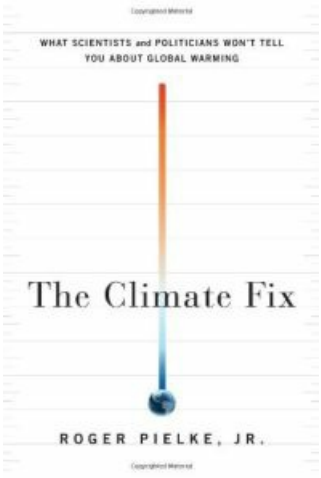

Book The Climate Fix

What Scientists and Politicians Won't Tell You About Global Warming

Roger Pielke Jr.
Basic Books, 2010
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Recommendation

The debate over mitigating the effects of climate change has become extremely politicized. Policy makers manipulate scientists, and scientists oblige them, while those opposed to regulation use uncertainties in the science to justify inaction. Professor Roger Pielke Jr. cuts through the emotion, rhetoric and posturing to find a solid foundation for effective policy. He explains climate change and emissions reduction through the lens of political possibility, and offers environmental action that embraces economic growth. He explains why emission-reduction targets won't work and why taxation policies might. His thorough treatise can be wonky, but *BooksInShort* recommends his vision to policy makers, energy industry reformers and concerned citizens.

Take-Aways

- Most scientists agree human activity causes climate change, but their predictions differ.
- No single policy can cover all the factors contributing to climate change.
- The Kyoto Protocol covers six greenhouse gases, notably carbon dioxide, which lingers in the air.
- The "iron law of climate policy" is: Economic growth always beats environmental good.
- The "Kaya Identity" combines population, energy efficiency, GDP and carbon intensity of energy sources to calculate a nation's emission profile.
- Weather is not climate, though climate change has some impact on weather.
- Climate-change definitions drive policy, which drives practice.
- Future climate policy should address emissions and provide energy to unindustrialized nations via investment in advanced technology.
- Increased development in vulnerable locations multiplies the impacts of natural disasters.
- Global "decarbonization" requires expanding low- and no-carbon energy technologies.

Summary

Climate Science Facts

Human activity puts more carbon dioxide and other greenhouse gases into the Earth's atmosphere than the oceans, soil and air can safely absorb. Scientists fear – though they are not certain if or when – that the planet may reach a tipping point when too much carbon dioxide has entered a system no longer able to absorb it or to buffer the globe from its effects.

> "Under all scenarios of future energy demand...the world will need a vastly larger energy supply."

In Europe, policy makers talk about stabilizing carbon emissions at 450 parts per million (ppm), which apparently would increase atmospheric temperatures by "two degrees Celsius above preindustrial levels." But the numbers are a best guess. Environmentalist Bill McKibben and many scientists suggest 350 ppm instead, which would keep emissions at 1980s' levels. In 2010, carbon levels were 398 ppm. Other scientists think the quest for the optimal "stabilization target" is a distraction and that policy makers should concentrate on reducing emissions to zero.

> "Politicization...serves to undermine climate policy and reinforce a status quo characterized by rancor and gridlock."

The Earth's complex climate system challenges politicians. Debates over ozone and acid rain occurred in the late 1980s amid political and public policy processes and in a different atmosphere than today's climate debates. Current predictions in climate science feature too many variables, uncertainties and long views to be useful to policy makers.

Three Untrue Beliefs About Climate Change

Politicians often suggest that they have no public mandate to address climate change. Not true – support has stayed strong for 20 years despite periodic dips. Another common view: Society can act against climate change only at the expense of economic well-being. Not true – only bad policy would make that so. Another assumption: Technology already exists that can address climate change without the necessity of lowering emissions. Not true – some technologies are promising, but without decisions to implement them and foster further innovation, alternative energy technologies will fall far short.

> "Weather events and even climate patterns over a period of years simply cannot be attributed to greenhouse gas emissions. Detecting changes in climate requires decades of observations."

The perception that a "trade-off" between the economy and the environment is inevitable is entrenched in politics and embedded even in statements from the United Nations Intergovernmental Panel on Climate Change (IPCC). That perception is untrue. As a matter of fact, the climate policy responds to an "iron law", which says that whenever environmental policy competes against economic policy, economic interests have always won and always will. Surveys indicate that people will pay to support climate policies, but they won't pay too much. To be successful, environmental and economic policies must complement each other.

"Decarbonizing" the Economy

Moving toward global decarbonizing makes good sense for reasons beyond reducing the effects of excess greenhouse gases. On average, the US consumes 100 "quads" (one quad is one quadrillion British Thermal Units, or BTUs) of energy yearly. The US Energy Information Agency predicts that by 2030, the world will consume 678 quads of energy, assuming 1.5% annual growth. This bespeaks an enormous, growing worldwide demand for energy. Because long- and medium-term energy consumption predictions are useless, "no-regrets" planning – planning "that makes sense regardless of scientific uncertainties" – is the right path.

> "The use of offsets...is an example of a sort of 'magical thinking' that tends to show up in the climate debate rather than confront the real challenges of decarbonization."

Climate policy focused on the sole goal of reducing emissions will fail. Millions worldwide lack access to energy. Focusing on alternative technologies and diversifying energy supplies will improve their access while lowering emissions. This will need to be a learn-as-we-go process.

