Solutions

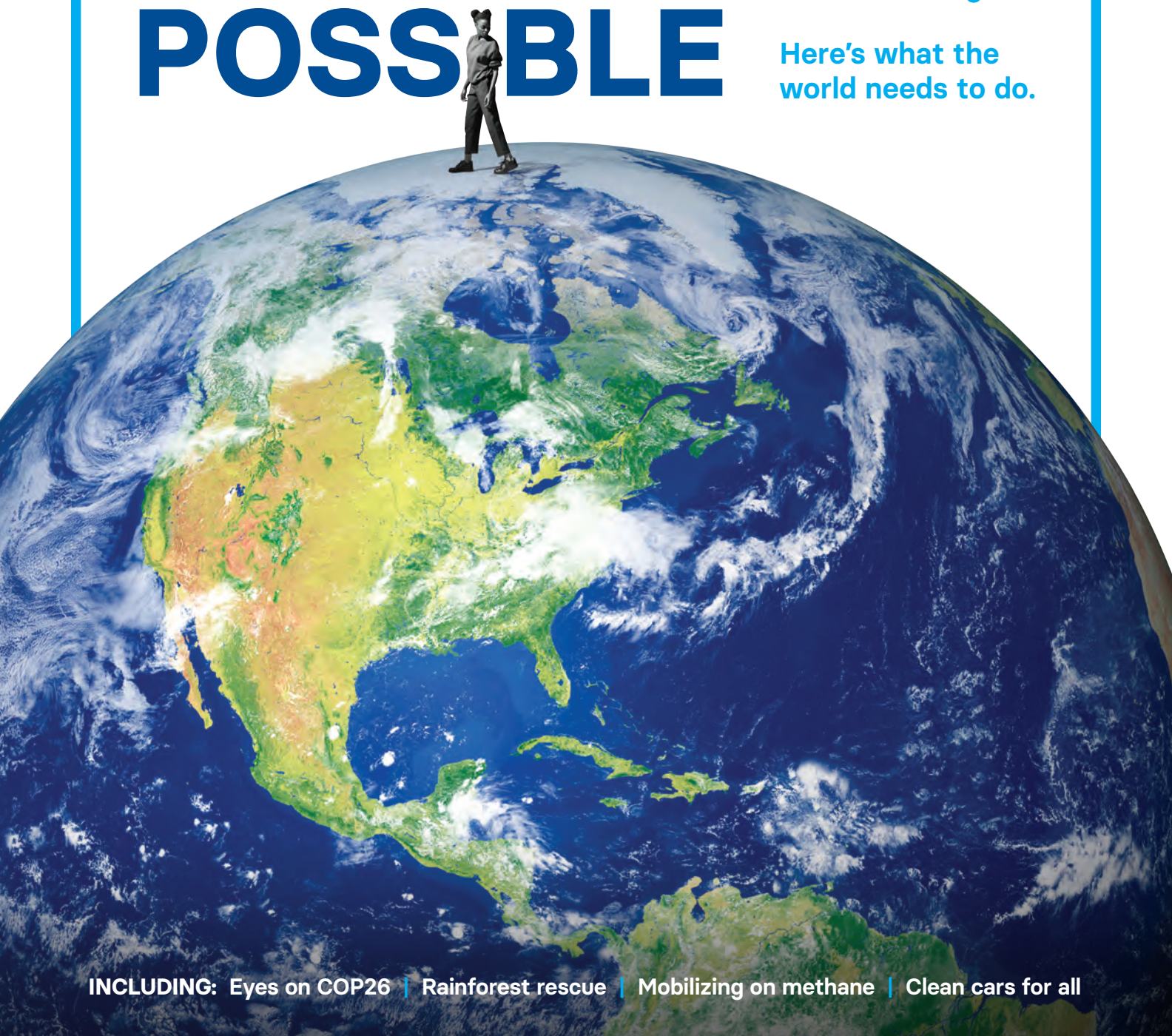
EDF ENVIRONMENTAL DEFENSE FUND®
Finding the ways that work

Vol. 52, No. 4 / Fall 2021

Mission: POSSIBLE

We are facing a critical moment in the climate fight.

Here's what the world needs to do.



INCLUDING: Eyes on COP26 | Rainforest rescue | Mobilizing on methane | Clean cars for all

Whale power

The population of great whales in Earth's oceans has plummeted more than two thirds, from an estimated 4-5 million in the days before commercial whaling. Now scientists have discovered a curious fact: this decline has also affected the climate. Whale waste feeds surface vegetation, which captures CO_2 from the air. That's the tip of a rich marine food web which draws carbon toward the sea floor where it can be stored for millennia. Just one more reason why these magnificent creatures should be saved.

GETTY

Climate change: The message hits home

Looking back, the summer of 2021 may be seen as the moment the message hit home: Climate change is here and the world needs to act. From the Amazon to Siberia and across the United States, heat waves, fires, floods and storms struck, creating scenes of tragic devastation.

Your investments have funded EDF staff in China, Europe and the U.S. to help support and strengthen countries' ambitions to act on climate. Now, negotiators head to Scotland for the global summit called COP26, where I'm hopeful that important further progress will be made (*see p. 7*).

Here at home, President Biden set an attainable goal of halving U.S. carbon emissions from 2005 levels by 2030. EDF Action, EDF's advocacy partner, is a leading voice in Congress on legislation to reduce pollution while decarbonizing our economy. The bipartisan passage of a Senate infrastructure bill, which invests in mass transportation, electric vehicle charging stations and power grid modernization was an encouraging first step toward our broader goals, which include addressing environmental injustice.

EDF has led a global effort to spotlight methane as a powerful greenhouse gas. Our latest study shows that cutting global methane emissions could slow the rate of warming by 30%. Congress's restoration of Obama-era limits on emissions this spring cleared the way for EPA to issue comprehensive new methane regulations, and we're working hard to get the strongest ones possible (*see p. 9*).

The private sector, too, has a critical role to play in slowing climate change. We're working with automakers to realize the president's vision that half of all new passenger vehicles sold in the U.S. be electric by 2030. In addition, we're working with major fleet operators to hasten the uptake of zero-emission trucks and buses, which could have outsized benefits for health as well as climate *(see p. 10)*. We also helped raise initial commitments of over a billion dollars, mostly in private capital, to enable countries to reduce carbon emissions by saving their tropical forests. Billions more in funding is expected for this critical work *(see p. 12)*.

Finally, we're working with major investors on using their leverage to make sustainability a priority for every corporation. That approach bore fruit when shareholders elected three new members to the board of ExxonMobil who pledged to move the company toward a low-carbon future. After the vote, one Wall Street investor told me, "Every CEO in America woke up thinking about what they have to do to tackle climate change." *(See p. 15)*.

Around the world, people have awakened to the reality of climate change. We know what we have to do. We know how to do it. And with your support, we will succeed.

Fred Krupp
EDF President

In this issue

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Solutions

ENVIRONMENTAL DEFENSE FUND
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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EDF ENVIRONMENTAL DEFENSE FUND
Finding the ways that work

FIELD NOTES

In China, let the trading begin

After years of preparation, China, the world's largest greenhouse gas emitter, has begun trading on its national carbon emissions market. The market is a key element in China's drive to produce no net carbon emissions by 2060 and initially covers 2,162 power plants — about 40% of the nation's total carbon emissions. Already the largest carbon market on Earth, it will eventually expand to include other industries such as chemicals and steel.

