SOLUTIONS

Environmental Defense Fund

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New land for a vanishing coastline

Louisiana initiates an ambitious plan to help communities survive and thrive as sea levels rise

BIG WIN FOR CLIMATE!

Global action on methane pollution

See pages 6 & 7

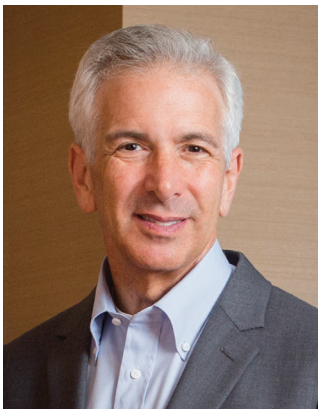
ALSO INSIDE: 50 years of progress on lead | Cuba's resilient reefs

Reviving nature's lungs

A square mile of mangrove forest can sequester carbon 10 times faster than the same area of mature tropical forest. But mangrove forests can also emit greenhouse gases when disturbed or degraded. In Ecuador, EDF is collaborating with local conservationists to study these natural powerhouses and better understand the impacts of preserving and restoring them.

LESLIE VON PLESS

Historic deals will tackle methane and slow warming



It's a new year, and a new era for action on methane pollution.

I'm proud to say that EDF helped deliver several pieces of critical progress on this powerful climate pollutant at the end of 2023 at the world climate summit, COP28.

I say critical because methane, the main component of natural gas, is 80 times more potent than carbon dioxide in the first 20 years after it's emitted. In fact, it is responsible for about 30% of current warming.

The first piece of progress was a historic agreement by more than 50 oil and gas companies to cut their methane emissions by about 90% by 2030 (*see p. 7*).

There are three reasons why this agreement is such a big step forward. First, it includes state-owned, national oil and gas companies, a group that is responsible for about half of the world's oil and gas production. Despite their collective power, they have previously had little oversight and, therefore, fewer incentives to cut emissions.

Second, EDF, in collaboration with the International Energy Agency and the UN's International Methane Emissions Observatory, will monitor compliance. That means that companies not delivering on their promises will have nowhere to hide. And thanks to MethaneSAT, a new methane-detecting satellite to be launched this year by an EDF subsidiary, we will soon be able to locate even small, ongoing methane leaks, which contributed as much as 88% of the total methane pollution in one basin, and the majority in most others we have studied.

Third, the time frame is short. If these commitments are fully implemented by 2030, they could lead to more progress to reduce methane in the next few years than has been achieved in the last decade.

COP28 also yielded two other major announcements on methane. The U.S. Environmental Protection Agency finalized its first-ever comprehensive rules governing methane pollution from oil and gas production. EDF took the lead in driving the agency to adopt these rules, which will cost-effectively cut methane and air pollution from one million oil and gas sites across the country (*see p. 6*).

And the dairy industry, which is responsible for nearly 10% of global methane emissions, unveiled a new coalition that aims to reduce the industry's impact on global warming. The Dairy Methane Action Alliance, which EDF convened to catalyze a global shift to climate-smart dairy production, counts several major dairy companies — including Danone, Kraft Heinz and Nestlé — among its founding signatories.

Carbon dioxide reductions are crucial for avoiding the worst ravages of climate change. But we've waited so long to get serious about the climate crisis that we need significant short-term action. These efforts to cut potent methane pollution are exactly that — making them huge (and verifiable) wins.

Fred Krupp
EDF President

In this issue

On the cover: In Plaquemines Parish, Louisana, a new, EDF-backed restoration project will address land loss and flooding. Photo: Mohammad Shahhosseini

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Environmental Defense Fund

Accelerating corporate climate progress

YYAN CAO-OWENS

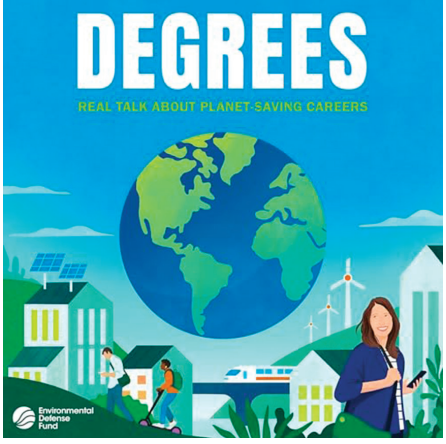
Just eight global industries, including food, construction and fashion, account for more than half of annual, global greenhouse gas emissions. And though 900 of the world's 2,000 largest companies have set goals to zero out their climate pollution, far fewer have followed those promises with concrete action at the speed that is required to pump the brakes on climate change.

"Many companies and their employees want to address climate change," says Elizabeth Sturcken, managing director at EDF + Business. "They want to lead but they don't know how."

Obstacles include lack of in-house expertise, changing regulations and confusion about what guidance to follow. That's why EDF created the Net Zero Action Accelerator, an initiative that helps companies prioritize and implement the highest-impact climate actions. In September, we launched our free, climate action web hub that provides companies with the science-backed tools and trainings to accelerate implementation of climate action plans. The tool includes guidance on generating internal engagement, calculating emissions, tackling industry-specific emissions hotspots, government regulations and incentives and more. The tool has environmental justice considerations built into its recommendations and a section dedicated to efforts companies can make to include climate justice in their work.

The actions that companies take in this decade will impact the world's ability to prevent climate change's most catastrophic and irreversible impacts, Sturcken says. "We can help move corporations from pledges to progress."

EDF's hit podcast, *Degrees: Real talk about planet-saving careers*, is transforming the hunt for meaningful work, with guests who run the gamut from Hollywood producers to climate scientists and eco-entrepreneurs. The show has been downloaded more than 215,000 times by listeners in more than 180 countries. As one audience member said in an online review, "It's not an exaggeration to say that this podcast changed my life."



