

**For Thursday Oct 5th**

■ We'll work in class on PART FOUR – The energy Transition  
Read texts 3 and 4 and prepare answers to the questions on text 3

**For Thursday Oct 12th**

■ Each group is going to prepare a revision card on one of three aspects of what is referred to as “climate action”:

- PART ONE - Scientific research
- PART THREE - Climate activism and legal actions
- PART FIVE – A future with less cars?

Your revision card will contain the following parts:

- Useful vocabulary on the topic
- Key facts and figures
- Discussion points on the topic for a Mines essay
- Useful expressions that could be used on a synthesis or an oral exam

■ **LVB:**

- Prepare an oral presentation of Text 3.
- Make a quick presentation of the two iconographic documents (doc A and Doc B) of the file and imagine a situation for a Mines Telecom oral based on document A.

**For Thursday October 19th**

■ **Practicing for the oral exam of X/ENS/ESPCI Oral – Document 6**

**During the Toussaint Holidays**

■ **Part 4** of the file focuses on the effects of climate change and climate change attribution.

Your task: prepare a revision card by using both the text in French and in English and then to translate the sentences in bold.

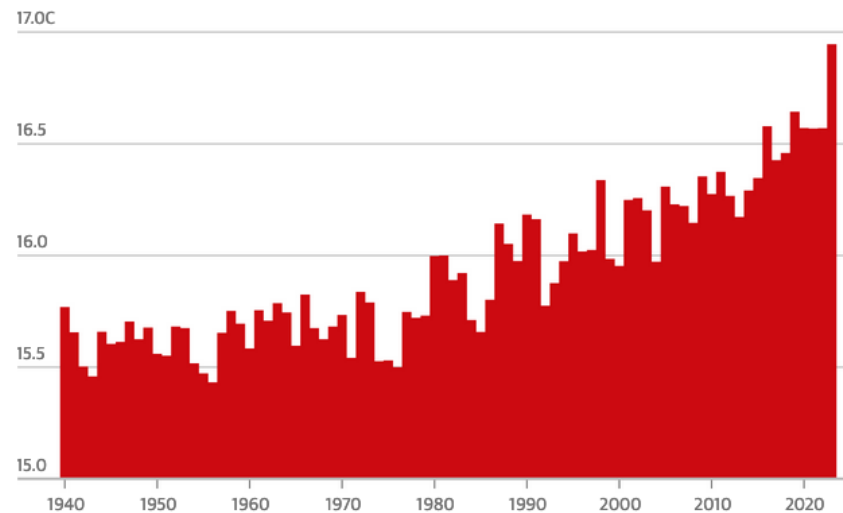
**Doc A**



**Doc B**

**July in 2023 has been the warmest on record**

Average global surface temperature for the first 23 days of July, C



Guardian graphic. Source: Copernicus/ERA5

## PART ONE – SCIENTIFIC RESEARCH FOR CLIMATE ACTION

### TEXT 1 - How researchers can help fight climate change in 2022 and beyond

*COP26 energized the global effort to halt global warming. Research is now crucial to monitoring progress and creating solutions.*

Editorial, *Nature*, 05 January 2022

Late last year, the major climate summit in Glasgow, UK — the 26th Conference of the Parties to the United Nations climate convention (COP26) — injected much-needed momentum into the political and business community in the fight to stop climate change. The year ahead represents an opportunity for scientists of all stripes to offer up expertise and ensure that they have a voice in this monumental effort.

Science is already baked into the UN’s formal climate agenda for 2022. In February, the Intergovernmental Panel on Climate Change (IPCC) is scheduled to release its assessment of the latest research into how climate warming is affecting people and ecosystems; a month later, the panel is set to provide an analysis of the options for curbing emissions and halting global warming. Combined with last year’s report on climate science, the governments of the world will have a solid review of the state-of-the-art of research on climate change. But the research community’s work stretches far beyond the IPCC.

At the top of governments’ climate agenda is innovation. Existing technologies such as wind and solar power, whose price has plummeted over the past decade, and more-efficient lighting, buildings and vehicles will help to reduce emissions. But if green energy is to push out fossil fuels and fulfil the rising demand for reliable power in low-income countries, scientists and engineers will be needed to solve a range of problems. These include finding ways to cut the price of grid-scale electricity storage and to address technical challenges that arise when integrating massive amounts of intermittent renewable energy. Research will also be required to provide a new

generation of affordable vehicles powered by electricity and hydrogen, and low-carbon fuels for those that are harder to electrify, such as aircraft.

Even in the most optimistic scenarios, such clean-energy deployments are unlikely to be enough to enable countries to keep their climate commitments. More innovation will also be needed — for example, in the form of technologies that can pull carbon dioxide out of the atmosphere. These have yet to be tested and demonstrated at any significant scale. Governments and funders also need to support scientists in efforts to understand the safety and efficacy of various controversial geoengineering technologies — methods for artificially cooling the planet, such as the addition of particles to the stratosphere to reflect sunlight back into space — if only to determine whether there is sense in even contemplating such alternatives.

There are signs of renewed support for research and innovation in helping to address climate change. In Glasgow, 22 countries, as well as the European Commission (EC), announced plans to cooperate on innovation focused on greening cities, curbing industrial emissions, promoting CO<sub>2</sub> capture and developing renewable fuels, chemicals and materials. (...) And China, currently the world’s largest emitter of greenhouse gases, is creating a vast research infrastructure focused on technologies that will help to eliminate carbon emissions.

In the United States, under President Joe Biden, the Democrats have also made innovation a linchpin of efforts to address climate change. A bipartisan bill enacted in November will expand green-infrastructure investments, as well as providing nearly US\$42 billion for clean-energy research and development at the US Department of Energy over the next 5 years, roughly doubling the current budget, according to the Information Technology and Innovation Foundation, a think tank in Washington DC. (...)

In addition to enabling green innovation, scientists have an important part to play in evaluating climate policies and tracking commitments made by governments and businesses. Many of the initiatives that gained traction at COP26 need science to succeed. That includes evaluating how climate finance — money that wealthy nations have committed to help low-income nations to curb emissions and cope with climate change — is spent. Research is also needed to understand the impacts of carbon offsets and carbon trading, for which new rules were agreed at COP26.

Climate science, too, must continue apace, helping governments and the public to understand the impact of climate change. From floods in Germany to fires in

Australia, the evolving field of climate attribution has already made it clear that global warming is partly to blame for numerous tragedies. Attribution science will also feed into an ongoing geopolitical debate about who should pay for the rising costs of climate-related natural disasters, as many low-income countries seek compensation from wealthy countries that are responsible for the bulk of the greenhouse-gas emissions so far.

These and other issues will be discussed again in November at COP27 in Sharm El-Sheikh, Egypt, where it will be crucial to make sure that everyone has a voice and that research supports climate monitoring and innovation everywhere, not just in richer nations. (...) (771 words)

## TEXT 2 - Three scientists at the cutting edge of new energy solutions

*Technology to produce, convert and store energy is central to these researchers' efforts.*

*Nature, 07 Sept 2022*



Shirley Meng, Anne Lyck Smitshuysen and Ying Chuan Tan take multi-faceted approaches to finding energy solutions. Credit: Paddy Mills

To meet global energy needs sustainably, countries must combine multiple approaches. These scientists are pursuing breakthroughs in high-profile areas of energy research: hydrogen, grid batteries and electrochemical reduction of carbon dioxide.

### **ANNE LYCK SMITSHUYSEN: Hydrogen power**

Anne Lyck Smitshuysen wants to find a cost-effective way to unlock the hydrogen power in water molecules. As a PhD student at the Technical University of Denmark in Kongens Lyngby, she works with solid-oxide electrolysis cells that use electric currents to split water into hydrogen and oxygen.

Lyck Smitshuysen developed a 3D-printed mould to protect the ceramic cells from warping and fracturing during manufacturing, making it possible to increase the cell size from 150 cm<sup>2</sup> to 1,000 cm<sup>2</sup>. “By upscaling the process, we can make it cheaper to use electrolysis for large-scale applications,” she says, estimating that the innovation could reduce the cost of producing hydrogen fuel by 15%. (...)

In addition to her PhD research, Lyck Smitshuysen is employed as a fuel-cell specialist at DynElectro, a Danish start-up company focused on hydrogen-based energy. In March, a paper she co-authored described the company’s successful attempt to increase the lifespan of hydrolysis cells by rapidly cycling between a direct current and an alternating current.

“Right now, it looks like we can prolong the lifetime of these cells from two or three years to at least five,” says Lyck Smitshuysen. “Because we are engineers, we won’t say that means an infinite lifetime. At some point, something is going to go some way that we didn’t predict.”

Longer-lasting cells would help to further reduce the costs of hydrolysis, a crucial step towards a greener energy system. “I want to do something to move towards a more carbon-neutral society,” Lyck Smitshuysen says. “That’s a big motivator.” — by *Chris Woolston*

### **SHIRLEY MENG: Storage solutions**

Shirley Meng sees a future power grid that runs largely on megawatt-scale batteries storing energy harvested from wind and solar power. It’s a vision so large that Meng, a materials scientist, felt compelled to leave her lab at the University of California, San Diego, to join the Argonne National Laboratory, outside Chicago, where she is now the chief scientist of the Argonne Collaborative Center for Energy Storage Science. “We needed a national lab to do things on a larger scale,” she says. Large-scale battery power requires nano-scale precision. In a review published in April, Meng and her team describe using artificial intelligence and computed X-ray tomography — a common medical imaging technique — to observe battery function

and deterioration in batteries including lithium ion batteries, a type that is often used to support large power grids.

