehicles, EDF also launched ElectricFleet.org, an online guide of best practices when converting to EVs for fleets large and small.

"We have gone from zero-emission trucks being sold in ones and twos to having orders of thousands today," Mathers says, adding that EDF is working to get the EPA to recognize this momentum and set much stricter pollution standards. "But the pace of improvement that we've already seen, coupled with this new federal investment, gives me a lot of hope that we are on our way to transitioning all U.S. trucks and buses to zero emissions."

CLEAR SKIES AHEAD

The Inflation Reduction Act brings the U.S. within reach of its 2030 greenhouse gas emission reduction goals.



Current policies
-26%

With IRA enacted
-41%

Source: REPEAT Project, projected results reflect modeling based on the July 27, 2022, draft legislation

Sandy, ten years after

The devastating storm was a wake-up call for New York and New Jersey. A decade later, communities are bracing for the next hit.

By Shanti Menon



Superstorm Sandy swept New Jersey's Star Jet rollercoaster into the Atlantic Ocean.

GETTY



Shoreline parks, such as this one at Hunters Point South in Long Island City, help protect communities from storm surge.

SWA / BAISLEY PHOTO: DAVID LLOYD

FULL MOON. HIGH TIDE. THE WORST possible time for a 1,000-mile-wide hurricane — the biggest ever to rise up out of the Atlantic — to slam into a low-lying, densely populated archipelago. Yet that was the moment when a storm called Sandy sent a wall of Atlantic water surging toward the shores of New York City and the New Jersey coast.

On October 29, 2012, Sandy's epic storm surge topped 14 feet in lower Manhattan. It killed 44 people and caused \$19 billion in damages in New York City alone as homes, hospitals, sewer systems, subway tunnels and power stations flooded.

In Ocean Breeze, Staten Island, the violence of the water knocked down entire homes. Frank Moszczynski, a carpenter and head of his neighborhood civic association, waded through the flooded

streets after the storm, helping search for survivors. "The devastation was terrible," he says. "It was as bad as bad could be."

The shock of Sandy's destruction set into motion scores of flood resilience projects in New York and New Jersey. They range from multibillion dollar efforts to fend off water with concrete and steel, to lifting or buying out damaged homes in high-risk areas, to building what experts call green infrastructure — like parks and street trees — to hold stormwater. There's even a giant breakwater that will incorporate living oysters.

But 10 years after Sandy, progress has been scattershot. "We're nowhere near where we need to be," says Kate Boicourt, EDF's director of coastal resilience for New York and New Jersey. "Some communities are better protected and some are not. And we're still building in risky areas."

Our wetter future

Climate change is fueling more frequent and intense hurricanes, as well as rising sea levels and more intense downpours, all of which exacerbate flooding. Even today, millions of people in New York and New Jersey are affected each year by flood-related road closures, train delays and property damage.

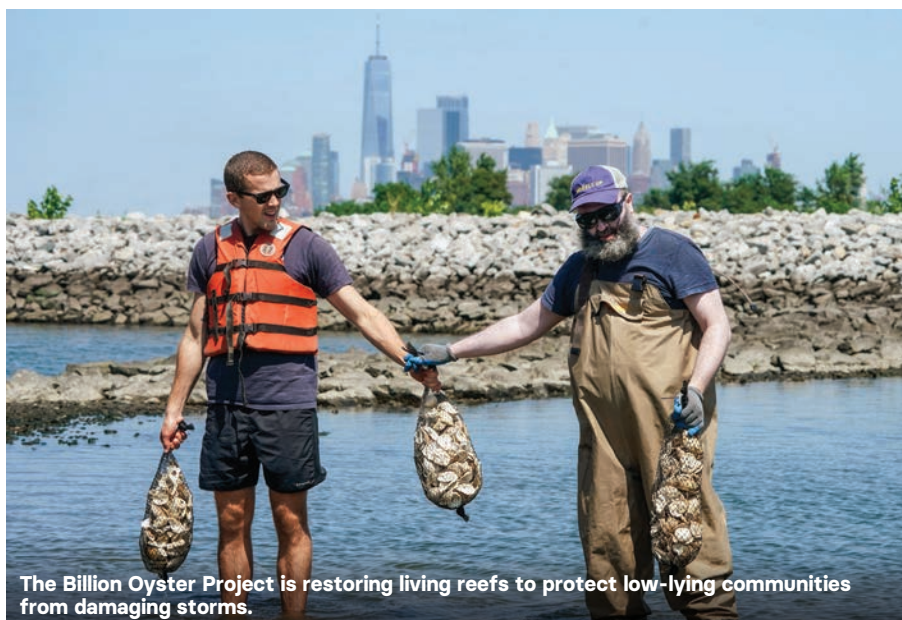
By 2050, sea levels in New York and New Jersey, home to 29 million people, are projected to rise by up to 2.5 feet. A quarter of New York City's land — home to one out of every ten city residents — has a one-in-four chance of flooding over the next 30 years.