EDF was invited by the Chinese government to introduce market-based solutions to environmental problems in China in the 1990s and prepared the ground for this launch by helping design pilot carbon markets in a number of Chinese cities and provinces. Prior to the start of trading, some 7,000 people trained on market simulation software we developed.

"The start of the carbon market marks a major milestone in China's drive to reach carbon neutrality," says Jianyu Zhang, chief representative for EDF China.

SHUTTERSTOCK

GETTY

250%

The predicted increase in the number of zero-emission heavy duty truck models available in the U.S. from 2020 to 2023.

Source: CALSTART

$1.8 million

The average amount that one square kilometer of coastal wetlands saves a year in property damage from storms.

Source: PNAS

GETTY

+7°

The number of degrees Fahrenheit hotter the lowest income neighborhoods in the U.S. can be compared to the wealthiest ones. The hotter areas have fewer parks and trees, and more asphalt, buildings and highways.

Source: Earth's Future

ADOBE STOCK

EDF prevails against unneeded pipeline

EDF has won a major victory in our long-standing fight to stop unnecessary oil and gas pipelines. A federal court invalidated the operating certificate of the $287 million Spire STL Pipeline, which runs from Illinois to Missouri. The court found that the Federal Energy Regulatory Commission, which is supposed to act in the public interest, had approved the project even though there was no clearly demonstrated need for additional capacity in the region. The case will now return to FERC. The 65-mile pipeline was completed in 2019 and is fully operational.

In the wake of the landmark ruling, which may have implications for other pipelines, FERC has faced greater public scrutiny of its authorization process. EDF is pushing the commission to update its review procedures.

GETTY

Rolling back the rollbacks

1 The Biden administration will replace or repeal a Trump-era decree that opened up much of Alaska's Tongass National Forest to logging, mining and other development. The Tongass locks away almost half the carbon stored by our national forests and is home to hundreds of species of wildlife.

2 EPA will reconsider the Trump administration's decision to leave in place inadequate protections against dangerous particle pollution emitted by power plants, cars and other sources. Failing to strengthen those standards results in 50,000 premature deaths every year. EDF and partners filed suit to get stronger protections enacted.

MEET EDF

Emily Steinhilber

Director of Coastal Resilience, Virginia

What are you working on?

I'm working with other nonprofits, businesses and government to help Virginia prepare for the impacts of climate change.

Why Virginia?

We have 10,000 miles of coastline and are already experiencing twice as much tidal flooding as two decades ago. As the climate changes, rainfall increases and sea levels rise, it's going to get even worse.

Why a coalition?

Individuals often play whack-a-mole with solutions. They might go after one fix — like building sea walls to hold back floodwater — but may not consider how it impacts local communities. Coalitions provide multiple perspectives to produce solutions that are good for all.

What will the world look like in 50 years?

It'll be wetter in Virginia! But if we get this right, our transportation, housing, energy and other systems will allow us to thrive.

What's next?

Virginia elects a new governor in November. Whatever the outcome, we'll be in there championing our plan on their first day in office!

AUSTIN LEE. PHOTO COURTESY OF PACE PRINTS

Art for environmental action

"I am hopeful that there are solutions to environmental challenges that can make a safer world," says New York-based artist Austin Lee. Lee, working with his gallery, Pace Prints, offered a signed edition of 50 prints of "Rendered Birds" to benefit EDF. The sold-out sale raised $44,000.

Changing crops in a changing climate

In central Arizona, the devastating Western drought has dramatically reduced the amount of Colorado River water available to the region's farmers for their crops.

In Pinal County, for example, farmers will lose around two-thirds of their river water next year.

Switching to less thirsty crops will be one step required to ensure the survival of the region's agricultural economy. To help prepare, EDF has teamed up with Bridgestone Americas and a local farmer to test guayule, a drought-tolerant desert shrub that can be used to produce rubber for tires.

Guayule requires roughly half as much water as alfalfa, one of the region's dominant crops. When combined with other materials, 10 acres can produce over 500 tires. EDF and Bridgestone hope to expand the project, which began on just 40 acres in 2018, to over 20,000 acres within three years.

"Guayule could help ensure farming remains economically viable in central Arizona," said Kevin Moran, senior director of EDF's Colorado River program.

REUTERS EVENTS

Mission Possible

Seizing the climate moment

Flooded rivers tearing through Europe. Torrential downpours in India, China and the northeastern U.S. Yet another hurricane ripping into Louisiana and historic wildfires on multiple continents. Climate change is everywhere, circling closer.

As dire as things seem, environmentalists have never been pessimists. We fight for the climate because we know success is possible. We have the tools to drastically slash climate pollution by shifting to electric vehicles, cleaning up energy production and protecting the world's tropical forests.

UNSPLASH

Can we put these solutions to work at the scale and speed required to stave off climate catastrophe? We have an opportunity like no other. The Biden administration has a plan to halve U.S. climate pollution by 2030. Congress has restored regulations on methane, and major companies are reshaping themselves to deliver climate action. All this, as the world heads to Glasgow for the most consequential climate summit since Paris.

"You can feel the world pivoting back to climate action," says Kelley Kizzier, who leads EDF's international climate work. "We just might have the right mix of urgency and momentum to push the planet back on track."

In this special climate issue of Solutions, we examine the groundbreaking work that has brought us to this moment, and — with the right push — can carry us into a more stable climate future.

A global climate reckoning

More than 200 countries, six official languages, 30,000 people and 12 nearly sleepless days. Will COP26 be the climate summit the world is waiting for?

GETTY

CLIMATE CHANGE HAS NOW TOUCHED every nation on the planet, submerging shores, burning forests, flooding fields and drying out rivers. According to the most recent United Nations report, climate change is accelerating, the world is locked into 30 years of worsening impacts and the planet is poised to blow past the crucial 1.5°C (2.7°F) warming limit by the early 2030s. After decades of procrastination, the world now has just a few short years left to slash greenhouse gas emissions in half or face catastrophic climate change.

This is the backdrop as the world converges on Glasgow, Scotland, this November for the 26th annual Conference of the Parties to the United Nations Framework Convention on Climate Change — COP26, for short.

SYON GEOGRAPHICAL LTD.

It is the most critical COP since 2015, when nations committed, under the landmark Paris Agreement, to holding global warming to well below 2°C (3.6°F) above pre-industrial levels. The pollution reduction targets they submitted back then — while better than none at all — would still lead to a more than 3°C (5.4°F) increase in warming, making large parts of the Earth uninhabitable and endangering global food supplies. In preparation for this year's COP, all parties to the Paris Agreement are expected to unveil new, hopefully much more ambitious climate targets.

Whether they will do enough to stave off climate catastrophe, or continue to kick the can down the road, remains to be seen.

"I call this the ambition COP," says Kelley Kizzier, EDF's Associate Vice President for international climate. The urgency is palpable and the momentum encouraging. The EU, U.K. and U.S. have all come forward with solid targets in line with the scale of emissions cuts needed to cap global warming at 2°C or even 1.5°C. But immense challenges remain. China has pledged to be carbon neutral before 2060, but hasn't yet submitted nearer-term goals. Other major emitters, such as Australia, Brazil and India, have yet to make pledges of their own.