Every bit of wear, no matter how small, erodes a battery's power and longevity. "We're developing tools to enable us to diagnose and quantify battery degradation, so we can come up with engineering solutions to make a battery last for centuries," she says. Whether they are powering cars or entire communities, batteries must be durable and recyclable, Meng says. She wants to get the most out of every lithium atom or any other resource that goes into battery production. "Once we take resources from the ground, I want them to contribute to the grid forever," she says. Increasing the lifespan of a battery also reduces the overall cost per kilowatt hour, a crucial aspect of any reimagining of the world's energy grid.

Although she calls herself a "battery person", Meng emphasizes that it will take a wide variety of energy sources and storage strategies to power the future grid. She envisions a mixture of ion batteries and 'flow batteries', which store energy in liquid tanks. She also sees an important role for hydrogen in energy production and storage. But batteries will be the foundation, she says. "We have enough solar; we have enough wind. Batteries are the last missing piece for a grid that is stable and sustainable." — *by Chris Woolston*

#### **YING CHUAN TAN: Carbon converter**

Advancing more sustainable sources of energy first motivated Ying Chuan Tan as an undergraduate student in Singapore. Now a chemical and biomolecular engineering researcher at the Institute of Sustainability for Chemicals, Energy and Environment (ISCE2), launched under Singapore's Agency for Science, Technology and Research in March, he is interested in one emerging technology: electrochemical reduction of carbon dioxide.

The process involves using water electrolysis to convert CO<sub>2</sub> directly into ethanol, ethylene and other valuable chemicals — instead of deriving them from fossil fuels. "This helps to make it more sustainable," says Tan. It could also help mitigate the effects of climate change. Capturing CO<sub>2</sub> from the atmosphere and storing it deep underground is expensive. Electrochemical reduction offers a cost-effective alternative, with the added benefits of generating useful multi-carbon products while using renewable energy sources.

But in order for the nascent technology to realize its potential, the carbon conversion efficiency rate needs to be raised to 50% or more, up from the current

30%, says Tan. In 2019, Tan moved to the Korea Advanced Institute of Science and Technology, in Daejeon, to deepen his knowledge of the technology, before returning to Singapore in 2021.

Tan is looking for new catalysts. Silver and gold, for instance, are used to produce carbon monoxide (the main component of synthetic gas), but they are expensive. Nano-sized nickel is a promising alternative, however finding a framework for it to work well on the electrode has been challenging. In 2021, Tan's team described how carbon nanotubes in nickel maximizes the active sites available for binding while facilitating an uninterrupted flow of electrons. This allows CO<sub>2</sub> to be reduced more quickly to carbon monoxide. (...)

Since Tan moved home, his focus has been on finding ways to support Singapore's chemical industry so that it remains competitive. "I hope my technology can be used globally," he says, "and that we can have more sustainable chemical production through the electrocatalysis route." — *by Sandy Ong*

## **PART TWO – THE ENERGY TRANSITION**

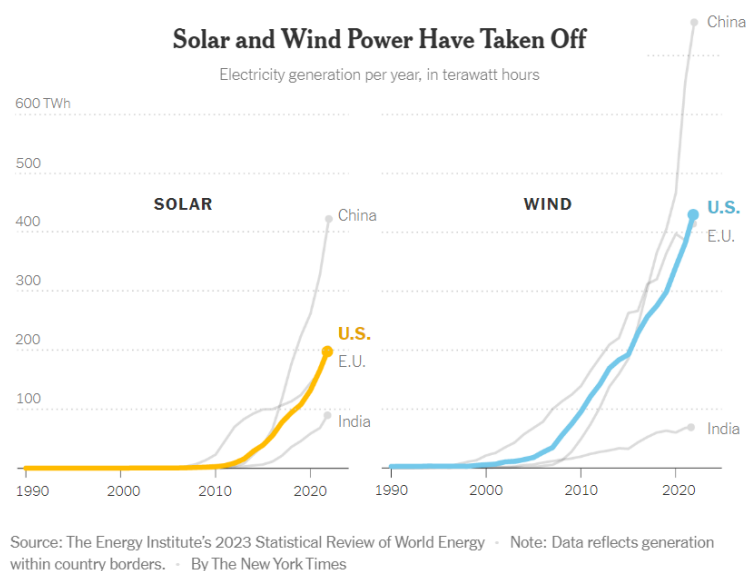
### **TEXT 3 - The Clean Energy Future Is Arriving Faster Than You Think**

***The New York Times***, Aug 17, 2023

Part of *their series on The Energy Transition*

*This is just the introduction of a very long article the complete version of which you will find on the Cahier de Prépa.*





Delivery vans in Pittsburgh. Buses in Milwaukee. Cranes loading freight at the Port of Los Angeles. Every municipal building in Houston. All are powered by electricity derived from the sun, wind or other sources of clean energy.

Across the country, a profound shift is taking place that is nearly invisible to most Americans. The nation that burned coal, oil and gas for more than a century to become the richest economy on the planet, as well as historically the most polluting, is rapidly shifting away from fossil fuels.

A similar energy transition is already well underway in Europe and elsewhere. But the United States is catching up, and globally, change is happening at a pace that is surprising even the experts who track it closely.

Wind and solar power are breaking records, and renewables are now expected to overtake coal by 2025 as the world's largest source of electricity. Automakers have made electric vehicles central to their business strategies and are openly talking about an expiration date on the internal combustion engine. Heating, cooling, cooking and some manufacturing are going electric.

As the planet registers the highest temperatures on record, rising in some places to levels incompatible with human life, governments around the world are pouring trillions of dollars into clean energy to cut the carbon pollution that is broiling the planet.

The cost of generating electricity from the sun and wind is falling fast and in many areas is now cheaper than gas, oil or coal. Private investment is flooding into companies that are jockeying for advantage in emerging green industries. “We look at energy data on a daily basis, and it’s astonishing what’s happening,” said Fatih Birol, the executive director of the International Energy Agency. “Clean energy is moving faster than many people think, and it’s become turbocharged lately.”

More than \$1.7 trillion worldwide is expected to be invested in technologies such as wind, solar power, electric vehicles and batteries globally this year, according to the I.E.A., compared with just over \$1 trillion in fossil fuels. That is by far the most ever spent on clean energy in a year.

Those investments are driving explosive growth. China, which already leads the world in the sheer amount of electricity produced by wind and solar power, is expected to double its capacity by 2025, five years ahead of schedule. In Britain, roughly one-third of electricity is generated by wind, solar and hydropower. And in the United States, 23 percent of electricity is expected to come from renewable sources this year, up 10 percentage points from a decade ago. (...)

Even as the pace of change in the United States is surprising everyone from energy experts to automobile executives, fossil fuels still dominate energy production at home and abroad.

Corporations are building new coal mines, oil rigs and gas pipelines. The government continues to award leases for drilling projects on public lands and in federal waters and still subsidizes the industries. After posting record profits last year, leading oil companies are backing away from recent promises to invest more heavily in renewable energy.

The scale of change required to remake the systems that power the United States — all the infrastructure that needs to be removed, re-engineered and replaced — is mind-boggling. There are major challenges involved in adding large amounts of renewable energy to antiquated electric grids and mining enough minerals for clean technologies. Some politicians, including most Republicans, want the country to continue burning fossil fuels, even in the face of overwhelming scientific consensus that their use is endangering life on the planet. Dozens of conservative groups organized by the Heritage Foundation have created a policy playbook, should a Republican win the 2024 presidential election, that would reverse course on lowering emissions. It would shred regulations designed to curb greenhouse gases,

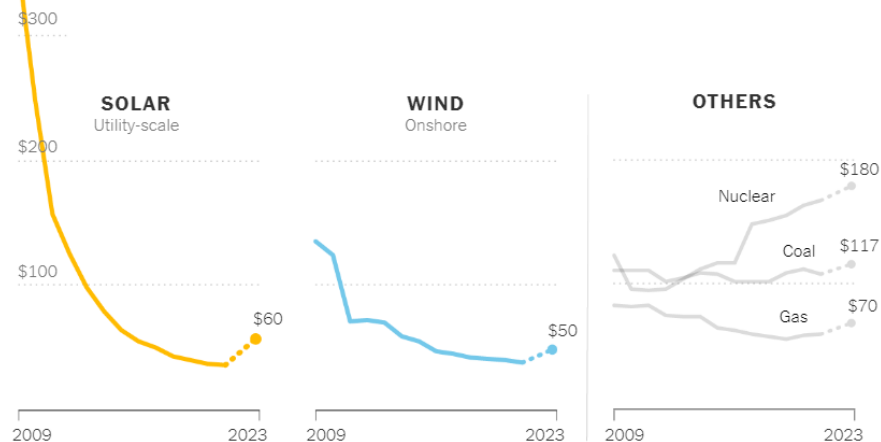
dismantle nearly every federal clean energy program and boost the production of fossil fuels.