Since Sandy, New York and New Jersey have been making big changes to protect against future flood damage. Transit systems and power stations have been fortified. New building codes were instituted. The city of Hoboken, New Jersey, is building a series of parks designed to hold hundreds of thousands of gallons of stormwater. In lower Manhattan, construction recently began on flood walls and elevated waterfront parks that can be sealed off with gates to protect the housing behind them.

Who's protected, who's not

But not everyone is safer. One ambitious 2019 proposal from the U.S. Army Corps of Engineers (*see sidebar, p. 11*) floated several ideas to manage storm surge, including an environmentally risky, \$119 billion, 6-mile-long gated barrier across the mouth of New York Harbor. Another concept, involving several smaller gates, would have left about half a million people in southern Brooklyn unprotected.

The proposals were met with skepticism from environmental groups and



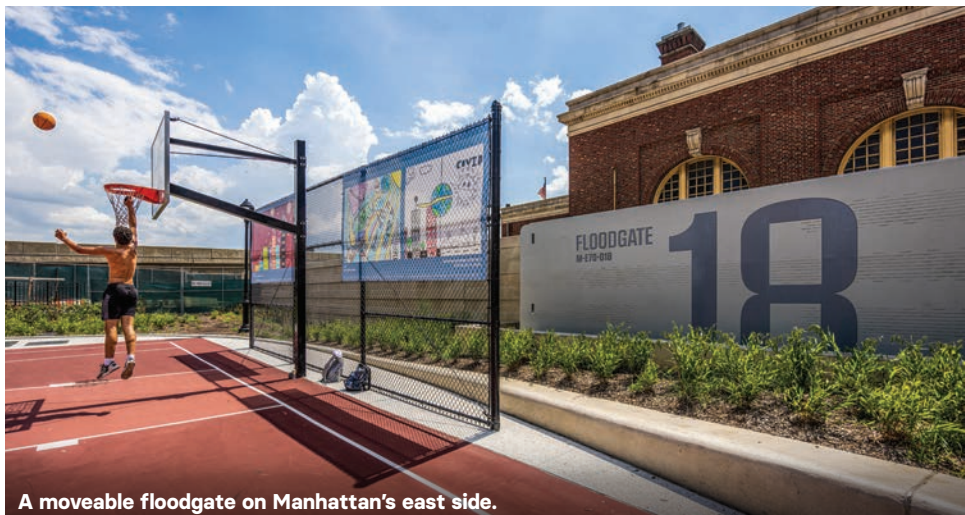
The Billion Oyster Project is restoring living reefs to protect low-lying communities from damaging storms.

DOUG BARNETT/APP VIA GETTY IMAGES



Coney Island activist Pamela Pettyjohn.

MOHAMMAD SHAHHOSSEINI



A moveable floodgate on Manhattan's east side.

MOHAMMAD SHAHHOSSEINI

many impacted communities. Pamela Pettyjohn lives in one such community in Coney Island. During Sandy, Pettyjohn watched her living room furniture float toward the ceiling, as floodwaters laden with chemicals and raw sewage burst through her foundation. A 6-foot-deep sinkhole opened up on her street, extending the length of her block.

“It looked like there was an earthquake,” she says.

Pettyjohn had flood insurance, but the payout covered less than half the cost of her repairs. Her aid from the Federal Emergency Management Agency totaled only \$128. Pettyjohn, a retiree, had to use all her savings and take on debt to rebuild. Yet today, while resilience projects take root in other parts of the city, and new highrises spring up in Coney Island, Pettyjohn's home is no more protected than it was 10 years ago. And she's still in debt.

“I worked all my life,” says Pettyjohn. “But one more storm and I'm homeless.”

Communities fight back

Seeing her neighborhood in despair after the storm, Pettyjohn launched the Coney Island Beautification Project, with a simple goal to plant cheerful flowers. But she quickly realized her community needed more than a mood boost — they needed to plan for the future. The group's mission evolved to include local environmental advocacy, including flood resilience.

“We're on the front line of storms,” says Pettyjohn. “If we're protected, then communities behind us are protected too.”

Along with EDF and others, CIBP has been urging the Army Corps to engage more with communities who understand

local flooding issues, and to consider more equitable and natural solutions such as oyster reefs or wetlands, which provide environmental benefits as well as flood protection.

Those efforts may have had some effect. At press time, the Corps had tentatively selected a concept that includes smaller sea gates and some as-yet unspecified measures on the shoreline, including in Coney Island.

Whether those will be walls, wetlands or something else remains unclear. And the Corps only considers storm surge, not other types of flooding, such as that caused by rainfall from Hurricane Ida, which drowned 11 people in basement apartments in Queens in 2021.