Long-awaited victory on toxic chemical

Nine years after her 13-year-old daughter, Emma Grace, died from a rare brain tumor, Kari Rhinehart finally got the call she'd been waiting for.

On October 23, Dr. Michal Freedhoff, America's top chemicals regulator, called Rhinehart personally to tell her that the EPA had moved to ban trichloroethylene (TCE) — a known carcinogen that had contaminated the groundwater in Franklin, Indiana, where Rhinehart used to live. The contamination came from several sources, but notably, a nearby electrical parts plant had been using TCE as a degreaser. The chemical is also used as a spot cleaner and dry-cleaning solvent. Rhinehart believes that exposure to chemicals including TCE is what caused her daughter's cancer — as well as the higher-than-average rate of pediatric cancer in Franklin. Experts have found that TCE not only causes cancer, it's also toxic to the nervous system, kidneys, liver, immune system and to developing fetuses.

EDF has been working for more than 10 years to get TCE off the market — providing scientific expertise to regulators and working with impacted families to educate policymakers on the dangers of the chemical. EDF federal affairs expert Joanna Slaney says that she's proud to have gotten to work with Rhinehart on this rule and is pleased that once the EPA's proposal is final — likely in 2024 — most uses of TCE will be banned within a year.

"This is a major step forward for everyone who has fought to prohibit the use of TCE, which has harmed or cut short the lives of so many," says Maria Doa, EDF's senior director for chemicals policy. "TCE is a chemical that simply should not be used."

KARI RHINEHART

Kari Rhinehart and daughter Emma Grace

NOEL LÓPEZ FERNÁNDEZ

Ocean odyssey

A historic Cuban voyage searches for clues to coral reef survival.

Taking notes: A Goliath grouper investigates researcher Fabián Pina in Cuba's Jardines de la Reina marine reserve.

IN WHAT OCEANOGRAPHERS ARE CALLING a "dream come true" for Cuban marine science, a team of experts completed a first-of-its-kind circumnavigation of the Caribbean's largest island in September to study coral and other marine life.

The two-month "Bojeo a Cuba" expedition aimed to gauge the health of the country's exceptional coral reefs along with that of the fish and other marine life that depend on them.

The team of Cuban researchers hopes the expedition will advance scientists' understanding of the reefs' resilience to climate change. The data, collected during the hottest summer on record, could provide guidance to researchers across the globe working to protect reefs stressed by warming waters, pollution, overfishing and other threats.

"This expedition is the fruit of years of intense work and marks the beginning of a new era for marine science and conservation in Cuba," says Fabián Pina (*above*), the Cuban marine biologist who co-initiated the project. "For the first time, we're getting a picture of the state of corals throughout the island, along with observations of sharks, fish, water quality and microbiology, using consistent protocols in a short time frame."

Cuba's resilient reefs

Half a billion people and about 25% of ocean fish depend on healthy coral reefs, but more than half of the world's reefs are at risk. Increasing levels of carbon dioxide are making the ocean more acidic. Higher acidity affects the balance of minerals in the water, making it harder for coral and other marine animals to build their protective skeletons or shells. Although corals can often survive a bleaching event, it increases stress and risk of dying at a later date.

Cuba's waters are home to four of the world's most resilient reefs, providing ideal conditions in which to study coral. Researchers suspect that the secrets to the resilience may include well-protected marine conservation areas, a lack of runoff from farms and urban areas and favorable coral genetics.

Despite these advantages, the expedition team found worrying signs of degradation at certain reef sites. While the data are still being analyzed, researchers found that some reefs have suffered coral bleaching, disease and invasive species, particularly along the island's southern shore. Scientists are also concerned that overfishing is affecting populations of sharks and other large fish.

Sailing toward solutions

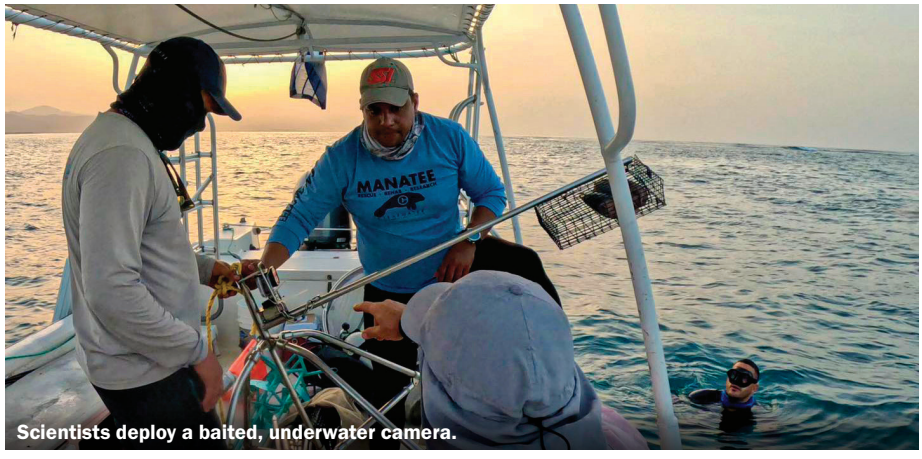
EDF and Cuban partners hope that knowledge gleaned from the expedition could lead to new management and conservation techniques that can preserve and slow the degradation of reefs around the world. In addition, researchers intend to use the study's conclusions to support Cuba's commitment to 30x30, the worldwide initiative to set aside and protect 30% of Earth's land and ocean areas by 2030.

"The conservation of Cuba's reefs benefits ecosystems and communities in the entire region," says Valerie Miller, director of EDF's Cuba program. "Although the boat has docked, the science is just starting. We look forward to helping turn science into action for healthy ecosystems and the coastal communities that rely on them."