And while energy systems are changing fast, so is the climate. It is far from certain whether the United States and other polluting countries will do what scientists say is required to avert catastrophe: stop adding greenhouse gases to the atmosphere by 2050. All of the investment so far has slowed the pace at which emissions are growing worldwide, but the amount of carbon dioxide pumped into the atmosphere is at record levels.

And yet, from Beijing to London, Tokyo to Washington, Oslo to Dubai, the energy transition is undeniably racing ahead. Change is here, even in oil country. (742 words)

### The Cost of Renewable Energy Has Plummeted

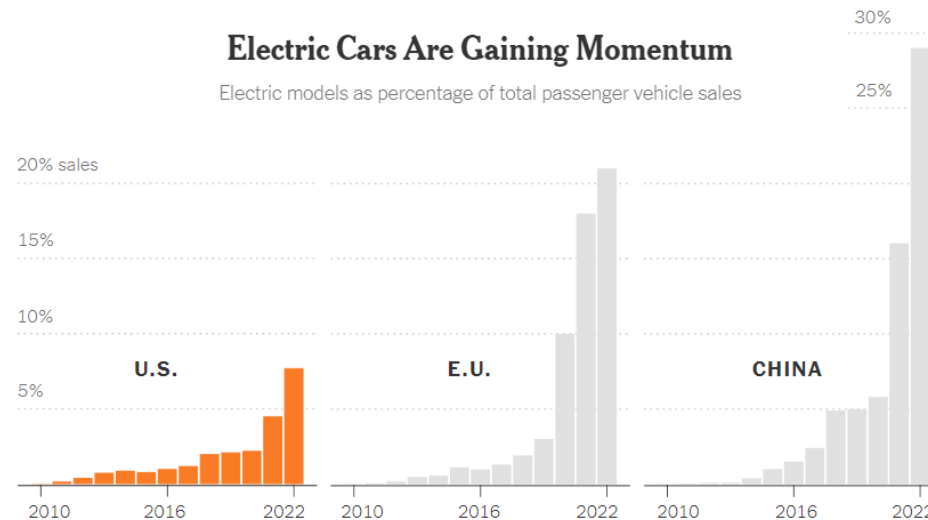
Cost of building and running new power plants, in dollars per megawatt hour



Source: [Lazard](#) - Notes: Charts reflect the mean levelized cost of energy, which captures the price of building and running new power plants but excludes other electrical system costs. Lazard did not release data for 2022. In 2023, costs rose because of supply-chain problems, inflation and other issues. - By The New York Times

### Electric Cars Are Gaining Momentum

Electric models as percentage of total passenger vehicle sales



Source: [International Energy Agency](#) - Note: Sales share of battery electric vehicles excludes plug-in hybrids. - By The New York Times

## TEXT 4 - China's Two Climate Directions

The Morning, August 15 2023 – A daily newsletter from *The New York Times*

While the U.S. and Europe have enacted sweeping policies to fight climate change in recent years, China has always had the potential to undermine those successes.

China is the world's biggest polluter. It has the second-largest population on earth, with a growing economy that increasingly demands energy. If China largely fills that demand with coal and other fossil fuels, as it has for the past two decades, it could negate the rest of the world's progress in reducing planet-warming greenhouse gas emissions.

The good news is that China is not relying only on fossil fuels. The world is moving toward a clean energy future faster than experts expected, my colleagues David Gelles, Brad Plumer, Jim Tankersley and Jack Ewing reported. And that future includes China. It already produces more electricity by solar and wind power than any other country, as this chart shows:

China is also a leading manufacturer of electric cars. They now make up a larger share of the passenger vehicle market in China than in the U.S. or the E.U.:

“There is no doubt about it: China is doing more than any other country when it comes to renewable energy and electric vehicles,” David, who writes The Times’s Climate Forward newsletter, told me.

How? China has poured a lot of money into the research, development and use of clean energy, using its extensive manufacturing base to build solar panels and wind turbines and bring down prices worldwide. It has provided subsidies to buyers of electric vehicles, as the U.S. now does. And it has pursued, and surpassed, aggressive goals: China vowed to double its capacity of wind and solar power by 2030. It is on track to meet that goal five years ahead of schedule.

Still, there is some bad news. While China is the world’s biggest adopter of clean energy, it also remains the world’s biggest user of fossil fuels, particularly coal. “We have to hold these two things, which can seem contradictory, in our heads at the same time,” David said. “China is pulling the world in two directions.”

This may not be a contradiction so much as a transition. China’s investments suggest it is enthusiastic about clean energy. But it needs to power homes and factories at levels that clean energy sources alone can’t handle yet. So China continues using fossil fuels to meet its needs. As clean energy becomes cheaper and more competitive, China could replace fossil fuels and over time reduce how much it pollutes.

That is the optimistic scenario, and China’s quick embrace of clean energy suggests such a future is increasingly plausible. (432 words)

**TEXT 5 - How the Inflation Reduction Act Has Reshaped the U.S.—and The World**

Justin Worland, **TIME**, August 11, 2023

In late July, I visited a steel mill in Gallatin, Ky., operated by the company Nucor. During my visit, I watched as the facility churned out massive rolls of low-carbon steel destined for use in renewable infrastructure. Nucor’s stock price has increased nearly five-fold in the last three years, and the day before I visited the company had announced blockbuster profits citing, in large part, all the demand created by businesses racing to take advantage of money flowing from federal spending programs, including and especially the Inflation Reduction Act (IRA).

Kentucky is far from alone. Across the country, the IRA has spurred hundreds of billions of dollars in investment in clean technology. Lithium-ion battery makers are

opening factories near auto industry hubs to serve the growing electric vehicle market. Solar manufacturers are setting up shop in red states like Georgia. And old-school oil companies are investing in hydrogen. “It’s a transformation of the economy,” says John Podesta, President Joe Biden’s senior advisor charged with implementing the IRA.

The IRA, which will mark one year since its signing on Aug. 16, is a classic piece of D.C. lawmaking. It came about in a windy legislative process that began with a big campaign promise from Biden and ended with backroom deal-making on Capitol Hill. And it has an odd, misleading name with a funny acronym, to boot.

But while the law was born in D.C., to understand its impact you need to look outside the capital as it reshapes industry across the country and the world. From Miami to Mumbai, Boise to Brussels, wherever I’ve traveled in the last year, the IRA has been top of mind for policymakers, business leaders, and civil society. It will not only determine whether the U.S. meets its emissions reduction goals, but also shape the global economy for decades to come.

“I want to make it clear: the Inflation Reduction Act is the single most important climate action since the Paris Agreement in 2015,” Fatih Birol, the executive director of the International Energy Agency, told me in May.

At the core of the IRA is a mantra oft-repeated by members of the Biden Administration: the law is designed to be private sector-led and government-enabled. Instead of introducing mandates, the IRA offers tax breaks to companies that deploy clean technologies.

The impact was swift. “It was quick, it was immediate, and it doesn’t appear to be slowing down,” says Greg Matlock, who leads EY’s Americas Energy Transition practice. Matlock says that “within a week” of the law’s passage he noticed “tangible movement on investments” from clients.

Companies have invested more than \$270 billion in U.S.-based clean energy projects—think wind, solar, and battery—since the IRA became law, according to a report from the American Clean Power Association released earlier this week. Electric vehicle technology investment has totalled more than \$130 billion, according to White House data. And the private sector is expected to spend trillions more to take advantage of the incentives in the law over the next decade. (...)

The IRA has also convinced some longtime skeptics of the clean energy transition about the opportunity to make money with lower-carbon solutions. Even as oil and gas companies double down on their commitment to fossil fuels, for example, they have also allocated billions in the past year to pursue technologies like hydrogen and carbon capture that can take advantage of federal subsidies. ExxonMobil is even exploring getting into the lithium game, hoping to exploit its knowledge of drilling to make money off the transition. (...)

All of this enthusiasm means that the federal government may end up spending a lot more on the law's clean-energy incentives than originally thought. Prior to the law's passing, Congressional backers citing the Congressional Budget Office and Joint Committee on Taxation estimated that the federal government would spend close to \$400 billion on the law's climate provisions. A paper published in March by the Brookings Institution estimated that it could top \$1 trillion as companies and consumers take advantage of the law's uncapped tax incentives.

A critic of the law might balk at the extra cost to the taxpayer, but there's another way to look at it: higher uptake means the law is working.

In late June, top officials from the Biden Administration fanned out across the country to make the case to the American public that the IRA and other policies are creating jobs and reinvigorating communities. They were armed with good news: a report from the Department of Energy showed that the U.S. added 114,000 clean energy jobs last year. Energy Secretary Jennifer Granholm visited a burgeoning corridor of electric vehicle manufacturing in the southeast that's become known as the "battery belt," for example, and Environmental Protection Agency Administrator Michael Regan traveled to Vermont to announce a new \$7 billion grant program to provide solar power to low-income households.

"What we're going to do is go out and tell the story," says Podesta.