EDF, CIBP and others are continuing discussions with the Corps to address these issues.

Out of harm's way

After Sandy, New Jersey and New York used federal disaster funds to pursue an underused solution — voluntary buyouts. Each state purchased about 700 damaged properties in high-risk areas and limited future development on the sites.

After 40 years in his community, Moczynski of Ocean Breeze took the buyout and moved to higher ground. Geese now waddle through the empty streets of his old neighborhood. Herons flap lazily across the marshes.

“This place was like Mayberry,” he says. “We loved living here. But I didn't ever want to put my family in harm's way again.”

The majority of New York State's buyouts took place in Staten Island,

where studies of flood risk were already on record, and where several communities had access to information and resources to mobilize quickly and apply.

In Coney Island, Pettyjohn heard she could sell her property for redevelopment, but the details were thorny. And, she says, “They wanted us to move, but where would we go?”

Home economics

Affordable housing is often located in flood-prone areas, due in part to a history of racist housing policies. Low-income communities and communities of color already tend to be hardest hit by disasters and fare worse in recovery, as many lack insurance and savings. Yet disaster aid tends to flow to whiter and wealthier communities.



EDF's Kate Boicourt, left, with Cornell University's Linda Shi.

MOHAMMAD SHAHHOSSEINI

As increased flooding puts pressure on the housing market, these disparities could worsen, says Linda Shi of Cornell University, who studies climate impacts and adaptation in cities. “Those who can’t afford more protected areas are either going to be excluded or actively displaced from safe housing,” she says.

Shi is working with EDF and community partners to research how affordable housing in New York City is impacted by flood risk, and how best to protect residents. “The housing crisis and the climate crisis are intertwined,” says EDF’s Boicourt. “Cities can’t solve one without dealing with the other.”

EDF economist Carolyn Kousky is examining how to make disaster recovery more equitable. “Many forms of financial assistance take months to make their way to people, and that imposes hardships on the most vulnerable,” she says.

Kousky is working with the Center for NYC Neighborhoods and the NYC Mayor’s Office of Climate and Environmental Justice on a pilot insurance program to get funds to families in need faster. Parametric insurance, widely used in the developing world, delivers payouts at a predetermined trigger point, such as the height of floodwaters in a particular location. This eliminates the need for paperwork and a visit from an adjuster, so administrative costs are lower and benefits can be delivered quickly.

There’s also a bipartisan effort in Congress, supported by EDF, to reform the byzantine federal disaster relief process, which can take years to deliver aid

to communities — many of which lack the resources to apply and wait for funding. If passed, the legislation would vastly simplify the application process, making it easier for all communities to access funds.

A master plan

Ultimately, preparing for hurricanes and flooding will require a comprehensive plan that considers future climate impacts in all government decisions about what to build, how and where. EDF helped Louisiana develop the nation’s first coastal resilience master plan after Hurricane Katrina, and has successfully advocated for similar plans in Virginia and North Carolina.

New Jersey released its first coastal resilience plan in 2021. New York City will also create one, thanks to the advocacy of the Waterfront Alliance’s Rise to Resilience coalition, of which EDF, CIBP and others are a part. The coalition is now urging New York to create a coastal resilience plan for the state.

EDF is also educating voters in New York about a proposal for a \$4.2 billion environmental bond that will appear on ballots in November. The bond would dedicate more than \$1 billion to flood resilience, including buyouts, retrofits, wetland restoration and coastal rehabilitation.

No place in the world has hit upon the perfect solution to adapt to a future of more water; resilience will need to take many forms. But whatever solutions are tested in New York and New Jersey will be closely watched by the rest of the world.

“We have to figure this out,” says Boicourt. “This region is home to almost one-tenth the U.S. population. We are the economic engine of the nation. If we can’t make it here, can we make it anywhere?”

In Coney Island, Pettyjohn looks to the future with hope. “I would love for my neighborhood to become the classroom for other coastal communities to see, this is how you build, how you protect,” she says. “This is how you live with water.” ■

Take action Calling all New Yorkers! You can vote on the Environmental Bond Act on November 8. Learn more at EDF.org/NYBondAct.



THE BASICS

The Army Corps of Engineers

Are they the Army or engineers?

Both. The Corps is a branch of the U.S. Army that plans and executes major public engineering jobs around the world, such as dredging rivers and flood-control projects.