More than 30 organizations, including the Marine Research Center at the University of Havana and Avalon-Marinas Marlin (a public-private partnership), contributed to the expedition. EDF supported the research vessel and assisted with data-collection design and communications.

"This expedition opens new doors," says Pina. "There are enormous opportunities to take advantage of, to save this beautiful and essential part of the nation's and the world's natural heritage."

Tom Clynes



NOEL LÓPEZ FERNÁNDEZ

Scientists deploy a baited, underwater camera.

Strong new U.S. rules to cut methane pollution

Sweeping oil and gas industry regulations will benefit health and climate.

WENDY ATCITTY GREW UP IN THE late 1970s seeing oil and gas pump jacks, bobbing like giant grasshoppers, all around her in northwest New Mexico. Yet her mother's home, on Navajo Nation land, didn't have electricity until 2007.

"One hundred years of oil and gas development, and what did we gain?" asks Atcitty, a former science teacher who now works with Naeva, a Native American civic action group, to educate communities about energy. "It's unbelievable to see in my lifetime the impact of climate change on Navajo lands. Things got drier, warmer. The winds are harder."

Atcitty and Naeva have been advocating alongside EDF for strong new EPA rules to reduce methane pollution from the oil and gas industry — a major source. Methane is a potent, short-lived climate pollutant that is accelerating how quickly the planet heats up. Reducing it is the fastest way to slow down the rate of climate change.

In December 2023, the EPA finalized its first-ever comprehensive oil and gas methane rule, which will cut climate and air pollution from nearly one million sites across the country.

"This is one of the most impactful actions the EPA has taken to reduce climate pollution to date," says EDF attorney Rosalie Winn. "It's going to make a difference for climate and for people's health for generations to come."

Supported by EDF research and 400,000 public comments from EDF members, partners like Naeva, and others, the rule will reduce methane pollution and protect the health of some 18 million people who live less than a mile from an oil and gas site. When methane is emitted from oil and gas equipment, it often carries toxic air pollutants with it, like cancer-causing benzene and smog-forming chemicals.

In New Mexico, Navajo Nation members are twice as likely to live within half a mile of such facilities. Atcitty recalls strong smells and constant headaches when drilling was taking place nearby. "There was a big flare, like 10 feet tall, about 100 feet from my late uncle's house," she says."When the flare stopped, the headaches stopped."

The new rule, through requirements such as more efficient equipment and more frequent leak detection and repair, is projected to cut 58 million tons of methane pollution and 16 million tons of harmful air pollution by 2038.

When EDF-affiliated MethaneSAT, a unique, highly advanced methane-measuring satellite, launches later this year, it will track the impact of the new rules and hold polluters who break them accountable.

Naeva and EDF are also working with the Navajo Nation government to reduce methane emissions from oil and gas operations on tribal land. Capturing methane instead of releasing it as pollution could bring in $1.2 million annually in royalties — funds that could help the tribe move toward climate resilience, says Atcitty.

"We want energy, but we don't want it to grab our water and make us go looking for our asthma inhalers," she says. "I hope that with these new rules, with more education about sustainable economies in our communities, that we can restore balance."

Shanti Menon

METHANE: THE BASICS

What is it? A short-lived climate pollutant that is accelerating global warming. It has over 80 times the warming power of carbon dioxide in the first 20 years after its release.

Where does it come from? Mostly agriculture and fossil fuels; oil and gas is the largest industrial source. Natural gas, which is mostly methane, leaks from millions of oil and gas sites around the world.

Flaring at an oil and gas site in Williams County, North Dakota.

ALAMY.COM

Wendy Atcitty

ALYSSA FOSTER PHOTOGRAPHY

A climate win for the world to see

New commitments by the oil and gas industry could slow global warming. EDF is watching.

WALEED ZEIN/ANADOLU AGENCY VIA GETTY IMAGES

Methane action took center stage at December's world climate summit in Dubai.

More than 50 major oil and gas companies, responsible for 40% of the world's oil production, have agreed to slash climate-polluting methane emissions by about 90% by 2030.

Signatories of the Oil and Gas Decarbonization Charter, announced at the COP28 world climate summit in Dubai in late 2023, include major national oil companies like Saudi Aramco. The pollution reductions — if met — will slow the rate of climate change in this decade.

To ensure companies act, EDF and allies, including the International Energy Agency and the UN Environment Programme, have launched a partnership to track and report these companies' progress using satellites and other data.

"The climate crisis demands action, and that's what this is," says former U.S. Environmental Protection Agency administrator William Reilly. "Cutting methane pollution is the fastest way to limit near-term global warming. It's not the whole answer, but it's real progress."

A very big deal

"Reductions in long-lasting carbon dioxide pollution are critical for climate in the long run," says EDF president Fred Krupp. "Slashing methane will produce climate benefits within the next 10 years. And it's crucial that we hold the industry accountable for meeting this pledge."

Because methane's impact is swift and potent, (*see box, p. 6*), reducing it will avoid some of the global temperature rise expected in the next decade. EDF science and advocacy brought this fact to the world's attention, opening up a new opportunity in the climate fight.

Cutting methane pollution in half would also save hundreds of thousands of lives and tens of millions of tons of crops every year, since methane is a major source of ground-level ozone, which damages plants, triggers asthma and aggravates lung diseases.

Slashing oil and gas methane pollution is the fastest route to achieving these results. The industry is responsible for about one-quarter of all methane emissions worldwide, and already has the technology to make big reductions, quickly, at little cost.

50+

The number of oil companies that have agreed to slash their methane emissions to nearly zero by 2030.

