FALSE ALARM

ALSO BY BJORN LOMBORG

Cool It: The Skeptical Environmentalist's Guide to Global Warming

The Skeptical Environmentalist: Measuring the Real State of the World

FALSE ALARM

HOW CLIMATE CHANGE PANIC COSTS US TRILLIONS, HURTS THE POOR, AND FAILS TO FIX THE PLANET

BJORN LOMBORG

BASIC BOOKS
New York

Basic Books
Hachette Book Group
1290 Avenue of the Americas, New York, NY 10104
www.basicbooks.com

Printed in the United States of America

First Edition: [**ON-SALE MONTH YEAR-TK**]

Published by Basic Books, an imprint of Perseus Books, LLC, a subsidiary of Hachette Book Group, Inc. The Basic Books name and logo is a trademark of the Hachette Book Group.

The Hachette Speakers Bureau provides a wide range of authors for speaking events. To find out more, go to www.hachettespeakersbureau.com or call (866) 376-6591.

The publisher is not responsible for websites (or their content) that are not owned by the publisher.

Editorial production by Christine Marra, *Marra*thon Production Services. www.marrathoneditorial.org
Interior book design by Jane Raese
Set in 10-point Utopia

Library of Congress Cataloging-in-Publication Data has been applied for.

ISBN 978-1-5416-4746-6 (hardcover), ISBN 978-1-5416-4748-0 (ebook)

LSC-C

10 9 8 7 6 5 4 3 2 1

CONTENTS

SECTION 4
HOW TO FIX CLIMATE CHANGE

SECTION 5
TACKLING CLIMATE CHANGE AND ALL THE WORLD'S OTHER CHALLENGES

SECTION ONE

CLIMATE OF FEAR

INTRODUCTION

WE LIVE IN AN AGE OF FEAR—particularly a fear of climate change. One picture summarizes this age for me. It is of a girl holding a sign saying:

You'll die of old age
I'll die of climate change

This is the message that the media is drilling into our heads: climate change is destroying our planet and threatens to kill us all. The language is of apocalypse. News outlets refer to the "planet's imminent incineration" and analysts suggest that global warming could make humanity extinct in a few decades. Recently, the media has informed us that humanity has just a decade left to rescue the planet, making 2030 the deadline to save civilization. And therefore we must radically transform every major economy to end fossil fuel use, reduce carbon emissions to zero, and establish a totally renewable basis for all economic activity.[1]

Children live in fear and line the streets in protest. Activists are cordoning off cities and airports to raise awareness that the entire population of the planet is facing "slaughter, death, and starvation."[2]

Influential books reinforce this understanding. In 2017, journalist David Wallace-Wells wrote a lengthy and terrifying description of global warming impacts for *New York* magazine. Although the article was generally panned by scientists as exaggerated and misleading, he went on to publish the same argument in book form in *The Uninhabitable World*, which became a bestseller. The book revels in unabashed alarmism: "It is worse, much worse, than you think." Likewise, in his 2019 book, *Falter*,

naturalist Bill McKibben warned that global warming is the greatest threat to human civilization, worse even than nuclear war. It could finish off humanity not with an explosion but "with the burble of a rising ocean." A bookshelf would groan under the weight of recent books with deliberately terrifying titles and messages: *Field Notes from a Catastrophe: Man, Nature, and Climate Change*; *Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity*; *The Great Derangement: Climate Change and the Unthinkable*; and *This Is the Way the World Ends: How Droughts and Die-offs, Heat Waves and Hurricanes Are Converging on America*.[3]

Media outlets reinforce the extreme language by giving ample space to environmental campaigners, and by engaging in their own activism. The *New York Times* warns that "across the globe climate change is happening faster than scientists predicted." The cover of *Time* magazine tells us: "Be worried. Be very worried." The British newspaper the *Guardian* has gone further, updating its style guidelines so reporters must now use the terms "climate emergency," "climate crisis," or "climate breakdown." Global warming should be "global heating." The newspaper's editor believes "climate change" just isn't scary enough, arguing that it "sounds rather passive and gentle when what scientists are talking about is a catastrophe for humanity."[4]

Unsurprisingly, the result is that most of us are very worried. A 2016 poll found that across countries as diverse as the United Arab Emirates and Denmark, a majority of people believe that the world is getting worse, not better. In the United Kingdom and the United States, two of the most prosperous countries on the planet, an astonishing 65 percent of people are pessimistic about the future. A 2019 poll found that almost half of the world's population believes climate change likely will end the human race. In the United States, four of ten people believe global warming will lead to mankind's extinction.[5]

There are real consequences to this fear. People are deciding, for instance, not to bring children into the world. One woman told a journalist: "I know that humans are hard-wired to procreate, but my instinct now is to shield my children from the horrors of the future by not bringing them to the world." The media reinforce this choice; the *Nation* wants to know:

"How Do You Decide to Have a Baby When Climate Change Is Remaking Life on Earth?"[6]

If adults are worried silly, children are terrified. A 2019 *Washington Post* survey showed that of American children ages thirteen to seventeen, 57 percent feel afraid about climate change, 52 percent feel angry, and 42 percent feel guilty. A 2012 academic study of children ages ten to twelve from three schools in Denver found that 82 percent expressed fear, sadness, and anger when discussing their feelings about the environment, and a majority of the children shared apocalyptic views about the future of the planet. It is telling that for 70 percent of the children, television, news, and movies were central to forming their terrified views. Ten-year-old Miguel says about the future:

> There won't be as many countries anymore because of global warming, because I hear on like the Discovery Channel and science channels like in three years the world might flood from the heat getting too much.