One tool that would help make big reductions achievable is international carbon markets. EDF has calculated that such markets could help the world double its emissions reductions at no additional cost. "But it has to be done right," says Kizzier. These markets allow polluters to fund carbon reducing measures abroad — such as protecting tropical forests — in addition to emissions they must reduce at home. But there are challenges. The reductions achieved through carbon markets must be independently verified and the system needs to ensure that there is no "double counting" where both a buyer and seller can claim the same reduction. One heavy lift for COP negotiators will be ironing out wrinkles like these to complete the rules that govern how international carbon markets work.

Another sticking point is ensuring the richest countries, which include some of the biggest polluters, support developing and emerging economies. In 2010, developed nations pledged $100 billion per year by 2020 to help developing countries reduce emissions and adapt to the impacts of climate change. Under the Paris Agreement, countries agreed to build upon this pledge. Adds Kizzier: "We also know public sector finance will not be enough. It needs to spur private sector investment to begin to scratch the surface of what it will actually take to help the world transition to clean economies and prepare for the impacts of climate change."

Despite these challenges, and previous COP's mixed record of success, the meeting is still the only existing global forum for critical climate discussions, and the only climate forum in which all countries' concerns carry equal weight, regardless of size. Agreement can only come by consensus. This is what gives COP decisions global authority — though it means it can take only one country dragging its heels to stymie more ambitious action.

"If we didn't have a COP, we'd have to invent one," says Kizzier.

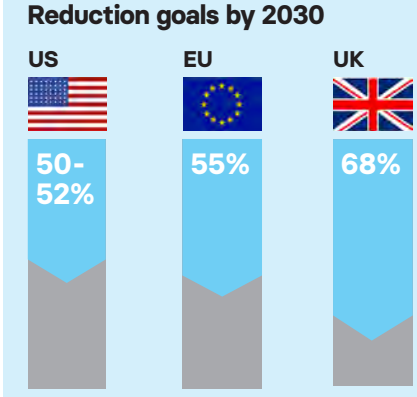
Kizzier says she feels the same kind of energy leading up to COP26 as she did before Paris.

"Paris saw almost every nation in the world agreeing to take action towards a common cause," she says. "It was a paradigm shift. This year, everyone is fired up again imagining what is possible."

Joanna Foster

EMISSIONS AMBITIONS

Reduction goals by 2030



The Basics: COP

COP stands for Conference of the Parties to the United Nations Framework Convention on Climate Change. It's the only global forum at which all countries gather to confront the climate crisis. As many as 30,000 people attend each year including delegations from more than 200 countries, representatives from dozens of official observer organizations, including EDF, and journalists from around the world.


ISTOCK

The highs and lows

1992
Rio
154 countries sign the United Nations Convention on Climate Change, setting out ways to avoid the most disastrous effects of climate change.

1997
Kyoto
Developed nations representing about half of global emissions pledge to reduce their climate pollution.

2009
Copenhagen
The summit fails to set basic targets for reducing emissions or secure commitments from countries.

2015
Paris
195 countries and the EU pledge to cut emissions with the goal of limiting global warming to less than 2°C (3.6°F).

2021
Glasgow
Countries are expected to pledge new climate targets, we hope much more ambitious than Paris.

COP: An insider's view

Kelly Kizzier

IISD/ENB - KIARA WORTH

EDF's Kelley Kizzier has been at every COP but two since 2005, both as the EU's lead markets negotiator and as an official observer with EDF.

"I would lovingly describe it as structured chaos," says Kizzier, who notes that 20-hour days are unexceptional. "Figuring out where you're supposed to be at any given time and how to eat and sleep enough to remain coherent can be a challenge. I've seen government officials snoozing on a lobby couch, because sometimes a nap is non-negotiable."

As an official observer organization, EDF can sit in on most of the negotiations. "Being an official observer gives us valuable insights into what or who is blocking progress and whether talks are headed in the right direction or falling apart," Kizzier explains.

Outside of the U.N. meetings, EDF hosts events to raise awareness about key issues. This year, EDF will be highlighting the importance of controlling methane emissions from oil and gas operations, doubling down on efforts to protect tropical forests and calling for greater ambition and speed in the transition to vehicle electrification.

"You can't swing a cat at a COP without hitting an EDFer," says Kizzier. "We're everywhere trying to get our message out."

Our economists, scientists and policy experts are also on hand to help journalists make sense of issues so they can explain to the rest of the world what is happening and why it matters. "In Paris," recalls Kizzier, "we had a gaggle of journalists from the world's top publications all huddled around a folding table as former EDFer Nat Keohane read through the latest text of an agreement and called out what details had changed and what it meant."

"COPs are a roller coaster ride — frustrating, hopeful, exhausting and exhilarating," says Kizzier. "I'm a nerd and an optimist, and I look forward to them all year."

World leaders take aim at climate pollution from methane

From Washington to Brussels to Beijing, new rules are on the way to cut the pollution that is making the planet hotter, faster.

GETTY

The Permian Basin is the world's largest oil field and a big source of U.S. methane pollution.

THIS SUMMER, DURING THE HOTTEST June in recorded U.S. history, Celerah Hewes of Albuquerque, New Mexico, urged the EPA to cut climate pollution from methane. Methane has more than 80 times the near-term climate warming power of carbon dioxide and is responsible for at least a full quarter of the warming that we are experiencing today.

"On her first day of summer camp, my daughter suffered a heat stroke," said Hewes, a member of EDF affiliate Moms Clean Air Force, who spoke at an EPA virtual public hearing. "On the third day, I had to explain to her that she couldn't play outside because the air was dirty from wildfires. We have to address climate change now, before this becomes the new normal."

As millions sizzled in the record-breaking heat, Congress cleared the way for the EPA to act. Delivering a big win for climate, a bipartisan majority in Congress voted to reinstate Obama-era regulations on methane pollution from the oil and gas industry. The vote reversed one of the Trump administration's most damaging climate rollbacks and immediately restored protections for communities affected by oil and gas pollution.

It also opened the door for the EPA to make deeper cuts to methane pollution, as Hewes, EDF methane experts and hundreds of others urged the agency to do. At press time, the EPA was expected to issue proposals this fall to strengthen methane regulations on new oil and gas wells and, for the first time, to regulate methane from 800,000 existing wells that account for the bulk of the industry's methane pollution.

A key climate solution

Cutting oil and gas methane pollution is the fastest, cheapest way to slow down global warming. Methane is the main component of natural gas, and it can leak or be purposely released from oil and gas operations and equipment. EDF estimates show that the industry is responsible for nearly half of U.S. methane pollution.

Once detected, many leaks can easily be fixed. The industry can cut its methane pollution by 75%, according to the Inter-national Energy Agency, by widely adopting technologies and practices already in use. More than half of those reductions can be made at no net cost to industry.

According to a recent study by EDF climate scientist Dr. Ilissa Ocko, using existing technology to cut all methane pollution in half by 2030 could slow the rate of global warming by as much as 30%.

Curbing oil and gas methane also reduces pollutants often released along with methane, such as cancer-causing benzene and smog-forming chemicals. More than 9 million people in the U.S. live within half a mile of an active oil and gas well and risk exposure.

Sue Franklin of Fort Davis, Texas, is one. "Many nights I woke up choking with the rotten egg smell of sulfur dioxide," Franklin told the EPA. "I had severe headaches and breathing problems that I never had before," she testified. "I beg you to please take action so people are not driven out of their homes."

