

and how the opportunity to adopt emissions trading afforded by the Kyoto Protocol resulted in the European Union's Emissions Trading Scheme. The chapter closes with an extended discussion of how well that program has worked in practice and concludes that it could serve as a prototype for a global system.

Chapter 5 discusses both agriculture and forests not only as sources of greenhouse gases, but also as targets of opportunity for sharing the rent from the carbon market via the Clean Development Mechanism (CDM) and the Reduction in Emissions from Deforestation and Forest Degradation (REDD) program.

Since the CDM and REDD programs are both based upon creating offsets from individual projects (as opposed to allowances based upon countrywide caps), chapter 6 discusses both the strengths and weaknesses of these project-based approaches in more specific detail.

Since a global carbon market would generate a considerable amount of rent and a key aspect of this book's thesis is that rent sharing is crucial to implementing a successful approach to controlling the risks posed by climate change, chapter 7 examines the various rent sharing options and their consequences in some detail.

Chapter 8 coalesces all these pieces of the puzzle to provide the basis for a productive international negotiations strategy. Rather than see the 2009 Copenhagen meeting as a failure for not furthering the top-down process envisioned by the Kyoto Protocol, the author sees it as creating an opportunity for a new bottom-up climate agreement architecture, the skeleton of which is fashioned in this chapter.

In an age where momentum toward a Kyoto-type climate policy seems to have been significantly dulled in countries such as Canada and the United States, "messaging" has arisen as a significant topic for public discussion. In general, how the story is told seems to matter a lot in building support for action on climate change.

This book, in my view, is an example of excellent messaging targeted at an educated public. It is written in an engaging style that provides an experiential context for solid economic ideas that might otherwise be too abstract to be absorbed by a general audience. The story opens at the Manaus Opera House in Brazil with dawn appearing on

the horizon, takes us to the ski slopes on the Alps where a shortage of snow is hampering operations, briefly visits the Maldives where a sovereign fund has been set up to purchase land in Sri Lanka and southern India to provide a destination area when rising sea levels force its residents to evacuate, and introduces a small, low-income family in Indonesia to show how incentives can be reformulated to align personal and planetary interests. The book concludes, as the sun sets in Copenhagen, with an optimistic assessment of how both fair and efficient international agreements can be forged based upon the foundation of a vibrant carbon market with shared revenue.

Although compact, the book is quite comprehensive. It recognizes and weaves together the energy, food, national security, and climate impact interdependencies that make climate policy the complex subject that it is. Even more important, this book not only identifies the challenges posed by those interdependencies, but also recognizes the opportunities for meaningful change that they present.

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Climatopolis: How Our Cities Will Thrive in the Hotter Future. By Matthew E. Kahn. New York: Basic Books, 2010. Pp. v, 274. \$26.95. ISBN 978-0-465-01926-7.

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How concerned should we be about climate change? The answer is probably less than many people think, according to Matthew Kahn in *Climatopolis*. Kahn is not a climate change skeptic—not even close. But he is skeptical about whether we humans will manage to reduce future greenhouse-gas emissions enough to avoid human-induced climate change. *Climatopolis* is therefore a book about the prospects for climate-change adaptation, and it is from this perspective, with a focus on cities, that Kahn finds less cause for concern.

Climatopolis begins with the assumption that our future will bring some combination of higher temperatures, sea level rise, more intense natural disasters, and changes in precipitation and drought conditions. The forecast is considered inevitable because of humanity's deep and

growing dependence on energy from fossil fuels, the burning of which generates emissions that cause climate change. In a way that some readers are likely to find overly pessimistic, dismissive, or both, Kahn asserts that we are unlikely to invent a “magical” technology that allows us to live well without producing greenhouse gases. He is equally skeptical about whether geo-engineering will help stabilize the climate. So when it comes to facing a future that includes climate change, Kahn has concluded as soon as page 5 that “unlike a ship, we cannot turn away.”

Economics is, after all, the dismal science, but early pessimism in *Climatopolis* quickly gives way to an overall optimistic theme. It is first encountered, somewhat surprisingly, in a chapter titled “What We’ve Done When Our Cities Have Blown Up.” With examples that range from fires and floods to wars and terrorist attacks, Kahn makes the case that we humans are a surprisingly resilient species. Among the lessons he draws are that destruction often triggers economic booms, people learn from their mistakes, cities are shaped by the accumulation of small decisions by millions of self-interested people, and when conditions are bad in one location people migrate to where it is better.

Kahn gets traction out of the notion that people “vote with their feet,” and he describes how climate change will affect where people want to go. Rising temperatures will cause Sun Belt cities in the United States to suffer, for example, while northern cities such as Minneapolis and Detroit will become more attractive places to live. Sea level rise will impact coastal cities such as Boston and San Francisco, while leaving inland cities unaffected. More generally, as climate change shifts the landscape of comparative advantages among cities—or people simply learn about the coming effects from climate scientists—people will have incentives for adaptation via migration. And the same logic applies to locations within particular cities. Just as climate change will have differential effects on the numerous micro-climates of Los Angeles, lower Manhattan is significantly more flood prone than most other parts of New York City.