These findings, if valid nationwide, suggest that more than ten million American children are terrified of climate change.[7]

As a result of this fear, around the world children are skipping school to protest against global warming. Why attend classes when the world will end soon? Recently, a Danish first-grader asked her teacher earnestly: "What will we do when the world ends? Where will we go? The rooftops?" Parents can find a glut of online instructions and guides with titles like *Parenting in a World Hurtling Toward Catastrophe* and *On Having Kids at the End of the World*. And so, representing her generation's genuinely held terror, a young girl holds up a sign that says "I'll die of climate change."[8]

I HAVE BEEN part of the global discussion on climate change policy for two decades, since writing *The Skeptical Environmentalist*. Throughout all this time, I have argued that climate change is a real problem. Contrary to what you hear, the basic climate findings have remained remarkably

consistent over the last twenty years. Scientists agree that global warming is mostly caused by humans, and there has been little change in the impacts they project for temperature and sea level rise.[9]

The political reaction to the reality of climate change has always been flawed—this, too, I have been pointing out for decades. There are, I have argued and continue to argue, smarter ways than our present-day approach to tackle global warming. But the conversation around me has changed dramatically in recent years. The rhetoric on climate change has become ever more extreme, and less moored to the actual science. Over the past twenty years, climate scientists have painstakingly increased knowledge about climate change, and we have more—and more reliable—data than ever before. But at the same time, the rhetoric that comes from commentators and the media has become increasingly irrational.

The science shows us that fears of a climate apocalypse are unfounded. Global warming is real, but it is not the end of the world. It is a manageable problem. Yet, we now live in a world where almost half the population believes climate change will extinguish humanity. This has profoundly altered the political reality. It makes us double down on poor climate policies. It makes us increasingly ignore all other challenges, from pandemics and food shortages to political strife and conflicts, or subsume them under the banner of climate change.

This singular obsession with climate change means that we are now going from wasting billions of dollars on ineffective policies to wasting trillions. At the same time, we're ignoring ever more of the world's more urgent and much more tractable challenges. And we're scaring kids and adults witless, which is not just factually wrong but morally reprehensible.

If we don't say stop, the current, false climate alarm, despite its good intentions, is likely to leave the world much worse off than it could be. That is why I'm writing this book now. We need to dial back on the panic, look at the science, face the economics, and address the issue rationally. How do we fix climate change, and how do we prioritize it amid the many other problems afflicting the world?

CLIMATE CHANGE IS REAL, it is caused predominately by carbon emissions from humans burning fossil fuels, and we should tackle it intelligently. But to do that, we need to stop exaggerating, stop arguing that it is now or never, and stop thinking climate is the only thing that matters. Many climate campaigners go further than the science supports. They implicitly or even explicitly suggest that exaggeration is acceptable because the cause is so important. After a 2019 UN climate science report led to over-the-top claims by activists, one of the scientist authors warned against exaggeration. He wrote: "We risk turning off the public with extremist talk that is not carefully supported by the science." He is right. But the impact of exaggerated climate claims goes far deeper.[10]

We are being told that we must do everything right away. Conventional wisdom, repeated ad nauseam in the media, is that we only have until 2030 to solve the problem of climate change. *This is what science tells us!*[11]

But this is not what science tells us. It's what politics tells us. This deadline came from politicians asking scientists a very specific and hypothetical question: basically, what will it take to keep climate change below an almost impossible target? Not surprisingly, the scientists responded that doing so would be almost impossible, and getting anywhere close would require enormous changes to all parts of society by 2030.

Imagine a similar discussion on traffic deaths. In the United States, forty thousand people die each year in car crashes. If politicians asked scientists how to limit the number of deaths to an almost impossible target of zero, one good answer would be to set the national speed limit to three miles per hour. Nobody would die. But *science* is not telling us that we must have a speed limit of three miles per hour—it only informs us that *if* we want zero dead, one simple way to achieve that is through a nationwide, heavily enforced three-mile-per-hour speed limit. Yet, it is a political decision for all of us, to make the trade-offs between low speed limits and a connected society.[12]

Today, such is our single-minded focus on climate change that many global, regional, and even personal challenges are almost entirely subsumed by climate change. Your house is at risk of flooding—climate change! Your community is at risk of being devastated

by a hurricane—climate change! People are starving in the developing world—climate change! With almost all problems identified as caused by climate, the apparent solution is to drastically reduce carbon dioxide emissions in order to ameliorate climate change. But is this really the best way to help?