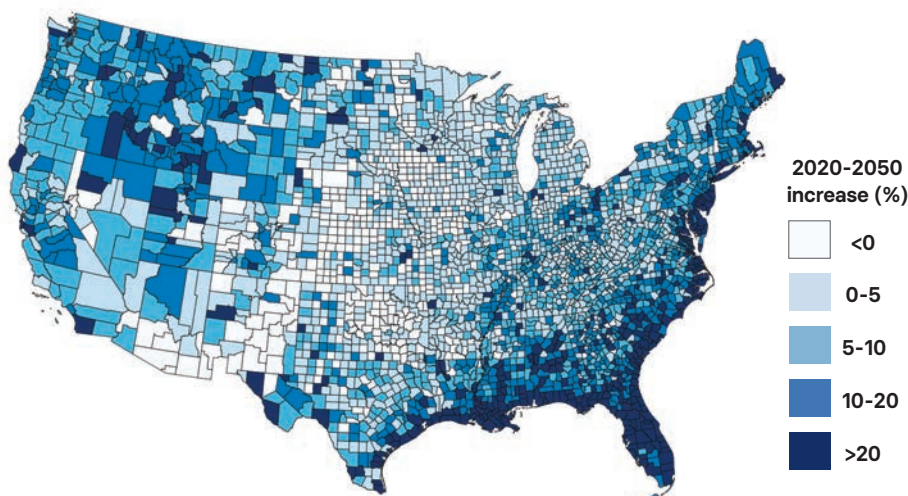
Friend or foe?

It’s complicated. The Corps has helped build flood protection for millions of people, but it has primarily focused on “gray” infrastructure projects, like sea walls, while natural infrastructure, like oyster reefs or marsh restoration — which can have economic, environmental and societal benefits — has taken a back seat. Also, the Corps’ traditional top-down, property-value-based approach can worsen inequities in flood risk and recovery.

Hope or despair?

There are encouraging signs. In 2021, after a campaign led by EDF and local groups, the Corps announced it would revise a flood management proposal in Miami to incorporate locally preferred, more equitable, nature-based solutions. In New York and New Jersey, the Corps’ new efforts to engage communities appear to be making headway. The Corps is still not well equipped, however, to address multiple flood hazards such as rainfall and higher tides. EDF is working with the Corps and Congress to help build this capacity.

FLOOD RISK ON THE RISE



Even with action to stabilize the climate, flood risk across the U.S. will increase about 25% by 2050.

Source: Wing et al, Nature Climate Change 2022

A survival guide for rainforests

IF YOU'VE EVER PAUSED TO CONSIDER whether it would actually do any real good to pay a little extra to offset your emissions from a flight, you understand the dilemma faced by companies around the world interested in the promise of carbon credits, but unsure of what they're actually paying for.

Carbon credits are the wonky term used to describe the way in which companies can pay to offset their carbon emissions, or supplement their reductions, by funding carbon-reducing projects, such as forest preservation, elsewhere. They are generally administered by private enterprises and quality varies.

"Not all carbon credits are created equal," explains Alex Hanafi, who leads

EDF's work on emissions cap-and-trade programs, legal issues in global climate negotiations, and environmental governance. "Companies really have to do their homework to figure out if what they're buying is going to have the desired environmental and social impact."

Now, a new initiative aims to bring some much needed clarity to those decisions when it comes to one of the most popular and important carbon credits out there — those that claim to protect and restore tropical forests.

The Tropical Forest Credit Integrity Guide for Companies, developed by a group of leading environmental NGOs, including EDF, Indigenous peoples' organizations and research institutions, lays

SUE CUNNINGHAM PHOTOGRAPHIC / ALAMY STOCK PHOTO

out a set of five recommendations designed to help businesses navigate the murky waters of forest carbon credits. The goal? To bolster demand for, and in turn supply of, "high-quality" forest carbon credits.

So what does the guide recommend for a company interested in protecting trees halfway around the world?

The guidance advises companies to choose carbon credits that prioritize protecting existing forests over planting new trees and to look for large-scale, coordinated programs over smaller projects. It also calls on companies to look for credits that demon-

strate high environmental quality, for example, having robust systems in place to monitor and verify that forests are actually being protected. And it says credits should include strong social safeguards such as ensuring local communities can play a true partnership role and receive an equitable share of the proceeds. It adds that companies should not use carbon credits as a substitute for efforts to decarbonize their own operations and supply chain.

Finally, the guidance recommends that companies align their carbon-cutting efforts with the goals of the Paris Climate Agreement and use systems of reporting and accounting for carbon reductions that are complementary to those of national governments, so the total climate impact is clear.

Last year, the world lost an area of tropical forests the size of Cuba. Forest loss and land use change accounts for almost one quarter of all global emissions. More than 1,500 companies — valued at \$11.5 trillion — have pledged to reduce their climate emissions to net zero. Many of these pledges will include a commitment to purchasing credits to fund forest preservation.

But they urgently need safeguards in place to ensure that the money delivers the climate benefits promised.

"We can't limit climate change to safer levels if we don't keep forests alive," says Hanafi. "And we can't do that at the scale and speed the climate crisis demands without the support of the private sector."

Over the next few months, the group will hammer out several important details within the guidance, such as how to ensure that promises to share benefits equally with local and Indigenous peoples are actually true.