This latest announcement is part of a global movement to act on methane. The U.S. just finalized its strongest ever methane regulations (*see p. 6*) for oil and gas companies operating in America, and the EU, the world's biggest natural gas importer, has provisionally agreed on legislation to rein in methane emissions. China also introduced its first national methane action plan, which reflects many of EDF's recommendations.

But until now, nationally owned oil companies, which produce more than half of the industry's methane pollution, have done little to address their methane emissions. That's about to change.

Holding polluters accountable

"Commitments are good, but outcomes matter," says Krupp. "Accountability is the name of the game."

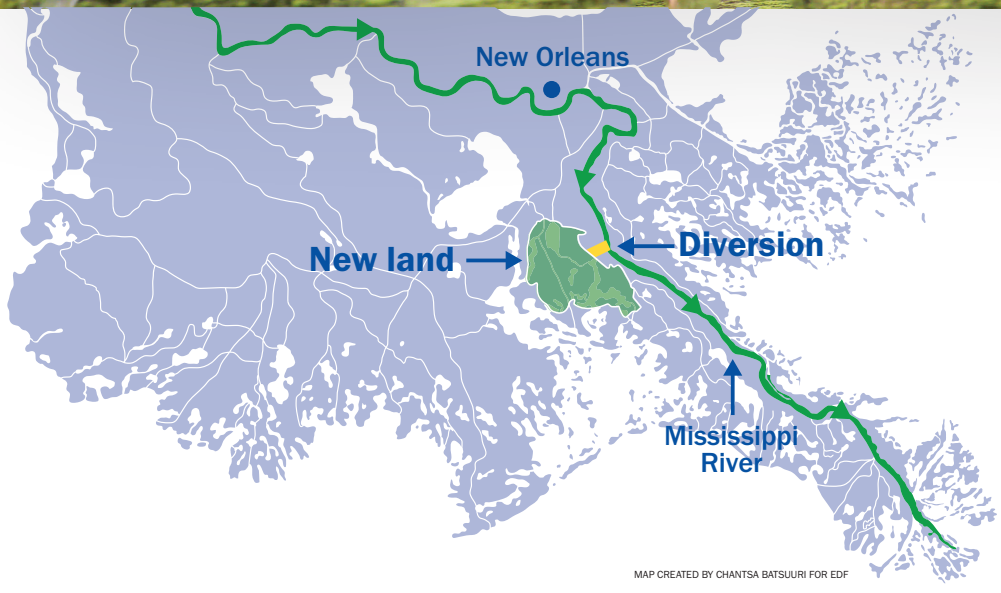
EDF subsidiary MethaneSAT will play a major role in the independent effort to ensure companies deliver on these promises. Launching in 2024, MethaneSAT will be the most versatile methane-detecting satellite in space. It has the unique ability to spot major emission events as well as millions of small sources, which are diffuse and unpredictable. EDF research has shown that these sources could account for half or more of total emissions in some regions. And MethaneSAT will make its data rapidly available to everyone.

"If companies fail to meet their commitments, we'll all know it," says Krupp.

Of course, there's more work the industry needs to do, like ramping up investment in renewable energy and low-carbon fuels. And the world can't use fossil fuels at the current rate and meet the Paris Agreement climate goals. But a dramatic and verifiable reduction in global methane pollution is a major near-term win for the climate — one that we will be here to witness.

Shanti Menon

Saving the wetlands



MAP CREATED BY CHANTSA BATSUURI FOR EDF

Louisiana's marvelous coastline is one of the fastest-disappearing places on Earth. Restoring it is a massive undertaking. But the mighty, muddy Mississippi River can help.