If you want to help people in the Mississippi floodplains lower their risk of flooding, there are other policies that will help more, faster, cheaper, and more effectively than reducing carbon dioxide emissions. These could include better water management, building taller dikes, and stronger regulations that allow some floodplains to flood so as to avoid or alleviate flooding elsewhere. If you want to help people in the developing world reduce starvation, it is almost tragicomic to focus on cutting carbon dioxide, when access to better crop varieties, more fertilizer, market access, and general opportunities to get out of poverty would help them so much more, faster, and at lower cost. If we insist on invoking climate at every turn, we will often end up helping the world in one of the least effective way possible.

WE ARE NOT on the brink of imminent extinction. In fact, quite the opposite. The rhetoric of impending doom belies an absolutely essential point: in almost every way we can measure, life on earth is better now than it was at any time in history.

Since 1900, we have more than doubled our life expectancy. In 1900, the average life span was just thirty-three years; today it is more than seventy-one. The increase has had the most dramatic impact on the world's worst off. Between 1990 and 2015, the percentage of the world practicing open defecation dropped from 30 to 15 percent. Health inequality has diminished significantly. The world is more literate, child labor has been dropping, we are living in one of the most peaceful times in history. The planet is getting healthier, too. In the past half-century, we have made substantial cuts in indoor air pollution, previously the biggest environmental killer. In 1990, it caused more than 8 percent of deaths; this has almost halved to 4.7 percent, meaning 1.2 million people survive each year who would have died. Higher agricultural yields and changing attitudes to the environment have meant rich countries are increasingly

preserving forests and reforesting. And since 1990, 2.6 billion more people gained access to improved water sources, bringing the global total to 91 percent.[13]

Many of these improvements have come about because we have gotten richer, both as individuals and as nations. Over the past thirty years, the average global income per person has almost doubled. That has driven massive cuts in poverty. In 1990, nearly four in ten people on the planet were poor. Today, it is less than one in ten. When we are richer, we live better and longer lives. We live with less indoor air pollution. Governments provide more health care, provide better safety nets, and enact stronger environmental and pollution laws and regulations.[14]

Importantly, progress has not ended. The world has been radically transformed for the better in the last century, and it will continue to improve in the century to come. Analysis by experts shows that we are likely to become much, much better off in the future. Researchers working for the UN suggest that by 2100 average incomes will increase perhaps to 450 percent of today's incomes. Life expectancy will continue to increase, to eighty-two years or possibly beyond a hundred years. As countries and individuals get richer, air pollution will reduce even further.[15]

Climate change will have an overall negative impact on the world, but it will pale in comparison to all of the positive gains we have seen so far, and will continue to see in the century ahead. The best current research shows that the cost of climate change by the end of the century, if we do nothing, will be less than 4 percent of global GDP. This includes all the negative impacts; not just the increased costs from stronger storms, but also the costs of increased deaths from heat waves and the lost wetlands from rising sea levels. This means that instead of seeing incomes rise to 450 percent by 2100, they might "only" increase to 434 percent. That's clearly a problem. But it's also clearly not a catastrophe. As the UN climate panel put it themselves:[16]

> For most economic sectors, *the impact of climate change will be small relative to the impacts of other drivers* [such as] changes in population, age, income, technology, relative prices, lifestyle, regulation, governance, and many other aspects of socioeconomic development. (italics added)[17]

This is the information we should be teaching our children. The young girl holding the sign "I'll die of climate change" will not, in fact, die of climate change. In fact, she is very likely to live a longer, more prosperous life than her parents or her grandparents, and be less affected by pollution or poverty.

But because of the fear-mongering surrounding climate change, most people don't hear the good news. And because we believe that climate change is a much bigger challenge than it really is, many countries are spending more and more to combat it, and spending it in less and less sensible ways. Evidence shows that globally we are now spending more than $400 billion annually on climate change, through investments in renewables, in subsidies, and in lost growth.[18]

The costs are likely to keep increasing. With 194 signatories, the 2015 Paris Agreement on climate change, the most expensive pact in human history, is likely to incur costs of some $1–$2 trillion per year by 2030. With ever more nations making promises to go carbon neutral over the next decades, these costs could escalate to tens of trillions of dollars annually in the coming years.[19]

Any response to climate change will cost money (if addressing the problem made money, doing so wouldn't be contentious and we'd already be doing it). If a relatively low-cost policy could fix most of the problem, that could be money well spent. However, it turns out that the Paris Agreement in its best-case scenario will achieve just one percent of what the politicians have promised (keeping temperature rises to 1.5°C (2.7°F)), and at huge cost. It is simply a bad deal for the world.[20]