Global momentum

EDF has been building the case for methane regulations in the U.S. and beyond. China and the EU are now both developing new rules to limit methane pollution. And at the COP26 climate talks in November, major oil and gas companies and the countries that buy their products could agree to tackle methane together.

"The world is waking up to the fact that we have to cut methane as well as carbon dioxide," says EDF's energy head Mark Brownstein. "We have to seize this critical opportunity for climate action."

Shanti Menon

SHUTTERSTOCK

Clean cars for everyone

An iconic American pickup truck is going electric, ushering in a new era of pollution-free driving.

AND HEDRICK/CAR AND DRIVER MAGAZINE

FORD'S F-SERIES PICKUPS HAVE been the top-selling vehicles in the country for nearly 40 years and, this fall, buyers will be able to order the new F-150 Lightning. It's the fastest F-150 yet, with a towing capacity of 10,000 pounds and a near-instant torque that prompted noted automotive expert Joe Biden to announce, after a test drive this spring: "This sucker's quick!"

The truck, which rolls out in 2022 with a starting price of less than $40,000, runs entirely on electricity.

Ford's decision to make its brawny, beloved workhorse vehicle fully electric represents a turning point in the auto industry, as does GM's decision, on which EDF advised, to sell only zero-emission vehicles by 2035. Until recently, electric vehicles were mostly niche products, marketed to environmentally conscious consumers or well-heeled enthusiasts. As recently as 2017, some major auto manufacturers lobbied the Trump administration to roll back U.S. and California clean car laws. But this summer, the Big Three automakers and United Autoworkers stood beside President Biden as he announced his goal of making half of all new cars sold by 2030 free of tailpipe pollution. Ford, GM and others envision EVs meeting the needs of every driver, not just a select few.

More than 120,000 people across the country have already put down a $100 deposit to reserve the Lightning. GM plans to make an electric Silverado pickup; Tesla's Cybertruck, also priced under $40,000, is expected to enter production in 2022.

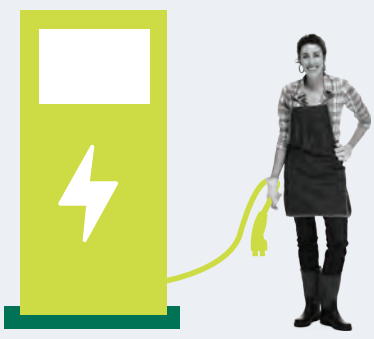
Robert McKeon, who runs a 550-acre farm in Red Hook, New York, hopes to be one of the first to get a new electric pickup. He used a conventional pickup for years to haul his livestock and transport bales of hay and bushels of apples. But when his truck died three years ago, McKeon held off on replacing it. He's been contracting out big hauling jobs to a fellow farmer, and making do with his old SUV for moving smaller loads.

"Throwing goats in the back of the Subaru got old pretty quick," says McKeon, whose daughter Natalie works for EDF. "I'm dying for a pickup, but I don't want to buy another gas vehicle. It's bad for the environment. And I think it's a bad investment. The maintenance costs are high and they depreciate right off the lot. I'm waiting for electric."

Automakers are betting on a wave of EV customers like McKeon. Worldwide, they plan to invest more than $340 billion in electric vehicles through 2030; about $52 billion has already been announced as being headed for America, where two factories in Michigan alone are expected to create more than 5,000

Farmer Robert McKeon

MCKEON



ISTOCK

Rapid EV-olution

	2011	2018
EV models available	3	14
Average range	73 miles	125 miles

jobs. Most analysts predict that the lifetime cost of EV ownership will equal that of a gas-powered vehicle by 2025.

"The transition is happening," says EDF Senior Counsel Peter Zalzal. "But if we want to protect climate and health, how fast it happens matters. And that is where Washington comes in."

Transportation is the number one source of climate pollution in the United States and a major source of air pollution. Making all new passenger cars and trucks zero-emissions by 2035 and freight trucks and buses zero-emissions by 2040 is critical for the U.S. to reach its climate goals and protect the health of communities.

Cutting 15 billion tons of carbon

EDF is urging the Biden administration to establish pollution standards under the Clean Air Act that would hit these targets, cutting more than 15 billion metric tons of carbon pollution — more than twice U.S. annual emissions — by 2050. Such standards would also prevent more than 150,000 premature deaths due to air pollution by 2050.

EDF is also working with major manufacturers and companies, including FedEx, GM, IKEA and others, to advance clean vehicle strategies. FedEx recently announced that all of its parcel pickup and delivery vehicles will be electric by 2040. IKEA is aiming for all its home deliveries to be zero emissions by 2025. In all, 17 companies that operate large vehicle fleets have committed to transition all or significant parts of their fleets to electric vehicles. Fourteen more have set targets to cut emissions by at least 50% by 2035.

The industry is not entirely united behind zero-emissions vehicles, however. Toyota is reportedly lobbying to slow down the transition, arguing against the new rules and investments that could squeeze out its gasoline-electric hybrids sooner.

The U.S. government is not the only driver of change. In July, the EU proposed legislation that would require all new cars and vans sold to be zero emissions by 2035. The UK and Canada have also announced similar plans. California is expected to adopt standards in 2022 that would hit this target.

For McKeon and others ready to make the electric switch, the new wave of EVs can't come quickly enough.

"I'm dying for a new pickup," McKeon says. "I can even use this one for backup power. I can't wait to show other folks the benefits. Everyone's going to want one."

Shanti Menon

Clean air for everyone

GETTY

Pollution from vehicles doesn't only damage the climate —it kills. And it's not evenly distributed. Highways, bus depots and other pollution sources are often located in communities of color — a disparity that springs in part from decades of racist policies and disenfranchisement — exposing residents to greater harm.

An EDF block-by-block study of air quality and health in the San Francisco Bay Area found that, on average, neighborhoods with more people of color face double the rate of childhood asthma from traffic pollution compared to predominantly white neighborhoods.

The disparities can be extreme. In West and Downtown Oakland, where most residents are people of color, as many as half of new childhood asthma cases were due to traffic pollution. By contrast, in a predominantly white Oakland Hills neighborhood, this pollution gave rise to 20% of new childhood asthma cases.

"Kids who never had asthma now have a health condition that will probably burden them for a lifetime," says EDF health scientist Ananya Roy, who led the study. "This could have been prevented."

Mapping air quality and health data at the neighborhood level — an approach pioneered by EDF and our community partners — could help guide the rollout of electric vehicles and charging stations to neighborhoods where air pollution reductions are most needed. EDF plans to expand this work to additional cities in the coming months.

Eliminating pollution from all new trucks and buses by 2040 would prevent more than 57,000 premature deaths due to air pollution. "That's great motivation to focus on electrification," says Roy.

2021

72

248 miles

2022–2024

85-100

275+ miles

Sources: US DOE; MJ Bradley EV Market Update; Consumer Reports

ISTOCK

Rainforest relief

Rooted in EDF's decades of work in the Amazon, new initiatives help companies deliver on pledges to preserve tropical forests and slow climate change.

THE 2010S WERE SUPPOSED TO BE the years that ended corporate deforestation, as hundreds of the world's biggest companies promised to stop sourcing and selling goods linked to deforestation by 2020. But as that deadline arrived, the vast majority of companies had fallen far short. From the Amazon to Indonesia, as the decade closed, the pace of forest loss was at least 30% higher than in the previous decade.