At the core of *Climatopolis* is also the argument that, because people can vote with their feet, cities themselves will have an incentive for

climate-change adaption. In more vulnerable areas, the result will be a decrease in property values, an outflow of skilled people, and a loss of economic growth. Cities facing these challenges will thus find ways to buffer residents from climate-change impacts in order to retain a highly skilled workforce and grow their economies. Entrepreneurs will also play a role taking advantage of new opportunities to adapt and incentives created by emission policies in one form or another. In both cases, Kahn leaves open the exact mechanisms by which such adaptation will occur, but he clearly has in mind the climate-proofing of infrastructure and investments in new technology.

Climatopolis also cautions against maladaptive policies, and the recommendation here will be familiar to economists: prices should be left undistorted to reflect real costs and risks. Kahn is critical of a policy in Los Angeles under which people who demand more water pay a lower marginal price, and thereby face exactly the wrong incentive for conservation as water becomes increasingly scarce. He also points to the problems of subsidized insurance or caps on premiums for residents in climate-vulnerable areas, as these policies only promote greater vulnerability. What is more, Kahn would like us to stop treating people who move into harm’s way as victims in need of a bailout when natural disasters strike. He writes that, “Ironically, to allow capitalism to help us adapt to climate change, the government must precommit to not protect ‘the victims’.”

The credibility of any such precommitment strategy would, of course, be questionable, especially given the damage of events like Hurricane Katrina or the tornados that just ripped through the southern United States. Kahn also recognizes that the difficulty of creating the right incentives is compounded further by the way constituencies in climate-vulnerable areas will seek political influence to use public resources for their own private protection. Interestingly, this causes him to speculate whether more authoritarian nations like China might be better prepared to overcome the political challenges of climate-change adaption. But this point is an outlier in a book that generally combines a Chicago School faith in free markets with a Julian Simon belief that human ingenuity will solve environmental problems.

My own views are less categorical, but I find little to disagree with in *Climatopolis*. Though I should mention, in the interest of full disclosure, that I know Matthew Kahn quite well, and we have even coauthored a paper together. Nevertheless, this review poses little conflict of interest because I know he would encourage my taking him to task on a few things.

In some respects, I think readers might justifiably question whether history supports the *Climatopolis* vision of adaptation. The book relies heavily on the assumption that we will have “high-quality models for future flood, heat wave and drought risk, and that the population believes the forecasts.” But we know that climate models are highly uncertain and what people are willing to believe is often surprising. Coincidentally, the paper I coauthored with Kahn reports that 33 percent of the U.S. population does not believe in climate change, and that the probability someone does believe is decreasing in his or her local unemployment rate. Presumably if climate change gets bad enough, or begins to happen quickly, doubts that depend on local economic conditions will no longer persist, but this is certainly not the outcome many of us are hoping for.

Climatopolis also leaves open questions about what exactly makes for good or bad adaptation policy. Consider the rebuilding of New Orleans in the years since Hurricane Katrina. By one interpretation of Kahn’s argument, many of these efforts are consistent with a city fortifying itself from the impacts of climate change in order to prevent continued outmigration of residents. But another interpretation implies that these same efforts are maladaptive because they encourage continued residency in climate-vulnerable areas. Underlying these two different interpretations is the fact that locally optimal adaptation need not be regionally, nationally, or globally optimal. A consequence, it seems to me, is that competition

among cities is not necessarily beneficial when it comes to climate-change adaptation.

More coverage of a few things in *Climatopolis* would also have been useful. Kahn argues that globalization will help us cope with climate change because free trade promotes the distribution of goods and services to places with the greatest demand. Though, surprisingly, the only example specifically discussed is the likely expansion of markets for dried fruit to help deal with drought-induced food shortages. And what about the fact that globalization makes us more dependent on infrastructure that will become increasingly vulnerable to climate shocks? Recall how the eruption of an Icelandic volcano in 2010 disrupted transportation in and out of Europe for weeks. Kahn is also aware that the benefits of adaptation will do little to help the world’s poor, but readers are left wondering how he would propose to address the inequities, if at all.

While a reviewer can always ask for more out of a book, I think *Climatopolis* delivers something well worth the read for economists and others interested in the increasingly important challenges of climate change. I predict that Kahn will get you agreeing, disagreeing, and perhaps more importantly, thinking. You will also be entertained, as Kahn’s writing style is atypically breezy and humorous for an academic. But in chapters with titles like “Playing One-on-One with Kobe Bryant” and “Bono’s Anxiety,” his subject matter is serious. Readers will find a persuasive argument to shift some of our attention from climate-change mitigation to climate-change adaptation—and in doing so, according to *Climatopolis*, the future of our cities looks a bit brighter, even if somewhat warmer.

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