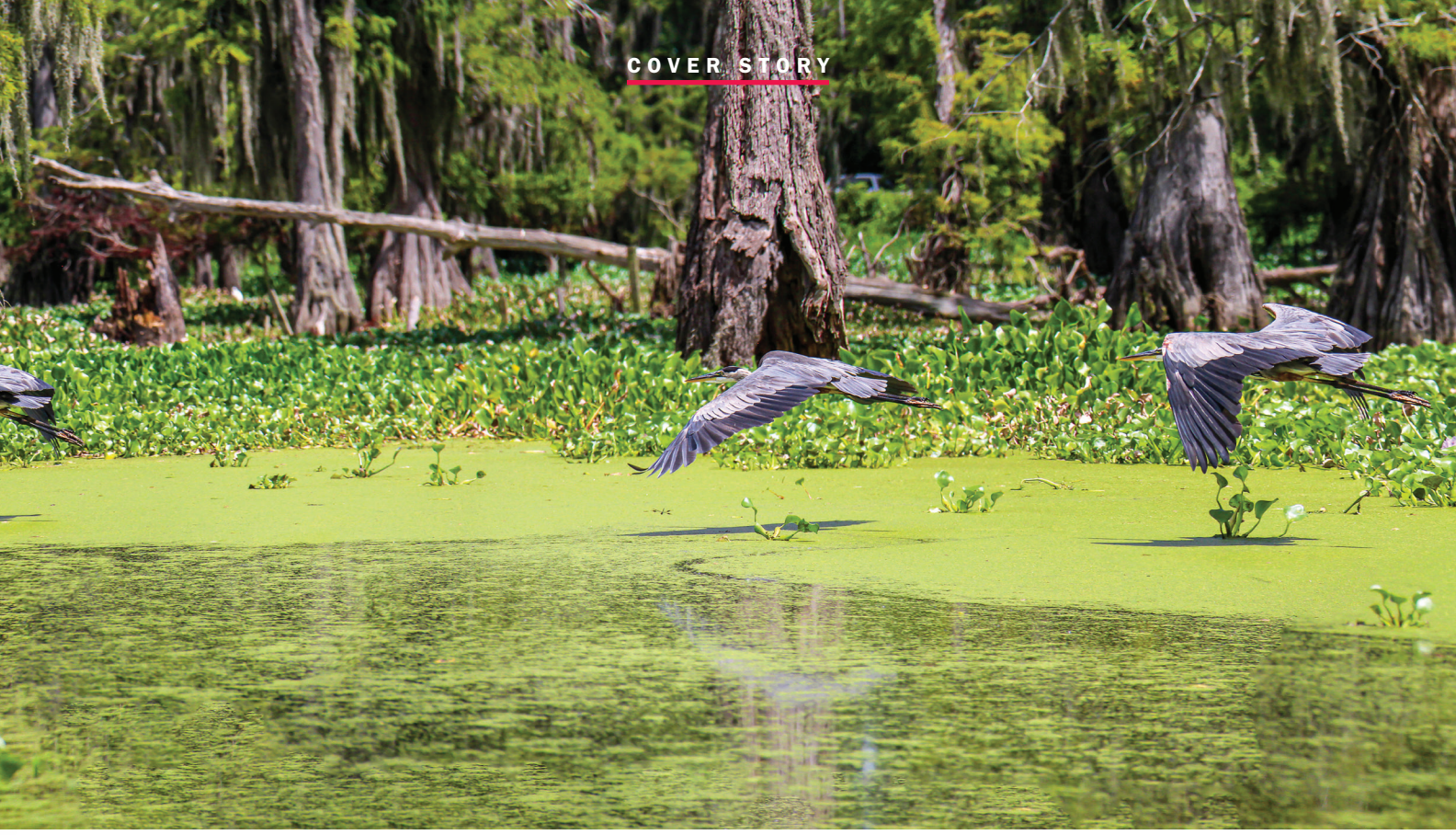
By Shanti Menon

Map above: **The Mid-Barataria sediment diversion (*yellow*) will replenish dying wetlands.**

THE MISSISSIPPI RIVER FLOWS more than 2,000 miles through the heart of America before it pours into the Gulf of Mexico. At its magnificent delta in southern Louisiana, wetlands, islands and forests rise up from the rich mud deposited by the river. These coastal ecosystems are home to bounteous fish and wildlife, and have provided communities as far inland as New Orleans with flood protection.

But over the years, levees and other human interventions have starved the delta of mud, weakening the wetlands that hold back waters during storms and high seas. Since the 1930s, 2,000 square miles of Louisiana's wetlands — an area about the size of Delaware — have vanished. Plaquemines Parish, a tendril of lush, water-blessed land extending into the gulf, is among the fastest-disappearing places on earth. As climate change brings higher sea levels and more frequent strong storms, flood risk is higher than ever.

This year, Louisiana broke ground on an ambitious project — championed by EDF and partners for decades — to fight back against land loss, using the power of the mighty, muddy Mississippi River itself. It's one of the largest wetland restoration projects the world has ever seen, and the centerpiece of Louisiana's $50 billion plan to help coastal communities survive



GETTY IMAGES

and thrive in a changing climate.

"Louisiana has seen the impacts of climate change like nowhere else in the country," says coastal scientist Natalie Snider, a Louisiana native who leads EDF's Climate Resilient Coasts and Watersheds team. "But we're also planning for it like nowhere else."

Louisiana is sinking

Louisiana's shocking rate of land loss is largely due to a century of human efforts to control the Mississippi River. The U.S. Army Corps of Engineers, the federal agency responsible for maintaining navigation and flood protection along U.S. waterways, has built thousands of miles of dams, levees and other structures along the Mississippi to hold the river in place. These efforts to safeguard communities and commerce have also choked off the supply of rich Mississippi mud to the coastal wetlands — the same mud that, over millennia, raised 8,000 square miles of south Louisiana out of the sea.

As the mud settles, Louisiana's coast is also subsiding. That natural process is being accelerated by more human intervention — decades of swamp draining, canal digging and dredging. And as climate change pushes sea levels higher, Louisiana is expected to lose another 3,000 square miles of land over the next 50 years, nearly doubling its economic risks from flooding to approximately $24 billion each year. Plaquemines is projected to lose more than half of its land by 2050.

"These communities have the coast lapping up against their homes," says Daniel Songy, a boat captain in southeast Louisiana. "Home insurance is going up, if you still have a policy, if you didn't get dropped. And people are losing their homes. Anything we can do to build land, we need to do it."

Save the wetlands, save Louisiana

The New Orleans region was once protected by a 40-mile-wide expanse of wetlands. By the time Hurricane Katrina arrived in 2005, that natural buffer zone had largely disintegrated. Katrina's unprecedented 25-foot storm surge overwhelmed the city's levee system, causing nearly 2,000 deaths and more than $100 billion in damages. The storm also wiped another chunk of Louisiana's wetlands off the map, essentially moving New Orleans closer to the open sea.

After Katrina, Louisiana launched a comprehensive plan to protect and restore its coasts. The state has since completed scores of projects, from levee upgrades to rebuilding barrier islands.

But the new project, which broke ground in August, is the most ambitious to date. Known as the Mid-Barataria Sediment Diversion, it represents a new

> **"Louisiana has seen the impacts of climate change like nowhere else in the country."**
>
> **— Natalie Snider, EDF**

way of managing the Mississippi River. Instead of trying to hold the river back, Louisiana is setting the mighty Mississippi free.

Engineers will cut a 2-mile-long channel to connect the west bank of the river to the vanishing wetlands of Barataria Bay. When the river runs high, the channel will allow up to 75,000 cubic meters of freshwater and sediment — the horizontal equivalent of Niagara Falls on an average day — to flow into the bay.

The river will once again naturally build land, restoring 20–40 square miles of wetlands over the next 50 years.