The cable news airwaves may be relatively quiet about the IRA, yet the trillions in investment catalyzed by it have undoubtedly begun to shape politics in the U.S. IRA supporters love to talk about green jobs in red states, particularly in the emerging "battery belt." Manufacturers of batteries as well as EVs, solar panels, and other technologies have clustered in red states like Kentucky, Tennessee, and Georgia, leading even some Republican officials, like Trump-aligned GOP Rep. Majorie Taylor Greene, to embrace clean energy when the components are being built in their backyard.

But beneath the surface the narrative gets more complicated. Many states winning the race for clean energy investment—think of say Georgia or Tennessee—appeal to companies in part because of their "business friendly" approach. That includes offering tax incentives to attract companies as well as laws that make it more difficult to form unions. The fast pace of the transition—particularly for automakers—has already raised concerns among workers. Ensuring that jobs created by clean energy investment are what Biden has called "good jobs" will be a continuing thread in the coming years. (...)

One of the biggest questions that comes up on the road, especially outside the U.S., is whether the IRA would survive a future Republican administration and the whiplash that would accompany it. There's no question that a future Republican president might succeed at chipping away at the law around the edges, but early indicators suggest that, at its core, the law is here to stay.

Earlier this year, a contingent of Republicans whose districts are benefiting from clean energy investments pushed back when House Republicans proposed gutting the law as part of budget negotiations. Podesta likens it to the Affordable Care Act, the law passed under President Barack Obama that Republicans tried and failed to repeal: "Once these plants are built, once these jobs are created, it's going to be hard to reverse that." (1145 words)

*Justin Worland is a senior correspondent at TIME in the Washington, D.C. bureau. He received Covering Climate Now's inaugural Climate Journalist of the Year award in 2022, among other awards*

### **DOC 6 – Video – The Future of Energy in America**

[https://www.youtube.com/watch?v=tOfITTCYpY&ab\\_channel=CBSNews](https://www.youtube.com/watch?v=tOfITTCYpY&ab_channel=CBSNews)

**CBS News, 12 April 2023**

**Exercise type Oral X /ENS /ESPCI**

Stop at 5'31' « and without it it's hard to do”

## **PART THREE – CLIMATE ACTIVISM AND LEGAL ACTIONS**

### **DOC 7 – AUDIO – Judge ruling in Montana**

### **TEXT 8 - With TikTok and Lawsuits, Gen Z Takes on Climate Change**

As Kaliko Teruya was coming home from her hula lesson on August 8, her father called. The apartment in Lahaina was gone, he said, and he was running for his life.

He was trying to escape the deadliest American wildfire in more than a century, an inferno in Hawaii fueled by powerful winds from a faraway hurricane and barely hindered by the state's weak defenses against natural disasters.



Her father survived. But for Kaliko, 13, the destruction of the past week has reinforced her commitment to a cause that is coming to define her generation. “The fire was made so much worse due to climate change,” she said. “How many more natural disasters have to happen before grown-ups realize the urgency?”

Like a growing number of young people, Kaliko is engaged in efforts to raise awareness about global warming and to reduce greenhouse gas emissions. In fact, last year she and 13 other young people, age 9 to 18, sued their home state, Hawaii, over its use of fossil fuels.

With active lawsuits in five states, TikTok videos that mix humor and outrage, and marches in the streets, it’s a movement that is seeking to shape policy, sway elections and shift a narrative that its proponents say too often emphasizes climate catastrophes instead of the need to make the planet healthier and cleaner.

Young climate activists in the United States have not yet had the same impact of their counterparts in Europe, where Greta Thunberg has galvanized a generation. But during a summer of record heat, choking wildfire smoke and now a hurricane bearing down on Los Angeles, American teenagers and twenty-somethings concerned about the planet are increasingly being taken seriously.

“We see what’s happening with climate change, and how it affects everything else,” said Elise Joshi, 21, the executive director of Gen-Z for Change, an organization she joined while she was in college. “We’re experiencing a mix of anger and fear, and we’re finally channeling it into hope into the form of collective action.”

The youth vote’s mounting frustration with the Biden administration’s climate agenda is a wild card factor in next year’s presidential race. They are particularly livid that President Biden, who pledged “no more drilling on federal lands, period,” during his campaign, has failed to make good on that promise.

Young people are helping organize a climate march in New York next month, during the United Nations General Assembly. And their force is being felt even in deep-red states like Montana, where a judge on Monday handed the movement its biggest victory to date, ruling in favor of 16 young people who had sued the state over its support for the fossil fuel industry.

In that case, a lengthy fight resulted in a surprise victory that means, at least for now, that the state must consider potential climate damage when approving energy projects.

“The fact that kids are taking this action is incredible,” said Badge Busse, 15, one of the plaintiffs in the Montana case. “But it’s sad that it had to come to us. We’re the last resort.”

That mix of pride and exasperation is not uncommon among young climate activists. Many are energized by what they see as the fight of their lives, but also

resentful that adults haven’t seriously confronted a problem that has been well understood for decades now.

“Do you think I really want to be on a stand saying, like, ‘I don’t have a future,’” said Mesina DiGrazia-Roberts, 16, another of the plaintiffs in the Hawaii case, who lives on Oahu. “As a 16-year-old who just wants to live my life and hang out with my friends and eat good food, I don’t want to be doing that. And yet I am, because I care about this world. I care about the Earth and care about my family. I care about my future children.”

In the Hawaii case, the youths have sued the state’s Department of Transportation over its use of fossil fuels, arguing that it violates their “right to a clean and healthful environment,” which is enshrined in the state Constitution. The state filed two motions to dismiss the case, but this month a judge set a trial date for next year.

A nonprofit legal organization called Our Children’s Trust is behind the Montana and Hawaii cases, as well as active litigation in three other states. A similar case it brought in federal court, *Juliana v. United States*, was thrown out by an appeals court in 2020, days before it was set to go to trial. But in June, a different judge ruled the case could once again proceed toward trial. (...)

Climate change is a growing political priority for young people. It was one of the top issues among a third of young voters in the 2020 presidential election, according to Tufts University.

But while the Biden administration has passed sweeping laws, including the Inflation Reduction Act, designed to speed the development of clean energy, it has also angered young environmental activists by approving new fossil fuel projects. (...)

Across the movement, there is an effort to combat “climate nihilism,” the fatalistic acceptance that nothing can stop runaway global warming. That sentiment, captured in the phrase “OK Doomer,” contributes to the slow pace of progress, they maintain. (...)

Enthusiasm for the climate movement is spreading in surprising ways. A group of young techno optimists who shun doomerism have embraced the label of “Decarb Bros.” And among Republicans, millennials and members of Gen Z are far more likely than their elders to believe that humans are warming the planet and support efforts to reduce emissions, according to the Pew Research Center. Overall, about 62 percent of young voters support phasing out fossil fuels entirely, according to Pew.

On Maui, Kaliko and her family were trying to recover from the second natural disaster in five years. In 2018, flash flooding from Hurricane Olivia destroyed their home on the northern tip of the island. Now, the fire.

“We really need adults to wake up,” she said. “If we don’t fix this now, there’s not going to be a future.” (1017 words)

## PART FOUR – IMPACT OF CLIMATE CHANGE – CLIMATE ATTRIBUTION

### TEXT 9 - A Tropical Storm in August? California's Year of Extremes Grinds On

For California, where punishing droughts over the past two decades have shriveled crops and caused wells to run dry, it has been another year of extremes. Only this time, they're of the opposite kind.

It started with winter storms that drenched cities and towns, buried the Sierra Nevada in snow and caused an enormous long-vanished lake to reappear in the Central Valley. And it is poised to pass another milestone this weekend, as Hurricane Hilary lashes Southern California and its bone-dry inland deserts, which normally receive only a scant few inches of rain a year.

All of this is quite a turnaround from the past three years, the state's driest on record, when officials were imposing strict controls to save water.

Hilary, which forecasters say could weaken to a tropical storm by the time it makes landfall in California, has no direct meteorological connection with the storms from early this year. But, taken together, they reinforce a key maxim about the weather in California: There's no such thing as an average year — only very wet, or very dry.

"This year is going to be known as just a tale of extremes that worked all the way through the year," said Michael Anderson, California's state climatologist.

In a warming climate, we should expect to see more of such extremes, Dr. Anderson said. Still, "to have them all happen in the same year, in and of itself might be its own extreme," he said.

Nowhere in the contiguous United States does precipitation vary year to year more than in California, and southeastern California in particular. The state's Mediterranean climate — with hot, dry summers and cool, wet winters — means the atmospheric-river-fed storms that hit the state between November and March deliver most of the water it gets for the entire year. This variability is a major factor in the state's perennial struggles to supply water to both its giant population and its farm sector.

California often receives more rain during periods of El Niño, the recurring climate pattern related to sea-surface temperatures in the Pacific. But this past winter's storms swept through during its opposite phase, La Niña. El Niño

conditions arrived in late spring and are expected to persist into next year, which could mean another wet winter is ahead for California.

Also in the background: climate change. As societies burn fossil fuels and heat the planet, the warmer atmosphere can hold more moisture. This means storms in many places, California included, are more likely to be very intense.