What happened?

"In many cases, the companies' desire to end their role in deforestation was sincere," says Breanna Lujan, EDF's forest and climate policy manager. But progress was stalled by under-resourced efforts, lack of know-how and inexperience in dealing with the political, social and economic complexities of the countries whose forests the companies were trying to protect.

Customers and investors are increasingly calling on companies to accelerate action on forest protection, which remains critical to slowing climate change. Tropical forests sequester more than a billion of tons of carbon dioxide annually, adding to the vast quantities they already store. They also evaporate huge amounts of water. That evaporation produces the billowing clouds that tower over these forests, cooling the Earth by reflecting sunlight back into space.

"There's just no way to stabilize the climate without protecting tropical forests," says Steve Schwartzman, EDF's senior director of tropical forest policy. Ending forest loss, coupled with reforestation, can reduce a large portion of global greenhouse gas emissions. Tropical forests also harbor many Indigenous peoples and forest communities, and half the Earth's biodiversity.

Finally, the obstacles to effective corporate forest preservation are being addressed. In Mato Grosso, Brazil's largest agricultural producing state, EDF and Brazilian partners are helping landowners who go above and beyond the legal requirements for forest maintenance to receive compensation for leaving more of their forest land untouched. Launched in 2020, the work complements another EDF strategy, which helps companies that buy agricultural products in Mato Grosso to collaborate with local people and regional authorities to reduce deforestation, maintain native vegetation and increase productivity.

Going global

A new initiative, the LEAF Coalition, was inaugurated this spring and has already raised more than $1 billion in public and private money, including the biggest ever private-sector contributions to reducing deforestation. More than 30 jurisdictions have applied for the program, which seeks to preserve as much remaining tropical forestland as possible, whether in Latin America, Central Africa or South and Southeast Asia.

LEAF represents the culmination of work begun in the 1990s by EDF and partners, including nonprofits and Indigenous groups in Brazil, to devise ways of compensating those who preserve woodlands. This led to the development of policies which reward countries that cut emissions by saving and planting trees on the scale of large jurisdictions, such as entire

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***

ISTOCK

MINDEN PICTURES

A home for three-toed sloths

nations or states. As Schwartzman put it, the idea was to make trees worth more alive than dead.

The jurisdictional approach makes it possible to quantify the amount of preservation more accurately and to overcome the problem of "leakage", when reducing emissions by protecting one patch of land causes increased emissions in another unprotected area where forests are burned or cleared.

While working on the policy frameworks, Schwartzman and others, including EDF's chief natural resource economist Ruben Lubowski, began to explore ways to mobilize private finance to protect forests at the jurisdictional scale. That vision started to become a reality after Norway, the United Kingdom and the United States joined with nine major international companies, including Amazon, Nestlé, Salesforce and Unilever, to create LEAF.

"We recognize that bold climate action is needed today," says Max Scher, head of Clean Energy and Carbon Programs at Salesforce. "That's why we are proud to be an initial participant in the LEAF Coalition, which provides an innovative way to invest in protecting tropical forests around the globe and sequestering carbon at scale."

Emergent, a nonprofit created by EDF, will administer LEAF's transactions, which enable private companies to pay for carbon credits created when jurisdictions demonstrate that they have reduced emissions by preserving forest. Emergent buys forest protection credits that meet a science-based verification standard that EDF helped to launch. This standard also ensures that people who live in protected forests benefit from payments.

LEAF has the potential to mobilize billions of dollars for large-scale forest protection and sustainable development. For Schwartzman, who first visited the Amazon in the 1980s, LEAF marks a turning point in a life devoted to the protection of tropical forests and building partnerships with those who live in them.

"It took decades to get here, but now we can offer companies a way to confidently make meaningful contributions to large-scale forest protection," he says. "That's going to aid the forests, the people who live in them and everyone on the planet who will benefit from a more stable climate."

Tom Clynes

INSIDE
Solutions

LIVE WEB EVENT

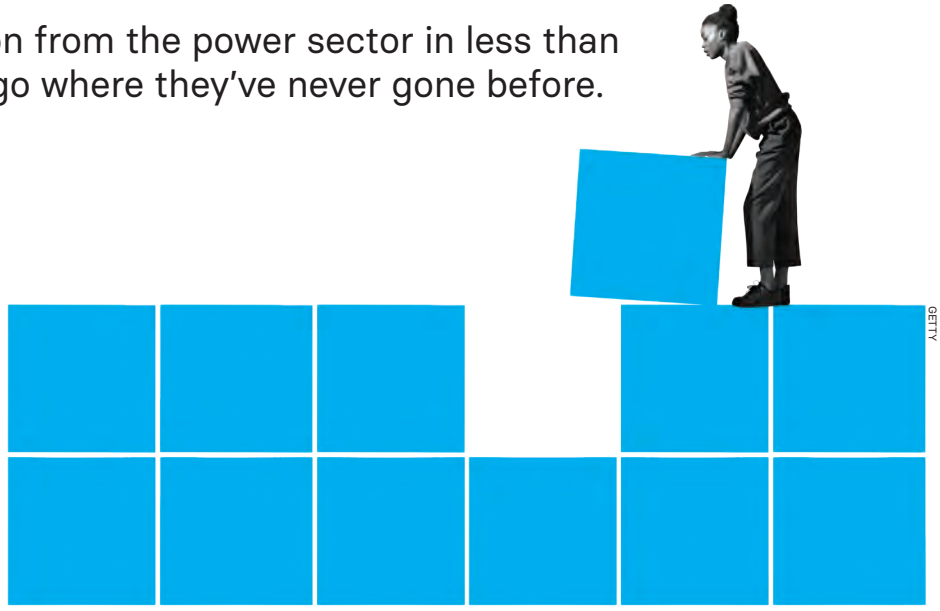
Saving the Amazon

Rainforests are vital for protecting biodiversity, soaking up climate pollution and supporting forest communities. Join us on a virtual trip to the Amazon and hear from EDF experts on our efforts to save an incredible, but critically threatened, ecosystem.

December 7, 2021 | 1-2 p.m. ET
Sign up at edf.org/InsideSolutions

Solar's new frontier

To eliminate climate pollution from the power sector in less than 10 years, renewables must go where they've never gone before.



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IT WAS DECEMBER 21, 2016 — THE darkest day of the year — when Stephen Trimble turned on his company's first commercial solar installation. Winter solstice is a tough day to launch a sun-powered business, especially in Anchorage, Alaska, where there are only five hours of daylight.

"Everyone thought I was nuts," recalls Trimble, who founded Arctic Solar Ventures, Alaska's first company dedicated to grid-connected solar, in 2015. "It was maybe 14 degrees outside, one foot of snow, and we had to use blow torches to melt the ice off our equipment so we could finish construction."

To make solar work in Alaska, Trimble and his team had to solve technical challenges and overcome public skepticism.

"We had to prove to people that solar wasn't just for greenies or hunting cabins and that it really could work in our northern climate," says Trimble, a former geologist and consultant for oil and gas companies who now sports a t-shirt that reads: "Solar, not just for hippies anymore." Trimble now counts many employees of energy companies like BP, Halliburton and ConocoPhillips among his customers.