"Sediment is the lifeblood of Louisiana," says Alisha Renfro, a coastal scientist for Restore the Mississippi River Delta, a Louisiana-based coalition co-founded by EDF. "It is the thing that built our coastal wetlands and it is the key to sustaining them."

The Big Muddy

While this type of manmade diversion is

Daniel Songy

MOHAMMAD SHAHHOSSEINI

unprecedented, nature has already created similar diversions. Despite humankind's best attempts to hold it in place, the Mississippi will occasionally find a weak spot to burst through its banks, carving a new, shorter path to the sea. And where the Big Muddy goes, land will follow.

One such spot is Neptune Pass in Plaquemines Parish. In 2019, the pass was a small canal on the river's east bank. But by 2022, after several years of high water, it had ballooned into an 850-foot wide branch of the Mississippi, with a flow five times that of New York's Hudson River. Satellite images have shown plumes of muddy sediment flowing into the salty blue waters of Quarantine Bay.

This summer, the promise of new land became reality.

In a tiny seaplane flying high above the Neptune Pass outlet, Renfro lets out a whoop of joy. "I see land popping up!" she says, pointing out tiny, elongated sandbars breaching the surface of the bay, like a school of porpoises. "That wasn't there three weeks ago."

At Neptune Pass, and other places like it, the Big Muddy shows what sediment can do.

"The stuff is like Miracle-Gro," says Tye Fitzgerald, an engineer working on land-building projects with the state's Coastal Protection and Restoration Authority.

First, sediments build up in the shallows, forming a bulwark against the lapping waves.

As soon as sunlight can reach it, the new land is covered with a slimy layer of subaquatic vegetation — SAV to excited coastal scientists, *yuck* to unsuspecting barefoot guests. Common wetland plants like duck potato follow, and within a few more years, willow trees.

The many faces of the delta

Birds are already circling above the new outlet at Neptune Pass, where the delta's characteristic interface of river and sea is an ecological goldmine. Louisiana fishers land $300 million worth of seafood from delta nurseries every year. Some 5 million migratory waterfowl feed and rest here. In the spring, shorelines are dotted with tens of thousands of fluffy chicks, growing fat on the delta's rich food supply.

"The delta is a national asset. It's like the Grand Canyon," says former EDF general counsel Jim Tripp, who launched EDF's work in Louisiana in 1973.


EDF's Natalie Snider

MOHAMMAD SHAHHOSSEINI

Yet because of all it can provide, there is little of the lower Mississippi that humans have not touched. The banks of the river are lined with cargo terminals and oil refineries. Some 500 million tons of freight, including 60% of the country's corn and soybean exports, and 22% of oil and gas, pass through the delta annually, necessitating constant dredging.

All these interests have a stake in how the river flows. The Mid-Barataria Sediment Diversion, although broadly supported, has not pleased everyone. When the diversion freshens up salty ocean waters, some oyster beds will not survive. Other species, like brown shrimp, will move further offshore, potentially out of reach of small shrimp boats.

Earlier this year, as protestors threatened to disrupt the groundbreaking ceremony, Louisiana State Senator Pat Connick, who represents many fishermen in Plaquemines, spoke bluntly about the necessity of the project. "Something needs to be done differently, we all know that. Or we lose everything."

For Snider, one of the most important aspects of the $2.9 billion project is the $378 million set aside for communities impacted by the diversion.The state has already laid out plans to spend $10 million to help fisheries, including funding to help shrimpers purchase new gear, and to develop new grounds for oyster cultivation. Other funds will go to communities south of the diversion that face increased flooding.

"The ecosystem changes will be dramatic and quick, so there is a need to adapt," she says. "But the urgency is real, and the future of New Orleans, the bayou communities, the fisheries and wildlife — the amazing culture and bounty that people all over the country enjoy — desperately depend on it." ■

55%

Land loss expected in Plaquemines Parish over the next 50 years, without action to protect the coast.

Source: Louisiana CPRA

VISIT US ONLINE Learn more about efforts to protect threatened coastlines and communities at **vitalsigns.edf.org/resilience**.

Reap what you sow

One of America's first farm financing programs to reward environmental stewardship pays off.

NOTILL.ORG

Mike Neff at his Decatur County, Kansas, farm

MIKE NEFF'S CONSERVATION JOURNEY dates back to the 1980s, when he and his father stopped tilling a few of the fields on their Kansas farm, instead planting the next season's crop directly into the crop residue from last year's harvest. Over the next 15 years, they transitioned 100% of their operation to no-till and Neff began planting cover crops to help prevent erosion and naturally return nutrients to the soil. It paid off. Along with saving money, the organic matter in the soil increased and the land became more resilient to drought.

Today, Neff's goal is to reduce chemical use as much as possible by emulating nature's diversity with his rotation of wheat, triticale, sunflowers, corn, soybeans, and alfalfa. Farming in a semi-arid environment, Neff is vigilant about managing moisture and constantly looking for ways to improve the health of his soil.

Despite the successes of farmers like Neff, it's often an uphill battle convincing growers to adopt new practices.

"Farming is innately risky and farmers operate on slim margins at the best of times," says Maggie Monast, EDF's senior director for climate-smart agriculture. "Adopting any new techniques or practice can seem prohibitively expensive and risky. Even though in the long run, farming that is better for the environment and reduces emissions can actually increase profitability and decrease risks posed by a changing climate."

That's why EDF teamed up with Farmers Business Network (FBN), a company which provides analytics, crop marketing, financing and insurance services to farmers, to create a first-of-its-kind program called the Regenerative Agriculture Financing Program to reward farmers for climate-smart agriculture practices that reduce emissions and build resilience.

