



eaarth

MAKING A LIFE ON A TOUGH NEW PLANET

"What I have to say about this book is very simple: Read it, please. Straight through to the end. Whatever else you were planning to do next, nothing could be more important."

—BARBARA KINGSOLVER

BILL
McKIBBEN

AUTHOR OF *THE END OF NATURE*

PREFACE

I'm writing these words on a gorgeous spring afternoon, perched on the bank of a brook high along the spine of the Green Mountains, a mile or so from my home in the Vermont mountain town of Ripton. The creek burbles along, the picture of a placid mountain stream, but a few feet away there's a scene of real violence—a deep gash through the woods where a flood last summer ripped away many cubic feet of tree and rock and soil and drove it downstream through the center of the village. Before the afternoon was out, the only paved road into town had been demolished by the rushing water, a string of bridges lay in ruins, and the governor was trying to reach the area by helicopter.

Twenty years ago, in 1989, I wrote the first book for a general audience about global warming, which in those days we called the “greenhouse effect.” That book, *The End of Nature*, was mainly a philosophical argument. It was too early to see the practical effects of climate change but not too early to *feel* them; in the most widely excerpted passage of the book, I described walking down a different river, near my then-home sixty miles away, in New York's Adirondack Mountains. Merely knowing

that we'd begun to alter the climate meant that the water flowing in that creek had a different, lesser meaning. "Instead of a world where rain had an independent and mysterious existence, the rain had become a subset of human activity," I wrote. "The rain bore a brand; it was a steer, not a deer."

Now, that sadness has turned into a sharper-edged fear. Walking along this river today, you don't need to imagine a damned thing—the evidence of destruction is all too obvious. Much more quickly than we would have guessed in the late 1980s, global warming has dramatically altered, among many other things, hydrological cycles. One of the key facts of the twenty-first century turns out to be that warm air holds more water vapor than cold: in arid areas this means increased evaporation and hence drought. And once that water is in the atmosphere, it will come down, which in moist areas like Vermont means increased deluge and flood. Total rainfall across our continent is up 7 percent,¹ and that huge change is accelerating. Worse, more and more of it comes in downpours.² Not gentle rain but damaging gully washers: across the planet, flood damage is increasing by 5 percent a year.³ Data show dramatic increases—20 percent or more—in the most extreme weather events across the eastern United States, the kind of storms that drop many inches of rain in a single day.⁴ Vermont saw three flood emergencies in the 1960s, two in the 1970s, three in the 1980s—and ten in the 1990s and ten so far in the first decade of the new century.

In our Vermont town, in the summer of 2008, we had what may have been the two largest rainstorms in our history about six weeks apart. The second and worse storm, on the morning of August 6, dropped at least six inches of rain in three hours up on the steep slopes of the mountains. Those forests are mostly intact, with only light logging to disturb them—but that was far too much water for the woods to absorb. One of my neighbors,

Amy Sheldon, is a river researcher, and she was walking through the mountains with me one recent day, imagining the floods on that August morning. “You would have seen streams changing violently like that,” she said, snapping her fingers. “A matter of minutes.” A year later the signs persisted: streambeds gouged down to bedrock, culverts obliterated, groves of trees laid to jackstraws.

Our town of barely more than five hundred people has been coping with the damage ever since. We passed a \$400,000 bond to pay for our share of the damage to town roads and culverts. (The total cost was in the millions, most of it paid by the state and federal governments.) Now we’re paying more to line the creek with a seven-hundred-foot-long wall of huge boulders—riprap, it’s called—where it passes through the center of town, a scheme that may save a few houses for a few years, but which will speed up the water and cause even more erosion downstream. There’s a complicated equation for how wide a stream will be, given its grade and geology; Sheldon showed it to me as we reclined on rocks by the riverbank. It mathematically defines streams as we have known them, sets an upper limit to their size. You could use it to plan for the future, so you could know where to build and where to let well enough alone. But none of that planning works if it suddenly rains harder and faster than it has ever rained before, and that’s exactly what’s now happening. It’s raining harder and evaporating faster; seas are rising and ice is melting, melting far more quickly than we once expected. The first point of this book is simple: global warming is no longer a philosophical threat, no longer a future threat, *no longer a threat at all*. It’s our reality. We’ve changed the planet, changed it in large and fundamental ways. And these changes are far, far more evident in the toughest parts of the globe, where climate change is already wrecking thousands of lives daily. In

July 2009, Oxfam released an epic report, “Suffering the Science,” which concluded that even if we now adapted “the smartest possible curbs” on carbon emissions, “the prospects are very bleak for hundreds of millions of people, most of them among the world’s poorest.”⁵

And so this book will be, by necessity, less philosophical than its predecessor. We need now to understand the world we’ve created, and consider—urgently—how to live in it. We can’t simply keep stacking boulders against the change that’s coming on every front; we’ll need to figure out what parts of our lives and our ideologies we must abandon so that we can protect the core of our societies and civilizations. There’s nothing airy or speculative about this conversation; it’s got to be uncomfortable, staccato, direct.

Which doesn’t mean that the change we must make—or the world on the other side—will be without its comforts or beauties. Reality always comes with beauty, sometimes more than fantasy, and the end of this book will suggest where those beauties lie. But hope has to be real. It can’t be a hope that the scientists will turn out to be wrong, or that President Barack Obama can somehow fix everything. Obama can help—but precisely to the degree he’s willing to embrace reality, to understand that we live on the world we live on, not the one we might wish for. Maturity is not the opposite of hope; it’s what makes hope possible.

The need for that kind of maturity became painfully clear in the last days of 2009, as I was doing the final revisions for this book. Many people had invested great hope that the Copenhagen conference would mark a turning point in the climate change debate. If it did, it was a turning point for the worse, with the richest and most powerful countries making it abundantly clear that they weren’t going to take strong steps to address the crisis before us. They looked the poorest and most vulnerable

nations straight in the eye, and then they looked away and concluded a face-saving accord with no targets or timetables. To see hope dashed is never pleasant. In the early morning hours after President Obama jetted back to Washington, a group of young protesters gathered at the metro station outside the conference hall in Copenhagen. *It's our future you decide*, they chanted.

My only real fear is that the reality described in this book, and increasingly evident in the world around us, will be for some an excuse to give up. We need just the opposite—increased engagement. Some of that engagement will be local: building the kind of communities and economies that can withstand what's coming. And some of it must be global: we must step up the fight to keep climate change from getting even more powerfully out of control, and to try to protect those people most at risk, who are almost always those who have done the least to cause the problem. I've spent much of the last two decades in that fight, most recently helping lead 350.org, a huge grassroots global effort to force dramatic action. It's true that we've lost that fight, insofar as our goal was to preserve the world we were born into. That's not the world we live on any longer, and there's no use pretending otherwise.

But damage is always relative. So far we've increased global temperatures about a degree, and it's caused the massive change chronicled in chapter 1. That's not going to go away. But if we don't stop pouring more carbon into the atmosphere, the temperature will simply keep rising, right past the point where *any* kind of adaptation will prove impossible. I have dedicated this book to my closest colleagues in this battle, my crew at 350.org, with the pledge that we'll keep battling. We have no other choice.