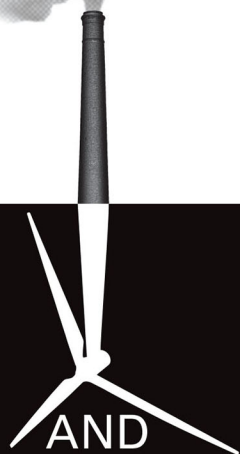


KENTARO KAWAMORI

# CAPITALISM

CREATED THE CLIMATE CRISIS



# CAPITALISM

WILL SOLVE IT

THE MARKET FORCES CATALYZING  
**A CLIMATE TECHNOLOGY RENAISSANCE**

WILEY



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*To my family, friends, and all the entrepreneurs and those  
who support them building the future of climate solutions  
and a new energy economy.*





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# Acknowledgments

THIS BOOK IS the culmination of my interactions with all the great people in my life who have helped me get to where I am today; there are so many of you. Thank you for being a part of my life and continuing to shape my journey.



# Introduction

WE HAVE CREATED the perfect storm. Consumerism—the insatiable demand for more goods and services—powers our economic system of capitalism, which needs reliable, affordable, and easily available energy to produce the products that can be sold for profits. Most of our energy generation in its current forms creates excessive greenhouse gases (GHGs), including carbon dioxide and methane, that become trapped in our atmosphere and, like a blanket, warm our planet to excess.

The result is climate change, the long-term shifting of temperatures and weather patterns coupled with more extreme weather-related events and changes that threaten the livability of our planet.

Among all the negativity, though, there is positive news. Capitalism is purpose-built to provide the breeding ground for solutions to the climate crisis using the same creativity, tenacity, and drive that led to the crisis. Given the right set of incentives, we will turn capitalism into the driving force for the good of the planet.

Industrialization in the 17th century coincided with the beginning of the global temperature rise due to industry emissions and a growing population. Despite this long history between human activity and a warming planet, most of us still seem unwilling or unable to materially change our demands, perhaps from ignorance to the

issue or lack of interest in getting involved. Even if we individually embrace sustainability, on an absolute basis, the global consumption of every resource will increase radically as planet Earth becomes home to nearly 10.5 billion people by 2100.<sup>1</sup> Future generations will face potential resource constraints and even depletion at our current trajectory.

For those individuals who still refute climate science, they will have trouble denying temperatures these days might seem a bit colder or hotter, and the weather is wetter or drier than they remember. They'll likely agree that the cost of goods and services has risen and on some days the air isn't quite as clean as it used to be.

Welcome to a world where our climate is changing and the world is reacting. Those reactions range from talk about climate shifts, carbon footprints, and severe weather events to companies raising prices to compensate for the cost of increased climate disruptions, global firms working to reduce GHG emissions, and groups in and outside of government brainstorming for solutions to the challenges.

While the climate crisis has recently seen a positive uptick in awareness, most historical climate talk did not result in immediate concerns for the general public. However, with regional climate activity becoming increasingly relevant in today's headlines, many need to rethink that "who-cares" attitude. In the last few years, Florida dealt with traumatic coastal flooding from severe hurricanes, Northern California coped with tremendous devastation from wildfires, and India sizzled under brutal heat. Earth's global surface temperatures have risen faster since 1970 than in any 50-year period over the past 2,000 years, according to the latest report from the nonprofit United Nation's Intergovernmental Panel on Climate Change.<sup>2</sup>

The days of ignoring climate change and its effects on our daily lives have come and gone. People across the world have awakened to the crisis and started to demand action; for example, a majority of adults in the United States want the country to prioritize developing renewable energy sources instead of expanding the production of fossil fuels like oil, coal, and natural gas, according to a recent poll from the Pew Research Center.

On the other side of the Atlantic, sentiments favoring our planet's sustainability run deep. The European Union (EU) in September 2023 revised upwards its renewable energy targets, with passage of a law

requiring 42.5% of EU energy to be renewable by 2030.<sup>3</sup> That's almost double the 2022 level of 23%.<sup>4</sup>

European climate law also stipulates EU countries must cut GHG emissions by at least 55% by 2030. The goal is climate neutral—net zero GHG emissions—by 2050.<sup>5</sup>

And, let's not forget COP28, the UN Conference of Parties that met in late 2023 in Dubai to discuss what the world can do about the climate crisis. Accomplishments at the conference included a mid-term review (global stocktake) of progress countries are making toward commitments as part of the 2015 Paris Agreement and a decision to operationalize the Loss and Damage Fund adopted at COP27. The latter provides financial assistance to help developing countries cope with climate change issues.<sup>6</sup> Both developments are continued steps toward the nations of the world finding common ground on how best to combat climate shifts and their impacts on biodiversity and human life.

*Capitalism Created the Climate Crisis and Capitalism Will Solve It* isn't a book about pointing fingers or directing blame, bashing the oil and natural gas industry, or capitalism itself. Rather this book is about looking more closely at the past to better understand where we are today and gain insights into finding future solutions.

To state the obvious, no one wants an unlivable planet. But so much of the talk and writing about climate is tainted with misinformation, disinformation, whitewashing, greenwashing (the environmental version of whitewashing), and outright lies. Sorting through all that makes it even more difficult for corporations and individuals to know what's the truth.

In these pages, readers will gain a clear picture of how and why capitalism created the climate crisis, why it perpetuates, and how with the right mindset and direction—a marriage of public and private interests—and the help of capitalism we can better understand the vast opportunities that lie ahead of us.