FBN offered farmers a 0.5% rebate on the interest rate of their operating loans if they met certain environmental standards set by EDF for efficient fertilizer use and soil conservation.

In its pilot year, the program was an impressive success.

A total of 48 farmers, representing 18 states and a total of 42,000 acres, enrolled. The loans ranged from under $100,000 to over $2 million.

Of the first raft of participants, which included Neff, 83% of farmers who completed the program met environmental standards without seeing a drop in crop yields and received their rebate.

"This was our fastest-selling financial product ever," says Steele Lorenz, a senior director at FBN. "It highlights the enormous demand for, and powerful potential of programs that reward farmers for reducing emissions and protecting their soils."

Agriculture is a major driver of climate change. It's responsible for over 40% of human-caused methane emissions and two-thirds of nitrous oxide emissions, a powerful greenhouse gas, 300 times more potent than carbon dioxide. By itself, the global food system could add 1°C of warming by 2100.

In a recent global survey, EDF found that 87% of agricultural finance providers saw climate change as a material risk to their business. Despite this, only 24% of these lenders have taken steps to incorporate climate change considerations into their decision-making in a significant way.

"We saw a need for farmers' financial partners to become more involved," says Monast. "They share in the risks farmers face, and there is no bigger risk to the future of farming than climate change."

While Neff appreciates the cost savings from FBN's program, he also has satisfaction in finally being acknowledged for the conservation practices he uses on his farm. Benefits also return back to FBN, because farmers with healthy soils can reduce crop yield risks, making them a better borrower for their finance provider.

In response to the program's popularity and success so far, FBN has doubled the program's size to $50 million in 2023 and is planning to scale the fund to $1 billion over five years.

"This approach has the potential to be scaled across millions of acres, making climate-smart agriculture accessible to growers across the country," says Monast. "Nothing convinces people like seeing this work for themselves."

Joanna Foster

THE WILSON LEGACY

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

UNLEADED

Inside EDF's 50-year battle against toxic lead.

By Vanessa Glavinskas and Liz Galst

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When Dr. Philip Landrigan was a young resident at Boston Children's Hospital in the late 1960s, he started seeing children who had swallowed chips of lead paint. Tragically, many of them died. Those who survived were transformed.

"They lost cognitive function," Landrigan says. In many cases, their behavior changed. "I remember one mom telling me her son had been a sweet boy before he ingested lead and now would fly into a rage."

Dr. Landrigan began researching lead's health impacts and found that airborne lead particles — like those found in leaded gasoline exhaust — could harm children's health. Scientists have since detailed the metal's many detrimental effects on children, from irreversible brain damage to decreased IQ and behavioral problems. It's not just kids who are harmed. More than 400,000 adults in the U.S. die prematurely each year due to lead.

These harmful health effects catalyzed decades of advocacy by EDF experts who worked to remove lead first from gasoline, then from paint, and now from water pipes and consumer products. "EDF has been a very important player in this, no question," says Landrigan, who today heads the global public health program at Boston College. He compares the health benefits of reducing lead exposure to that of the polio vaccine and the eradication of smallpox. "They've all saved millions of lives."

But while the U.S. has made progress in protecting the public from lead, there's more to do. Millions of American homes still contain lead-based paint and there are 9.2 million lead service pipes carrying water to homes, schools and businesses. While children's blood lead levels have fallen dramatically since the 1970s, half of American kids tested between 2018 and 2020 still had detectable levels of lead in their blood — with lead contamination more common among Black and Latino children.

"There is no safe level of lead," says EDF's chemicals expert Tom Neltner. So until lead is removed from every source, EDF's work continues.

To mark the 50th anniversary of the U.S. Environmental Protection Agency's commitment to phase out lead from gasoline, we took a look back at EDF's decades-long battle to remove lead from our lives.

Median concentration of lead in a U.S. child's blood.
● = 1 µg/dL

Source: Centers for Disease Control and Prevention

1970s

1970

Just three years after being incorporated, EDF submits a petition to the U.S. Department of Health, Education and Welfare seeking the reduction and elimination of lead from the exhaust of motor vehicles.

1973

The EPA issues the rule that begins the phase down of lead in gasoline — a years-long process that ultimately becomes one of America's biggest environmental and public health victories.

1978

The Consumer Product Safety Commission bans the residential use of lead-based paint. The FDA also limits lead in color additives for cosmetics, excluding lead-acetate hair dyes.

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1980s

1982

A proposal to abolish lead limits in gasoline advances under President Reagan. EDF toxicologist Ellen Silbergeld testifies before the EPA in support of lead limits, pointing to evidence that even low levels of lead exposure can have serious health effects.

1985

In a surprising about-face, the EPA abandons its plan to abolish lead limits and instead adopts EDF's recommendation for faster reductions. The agency requires a more than 90% reduction of lead in gasoline, effective January 1, 1986.

1986

The amended Safe Drinking Water Act mandates that water pipes in new drinking water systems be lead-free. (However, "lead-free" is defined as pipes with no more than 8% lead.)


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1990s

1990

EDF research reveals that lead's devastating neurotoxic effects begin at even lower levels than previously thought. The report triggers more than 800 newspaper stories and television coverage. Report author Karen Florini shares her findings at a congressional hearing on lead exposure.

1991

Given that the most common sources of lead in drinking water are lead pipes and brass or bronze faucets, the EPA's new Lead and Copper Rule requires water utilities to treat their water in order to reduce pipe corrosion and thereby limit lead contamination.

1992

Congress passes the Residential Lead-Based Paint Hazard Reduction Act to protect families from exposure to lead in paint, dust and soil.