Especially in the context of some other extreme weather that North America has experienced this year — exceptional heat waves in the Southern United States; wildfires exacerbated by warmth and drought in Canada; torrential rain and flooding in Pennsylvania, Kentucky, Vermont and other regions — California's storms fit a pattern, said Michael Dettinger, a hydrologist and climatologist at the Desert Research Institute in Reno, Nev.

Different atmospheric mechanisms are at play in each of these extreme events, he said. But "the unrelenting nature of these compounding events sure seems to reflect something deeper than the individual events, by which I imply climate change unchained," Dr. Dettinger said. (...)

The feast-or-famine nature of California precipitation means that even a very wet year like this one can only boost water supplies so much before scarcity becomes a problem again.

"The reservoirs might be full, but the ground is still dry," said Jay Cordeira, an atmospheric scientist with the Scripps Institution of Oceanography, which is part of the University of California, San Diego. (...)

Fundamentally, California has "a baseline-drought climate punctuated by rainy periods," Dr. Cordeira said.

One way growers and landowners are trying to cope with these swings is by taking water from downpours and channeling it into the earth, where it can effectively be held in reserve for later use. In principle, this can reduce flood threats to homes and communities while also helping build up a lifeline for farmers against future droughts.

But making it work on a large scale takes lots of planning and infrastructure, including pumps, canals and basins. There are also knotty legal complexities: California regulates who gets to reroute water from creeks and rivers, to protect the rights of people downstream.

State authorities have worked to help local water districts overcome these hurdles and replenish their aquifers. Earlier this year, 92,410 acre-feet of potential floodwaters were diverted underground in response to an executive order from Gov. Gavin Newsom, according to the state's Department of Water Resources.

The progress has been heartening to see, said Philip Bachand, an engineer who works on groundwater recharge projects in different parts of California. But, he said, the state still needs to be putting much more water into the ground each year if it is

to have any hope of reversing the damage from decades of aquifer depletion and overuse. (...) (804 words)

The New York Times, August 19, 2023

### **TEXT 10 - 25 countries now face 'extreme water stress' every year - three of them are in Europe**

A quarter of the world's population is facing extreme water stress, according to new research. The countries at the highest risk regularly use 80 per cent of their renewable water supply for irrigating crops, livestock, industry and household needs every year.

Even a short-term drought can put them in danger of running out of water or the government turning off the taps to conserve what is left.

"Living with this level of water stress jeopardises people's lives, jobs, food and energy security," the report from the World Resources Institute (WRI) reads.

Its authors add that water is essential to fostering an equitable society, growing food, producing electricity, maintaining health and meeting the world's climate goals.

Population growth, economic development and climate change are all set to make the situation worse without proper management of our supplies. Globally, the demand for water is expected to increase by between 20 and 25 per cent by 2050. It has already more than doubled since 1960.

While demand for water has plateaued in Europe and the US due to investment in efficiency, international trade means that the problem goes beyond borders. Though most countries in Sub-Saharan Africa don't currently face extreme water stress, demand there is growing faster than any other region in the world. And with increased water use there could be major economic growth with Africa overall projected to be the fastest-growing economic region in the world.

But soaring demand paired with improper management of supplies threatens that growth. Data from the WRI shows that 31 per cent of global gross domestic product (GDP) - almost €65 trillion - will be exposed to extreme water stress by 2050. Just four countries - India, Mexico, Egypt and Turkey - account for half of the exposed GDP.

Water shortages have a widespread impact on everything from energy to food and health. In India, for example, a lack of water to cool thermal power stations between 2017 and 2021 resulted in the loss of enough energy to power 1.5 million homes for five years.

WRI says that around 60 per cent of the world's irrigated agriculture is already facing extremely high water stress too. Particularly threatened are crops like sugarcane, wheat, rice and maize.

Political will and financial backing are needed to stop water stress from causing water crises. They say that cities like Singapore and Las Vegas already prove that societies can thrive even in the most water-scarce scenarios.

Solutions include measures like making agriculture more efficient, treating and reusing wastewater, desalination and removing water-thirsty grass. "In fact, WRI research shows that solving global water challenges is cheaper than you might think," the report's authors argue.

It found that it could cost the world as little as 1 per cent of global GDP or 0.27 per person, per day between 2015 and 2050. (468 words)

[www.euronews.com](http://www.euronews.com), August 18, 2023

### **TEXT 10 bis - « Une crise de l'eau sans précédent » affecte déjà près de quatre milliards de personnes**

Par Martine Valo, *Le Monde*, 16 août 2023

Le monde, qui vient de connaître le mois de juillet le plus chaud jamais enregistré, a les yeux rivés sur la courbe des températures. Mais un autre marqueur essentiel du changement climatique est également au cœur de toutes les préoccupations : l'eau.

**Son cycle naturel est en train de se modifier, suscitant des pluies diluviennes et des sécheresses intenses. En tant que ressource, elle vient de plus en plus à manquer alors que la population humaine et l'essentiel du vivant dans la nature en ont d'autant plus besoin que les vagues de chaleur frappent plus fort.** Par conséquent, il devient manifeste que « *le monde fait face à une crise de l'eau sans précédent, exacerbée par le changement climatique* », comme l'affirme le World Resources Institute (WRI).

Cette organisation de recherche internationale basée aux Etats-Unis, à l'expertise reconnue dans le domaine de l'environnement, publie, mercredi 16 août, un atlas qui éclaire sans ambiguïté les pénuries actuelles et à venir, en partenariat avec le programme Aqueduct – lui-même soutenu par une alliance de centres de recherche, d'universités, de gouvernements et d'entreprises.

**Environ quatre milliards de personnes – environ la moitié de la population mondiale – affrontent déjà un stress hydrique « élevé » au moins pendant un mois par an.** Selon l'analyse du WRI et d'Aqueduct, qui ont examiné des séries de données de 1979 à 2019, la part de la population concernée pourrait s'élever à près de 60 % dès 2050. Un stress « élevé » signifie qu'au moins 60 % des ressources en eau disponibles sont consommées, entraînant des concurrences locales entre les différents usagers. Les pénuries sont appelées à s'aggraver sans une sérieuse politique d'anticipation.

Dès à présent, vingt-cinq pays relèvent, eux, d'un stress « extrêmement élevé » : le déséquilibre entre leur consommation et leurs réserves en eau atteint au moins 80 %. Bahreïn, Chypre, le Koweït, le Liban et Oman sont les plus exposés : ils occupent la tête de cette liste qui comprend aussi le Chili, la Grèce et la Tunisie. L'Asie du Sud, où 74 % de la population est exposée à un stress hydrique très important, traverse une situation critique. Au Moyen-Orient et en Afrique du Nord, 83 % des habitants sont touchés.

#### Coupures d'eau volontaires

**On s'attend à ce que 1 milliard de personnes supplémentaires vivent dans des conditions de stress hydrique « extrêmement élevé » d'ici au milieu de ce siècle, même si l'on parvenait – selon un scénario optimiste – à limiter l'augmentation de la température moyenne entre 1,3 °C et 2,4 °C.** « *Et encore, notre analyse dessine des tendances de long terme et présente des moyennes, souligne Samantha Kuzma, responsable des données et experte en géolocalisation pour le programme Aqueduct et le WRI. Elle ne rend pas compte des pics qui peuvent susciter des ressentis encore pires localement.* »

Comment, dès lors, faire face à la moindre période de sécheresse supplémentaire lorsque la situation est aussi tendue ? Le WRI cite plusieurs épisodes au cours desquels les autorités publiques ont coupé l'alimentation en eau de certaines localités : en Inde, au Mexique, en Iran, en Afrique du Sud, où la ville du Cap a vécu des mois sous la menace d'un « jour zéro », c'est-à-dire sans plus recevoir la moindre goutte au robinet... Mais le rapport met aussi en avant des exemples de vulnérabilité peut-être plus inattendus, telles les coupures d'eau dans plusieurs écoles de la région du Sussex, dans le sud de l'Angleterre, en juin, parce que la demande avait excédé l'offre disponible pendant les chaleurs de ce mois. Pour

rappel, en France métropolitaine, plus de 700 communes ont dû être approvisionnées par camions-citernes et avec des bouteilles durant l'été 2022, tandis que les habitants de la Guadeloupe doivent régulièrement se conformer à des plannings de distribution d'eau.

**A l'échelle mondiale, la demande ne cesse d'augmenter. Elle a doublé depuis 1960, tirée par le boom de l'agriculture irriguée, les besoins grandissants de la production d'énergie, le secteur industriel, la croissance de la population.** Or elle s'accélère à un rythme supérieur à celui de la démographie mondiale. Le phénomène s'observe en particulier dans les pays en développement. Tandis qu'elle plafonne en Amérique du Nord, en Asie centrale et en Europe, la consommation risque de bondir de façon vertigineuse en Afrique subsaharienne. Celle-ci pourrait voir ses besoins en eau progresser de 163 % d'ici à 2050, principalement à cause d'une expansion de ses cultures irriguées, destinées en bonne partie à l'exportation.