In the meantime, Hanafi hopes the guidance will garner support from prominent companies with big climate pledges and that over time, the major standard-setting organizations that certify and issue carbon credits will incorporate these guidelines into their systems.

"If enough companies start demanding this sort of tropical forest carbon credit, the market will take the hint and this kind of quality credit will become the norm," says Hanafi.

Joanna Foster



High-quality carbon credits make local communities true partners.



THE WILSON LEGACY

This feature honors the memory of Robert W. Wilson, a long-time EDF supporter and champion of harnessing market forces to drive environmental progress. See edf.org/wilson

Information pollution

Lies about climate change are rampant on social media. Europe may have found a way to keep them in check.

ON SOCIAL MEDIA, LIES ABOUT climate change have misled millions and eroded trust in experts.

One study estimated that climate misinformation was viewed up to 1.36 million times every day on Facebook. On Twitter, suspected bots made up 25% of the tweets about climate change — often denying its reality or importance — after President Trump announced he would withdraw the U.S. from the Paris Agreement in 2017.

Yet social media companies have done relatively little to rein in disinformation about climate change — except for Pinterest, which, advised by EDF and its partners, stopped allowing content that denies the scientific consensus that climate change is happening and influenced by human activity.

Now, European regulators may force their hand.

“Humans wrote the code that amplifies disinformation, so humans can fix that code.”

— Michael Khoo, Climate Disinformation Coalition co-chair

In July, the European Parliament passed the Digital Services Act, a new law that requires technology companies to remove illegal and harmful content circulating online or face substantial fines. The act also requires companies that reach more than 45 million users to assess the societal risks (like climate change) that the design of their platforms exacerbate and demands more transparency. For example, social media platforms will have to reveal the algorithms they use to recommend content.

To enforce the law, the European Commission and national regulators will have new audit and inspection powers. And because fines will be imposed when harmful content circulating in Europe is not taken down, no matter where it originated, Europe's rules will force



RASIT AFDGAN/ANADOLU AGENCY VIA GETTY IMAGES

platforms to do a better job of monitoring harmful content globally.

The law, which goes into effect in 2024, also improves access to tech company data, making it easier for regulators, researchers and advocacy groups to hold social media companies accountable for the risks posed by the dissemination of illegal or harmful content, including disinformation.

“The Digital Services Act will cause global systems to be created,” says Friends of the Earth's Michael Khoo, who co-chairs the Climate Disinformation Coalition with EDF and the Union of Concerned Scientists. “From there, like any regulation, we can build forward.”

Europe's law is expected to influence the regulatory debate in other countries, notably the U.S., where lawmaker action has been stymied by industry lobbyists and concerns over infringing on free speech.

As a landmark, first-of-its-kind law, the Digital Services Act will start social media companies on a path toward real reform, Khoo says. And compared to the climate crisis, he sees disinformation as an easier problem to solve.

“Humans wrote the code that amplifies disinformation, so humans can fix that code,” Khoo says.

Vanessa Glavinskas

MEET THE TOXIC 10

A 2021 analysis found that nearly 70% of climate disinformation on Facebook came from just 10 accounts. These 10 accounts exploit social media's system of amplifying stories with a lot of shares, comments and likes by creating posts designed to provoke outrage and be reflexively shared.

- 1 Breitbart
- 2 The Western Journal
- 3 Newsmax
- 4 Townhall Media (founded by the ExxonMobil-funded Heritage Foundation)
- 5 Media Research Center (received funding from ExxonMobil)
- 6 The Washington Times
- 7 The Federalist Papers
- 8 The Daily Wire
- 9 Russian state media, via RT.com and Sputnik News
- 10 The Patriot Post, a secretive site whose writers use pseudonyms

Source: <https://counterhate.com>

Join the fight Combat misinformation online at edfaction.org/how-we-can-fight-misinformation.



In one hour, 500 trucks pass through one Newark intersection.

Kids are paying the price

By Shanti Menon

SIX MAJOR HIGHWAYS CROSS through the South Ward of Newark, New Jersey, creating a basketweave of ramps and overpasses in the neighborhood. Homes, schools and a senior center are steps away from roads lined with metal recycling facilities, warehouses, a waste transfer station, truck repair shops and factories. New Jersey's largest incinerator lies just to the north. Newark Airport and the port of Newark, two of the busiest transportation centers in the country, are next door.

And everywhere, there are trucks. Semis, flatbeds, tanks, 18-wheelers, dumps, car carriers, waste haulers and box trucks, you name it.

"We're surrounded," says Kim Gaddy, 58, a fourth-generation Newark resident.

An unequal burden

Air pollution has decreased in the U.S. over the past decade — but not everyone is breathing easier.

People of color, regardless of income, are exposed to higher levels of air pollution than the U.S. population as a whole. And children living in neighborhoods where thousands of trucks rumble through daily can face twice the risk of developing asthma from pollution exposure compared to kids in other parts of town.