Moreover, it is unlikely that the Paris Agreement, or any other wildly expensive climate initiatives, will be sustainable. While many people are worried about climate change, most aren't willing to spend much of their own money to solve the problem. Across the world, people are saying they're willing to pay at most $100–$200 a year to address climate change. A 2019 *Washington Post* survey showed that while more than three-quarters of all Americans think climate change is a crisis or major problem, a majority was unwilling to spend even $24 a year on fixing it. Yet, the commonly proposed policies will cost many thousands or even tens of thousands of dollars per person per year.[21]

When fighting climate change becomes too expensive, people will stop voting for it. Voters have already rebelled against environmental policies that push up the costs of energy: in France this takes the form of the Yellow Vests movement, and in the United States, Brazil, Australia, and the Philippines it has seen the election of politicians campaigning against climate change policy. For this reason, less grandiose responses to climate change might also be more effective, because the electorate won't turn against them. Climate policy has to be steady to be effective over the long run, and if the costs of climate policy are so high that citizens consistently turn against the governments that promote it, then meaningful change will be hard to come by.

ONE OF THE great ironies of climate change activism today is that many of the movement's most vocal proponents are also horrified by global income inequality. They are blind, however, to the fact that the costs of the policies they demand will be borne disproportionately by the world's poorest. This is because so much of climate change policy boils down to limiting access to cheap energy.

When energy becomes more expensive, we all end up paying more to heat our houses. But because the poor use a larger share of their incomes on energy, a price increase burdens them the most. In the rich world, an estimated two hundred million people already suffer from energy poverty, meaning energy sucks up one-tenth or more of their income. So they either have to use less energy, or they have to cut spending on other things. But energy poverty isn't just an extra cost to the already vulnerable—it can disrupt their lives. For instance, energy poverty means that poorer, elderly people can't afford to keep their homes properly heated, leaving them to stay longer in bed to keep warm. The elite use only a small portion of their large incomes on energy, so even dramatic price increases matter much less to them. This is why it is easier for the rich to argue for high energy taxes. In fact, financial benefits from climate policies (like subsidies given to a homeowner for erecting a solar panel or insulating a house, or driving a Tesla) overwhelmingly go to the richest.[22]

In poor countries, higher energy costs harm efforts to increase prosperity. A solar panel, for instance, can provide electricity for a light at night and a cell phone charge, but it cannot deliver sufficient power for cleaner cooking to avoid indoor air pollution, a refrigerator to keep food fresh, or the machinery needed for agriculture and industry to lift people out of poverty. Countries in the developing world need cheap and reliable energy, for now mostly from fossil fuels, to promote industry and growth. Not surprisingly, a recent study of the consequences of implementing the Paris Agreement showed that it will actually increase poverty.[23]

Our extraordinary focus on climate also means we have less time, money, and attention to spend on other problems. Climate change frequently sucks out the oxygen from almost any other conversation about global challenges. In rich countries, this monomaniacal focus means we have fewer and shorter conversations on how to fix our pension plans, improve our schools, and achieve better health care. For poor countries, climate policy threatens to crowd out the much more important issues of health, education, jobs, and nutrition. These are the issues that, if addressed appropriately, we *know* will help lift the developing world out of poverty and generate a much better future.

SO WHAT IS the way forward?

First, we need to evaluate climate policy in the same way that we evaluate every other policy: in terms of costs and benefits. What that means in this case is that we have to weigh the costs of climate policies against the benefits of fewer climate-related problems. The climate problems are incessantly highlighted, but the costs of a policy for cutting carbon dioxide are just as real, and often hit the poorest in society hardest. Carbon dioxide is a by-product of a society with access to reliable and cheap energy, which helps produce all the things that make it good: food, heating, cooling, transportation, and so on. Restricting access to more costly and/or less reliable energy incurs higher costs that reduce economic growth.

In the case of carbon dioxide, the best research on costs and benefits shows that we should cut some, but by no means all, carbon dioxide

emissions. We should do so through a carbon tax, starting out rather low at $20 per ton of emissions (equivalent to an 18¢ per gallon tax on gasoline) and slowly increasing it over the century. The tax should preferably be coordinated globally, but more likely we'll end up with a patchwork of less effective policies. Still, this will cut the global temperature rise somewhat and prevent us from reaching the most damaging temperatures. It will also slightly slow economic growth, because that is the inevitable corollary of making energy more expensive.

Overall, this turns out to be a good deal. We will examine the inner workings of these climate-economic models later, but here is the gist. The cost from slightly more expensive energy translates into a slightly slower-growing global economy that over the next centuries achieves slightly less welfare than it would have without carbon taxes. In short, the extra cost is about 0.4 percent of total GDP.

The lower temperature rise will lead to fewer climate damages over the coming centuries than the world would otherwise have seen. In total, that benefit is worth about 0.8 percent of total GDP. The simple point then is that it is a good deal to pay 0.4 percent of GDP to obtain a benefit of 0.8 percent of GDP.