1996

EPA Administrator Carol M. Browner signs the final rule in the agency's phase-out of lead in gasoline for all on-road vehicles. She calls it "one of the great environmental achievements of all time." The EPA and U.S. Department of Housing and Urban Development also issue a rule requiring that lead-based paint be disclosed to home buyers and renters.

1996

Psychiatrist Dr. Herbert Needleman links lead poisoning to antisocial behavior. "Lead is a brain poison that interferes with the ability to restrain impulses," he writes. A few years later, economist Rick Nevin correlates the decline in lead emissions from automobiles with a decline in violent crime in America. (Some experts attribute the decline to other factors).


EDF ARCHIVES

EDF's Karen Florini (*right*) inspects lead paint.

2000s

2005

2015

2008

The EPA issues a rule requiring that contractors be certified in preventing lead contamination when working on home renovations that may disturb lead-based paint.

2014 to 2016

The Flint water crisis, caused by mismanagement when the city switched its water supply, exposes 8,000 children to lead in Michigan and brings public attention to lead in water.

2018

The FDA bans the use of lead acetate in hair dye in response to a 2017 petition from EDF and other organizations.


ISTOCK / GETTY

2021

EDF helps secure $15 billion in the Bipartisan Infrastructure Law to replace lead service lines, the pipes that connect homes to water mains. The move is a win for public health and creates jobs.

2023

EDF raises the alarm on underfunding to states with many lead service lines and begins working with the EPA on more equitable financing for their removal. Later that year, the agency proposes a rule requiring that utilities replace 10% of their lead pipes every year.

WHAT'S NEXT?

EDF is a key partner in the Biden Administration's Get the Lead Out Partnership, a coalition that aims to replace every remaining lead service line — the main source of lead in drinking water — in the U.S. over the next decade.

Protect yourself from lead exposure at home. ***Turn to p. 14 to find out how.***

Look out for lead

The toxic metal can lurk in many places in and around your home. Here's how to find it.

Prevention is the best medicine.

That's especially true when it comes to exposure to lead.

There is no safe level of lead in the human body — and once a person has been exposed, there is no good way to remove it. Children under six are particularly at risk because of lead's effect on developing brains.

Here are three places to look for lead at home — and some actions you can take if you find it. Visit epa.gov/lead to learn more.

A lick of paint

Lead paint was banned in the U.S. in 1978. But if you live in one of the more than 34 million homes built before then, you may still be at risk. Painted windows and doors are particularly dangerous because opening and closing them can create paint chips and dust that are easy for young children to ingest. Vintage cribs and other pieces of painted, handed-down or antique furniture can also pose a danger.

TAKE ACTION Hiring an EPA- or state-certified risk assessor is the best way to find out where lead paint might be lurking and whether remediation is needed. Find an assessor at **bit.ly/3tekkVX**. (DIY test kits for paint or dust have significant drawbacks.) Renovating? Find a lead-certified contractor at **bit.ly/3N0Dfu8**.

Tap into safe water

The vast majority of U.S. tap water is safe. But service lines that bring water into homes, schools and businesses from underground mains, as well as some pipes and fixtures inside buildings, can contain lead.

TAKE ACTION Some utilities test water for free or you can find an EPA-certified lab at **bit.ly/46v2EDj**. To learn more about lead in drinking water, call the EPA's hotline at 800-426-4791.

ISTOCK/GETTY

A question of dirt

Peeling house paint, old gasoline exhaust, and industrial sources can all contaminate soil around homes. Putting soiled hands in the mouth, or eating produce grown in contaminated soils, can expose kids and adults to lead.

TAKE ACTION If you garden or if kids play in your yard, find out if the soil around your home is contaminated.The EPA's National Lead Laboratory Accreditation Program (**bit.ly/46v2EDj**) can help you find an accredited soil testing lab near you.

Liz Galst

YOU GOT THIS DONE!

Power to the people

A law student's model bill is bringing EV charging to Illinois apartment dwellers.

In 2017, Neda Deylami was a second-year law student at Loyola University Chicago, spending several hours each day on buses to reach her classes and work from what she describes as her "transit-desert neighborhood." To ease her commute, she bought an entry-level electric car.

"I loved having an environmentally friendly car," Deylami says. "But when I met up with other electric vehicle owners at events, they were mostly suburban homeowners who didn't understand the experience of apartment dwellers like me who had to hunt around for public charging.

"One of them actually told me I should buy a house before I buy a car," Deylami says. "But if only homeowners can conveniently own EVs, it limits our ability to do something about climate and air quality in a place like Chicago." More than three-quarters of the city's residents live in multi-unit dwellings and many are renters.

"I have a bill for that."

In her final year of law school, Deylami was inspired by a seminar in public-interest law to create a piece of "dream legislation." Focusing on expanding fair access to charging stations, she wrote a model bill.

After graduating, Deylami met State Rep. Robyn Gabel, who said she felt that Illinois should be doing more to expand charging opportunities for people who live in multi-unit buildings.

"I was like, 'I have a bill for that,'" Deylami says.

In 2023, a version of Deylami's bill became law when Governor JB Pritzker signed the Illinois EV Charging Act. The act requires new homes to have the basic electrical infrastructure, such as enough electrical capacity, and potentially, wiring and outlets, to support EV charging. It also prevents landlords and condo associations from imposing unreasonable charging restrictions.

In 2022, Deylami came to work at EDF. "I'm part of the team working on electric trucks now," she says. "Just like we were doing five years ago with cars, when I was writing the original legislation, we're trying to figure out the best path forward for charging infrastructure."

Tom Clynes

TAKE ACTION Give the green light to cleaner cars at bit.ly/3sKXUM5.

Neda Deylami charges her EV at her new apartment.

LLOYD DEGRANE

WE'RE ALL EARS Got an environmental question you want answered or a success story to share? Let us know at editor@edf.org.

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