#### Risque de surexploitation des réserves

L'atlas souligne par ailleurs les dangers pour la sécurité alimentaire : 60 % des cultures irriguées sont menacées par un stress hydrique « extrêmement élevé ». La canne à sucre, le blé, le riz et le maïs sont particulièrement concernés. Selon le WRI, près d'un tiers (31 %) du produit intérieur brut (PIB) mondial pourrait subir les conséquences d'un niveau de stress hydrique « élevé », voire « très élevé », en 2050, contre 24 % en 2010. A eux seuls, l'Inde, le Mexique, l'Égypte et la Turquie comptent pour plus de la moitié des régions du monde qui risquent de voir leur économie la plus bouleversée. L'industrie minière est elle aussi très dépendante des ressources hydriques. Ainsi, le Chili, deuxième plus important producteur au monde de lithium – un métal considéré comme crucial pour la transition énergétique –, annonce vouloir multiplier sa consommation d'eau par vingt d'ici à 2050.

**Dans ces conditions, les réserves en surface et celles qui sont contenues dans les aquifères risquent d'être encore plus surexploitées dans les années à venir,** leur baisse renforçant irrémédiablement la crise environnementale. Cet avertissement, porté de longue date par le WRI, est-il entendu par les décideurs ? « *Tout le monde répond que oui, la question de l'eau est très importante, mais chacun attend d'être plongé dans la crise pour en faire une priorité,* glisse Samantha Kuzma. *Nous étions présents à la conférence des Nations unies [sur la crise mondiale de l'eau, à New York] en mars. Nous y avons recensé 800 engagements. Ce qui manque, maintenant, ce sont des financements et des actions.* »

Limiter les effets de la crise de l'eau n'aurait pas un coût si élevé, à condition d'améliorer la gouvernance de ce secteur, assurent les auteurs du rapport. Ils évaluent le budget nécessaire à environ 1 % du PIB global afin, entre autres, de redresser le sous-investissement chronique dans les infrastructures, de changer les modèles d'irrigation, de miser sur les solutions fondées sur la nature (protéger les mangroves et les zones humides, par exemple), d'utiliser des eaux usées traitées. Et, bien sûr, de réduire nos émissions de gaz à effet de serre, afin d'atténuer le réchauffement climatique. **Si celui-ci n'est pas le seul responsable des difficultés d'approvisionnement en eau autour du globe, il l'est néanmoins en grande partie.**

## TEXT 11 - **Explainer** - Hawaii wildfires

*Dani Anguiano*, The Guardian, Fri 11 Aug 2023 00.48 BST

Unprecedented wildfires burning on the Hawaiian island of Maui have displaced thousands of residents, destroyed parts of a centuries-old town, and killed at least 96 people.

The disaster is one of the deadliest US wildfires in recent years.

The fast-moving fires, fanned by the winds of a distant hurricane, exploded overnight and moved so quickly that some residents jumped into the ocean to escape the flames and smoke. Crews are continuing to battle the fires, which have burnt through multiple neighborhoods, including the historic town of Lahaina.

“We just had the worst disaster I’ve ever seen. All of Lahaina is burnt to a crisp. It’s like an apocalypse,” said Mason Jarvi, a Lahaina resident who escaped. (...)

### **How did the Maui fire disaster start?**

The fires appear to have burned first in vegetation and then rapidly spread into populated areas as wind gusts of over 60mph rocked the island. The conflagration swept into coastal Lahaina with alarming speed and ferocity, blazing through intersections and leaping across wooden buildings in a town center that dates to the 1700s and is on the National Register of Historic Places.

Residents raced on to crowded roads, some of which were blocked with flaming debris.

“This was a classic wildland urban interface fire where there was a vegetation fire but it moved into an urban area and started burning structure to structure,” said the climate scientist Daniel Swain.

### **What’s driving the Hawaii fires?**

The cause of the fires has not been determined but they broke out as the island faced strong winds and low humidity that the National Weather Service had warned would bring high fire danger with the risk of rapid spread.

Hawaii was facing drought conditions and was in the midst of its dry season when Hurricane Dora, several hundred miles away, brought especially strong winds. The islands are sandwiched between high pressure to the north and a low pressure system associated with Dora, several hundred miles away, said Jeff Powell, a meteorologist in Honolulu. The differences in air pressure drove unusually strong trade winds that fanned the destructive flames.

The winds, strengthened by the hurricane, knocked out power lines and, moving downslope, contributed to the extreme spread of flames. Downslope winds are drivers of the highest impact fires, Neil Lareau, a professor of atmospheric science at the University of Nevada, Reno, said on Twitter. Downslope wind-driven fires have been responsible for 60% of structures lost and 52% of deaths in wildfires in the American west since 1999, according to a 2023 study.

### **What role is the climate emergency playing in the wildfires?**

The climate crisis, driven by fossil fuel use, is increasing the frequency and intensity of extreme weather events, including wildfires like the ones Maui is grappling with.

Clay Trauernicht, a fire scientist at the University of Hawaii, said the wet season could spur plants like Guinea grass, an invasive species found across parts of Maui, to grow as quickly as 6in (15cm) a day and reach up to 10ft (3 meters) tall. That grass creates a tinderbox that’s ripe for wildfire as it dries out.

“These grasslands accumulate fuels very rapidly,” Trauernicht said. “In hotter conditions and drier conditions, with variable rainfall, it’s only going to exacerbate the problem.”

Climate change not only increases the fire risk by driving up temperatures, but also makes stronger hurricanes more likely. In turn, those storms could fuel stronger wind events like the one behind the Maui fires.

Experts warn disasters such as the one unfolding on Maui are driven by multiple factors, but that the climate crisis is an undeniable contributor.

“These kinds of climate change-related disasters are really beyond the scope of things that we’re used to dealing with,” said Kelsey Copes-Gerbitz, a postdoctoral researcher at the University of British Columbia’s faculty of forestry. “It’s these kind of multiple, interactive challenges that really lead to a disaster.”

The situation in Hawaii recalled scenes of devastation elsewhere in the world this summer, as wildfires caused by record heat forced the evacuation of tens of thousands of people in Greece, Spain, Portugal and other parts of Europe, and Canada suffered unusually severe fires.



## TEXT 11 bis - A Hawaï, réchauffement et transformation des paysages ont nourri les feux meurtriers

Les paradis tropicaux se mettent, eux aussi, à brûler. Les feux qui ont ravagé, du 8 au 9 août, l'île de Maui, dans l'archipel d'Hawaï (Etats-Unis), ont enregistré le plus lourd bilan humain lié à des incendies depuis près d'un siècle aux Etats-Unis – 111 morts et des centaines de disparus, selon le dernier bilan des autorités, jeudi 17 août. Ils ont aussi frappé les esprits en raison des images dramatiques et spectaculaires qui ont circulé sur les réseaux sociaux, montrant des centaines d'habitants et de touristes se précipitant à la mer pour échapper aux flammes.

Surprenant dans un environnement dominé par des forêts humides luxuriantes, sur un archipel bénéficiant de pluies soutenues et situé au beau milieu du Pacifique, le potentiel destructeur des feux a résulté d'une conjonction de facteurs : la tendance lourde du réchauffement, le développement du phénomène El Niño, les transformations du paysage liées aux activités agricoles et la présence d'espèces végétales invasives. Les causes immédiates du départ de feu demeurent, elles, l'objet d'investigations.

« Hawaï est situé à la périphérie des tropiques et est sensible à la ceinture subtropicale de hautes pressions sèches, explique le climatologue Michael Mann, professeur au département des sciences de la Terre et de l'environnement de l'université de Pennsylvanie. *Le changement climatique élargit cette ceinture et, combiné à l'élévation des températures, tend à assécher les sols, ce qui entraîne une augmentation de la sécheresse, comme celle qui a frappé Maui cet été.* » A Lahaina, la ville de l'ouest de Maui rasée par l'incendie, « les données de précipitations montrent le déclin », signale le géographe Matthew Plackett, professeur associé à l'université de Coventry (Royaume-Uni).

### « Sécheresse éclair »

Autre signe de cet assèchement : le déclin des rivières. Dans une étude publiée en 2019 dans la revue *Hydrological Processes*, des chercheurs de l'université d'Hawaï à Manoa ont estimé les variations de débit de vingt-trois cours d'eau, sur les cinq îles principales de l'archipel, depuis la fin des années 1960. Les auteurs constatent « un assèchement général ». Depuis la fin des années 1980, ils observent une baisse moyenne des débits d'étiage de plus de 10 % par décennie. Au cours de

la saison sèche, de mai à octobre, ils notent que les rivières qui s'interrompent sont plus nombreuses, « indiquant que certains cours d'eau pourraient devenir intermittents ».

La destruction de la ville de Lahaina a marqué les esprits, mais cet assèchement tendanciel impose discrètement à l'archipel, depuis plusieurs années, une pression grandissante. « Pendant la majeure partie du XX<sup>e</sup> siècle, Hawaï cumulait environ 5 000 acres [2 000 hectares] brûlés chaque année », a déclaré Clay Trauernicht, spécialiste de la gestion des incendies à l'université d'Hawaï à Manoa, à l'agence Associated Press. Au cours des vingt à trente dernières années, cette superficie a triplé, voire quadruplé parfois, a-t-il ajouté. Combiné au développement du tourisme, l'assèchement des îles se traduit aussi par des tensions épisodiques sur l'approvisionnement en eau potable, utilisée par les grands complexes hôteliers de la côte : dès janvier, la presse locale rapportait des coupures d'approvisionnement dans de petites localités de l'ouest de Maui.