Cutting some carbon dioxide makes a lot of sense. First, it is easy to cut the first tons, because these are the most low-hanging fruit. There are many places where efficiency can be obtained at low cost. You can stop heating the patio when nobody is outside, incurring just the minimal inconvenience of turning the heat off. Also, cutting these first tons has the largest benefit, because it cuts the highest and most damaging temperature rises.[24]

But it is also important to recognize the scale of this solution. We pay 0.4 percent and make the world 0.8 percent better off. In total, the benefit is 0.4 percent of total global GDP. Getting a carbon tax right can make the world better, but not by a lot.

An approach informed by cost-benefit analysis also helps show us what we *shouldn't* do. We should not try to eliminate almost all carbon dioxide emissions in just a few short years. Yet, this is what most campaigners clamor for and most politicians profess to want. If we try to do this, the costs could escalate out of hand. Competently done, we would

need carbon taxes equivalent to tens or hundreds of dollars per gallon of gasoline in order to effectively prohibit carbon dioxide emissions in short order. This would cost us about 3.4 percent more of total global GDP. Yet, the extra benefits would be much lower at about 1 percent, making the world overall worse off. It would be a bad deal, even if all policies were done competently, and expertly coordinated across all nations and across the century.[25]

It is much more likely that such panicked climate solutions would be done badly and ineffectively, which could make the total costs incredibly large. We would in essence be paying a fantastically high price for little extra benefit. We would truly leave the world much worse off than it need be.

Let's return to the speed limit analogy. No sensible person would argue that we don't need any speed limits, just as no sensible person would argue that we should do nothing in response to climate change. At the same time, nobody argues that we should set the speed limit at three miles per hour, even though it would save thousands of lives, because the financial and personal costs would be too high for us to bear. And so we find a compromise solution somewhere in the range of fifty-five to eighty-five miles per hour. People who worry primarily about safety will argue for speed limits at the lower end, while those who care more about the financial implications of free movement will argue for the higher end. It's a reasonable range for conversation.

By demanding an immediate and dramatic reduction of carbon dioxide levels worldwide, climate activists are essentially arguing for the three-mile-per-hour speed limit. It's a ridiculous demand, at least for anyone who has to get to work in the morning.

Second, we need to look at smarter solutions to climate change. Top climate economists agree that the best way to combat its negative effects is to invest in green innovation. We should be innovating tomorrow's technologies rather than erecting today's inefficient turbines and solar panels. We should explore fusion, fission, water splitting, and more. We can research algae grown on the ocean surface that produces oil. Because the algae converts sunlight and carbon dioxide to oil, burning that oil will not release any new carbon dioxide. Oil algae are far from

cost effective now, but researching this and many other solutions is not only cheap but also offers our best opportunity to find real breakthrough technologies.[26]

If we innovate the price of green energy down below that of fossil fuels, everyone will switch—not just rich world countries but also China and India. The models show that each dollar invested in green energy research and development (R&D) will avoid $11 of climate damage. This will be hundreds of times more effective than current climate policies.[27]

Finding the breakthroughs that will power the rest of the twenty-first century could take a decade or it could take four. But we do know that we certainly won't solve the problem with more empty promises and investment in inefficiency. Innovation must be unleashed.

Unfortunately, we are not doing this now. While everyone in principle agrees we should be spending much more on R&D, the fraction of rich countries' GDP *actually* going into R&D has halved since the 1980s. Why? Because putting up inefficient solar panels makes for good photo ops, and it feels like we're doing something—funding eggheads is harder to visualize.[28]

This is one more cost of the relentless alarmism. Since we're so intent on doing something right now, even if it is almost trivial, we neglect to focus on the technological breakthroughs that in the long run could actually allow humanity to move away from fossil fuels.

Third, we need to adapt to changes. The good news is that we have done this for centuries, when we were much poorer and less technologically advanced. We can definitely do this in the future. Take agriculture. As temperatures rise, some wheat varieties might produce less. But farmers will plant other varieties and change crops, while more wheat farming will take place farther north. This is not cost free, but it will significantly reduce the costs of climate change.

Humans have proven themselves to be ingenious masters at adaptation. We can look to Bangladesh, which has massively lowered the death toll from tropical cyclones since the 1970s by investing in smart disaster preparation and better building codes, or to New York City, which learned from tropical storm Sandy and introduced a range of simple measures like storm covers for the subway system.

Fourth, we should research geoengineering, which mimics natural processes to reduce the earth's temperature. When the Mount Pinatubo volcano erupted in 1991, about fifteen million tons of sulfur dioxide were pumped into the stratosphere, forming a slight haze that spread around the globe. By scattering and absorbing incoming sunlight this haze cooled the earth's surface by an average of one degree Fahrenheit for eighteen months.

Scientists suggest we could replicate such a volcanic effect and cool the world a lot at a very low cost. It could also cool the world very quickly, in a matter of days or weeks. In that way, geoengineering could provide us with a potential backup policy if, for instance, we find that the West Antarctic ice sheet has started melting precipitously. Standard fossil-fuel-cutting policies will take decades to implement and half a century to have any noticeable climate impact. Only geoengineering can reduce the earth's temperature quickly.

We should not *do* geoengineering yet, because there might be downsides we haven't investigated. But we should research it to find out if it might offer plausible solutions in some cases.