Gaddy understands this scenario all too well. She and all her children have asthma. Her daughter Frankie was

diagnosed as a one-year-old in 2001, after Gaddy rushed the child to the hospital, coughing and gasping for air.

"I thought, I have got to do something," says Gaddy, then working in city politics with an ambition to become Newark's first female mayor. "No parent should have to see their child gasping for air."

One in 10 kids across all of Essex County, New Jersey, have asthma. But in Newark, the rate is one in four.

"When you have a high concentration of people who have lower socioeconomic status, suboptimal housing, who were born prematurely, whose parents have asthma, and then you surround them in this net of traffic — that's how you get this dynamic of respiratory illness," says Dr. Khalil Savary, a pediatric

pulmonologist at Rutgers University and Beth Israel Hospital in Newark.

Asthma is a leading cause of missed school days and absenteeism in Newark. "When kids miss school, parents miss work," Savary says. "They don't get promoted. They're more likely to get terminated. I see this regularly."

A countrywide blight

The story repeats itself in urban areas across the country. EDF research in the Bay Area has shown that kids in urban neighborhoods with heavy truck traffic face twice the pollution-related asthma risk compared to less-trafficked neighborhoods in the same city.

Maria Harris, an epidemiologist with EDF, has worked with partners to map similar patterns of inequality in Austin,

890,000

respiratory flare-ups and lost or restricted work days could be avoided every year by electrifying trucks and buses.

72 million

people in the U.S. live near truck freight routes, and they are more likely to be people of color and lower income.



PHOTO ILLUSTRATION BY TINK TANK STUDIO



TAMARA FLEMING PHOTOGRAPHY

Clean air campaigner Kim Gaddy.

Baltimore, Boston, Chicago, New York, Philadelphia and Washington, D.C.

“In cities across the country, we see that air pollution and asthma impacts are not evenly distributed,” says Harris. “Pollution hotspots are having a dramatic effect on kids’ health.”

Cleaner air, stronger lungs

Cleaning up diesel trucks and buses could cut asthma-inducing tailpipe pollution in half. EDF is working to speed up the transition to electric trucks, with a goal of having all new trucks sold nationwide in 2035 emit zero pollution.

We’re working with truck manufacturers, fleet owners such as FedEx, utilities and states to get more clean trucks on the road. Since 2017, nearly 200 fleets have purchased or committed to purchasing 166,000 electric trucks, an increase of 8,500%.

In 2021, New Jersey became the first eastern state to adopt California’s Advanced Clean Truck rule. It requires manufacturers to increase the number of clean trucks they sell in the state, reducing both air pollution and climate pollution.

The South Ward Environmental Alliance, which Gaddy founded in 2015, was one of several local groups that helped drive the change. Gaddy calls the rule a good first step, with one important caveat: “Communities like mine, with asthma and health issues, need zero-emission vehicles first.”

New Jersey is part of a coalition of 17 states, the District of Columbia and Quebec that have agreed on an action plan to achieve 30% zero-emission truck sales by 2030 and 100% no later than 2050.

EDF is working to guide states toward an even faster and fair transition, including

a targeted rollout of clean trucks that will reduce pollution in communities like the South Ward.

“We could not do this work without partners like Kim who provide a deeper understanding of community impacts,” says EDF’s Marilynn Marsh-Robinson, who works with diverse partners on energy issues. “Their experiences are essential to developing effective solutions.”

The EPA needs to do more

New research commissioned by EDF shows that eliminating pollution from about two-thirds of the trucks and buses on the road — including delivery vans, garbage trucks and box trucks — would result in 1,500 fewer premature deaths, 1,400 fewer hospital visits and 890,000 fewer respiratory flare-ups and lost or restricted work days each year.

This year, for the first time in 20 years, the EPA proposed strengthening pollution standards for these vehicles. But the proposal doesn’t go far enough, says EDF senior counsel Peter Zalzal. He is urging the EPA to lay the groundwork to make all heavy-duty trucks zero-emission by 2035.

The final rule will be issued at the end of 2022. Meanwhile, SWEA, EDF and others continue to advocate for state, city and company policies that put more zero-emission vehicles on the road now, prioritizing communities near ports, warehouses and other high-traffic areas.

“I would like to see a collaboration between business and communities centering on the health of communities,” says Gaddy. “If you protect health before profits, that’s a paradigm shift. We can’t change history, but we can create a healthier future.” ■

INSIDE Solutions

LIVE WEB EVENT

The science of pollution

Air quality monitors can tell us what’s in the air, but not where it came from. Now, EDF scientists have developed a tool to track air pollution to its source. Join our health experts to hear about how Air Tracker (see p.4) can help cities and communities tackle local air pollution that is threatening people’s health.