Trimble found that properly sized solar arrays will enable a home or business to sell enough excess power back to the grid between April and September to pay their utility bills through the winter, when their panels are buried under snow.

Every component in Trimble's solar arrays is colored black to absorb heat from the sun and melt snow faster. And to thwart snow completely, his team is now also integrating solar panels into exterior walls.

Having overcome all these hurdles, Trimble now says that the biggest challenge for expanding Arctic Solar Ventures is regulatory uncertainty. The tax credits that helped get his company off the ground have expired, and unlike many other states, Alaska doesn't have mandatory renewable energy requirements.

While critical clean energy requirements and carbon pollution limits for power plants are in place in 30 states, what's needed, says EDF's Associate Vice President of U.S. Climate Pam Kiely, is a national clean energy standard, as pledged by President Biden on the campaign trail and embraced by Congressional Democrats. A CES would not only be a game-changer for the clean energy industry, but if well designed, would be the linchpin to get the U.S. to meet Biden's commitment to slash greenhouse gas emissions by at least 50% across the economy by 2030.

"An enforceable, national policy that ensures deep cuts in pollution from the power sector will create hundreds of thousands of jobs and is the most important step we can take to put the country on the path to a safer climate," says Kiely, whose team helped secure the most ambitious carbon pollution limits in the country in Washington state and is deeply involved in Pennsylvania's efforts to join a program — the Regional Green-house Gas Initiative — to cut climate pollution from the power sector.

While Trimble waits to see if the administration can make good on its ambitions, he's partnering with the U.S. military to help it meet its renewable energy goals. Next year Arctic Solar Ventures will begin construction on the largest high-latitude solar project in the world, for an Alaskan air force base that has run on coal for decades.

"Solar in Alaska still makes some people scratch their heads," says Trimble. "But when you're on the frontlines of climate change, it would be crazy not to try."

Joanna Foster

Solar installation jobs are projected to grow faster than any other in America.

ARCTIC SOLAR VENTURES

SIPA/AP IMAGES

GETTY

Shareholders turn up the heat in corporate boardrooms

Exxon vote showcases the power of investor climate action.

LAST SPRING, A SMALL ACTIVIST hedge fund named Engine No. 1 stunned the corporate world by winning three seats on ExxonMobil Corporation's board of directors, introducing a new era at America's largest oil company. EDF supported the effort by emphasizing to major shareholders that the time is right for one of the world's biggest greenhouse gas emitters to confront the threat of the global climate crisis.

Coupled with a record number of sustainability-related investor actions at other oil and gas companies, this spring's proxy season sent a clear signal to the fossil fuel industry that investors want ambitious climate action. But according to Gabriel Malek, EDF's investor influence coordinator, the impact goes well beyond energy companies and activist investors.

"Over a broad spectrum of industries, investor frustration with companies that aren't doing enough to tackle climate change is rising to the surface," says Malek, who adds that Engine No. 1 could not have succeeded without the support of large institutional investors such as BlackRock, State Street and Vanguard.

"This is a watershed moment for the oil and gas industry and leading investors in the race to transition to a net zero energy system," says EDF President Fred Krupp. The turning point is the culmination of years of advocacy by EDF and others, who have made the case that a strong climate strategy is a business necessity, since climate change will affect the long-term prospects of every company.

In ExxonMobil's boardroom, that message had been slow to take hold. For the past decade, the company did little to invest in emerging clean energy sources and infrastructure, even as performance lagged and the stock price fell. The company's leaders fought the Engine No. 1 slate until the very end, working behind the scenes to convince investors to vote against the insurgent candidates.

But EDF and allies were also quietly holding supportive talks with major investors that together hold about a fifth of ExxonMobil's stock. EDF also huddled with Legal & General Investment Management, another of Exxon's top 20 shareholders. As the vote neared, LGIM released a statement supporting the Engine No. 1 candidates, saying it was "concerned with the strength of Exxon's sustainability and capital-allocation strategy, as the risk of the energy transition becomes increasingly apparent."

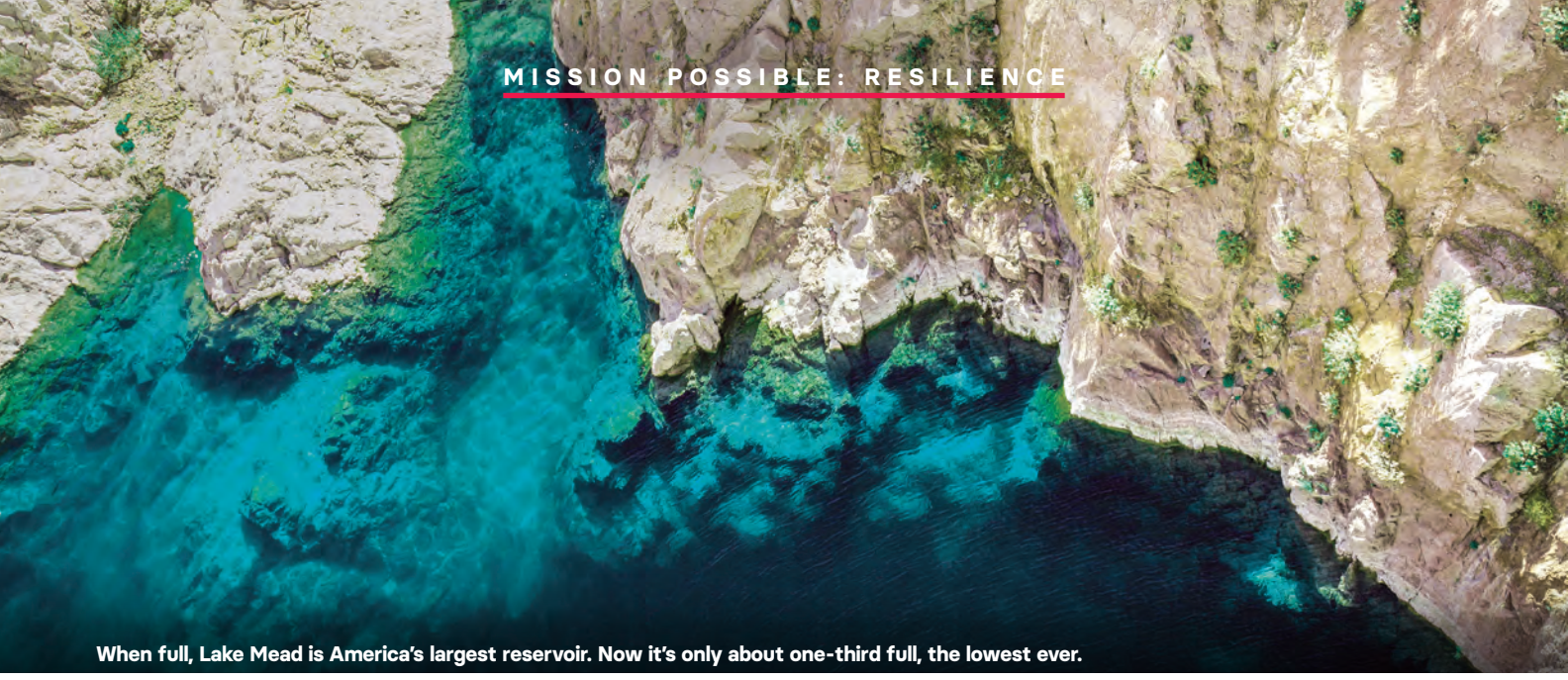
Building on the momentum of the ExxonMobil victory, EDF and LGIM America, the U.S. subsidiary of the 185-year-old British firm, recently announced a partnership to turbocharge investor leadership on climate change. The collaboration is the first of its kind between an environmental group and a major asset-management firm.