Fifth, and finally, we need to remind ourselves that climate change is not the only global challenge. To most people, it is not the most important issue—it is in fact the *least* important one. A UN global poll of nearly ten million people found climate to be the lowest policy priority, far behind education, health, and nutrition (see figure I.1). People in rich countries, having much better education, health, and nutrition, tend to be more afraid of climate change, but even for Europeans climate rises only to the tenth-highest concern. For the world's poorest, climate is robustly last.[29]

By focusing most of our attention on climate change, we're ignoring other, bigger issues that if addressed could make the world a much better place for billions of people. Expanding immunization and curbing tuberculosis, improving access to modern contraception, ensuring better nutrition and more education, reducing energy poverty—all of these are well within our power and, if we focused on them, could alleviate suffering for huge swaths of the world's population right now.

Moreover, if we invest more in development, it will also make everyone more climate resilient. Making a community more resilient and

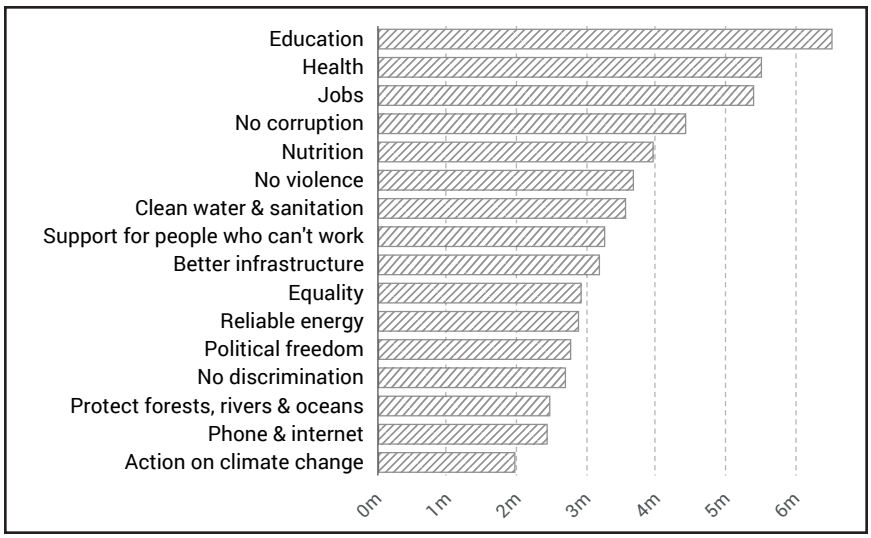


FIGURE I.1 Top policy priorities for the world. In connection with the UN's Sustainable Development Goals, 9.7 million people from across the world ranked their priorities out of sixteen options.[30]

prosperous means more people are able to invest in adaptation and preparedness, and are far less vulnerable to climate shocks. It turns out that helping the extremely poor improve their circumstances also helps them the most with tackling climate.

We need to be aware that when we insist, as part of foreign aid packages, that the developing world align with our climate priorities, we are enacting a kind of imperialism. We are not listening to what the citizens of these countries want. We are jeopardizing their opportunity to lift their populations out of poverty for the sake of our own concerns. This isn't just bad policy. It's grossly unethical.

WE NEED TO take a collective deep breath, and understand what climate change is and isn't. It is not like a huge asteroid hurtling toward earth, where we need to stop everything else and mobilize the entire global economy to ward off the end of the world. It is instead a long-term chronic condition like diabetes—a problem that needs attention and focus, but one that we can live with. And while we manage it, we can

live our lives and address the many other challenges that ultimately will matter much more for the future.[31]

In this book, we will start by examining the culture of fear created around climate change. Next, we will ask, what does the science actually tell us to expect? What is the cost of rising temperatures? After that, we will look at what's wrong with today's approach. How is it that climate change is at the forefront of our minds, yet we are failing to solve it? What do we achieve by making changes to our lifestyles? What are we achieving collectively, with promises made under the Paris Agreement on climate change? Finally, we will explore how we could actually solve climate change. What policies need to be prioritized in order to rein in temperature rises, and leave the planet in the best shape possible for our grandchildren?

We have it within our power to make a better world. But first, we need to calm down.

WHY DO WE GET CLIMATE CHANGE SO WRONG?

PEOPLE ARE PANICKING about climate change in large part because the media and environmental campaigners tell us to, because politicians overhype the likely effects, and because scientific research is often communicated without crucial context. Too often, the missing context is the most obvious fact of all: humans adapt to their changing earth. They have for millennia and will continue to do so. Any projection of the impact of climate change that fails to take this into account is not realistic.

There are strong incentives to tell the scariest possible story about climate change. Media gets more clicks and views with frightening stories. Campaigners get attention and funding. Researchers who position themselves as addressing apocalyptic threats get outsized attention, more recognition for their universities, and more future funding opportunities. Politicians who emphasize the scary scenarios get to promise to save us, and in the process gain the authority to distribute significant resources to fix the problem.