December 7, 2022 | 1-2 pm ET
Sign up at edf.org/InsideSolutions

You don’t have to have it all figured out to protect the environment.

Together we face the greatest challenge of our time: Climate change. Knowing we can count on your support through your will or trust has value beyond measure as we continue our fight today — and long into the future.

Contact EDF’s Planned Giving team to share your plans or learn about other ways to contribute.

Toll-free 1-877-677-7397
Legacy@edf.org
edf.org/legacy

What is blue carbon and

By Tom Clynes

Carbon that's captured and stored by the world's ocean and coastal ecosystems is known as blue carbon. Marine environments have absorbed about a third of human carbon emissions since the start of the Industrial Revolution. But as they are degraded or destroyed, they lose their ability to trap carbon and can release it into the atmosphere, accelerating climate change. EDF scientists are studying these processes in an effort to build the case for preservation.

Open oceans

The ocean collects and stores vast amounts of carbon in seabed sediment, vegetation, marine animals and the seawater itself. But warming waters and unsustainable exploitation can disrupt deep-water carbon cycles and release long-trapped gas back into the atmosphere.

Seaweed Marine forests of kelp and other seaweeds can rapidly trap large amounts of carbon. But these underwater forests are disappearing due to warming waters and other stressors. Seaweed aquaculture can sustainably produce food while regenerating habitats, and may be able to draw down atmospheric carbon.

Marine animals Small, abundant fish and other organisms living in the "Twilight Zone" — at depths of around 650 to 3,300 feet — eat and store the carbon in smaller organisms and help cycle it throughout the oceans. These fish transport some of this carbon into the deep ocean for long-term storage. Overfishing could disrupt this critical carbon pathway.

Dissolved carbon in seawater Ocean waters store much more carbon than the atmosphere and all the world's plants and animals. At depths below about 3,300 feet, this dissolved carbon remains locked away from the atmosphere. Unfortunately, the more water warms, the less CO₂ it is able to capture. If temperatures climb too far, seawater will begin to discharge some of its CO₂ back into the air.

Seabed sediment Via the food web and other mechanisms, some carbon reaches the bottom of the ocean, where it can remain locked up for millennia. Bottom trawling and other activities can release some of these ancient carbon stores, though scientists aren't certain how much of this carbon returns to the atmosphere.



why is it so important?

Coastal wetlands

Mangrove forests, salt marshes and seagrass meadows sequester carbon 10 times faster than mature tropical forests, but they are disappearing four times faster. Fast-growing coastal wetland plants take in CO₂ during photosynthesis and deposit carbon-containing leaves, branches and roots in underwater sediment. In this oxygen-poor environment, plant materials decompose slowly and can persist for thousands of years. But development, overfishing and other pressures can transform coastal environments from sinks to sources of CO₂ as well as methane, another potent greenhouse gas.

HOW DOES CARBON MOVE IN AND OUT OF COASTAL WETLANDS?

- 1 Fast-growing plants take in CO₂ during photosynthesis.
- 2 Dead leaves, branches and roots containing carbon are buried in underwater sediment where they persist for thousands of years.
- 3 When ecosystems are disturbed, carbon can be discharged back into the atmosphere.



Mangrove forests Clustered along tropical and subtropical coastlines, mangroves are among the most efficient carbon capture and storage systems on the planet. Since the late 20th century these forests have disappeared at an alarming rate, but conservation and restoration efforts are now slowing the loss.

Tidal marshes Salt marshes sequester carbon at a much higher rate than land ecosystems, but have lost more than 50% of their historical global coverage. Fortunately, marsh restoration can be very effective.

Seagrass meadows Seagrass roots accumulate vertically beneath the seafloor, creating a vast repository of buried carbon. Though these habitats occupy only a tiny fraction of the ocean's floor space, they store more than 10% of its buried organic carbon.



Learn more Check out EDF's interactive blue carbon explainer at edf.org/bluecarbon

PHOTO ILLUSTRATION BY TINK TANK STUDIO

From doomscroller to changemaker

The sheer scale of climate change can leave us feeling helpless. But there are multiple ways that each of us can make a difference. Start with these tips from climate advocates who decided to get involved.

1 Pick your battle

Start by considering your skill set and the amount of time you have. Next, narrow your focus to a specific issue (such as environmental justice or clean energy). Lead with your values and feelings — you'll be a better advocate if you're passionate about the cause.

"I got involved after I moved to Colorado and discovered that they were proposing a fracking operation less than a half mile from our house," says Laurie Anderson, a mother of five and a field coordinator for EDF affiliate Moms Clean Air Force. "What started as outrage over what they were doing to my community became a commitment to climate action on the state and national levels."

2 Collaborate

You'll punch above your weight — and have more fun — if you're part of a team. Check out EDF Action's advocacy engagement opportunities (edfaction.org/get-involved) to connect with people nearby who are fighting for climate action. Also consider asking friends, family and neighbors to join you.