Pour autant, la sécheresse des sols qui a contribué à la propagation des feux est survenue brutalement : les chercheurs parlent de « sécheresse éclair » – une notion qui a fait son apparition chez les hydrologues il y a une dizaine d'années seulement – pour décrire une situation dans laquelle la sécheresse des sols est rapidement aggravée par une vive montée des températures, un fort ensoleillement et des vents soutenus.

### Profondes transformations des paysages

Le retour du phénomène El Niño, début mai, a probablement joué un rôle dans l'emballage des feux. « Les années El Niño ont tendance à être des saisons cycloniques plus actives dans l'est et le centre du Pacifique, explique M. Mann. *Le passage de l'ouragan Dora au sud de Maui a probablement contribué au fort gradient de pression qui a favorisé les vents intenses ayant contribué à déclencher les premiers incendies.* » Le changement climatique a, là encore, sans doute, apporté sa contribution. « L'ouragan a fait un voyage exceptionnellement long depuis le Mexique, et cela n'aurait probablement pas été possible sans le réchauffement de l'océan », précise M. Plackett.

Aux bouleversements du climat et à la conjoncture météorologique s'ajoutent de profondes transformations des paysages, liés aux bouleversements de l'économie de l'archipel. Depuis une trentaine d'années, la déprise agricole a laissé en friche de grandes superficies. La culture de la canne à sucre, en fort déclin depuis le début des

années 1980, a presque disparu en raison de l'ouverture des marchés et du coût élevé de la main-d'œuvre, par rapport aux pays de la zone caraïbe, notamment. De même, les superficies de prairies pâturées ont également décliné à mesure que l'économie d'Hawaï se focalisait sur le tourisme.

Or les plantes herbacées à croissance rapide originaires d'Afrique, comme l'herbe de Guinée (*Megathyrus maximus*) ou l'herbe à mélasse (*Melinis minutiflora*), introduites au XX<sup>e</sup> siècle pour produire du fourrage en quantité, sont désormais des plantes invasives proliférantes. Elles occupent ces milliers d'hectares de friches et fournissent un combustible abondant pour les incendies. « *C'est sûr, la déprise agricole a certainement conduit à la colonisation [de l'archipel] par ces espèces invasives, conclut M. Plackett. Mais cet excès de végétation ne serait pas desséché, et ne deviendrait pas du combustible, s'il ne se trouvait pas dans un climat rendu plus sec par le changement climatique.* »

## PART FIVE – CARS OR NO CARS

### TEXT 12 - Throughout the rich world, the young are falling out of love with cars



*The Economist*, Feb 16th 2023

For Adah Crandall, a high-school student in Portland, Oregon, a daily annoyance is family members asking when she is going to learn to drive. Ms Crandall, who is 16, has spent a quarter of her life arguing against the car-centric planning of her city. At 12 she attended a school next to a major road down which thousands of lorries thundered every day. When a teacher invited a speaker to talk about air pollution,

she and her classmates were galvanised. Within a year, she was travelling to Salem, Oregon's capital, to demand lawmakers pass stricter laws on diesel engines.

Yet her family still nags her to get her driver's licence. "[It's] seen as this ticket to independence. It's so glorified," she says. Ms Crandall admits her life would be easier if she had access to a car—she would spend less time on buses, and could drive to the coast with her friends. But she hates the idea that she should have to. "Why in our society is our identity so tied to car use?" she asks. "If I choose to comply and get my driver's licence it would be like giving in."

Few technologies defined the 20th century more than the car. On the surface, the love affair with the personal automobile continues unabated into this century. The number of drivers on the world's roads continues to rise almost everywhere. The distance driven by American motorists hit a new peak last year, according to data from the Federal Highway Administration. But there are hints that this is changing. People like Ms Crandall show why. Getting a driving licence was once a nearly universal rite of passage into adulthood. Now it is something that a growing minority of young people either ignore or actively oppose, into their 20s and beyond.

That, in turn, is starting to create more support for anti-car policies being passed in cities around the world. From New York to Norway, a growing number of cities and local politicians are passing anti-car laws, ripping out parking spaces, blocking off roads and changing planning rules to favour pedestrians over drivers. Anne Hidalgo, the socialist mayor of Paris, boasts of "reconquering" her city for its residents.

After a century in which the car remade the rich world, making possible everything from suburbs and supermarkets to drive-through restaurants and rush-hour traffic jams, the momentum may be beginning to swing the other way.

Start with the demography, and in the country most shaped by the car. The average American driver goes much farther every year than most of his or her rich-world contemporaries: around 14,300 miles (23,000km) in 2022, which is about twice as far as the typical Frenchman. Nearly a century of road-building has resulted in sprawling cities, in which it is hard to get around in any other way. (...)

By 1997, 43% of the country's 16-year-olds had driving licences. But in 2020, the most recent year for which figures are available, the number had fallen to just 25%. Nor is it just teenagers. One in five Americans aged between 20 and 24 does not have a licence, up from just one in 12 in 1983. The proportion of people with licences has fallen for every age group under 40, and on the latest data, is still falling.

And even those who do have them are driving less. Between 1990 and 2017 the distance driven by teenage drivers in America declined by 35%, and those aged 20-34 by 18%. It is entirely older drivers who account for still increasing traffic, as baby-boomers who grew up with cars do not give them up in retirement.

A similar trend is well-established in Europe. In Britain the proportion of teenagers able to drive has almost halved, from 41% to 21%, in the past 20 years. Across the countries of the European Union there are more cars than ever. Yet even before the covid-19 lockdowns emptied the roads, the average distance travelled by each one had fallen by more than a tenth since the turn of the millennium. (The exceptions were relatively new member states such as Poland.) Even in Germany, where the internal-combustion engine is an economic totem, drivers are pushing the brakes.



The trend is especially strong in big cities. One study of five European capitals—Berlin, Copenhagen, London, Paris and Vienna—found the number of driving trips made by working people was down substantially since a peak in the 1990s. In Paris the number of trips made per resident has fallen below the levels of the 1970s.

No one is entirely sure why young adults are proving resistant to the charms of owning a set of wheels. The growth of the internet is one obvious possibility—the more you can shop online, or stream films at home, the less need there is to drive into town. One British report, led by Dr Kiron Chatterjee at the University of the West of England, and published in 2018, fingered a rise in insecure or poorly paid jobs, a decline in home ownership, and a tendency to spend longer in education. The rise of taxi apps such as Uber and Lyft has almost certainly contributed as well, as have higher insurance premiums for young drivers. Driving generally is more expensive. In America the average cost of owning a vehicle and driving 15,000 miles in it rose by 11% in 2022, to nearly \$11,000.

Other reasons seem more cultural. One big motivator, at least for the most committed, is worries about climate change. Donald Shoup, a professor at the University of California, Los Angeles, who has campaigned against the excessive provision of free parking in America, says he is surprised by how climate change has spurred many young activists to start campaigning against development focused on cars .

The falling popularity of cars among the under-40s chimes with the mood among city planners and urbanists, who have been arguing against cars for over two decades. Sometimes they have managed to get big, bold policies passed, such as the introduction of congestion-charging zones in the middle of London, Milan and Stockholm, under which drivers must pay a fee to enter. All three schemes have managed to cut traffic substantially and consistently. (A much-delayed and bitterly contested congestion-pricing scheme in New York could start later this year.)

Political opposition could put the brakes on the growth of anti-car policies. In New York it is suburban politicians, whose constituents are more dependent on cars, who have resisted the new congestion charge. In Berlin the centre-right Christian Democrats have campaigned in local elections on a platform of protecting the freedom to drive. Another worry is that as city centres freed from cars become more attractive, they also become more expensive—pushing some, especially families, out to suburbs where they need cars after all. (...)

But in the parts of Europe where anti-car policies have been in place for the longest, they appear to have worked like a ratchet. Giulio Mattioli, a transport researcher at Dortmund University, notes that almost nowhere in the world that has removed a big road, or pedestrianised a shopping street, has decided to reverse course. “Once people see [the benefits], they generally don’t want to go back.” . (1203 words)

## TEXT 13 - I am on motorists' side, says Sunak as he orders review of anti-car schemes

By Edward Malnick, THE TELEGRAPH, 29 July 2023 (adapted)

Rishi Sunak promised drivers that he is “on their side” as he ordered a review of controversial anti-car schemes being rolled out across Britain.

In an interview with *The Telegraph*, the Prime Minister said the vast majority of people “are dependent on their cars” and that “anti-motorist” policies fail to take account of how “families live their lives”.

Mr Sunak has ordered the Department for Transport (DfT) to carry out a review of low traffic neighbourhoods (LTNs), which often use cameras, giant planters and bollards to turn away cars. A source said he was “concerned by the levels of congestion outside the roads in which they are implemented”, amid fears that the measures simply displace traffic to neighbouring areas. (...)LTNs have become increasingly prevalent since the onset of the Covid pandemic and aim to reduce traffic in residential areas and cut carbon emissions.

The zones, originally introduced by Mr Khan in London, have since been rolled out to places such as Oxford, Bristol, Manchester, Birmingham and Sheffield, with funding from the DfT.