None of this means that we shouldn't worry about potentially big problems. We *want* researchers looking for the big problems, media highlighting what might harm us, and politicians saving us if we need it. But we should be appropriately skeptical, because selling Armageddon is also really useful to all these groups.

We should be most skeptical of the media's coverage of climate change. Nearly every day, we see new stories about rising temperatures and the extreme damage climate change will cause. Again, the media is rewarded for telling the most alarmist possible version of the climate

change story—that's what will sell the most newspapers and generate the most clicks. Nobody clicks on a link titled "Life in the future will be very recognizable but could be somewhat more challenging in certain respects." And so instead we read, in the words of one recent headline in the *New York Post:* "Climate Change Could End Human Civilization by 2050: Report." It's highly unlikely that the journalist who wrote the article, or the editor who came up with the shocking headline, was *setting out* deliberately and carefully to mislead their readers. But the journalist and editor most definitely were trying to get more readers. And it's clear that they did not fully read or assess the study they reported on, much less vet it against the established science on the topic.[1]

The actual 2019 study on which the story was based is just a flimsy seven pages from a little-known think tank, and veers wildly from the accepted science of the United Nations climate panel. The report presents the most extreme and unlikely scenario in which all climate impacts are far worse than projected by the vast majority of scientists. Within that extremely artificial setup, which the report authors state is beyond their capacity to model or even quantitatively estimate, there would indeed be a "high likelihood of human civilization coming to an end." But even then, the report does not set the date for the end of civilization at 2050, but only in some unspecified future. As one climate scientist described it: "This is a classic case of a media article over-stating the conclusions and significance of a non-peer reviewed report that itself had already overstated (and indeed misrepresented) peer-reviewed science."[2]

In other words, both the "report" and the news story were more climate fiction than climate news. Yet, in various forms this frightening story made it into *USA Today,* CBS News, and CNN, among many other major media news outlets.[3]

WHAT IS THE media's problem with climate change?

Of course, there is some careful, responsible reporting. But there is much more that isn't. Part of the problem is that over the past several decades, in an effort to seem balanced, many media outlets gave space to climate change deniers long after their arguments had been thoroughly debunked. More recently, deniers are not given space, and this is for the

better. But some of the alarmist coverage now may represent an effort to compensate for past sins. Journalists are making the same mistake at the other end of the political spectrum: they are failing to hold climate alarmists to account for their exaggerated claims.

Take the June 13, 2019, *Time* magazine cover story. The secretary-general of the United Nations, António Guterres, is photographed standing in a suit and tie with water up to his thighs off the coast of the tiny Pacific island nation Tuvalu. The accompanying article warns that "rising seas threaten to submerge Tuvalu" and states bleakly that because it lies almost at sea level, any rise threatens to wipe Tuvalu and its ten thousand inhabitants "off the map entirely."[4]

Alas, Secretary-General Guterres ruined a perfectly nice suit for no reason: this is not what the science says. Yes, global warming does make sea levels rise, including around the 101 reef islands of Tuvalu. But it would have taken the journalists just a few minutes to find the latest scientific study of Tuvalu published in *Nature*. It confirms that not only has the sea level been rising, but around Tuvalu it has risen at *twice* the global average. Yet, during the last four decades of strong sea level rise, Tuvalu has actually expanded and seen its total land area *increase* by 2.9 percent. This is a result of the process of accretion. Yes, sea level rise erodes and reduces land area, but at the same time old coral is broken up by waves and washed up on low-lying shores as additional sand, which counteracts the reduction. The 2018 research shows that this accretion process is overpowering the erosion, leading to net land area gain for Tuvalu. Moreover, this process is ongoing and its dynamic feature will likely mean that the Tuvalu islands can, in the words of the *Nature* study, "persist as sites for habitation over the next century."[5]

The *Time* cover story also warns that two other island nations, Kiribati and the Marshall Islands, will be wiped off the map. A few more minutes of research on both nations would have undercut the entire story. In Kiribati, four atolls all show natural accretion outpacing reduction since 1943. The main Tarawa atoll, where half the population lives, has seen accretion increase the total land area by 3.5 percent over three decades (plus a 15 percent increase from major reclamation projects in South Tarawa). Similarly, the Marshall Islands have seen their total land area increase by 4 percent because of natural accretion.[6]

Indeed, in the latest research summarizing all these studies for Micronesia, the Marshall Islands, Kiribati, French Polynesia, the Maldives, and Tuvalu, it turns out that accretion has beaten out sea level rise on all atolls and all larger islands. Despite sea level rising over recent decades, all atolls studied have increased in area, and all the larger islands studied either remained stable or increased in size.[7]

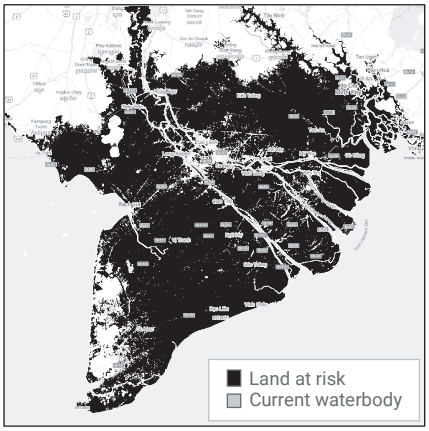
A more carefully investigated story would have included information on accretion and land mass gain, and could have focused on the challenges facing people who need to move from areas of erosion to accreted land. But instead of looking at the real problems that nations like Tuvalu will face because of climate change, the *Time* magazine story is framed as "our sinking planet": more digestible, scarier, and more saleable. But also deeply misleading.