The book is divided into two parts. The first looks at the state of our climate, why we should be concerned, and how we got to where we are. That includes a discussion of fossil fuels—good and not so good, how capitalism and governance helped perpetuate disposable commerce, and how climate risk equates to financial risk in this new era of accountability. In Part II, I'll cover why capitalism is the key to solving

the crisis, explore how modern finance is powering the next wave of innovative solutions that enable the world to decarbonize, examine the energy transition revolution, and finally share why I am hopeful for our future climate state of affairs.

As a consultant to numerous energy firms and a former C-suite executive at a Fortune 500 oil and gas firm, Chesapeake Energy Corporation, I've witnessed firsthand the challenges and opportunities within the traditional energy sector. As an entrepreneur and CEO of Persefoni AI Inc., I now lead the way in developing critical solutions in support of democratizing carbon accounting. My combined experiences in energy markets and climate technology give me a nuanced understanding of how market forces can be harnessed to spur climate action. Capitalism's inherent drive for innovation and efficiency can be an invaluable tool in developing and scaling up climate technologies.

While working at energy firms in the oil and gas and utilities sectors, the picture of capitalism on a collision course with sustainability became clear. I saw firsthand how the conversation in the industry began changing. Fueled by everything from social protests led by Greta Thunberg and environmental activists in boardrooms, the industry began the transition to new forms of energy and readily acknowledged its role in the climate fight.

I recognized we couldn't solve the problem without better understanding the problem itself. That meant we needed a better way to measure carbon emissions against a common climate baseline. Today, that's known as carbon accounting, or sustainable finance. Measurement, though, is just the beginning of the journey to decarbonization.

In 2019, I left Chesapeake, and the next year Persefoni was born. We named the company after the Greek goddess Persephone. Her story is one of sadness and redemption. Among other things, she is the goddess of spring. It is the themes of rebirth and bloom associated with spring that we wanted reflected in the company's name, an inherent optimism that things will get better.

Whatever your background or expertise or your level of climate knowledge, *Capitalism Created the Climate Crisis and Capitalism Will Solve It* will clearly lay out the issues and problems, along with a path to solid solutions. Whether someone believes or not in the possibility



of a silver bullet to reverse the effects of a warming planet overnight, it's highly unlikely any solution will happen without what's discussed in this book. Together we can make a difference for our planet.

A final note: a degree of fear, stress, and pessimism creeps into nearly every discussion on climate. In these pages, I choose to be hopeful. The book's tone doesn't belabor the negative; rather, it focuses on a future in which we successfully rise to the challenge and first mitigate, then reverse, the damage to our planet.

I believe capitalism can be a powerful engine for climate action, but only if we design the right incentives and frameworks. Are you ready to explore how we can achieve this together?



**PART**



**Where We Are Today**



# 1

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## Collision Course

### Consumerism, Capitalism, and Climate Crisis

*“By all empirical measures, no economic system other than capitalism has created greater prosperity for citizens or contributed to more breakthrough technology and economic advancements in the history of human civilization.”*

I WAS ON stage at TechCrunch’s “TC Sessions: Climate 2022.” It was mid-June and I was surrounded by an overwhelmingly left-leaning crowd on the University of California–Berkeley campus when I began to share my mantra:

*Capitalism created the climate crisis and capitalism will solve it.*

I had expected at least some fallout from this progressive crowd, but instead, there was only silence, so I continued.

Global consumerism—the world’s endless demand for goods and services—powers our capitalism. Governments, in turn, provide rules and regulations that support this economic system of private ownership for profit. Capitalism needs access to cheap, reliable energy to produce products and eventually profits. Generating that

energy—primarily through burning of fossil fuels—generates greenhouse gases (GHGs) that act like a blanket in our atmosphere, hold in more heat from the sun, and warm our planet to excess.

The bottom line: we as consumers have brought together the perfect set of ingredients that today manifest as Earth's climate crisis. This long-term alteration of temperature and weather patterns is fueled by trapped GHGs including carbon dioxide and methane (also sometimes known under the broad umbrella *carbon* or CO<sub>2</sub>). The results are more frequent and severe heat waves, droughts, natural disasters, hurricanes, wildfires, and rising sea levels that can lead to flooding and the loss of coastal habitats. Rapidly melting polar ice caps also shrink animal habitats.

The long-term effects of these climate shifts are devastating, and not just on weather, sea levels, and animals. Estimates are that unaddressed climate change could cut global economic output by \$23 trillion by 2050, according to Swiss Re, a leading global insurer based in Zurich, Switzerland.<sup>1</sup>

Consider these climate statistics:

- Earth is 1.1 degrees Celsius (°C) warmer today than in the late 1800s. A rise of 1.5°C above preindustrial levels is considered the maximum upper limit to avoid the worst fallout from climate change.<sup>2</sup>
- 2023 was Earth's hottest year on record.<sup>3</sup> Previously 2020 and 2016 statistically tied as the hottest, continuing a long-term warming trend.<sup>4</sup>
- June, July, and August 2023 was the hottest summer since 1880 when global record-keeping began.<sup>5</sup>
- Earth's atmosphere contains more carbon dioxide today than at any time in human history; 422.33 parts per million (ppm) as of December 30, 2023.<sup>6</sup> That compares with 290 ppm from 1800 to 1870.<sup>7</sup>
- Summer Arctic sea ice extent is shrinking by 12.2% per decade due to warmer temperatures, affecting ocean circulation and water temperatures.<sup>8</sup>