"Don't reinvent the wheel if you don't have to," adds William Sapon, a 2016 EDF Climate Corps fellow who has developed clean energy programs at the federal, state and local levels. "Get guidance from other people and organizations that are interested in your issue."

3 Set goals

Begin with a clear goal, such as, "Convince the city council to pass a renewable energy resolution." And lay out the

steps needed to achieve specific outcomes, such as getting 200 petition signatures, then meeting with council members. Identify community decision-makers, as well as supporters and "persuadables", and reach out with messages personalized to each audience.

Develop a thorough understanding of the facts underpinning your position, but lean on storytelling to make your case. For example, your arguments in opposition to a proposed fossil fuel plant may be more effective if you describe its potential effects on a member of your family with chronic asthma.

4 Don't quit

Failure is often the prelude to success. After the city council in Laurie Anderson's town approved a fracking development in a 1 a.m. vote, she persisted; and in 2019, she and fellow advocates celebrated after Colorado's governor signed a law requiring oil and gas projects to protect public health, safety and the environment.

"We lost multiple battles but eventually we built momentum," says Anderson.

5 Start now

Action, say climate activists, is the antidote to helplessness. "It can be intimidating to speak up," says Phoebe Romero, who helped to convince officials in Austin, Texas, to expand access to affordable solar power for low-income residents. "But once you do, knowing that you can use your voice to advocate for change is empowering."

Tom Clynes

THREE PROFILES IN ENVIRONMENTAL ACTION



FROM THE HIP PHOTOGRAPHY

Laurie Anderson has worked as a consultant for the League of Oil and Gas Impacted Coloradans, which helped to successfully push the state to increase regulation of the oil and gas industry, and continues her advocacy work at Moms Clean Air Force.



HTTFS/BUSINESS ATTENU

William Sapon is a climate advocate and consultant who works with the public, private and non-profit sectors and serves on the board of the Pittsburgh Region Clean Cities coalition.



LESLIE NON PLESS

Phoebe Romero, a 2015 EDF Climate Corps fellow, was an environmental program coordinator with the City of Austin Office of Sustainability. She now works at the Clean Energy Buyers Association in Washington, D.C.

Every day is Earth Day

To mark the 52nd anniversary of Earth Day, EDF asked how you sustain your commitment, season after season. Here are a few of your heartfelt replies.

Celebrating the first Earth Day, April 22, 1970, in New York City.

NYC.COM/RECORDS

Growing awareness My Dad gave me and my brother a part of our garden to plant anything we wanted. I chose carrots. And I realized then the magic of the earth. To take one seed and grow a whole plant. It actually was my first experience of the power of the Earth!

Michele S. | Walnut Creek, CA



Living lightly My parents would take my brother and me down to the ocean to do beach clean-ups as soon as I was old enough to walk. I have a clipping from a newspaper where I'm four years old on the beach in California picking up garbage.

Today, I want others to know that they can make a difference even with small actions. I compost, I shortened my showers, I turn off my lights, I have low-flow showers and toilets. I also planted a garden and I am supporting pollinators by having only native plants. Every little step makes a difference.

Marissa T. | Nashville, TN



Taking a stand I'm a retired teacher. On the first Earth Day, I did not fully participate because we were told that anyone who left school to take part would not be able to sing in our spring concert. Afterward, I promised myself I would never do that again, and I've participated in all kinds of Earth Day actions over the years. I began seriously recycling in 1987 and I mostly use public transit.

That is not sufficient, but it's the best a blind person like me can do. I hope I encouraged my students to think about our Earth and how they can contribute to stopping global warming. I believe they and their families want to make a difference, and they will.

Ruth S. | Chester, PA

Action is the antidote When my daughter was born, I started losing sleep over her future on this Earth. I found that the only way I could avoid constant anxiety was to do what I could — donate, volunteer, take action. In my activism I have also found community with people who have been fighting and continue to do so. Today, I feel encouraged by the younger generations and the changes I have seen in my lifetime in people's attitudes.

Tynee P. | San Diego, CA

A river reborn I have lived near the beautiful Merrimack River in New England my entire life. By the 1950s, the river had become an open sewer, like so many others. But after the Cuyahoga River in Ohio caught on fire in 1969, the country united behind the mission of righting this wrong. Today my beloved Merrimack is a gem, with returning species such as sturgeon, striped bass and bald eagles. We have done this for our rivers and lakes, and now we must do the same for our planet. I think we can do it.

Stephen E. | Andover, MA



An act of hope I just planted a Japanese Bloodgood Maple tree! At 82 years old, I won't see this tree to maturity, but I hope it will enjoy a better world than what exists today!

Dan C. | Aspinwall, PA

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make progress possible.



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edf.org/2022YEMatch