Mr Sunak said: “The vast majority of people in the country use their cars to get around and are dependent on their cars. When I’m lucky enough to get home to North Yorkshire, it’s more representative of how most of the country is living, where cars are important. “I just want to make sure people know that I’m on their side in supporting them to use their cars to do all the things that matter to them.”

Meanwhile, the Prime Minister faced mounting pressure to delay the 2030 phase-out of petrol and diesel cars as it emerged that Chris Stark said the sale of petrol and diesel vehicles by 2030 could be achieved with a clear strategy.

Separately, more than 40 Tory MPs and peers have written to Mr Sunak calling for the deadline to be pushed back. (...)

Amid growing divisions over net zero, Mr Sunak is preparing to announce a new round of licenses for North Sea oil and gas exploration this week as he seeks to make political capital out of Labour’s pledge to halt new drilling.

Mr Sunak used the interview to pitch himself as the pro-car party leader – setting himself against Sir Keir, who has been coming under pressure to tell Sadiq Khan, the Labour London Mayor, to axe his planned expansion of the capital’s **ultra low emission zone (Ulez)** after a public backlash.

Speaking on a visit to Wales, the Prime Minister claimed the Labour Party had become “anti-motorist”, citing schemes such as Ulez and the Welsh government’s plan to introduce a 20mph limit in all residential areas in September.

## TEXT 14 - Au Royaume-Uni, Rishi Sunak lance une offensive pro-hydrocarbures

*Pour se distinguer des travaillistes, le premier ministre britannique défend les automobilistes et soutient de nouvelles licences pétrolières et gazières en mer du Nord.*

Par Eric Albert (Londres, correspondance) *Le Monde*, 31 juillet 2023

Au cœur de l’été, alors que la planète a connu le mois de juillet le plus chaud de son histoire moderne, Rishi Sunak s’est lancé dans une nouvelle stratégie faisant de l’environnement une ligne de démarcation politique. S’il ne remet pas en cause l’objectif du Royaume-Uni d’atteindre la neutralité carbone d’ici à 2050, le premier ministre britannique multiplie les annonces pour défendre les automobilistes, soutenir la production d’hydrocarbures en mer du Nord et réduire le prix de la tonne de CO<sub>2</sub> pour les industries lourdes. A un an des élections législatives prévues pour l’automne 2024, il cherche à se distinguer ainsi du Parti travailliste.

Lundi 31 juillet, il s’est rendu en Ecosse pour confirmer que plus d’une centaine de nouvelles licences d’exploration et d’exploitation de gaz et de pétrole seront accordées dans les mois qui viennent en mer du Nord. Il y va, selon lui, de la sécurité énergétique du Royaume-Uni : « *Nous avons vu comment [Vladimir] Poutine a manipulé et utilisé l’arme de l’énergie, interrompant l’approvisionnement et réduisant la croissance économique des pays dans le monde entier. (...) Même quand nous aurons atteint la neutralité carbone en 2050, le quart de notre énergie viendra encore du pétrole et du gaz, mais certains préféreraient sans doute que ceux-ci viennent d’Etats hostiles plutôt que d’une production locale.* »

M. Sunak ajoute un argument environnemental : les autorités britanniques ont calculé que l’empreinte carbone des exploitations locales de gaz est quatre fois inférieure que pour le gaz naturel liquéfié importé.

Les associations environnementales crient au scandale. « *Alors que les feux de forêt et les inondations détruisent les habitations et les vies à travers le monde, le gouvernement de Rishi Sunak a décidé de reculer sur des politiques climatiques-clés* », accuse Philip Evans, de Greenpeace. « *Pour limiter le réchauffement climatique à 1,5 °C, il faut qu’il n’y ait plus de nouvelles exploitations d’hydrocarbures à travers le monde, selon l’Agence internationale de l’énergie, rappelle Jim Watson, directeur de l’Institut pour les ressources durables à University College London. Si le Royaume-Uni émet de nouvelles licences, il faudrait que d’autres pays réduisent leur production. Mais aucun ne le fait.* »

« Tracer une ligne claire »

Le premier ministre britannique annonce par ailleurs que deux nouveaux projets de capture de carbone, dans le nord-est de l’Ecosse et sur la côte est de l’Angleterre, ont été sélectionnés. Ceux-ci s’ajoutent à deux autres projets, qui pourront bénéficier de subventions, même si leur montant exact n’est pas connu.

Rishi Sunak, qui n’a jamais fait de la cause environnementale une priorité, a accentué son scepticisme après le 20 juillet. Ce jour-là, déjouant la plupart des pronostics, le Parti conservateur a conservé de justesse la circonscription d’Uxbridge et South Ruislip, dans l’ouest de Londres, lors d’une élection partielle. Cette victoire était principalement le résultat d’une révolte locale contre l’extension par le maire travailliste de Londres, Sadiq Khan, d’une zone interdisant la circulation aux voitures les plus polluantes (ou les condamnant à une amende quotidienne de 15 euros pour circuler). D’un coup, les conservateurs, qui avaient vingt points de retard dans les sondages sur les travaillistes, ont vu dans l’opposition aux politiques environnementales une tactique électorale.

Depuis, M. Sunak a décidé de se ranger du côté des automobilistes. Dimanche, il s’est fait photographier au volant de la vieille Rover de Margaret Thatcher, évoquant « *à quel point les voitures sont importantes pour les familles* ». « *Je suis un peu alarmé par la position du Parti travailliste, qui est très antiautomobilistes, explique-t-il au Daily Telegraph. La grande majorité des gens dans ce pays utilise leur voiture pour se déplacer et en sont dépendants.* » Le premier ministre britannique a annoncé une « *remise à plat* » de la politique des « *quartiers à faible circulation* », ces zones qui multiplient sens interdits et rues semi-piétonnières.

Ces annonces sont essentiellement symboliques. Sur le fond, la présentation lundi des nouvelles licences pétrolières et gazières ne change rien : les autorités britanniques avaient lancé le processus dès 2022, avec la 33<sup>e</sup> mise aux enchères de licences (la 32<sup>e</sup> avait eu lieu en 2020). Les offres ont été déposées par les entreprises en début d’année et l’annonce de leur attribution est attendue à l’automne. « *Il n’y a rien de nouveau, mais cela permet au Parti conservateur de tracer une ligne claire face aux travaillistes* », confirme Greg Roddick, analyste à Wood Mackenzie, une société de consultants en hydrocarbures. Les travaillistes ont annoncé que, s’ils remportaient les élections en 2024, ils interdiraient les nouvelles licences.

Par ailleurs, la mer du Nord est de toute façon en net déclin. La production d’hydrocarbures dans les eaux britanniques a été divisée par quatre depuis le pic du début des années 2000 et l’attribution de nouvelles licences ne devrait pas changer profondément la donne. « *Le déclin va continuer, juste peut-être un peu plus lentement* », poursuit M. Roddick. Wood Mackenzie prévoit une baisse de 50 % de la production d’ici à 2030 et de 75 % d’ici à 2035.

Ne pas aller trop loin

En revanche, de façon beaucoup plus discrète, mais beaucoup plus importante, le gouvernement britannique a annoncé le 3 juillet qu’il allait mettre sur le marché entre 2024 et 2027 davantage de quotas d’émissions de CO<sub>2</sub>. Ces quotas, que les industries les plus polluantes doivent payer, sont un des outils pour les pousser à décarboner leurs activités. L’annonce a fait lourdement chuter le prix de la tonne de CO<sub>2</sub>, qui s’échange désormais autour de 55 euros au Royaume-Uni, contre 90 euros dans l’Union européenne. « *Ce changement est largement passé inaperçu mais ce sera la politique qui aura l’impact le plus important de tous pour la trajectoire des émissions du Royaume-Uni* », estime dans le *Financial Times* James Huckstepp, un analyste à BNP Paribas.

Rishi Sunak prend néanmoins grand soin à ne pas aller trop loin dans sa politique anti-environnementale. Contrairement aux Etats-Unis ou à l’Australie, les climatosceptiques sont une minorité au Royaume-Uni : 70 % des Britanniques assurent que le réchauffement climatique est causé par l’homme, contre 15 % qui pensent le contraire, selon un sondage YouGov.

Le premier ministre britannique continue donc à soutenir officiellement l’objectif de neutralité carbone en 2050, qui est inscrite dans la loi, et à soutenir l’interdiction de la vente des véhicules à moteur thermique neufs en 2030 (cinq ans plus tôt que l’Union européenne). Simplement, il défend une approche qui se veut « *pragmatique*



et proportionnée ». « Nous voulons tous atteindre la neutralité carbone, mais Keir Starmer [le leader travailliste] ne comprend pas que les gens ne veulent pas prendre le risque que les lumières s'éteignent. Je veux donc tout faire pour soutenir notre industrie du gaz et du pétrole en mer du Nord », explique-t-il. A un an des élections, l'environnement devient un sujet de contentieux politique.

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- <https://www.euronews.com/culture/2022/11/19/carless-cities-why-the-future-of-our-cities-might-look-more-like-wakanda>

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- **Why Cities Are Banning Cars Around The World – CNBC – 7 Sept 2022**

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