"LGIMA and EDF share the conviction that asset managers have the opportunity and the responsibility to use their market power to accelerate climate pledges into climate progress," says John Hoeppner, head of U.S. stewardship and sustainable investments at LGIMA. "With shareholders and regulators increasingly demanding transparency and leadership from the private sector, climate action has become a business imperative."

EDF and LGIMA will kick off their collaboration by identifying companies in the oil and gas and transportation sectors whose climate strategies are inadequate. Next, they'll work with investors to make climate action a priority at those firms.

The message, says Malek, is that climate action brings financial rewards. "To succeed, businesses need to go beyond net zero pledges and back them with clear emissions targets and near-term timelines. They also need to support public policy that promotes decarbonization and a future that's clean and prosperous for everyone."

Tom Clynes



When full, Lake Mead is America's largest reservoir. Now it's only about one-third full, the lowest ever.

GETTY

Saving Arizona

When drought struck, a cast of unlikely partners pulled together with EDF to keep the water flowing.

GETTY

AS A CRIPPLING DROUGHT SEARS the American West, Arizona's growing population faces a hotter, drier future. This summer, when the federal government declared a water shortage at Lake Mead, a water source for 25 million people in the West, Arizona was prepared.

Three years ago, Arizona was the only holdout among the seven Colorado River Basin states on a historic plan to conserve Colorado River water. Under the plan, each state agreed to limit the amount of water it could draw from the river when reservoirs fell below certain levels. Otherwise, the federal government would impose its own limits.

As Arizona state and local leaders, farmers, businesses and tribes struggled to reach consensus on who should give up how much water, the Colorado River Indian Tribes, also known as CRIT, representing the Mohave, Chemehuevi, Hopi and Navajo, stepped forward. CRIT — whose farmland runs along more than 110 miles of Colorado River shoreline — agreed to leave nearly 49 billion gallons of its water in Lake Mead over three years. The Gila River Indian Community provided additional water.

"It was a critical turning point that helped Arizona sign on to the Colorado River drought agreement," said Kevin Moran, who leads EDF's Colorado River program. "This project exemplifies the essential role tribes can play in increasing resilience for the regional water system, while also meeting their own objectives."

But there was one problem: The agreement called for the tribes to receive $38 million in exchange for their river water, and Arizona legislators would commit only $30 million.

That's when Moran, a key player in the state's drought negotiations, stepped in. He teamed up with several generous donors and committed to raising the additional money. That goal was reached this summer when EDF, along with the National Audubon Society and Business for Water Stewardship, successfully raised the outstanding amount. It was one of the largest collaborations ever in response to drought in the West.

The funds needed to realize this crucial and innovative agreement came from more than a dozen corporations and philanthropies, including Intel, Google, Microsoft, Procter & Gamble and Target.

"The diversity of partners in this agreement — tech giants and consumer product leaders, local and national foundations, tribes and the state — underscores the new scale of collaboration needed to make water supplies more resilient to climate change," Moran said. The project will also serve as a model for other regions — in the West as well as elsewhere — that are facing water shortages.

The funding announcement came as Lake Mead fell to its lowest level since 1935, triggering water cuts for Arizona, Nevada and Mexico.

Under the Colorado River plan, Arizona's supply will be cut 18% in 2022 — with central Arizona farmers losing nearly 33% of their river water. All told, the state will lose as much water as 4.5 million residents would use in a year.

The situation would have been even worse had the tribes not agreed to forgo part of their water entitlement.

To keep their water in Lake Mead, CRIT stopped farming more than 10,000 acres. They plan to use the money to modernize their irrigation infrastructure, which dates back to 1867 and is the oldest system built by the Bureau of Indian Affairs. The improvements include lining canals to reduce seepage, making for more efficient water use.

"We are proud to play a key role in mitigating water shortfalls in Arizona as drought conditions persist," said Amelia Flores, Chairwoman of CRIT. "This project benefits not only the life of the river but also our people and future generations."

Ronna Kelly

Nurturing that 'aha!' moment

FROM EDF'S FOUNDING MOMENT — when a small group of citizens took the unprecedented step of using the courts to win a ban on a dangerous pesticide — finding new ways to solve the most pressing environmental problems has been in the organization's DNA.

More than 50 years later, EDF has expanded in both size and ambition, but nurturing that organization-wide spirit of experimentation and innovation remains a guiding principle and priority.

"We all have those middle-of-the-night, 'what if?' ideas," says EDF manager Daniel Hill. "But there's so much that has to go right for a great idea to get implemented. It has to be tested, iterated, funded, staffed. And you have to fit it all around existing work priorities."

It was this realization that led Hill — a former social entrepreneur with connections to Silicon Valley — to have a "what if?" moment of his own.

Could EDF take the seed-funded startup model for which Silicon Valley is so famous and launch an innovation incubator of our own?

Fast forward two years and Hill now heads EDF's Innovation Fund, an annual call for breakthrough thinkers from across EDF's 700-strong global workforce to apply for funding, space and support to explore and test new ideas. Since its inception in 2020, the fund has heard more than 70 ideas and is supporting six projects.

"The Innovation Fund came along at exactly the right time," said EDF manager Pamela MacDougall, who is piloting a project in Antigua to investigate whether electric school buses could do double duty as power sources during outages when extreme weather hits. "It was the jump-start we needed to get our project off the ground."

The fund's ultimate goal is to generate pilots that can evolve into full-scale projects capable of tackling the world's most pressing environmental challenges.

But just as in Silicon Valley, not every idea will fly, says Hill, and that's fine.

"We're creating a new, dedicated space where ambitious people can take risks and test ideas," he says. "Succeed or fail, we will learn from each project and those learnings can be used across our work here at EDF."

Tasha Kosviner

GETTY

Innovation Fund in action

Mission:
Keep the power on

Can electric vehicles also help keep the lights on during outages? Working with the Department of Environment in Antigua and Barbuda, this project will test the idea that an electric school bus, coupled with a bidirectional charger, could discharge power back into a building when the main supply goes down. The project will illustrate how electric vehicles can power critical buildings such as storm shelters or schools during outages, helping protect communities hit by storms made even more powerful by climate change.

Mission:
Tackle food insecurity

For millennia, the sea has been a vital source of food and income for coastal communities around the globe. Today, industrial fishing — which sells vast quantities of fish in markets far from where it was caught — and fish migration caused by warming seas, are putting this natural bounty at risk. This project will gather data on the global displacement of fish to illuminate the resulting food insecurity faced by millions. An interactive map will help fisheries managers and regulators visualize this displacement to create policies that protect local fish stocks for local people.

Mission:
Build back better

Across America, decades of underinvestment and discriminatory regulations have left many low-wealth communities and communities of color struggling for access to safe housing, jobs and services. When climate disasters strike, they are often hit harder and take longer to recover. This project will train residents from Houston's most at-risk neighborhoods in jobs such as installing solar panel, repairing electric vehicle charging infrastructure and cleaning up chemical spills. The project will help them rebuild stronger while improving resilience to future climate disasters and boosting long-term job prospects.