A SIMILARLY SCARY STORY swept the world in 2019, this one told by the *New York Times* and many, many other media outlets: that vast swathes of inhabited area will be underwater by 2050, with cities "erased." The headlines stem from quality research: a 2019 paper, published in *Nature*, that shows that past estimates of the impact of sea level rise have been wrong, because they relied on measurements of ground level that sometimes accidentally measured the tops of trees or houses rather than the ground itself. This means vulnerability to sea level rise has been underestimated.[8]

That's important. But the media used this to focus on a dystopian vision of 2050. The *New York Times* presented a terrifying map you can see on the left in figure 1.1. The map shows which areas of South Vietnam are under the expected high-tide water line and potentially at risk. Clearly this looks scary, and the paper in no uncertain terms declared that it shows South Vietnam will "all but disappear" because it will be "underwater at high tide." It told readers that "more than 20 million people in Vietnam, almost one-quarter of the population, live on land that will be inundated." Similar effects were shown around the world.

This news went viral. "Climate change is shrinking the planet, in the scariest possible way," tweeted Bill McKibben, founder of international climate advocacy organization 350.org. Climate scientist Peter Kalmus

New York Times,
South Vietnam underwater in 2050:



Actual extra land in
South Vietnam at risk by 2050:

FIGURE 1.1 This figure estimates the area of South Vietnam below high-tide water level. At the left, the map the *New York Times* highlighted for readers. The newspaper said it showed that by 2050 this entire part of Vietnam "will be underwater at high tide." This claim ignores existing protection. Indeed, most of South Vietnam is already below high tide, and almost everyone is protected. On the right is the extra land that will be below high tide by 2050. (Left graph reproduced with permission.)[9]

said he was once concerned about being labeled "alarmist," but news like this made him embrace the term.[10]

What did the media forget? To reveal what the comparative situation is today. And it is almost *identical* to the situation estimated for 2050. If you look at the map to the right in figure 1.1, you can see how much *extra* land will be at risk in 2050—almost none. Both maps simply show what everyone knows: people in the Mekong Delta literally live on the water. In South Vietnam's An Giang province, almost all land that is not mountainous is protected by a dike. It is "underwater" in the same way that much of Holland is: large swathes of land including Schiphol, the world's fourteenth-largest airport, are quite literally built under the high-tide mark. In London, almost a million people live below that level. But nobody in Holland, London, or the Mekong Delta needs scuba gear to get around, because humanity has adapted with dikes and flood protection.[11]

The actual research on which the *New York Times* article is based mentions in its introduction that "coastal defenses are not considered"

in its approach. That's fine for an academic paper, but it's ludicrous for the media to use its findings to produce claims of "20 million people underwater," or for campaigners to suggest that this gives us reason to all become "alarmist." The study shows that *today*, 110 million people are "underwater" regularly. In reality, almost every one of them is well protected. The real story here is the triumph of ingenuity and adaptation.[12]

In 2050, the study shows a global increase of 40 million people living below the high-tide mark: 150 million in total. As we will see later in this chapter, almost all of these additional vulnerable people will be protected at a fairly low cost.[13]

The media didn't set out to deceive readers, but the news it shared was unnecessarily, unjustifiably alarming. The real news is that an increase of forty million people living below the high-tide mark will be a slight worsening of a challenge that we have shown ourselves completely capable of solving, in a world that will be much wealthier and more resilient than it is today. Context matters.

ONE OF THE most influential recent examples of the media's alarmist approach is its coverage of a major report issued in 2018 by UN climate scientists. Most news outlets reported that these scientists were urging the world to drastically cut emissions by 2030, with huge changes needed to keep temperature rises below 2.7°F (1.5°C). CNN told us, for example, that "Earth has 12 years to avert climate change catastrophe." Versions of this story appeared in newspapers worldwide, and have been parroted by politicians and activists ever since.[14]

In fact, what had happened was that at the Paris climate change conference three years earlier, leaders from around the world had declared that they wanted to achieve the target of keeping temperature rises below 2.7°F. They even put that aim into the preamble of their Paris climate change agreement. They did so at the urging of campaigners who wanted to demonstrate their willpower and ambition, and not because the world's scientists had come together to declare this arbitrary cut-off point crucial.

Having already declared in 2015 that the goal was to restrict temperature rises to less than 2.7°F, world leaders *then* asked the UN's climate