Your climate-inspired art

This year, to celebrate Earth Day, EDF held its first-ever art contest. We invited you to submit work that expressed your hopes and fears for the environment, promising to display the winners in *Solutions*. From the dozens of responses, we chose the works of seven artists, all of which are shown here. Congratulations to each of them and to everyone who participated in the contest. Thank you for your generosity and creativity and for your commitment to building a better world!

Joel Rosenblatt
Mt. Pleasant, South Carolina
"Struggle of the Salmon"
Digital photograph

"The 'Struggle of the Salmon' was taken in Valdez, Alaska, near the site of the 1989 Exxon Valdez oil spill. Each year, between 500,000 and a million pink salmon return to the harbor to spawn. Clean energy is critical to the survival of this planet."

Amanda Burkman aka Rusti
Monterey, California
"Greta and Jane"
Recycled paint chip mosaic
18" x 24"

"Love strengthens when we harmoniously interact with our Earth, the beautiful creatures on it and each other. Protecting these invaluable gifts by committing to clean energy is our only way forward."

Neil Pine
Santa Monica, California
"Exotica"
Black ink and colored pencil
18" x 24"

"As an artist and vegan, I believe in sustainable, compassionate and health-conscious living — the freedom to breathe fresh air, have clean drinking water, a pristine ocean without toxic oil spills and protecting endangered species!"

Joseph Muscat
Toronto, Canada
"Cabin Jitters_9_Migration"
Mixed media

"'Cabin Jitters 9_Migration' is one of a series of works done during the pandemic. Migration of humans escaping political and environmental disasters is a worldwide issue. Like the migratory birds who make their annual trek to warmer and more suitable climes, we too seek better living conditions while striving to respect and preserve our earthly paradise."

Jolly de Guzman, aka dearantler
Los Angeles, California
"A Good Soak"
Acrylic on paper
20" x 26"

"This painting is part of a six-part series that offers a hopeful, action-oriented message for each of us to become a water steward. The whimsical collection of images reveals creative, sometimes surreal ways to capture rain. To me, 100% clean energy by 2050 means that the hum of fossil fuel-powered engines will be gone. The streets will be quiet and bird songs will fill the air. The air will be clean and the sky will be blue."

Mary Edna Fraser
Charleston, South Carolina
"Lincoln Peak"
Batik on silk
78" x 47.5"

"In 2050, I will be two years shy of 100. I think clean energy is necessary for our planet to survive. Future generations need action now. Lincoln Peak, in Glacier National Park, lies at an elevation of 7,450 feet."

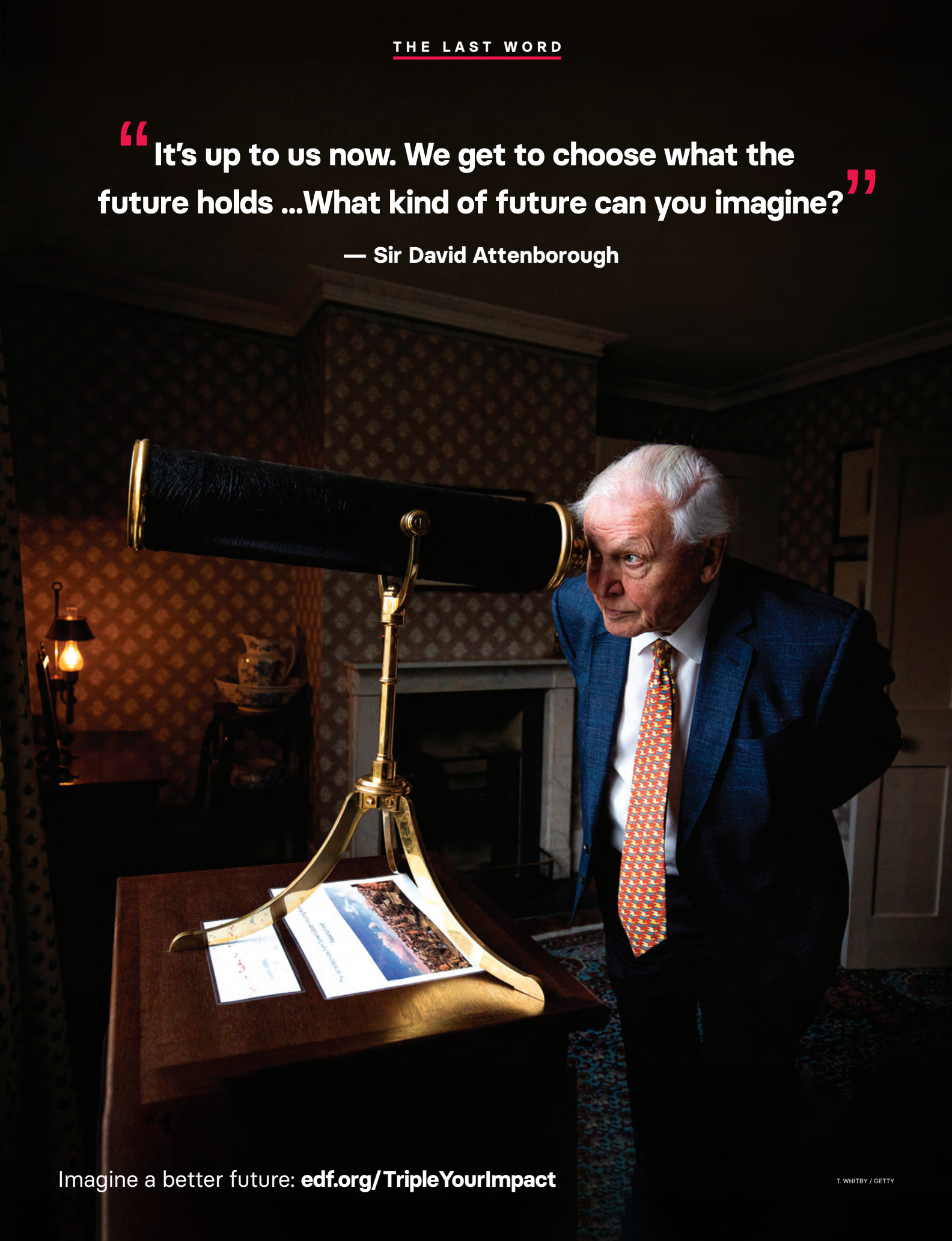
Edward Lee
Oakland, California
"Rising Seas"
Processed digital photograph

"This photo suggests that the effects of climate change will not just be devastating to nature, but also to humanity, in ways that we can only guess at this point. Achieving 100% carbon neutrality by 2050 is necessary, but also insufficient. The last time the Earth had carbon dioxide levels equal to today, the seas were some 70 feet higher. We have to figure out how to remove enormous amounts of carbon dioxide from the atmosphere or we will drown."

Amanda Burkman aka Rusti
Monterey, California
"New Growth"
Recycled paint chip mosaic
40" x 40"

"'New Growth' was inspired by the strength and beauty that comes from catastrophes, devastation and loss. The woman, cradling herself, is the new growth. She represents the beauty, hope, faith and strength gained from such destruction."

M. SHASHARAM / UNSPLASH


“It’s up to us now. We get to choose what the future holds ...What kind of future can you imagine?”
— Sir David Attenborough
Imagine a better future: edf.org/TripleYourImpact
T. WHITBY / GETTY