"The Kaya Identity"

Different economies have varying needs, as measured by the Kaya Identity, which calculates the "carbon intensity" of any economy, considering its population, per capita GDP, energy technologies and their efficiencies, and lower carbon-emitting sources. These factors contribute to an economy's emissions profile. Reducing emissions requires decreasing population, lowering per capita GDP, creating better energy efficiencies, and shifting to alternative energy sources, or some combination of these steps.

> "A very cold winter or two does not disprove a decades-long warming trend, and a series of damaging hurricanes is not evidence of a human influence."

The top 20 greenhouse-gas-emitting nations – led, as of 2006, by the US and China – create about 80% of global emissions. Of industrialized economies, France's has the smallest ratio of carbon emissions to GDP, primarily due to its nuclear energy. Many countries have unrealistic reduction goals. For Australia to meet its targets, it would have to replace its coal-powered electricity plants with 57 new nuclear plants by 2020. Australians oppose nuclear power, so building even one plant would be a feat. To replace coal plants with renewable energy, Australia would have to build 12,665 solar thermal power plants, about 24 per week until 2020. Some countries, like Japan, are already "carbon-efficient," and further Japanese carbon reductions will be difficult.

> "Using disasters to advocate for mitigation policies is misguided at best and misleading at worst."

The US has proposed a carbon reduction by 2020 of 17% off of the 2005 rates. The US would have to replace 12.9 quads of coal-sourced energy with carbon-neutral alternatives by 2026 to help meet its first reduction deadline, the equivalent of building 189 new nuclear plants generating 750 megawatts each. As energy demand increases, nations must develop alternatively sourced power to stay on target with their reduction goals. Assuming a low 0.5% increase yearly in demand, the US would have to build an additional 153 nuclear plants (a total of 342), or their alternative energy equivalent.

> "As we've seen with the oil catastrophe in the Gulf of Mexico in 2010, less reliance on fossil fuels might lead to environmental benefits that go well beyond climate."

Many hail "cap and trade" programs as the magic-bullet solution to carbon reduction. Such regulations set carbon targets while leaving room for market innovation. But experience shows that over time policy makers drop environmental targets that conflict with economic development. Worse, cap-and-trade abuses lead to a shell game where "offsets" allow emitters to pay for carbon reductions elsewhere that count toward their goals. Offset abuses generate lucrative incentives for business as usual. Insiders can make huge sums in carbon trading, and so these schemes will remain part of climate policy.

> "The science supporting claims of a human influence on the climate system is robust, and ...the diversity of human influences on the climate has been underestimated."

Technological fixes can provide potential solutions. To be considered useful, a technology must work as advertised, have accurately measurable effects and earn the backing of an established body of knowledge. Removing carbon from the atmosphere offers promise, whether in the form of carbon capture and storage or of "chemical air capture," which would grab carbon from the air. Protecting forests so they can absorb atmospheric carbon is a nontechnological solution. All these efforts cost less than doing nothing.

Redefining the Problem

Conflict over climate change begins with its basic definition. The IPCC defines it as any change, manmade or natural, that affects the climate system. The UN Framework Convention on Climate Change, which underpins the Kyoto Protocol, defines it as only that portion of impact resulting from human activity. Article 2 of the UN's Convention seeks to stabilize greenhouse gas levels to "prevent dangerous atmospheric interference with the climate system."

> "A focus on decarbonization...would elevate the importance of technological innovation in carbon policy and de-emphasize the role of science, particularly long-term climate predictions."

Even if science could attribute climate change wholly to natural causes, taking steps to mitigate its effects would still be prudent. The path to addressing climate change should reflect the no-regrets approach, acknowledging that science is a work in progress while seeking ways to reduce ongoing damage. Decoupling carbon policies from other factors that contribute to climate change would free science to work on solving more of decarbonizing's technological issues and to define other climate issues more effectively.

> "Connecting carbon pricing with energy innovation [enables] a virtuous circle...that allows those asked to pay the tax to see its benefits and thus builds the support necessary."

Shaping adaptation policies now makes sense, given that catastrophe requires only an "extreme event and a vulnerable society." Weather-related disasters, especially due to flood and storm, have been increasing since 1980. Although climate change is related to weather changes, the magnitude of disasters such as Hurricane Katrina are more the result of increased development in vulnerable areas than a result of climate change. Data on weather-related property damage confirms the need for adaptation policies.

> "A diversified approach will require letting go of the fantasy that it is possible to deal with climate change comprehensively under a single, global policy instrument."

Troublingly, the UK's Stern Review, an IPCC report issued in 2007, and even US government reports issued in 2008 and reissued in 2009 spread the scientifically unsupportable notion that climate change is a significant factor in weather-related disasters. Those who would discredit all climate-change-related science manipulate this misrepresentation of the IPCC's version of science. Because the UN Convention requires demonstration of "dangerous interference" before taking action, those in favor of acting to mitigate climate change have an incentive to link dramatic impacts such as weather calamities to climate change.

Climate Science Politicized and Polarized

In 2009, the release of thousands of private emails from climate scientists – including some who had contributed to IPCC reports – showed a behind-the-scenes attempt to manipulate the process of peer-reviewed scientific literature to influence the politics of climate change. These scientists discarded competing studies that disagreed with their positions. Climate skeptics pounced on this exposure of scientific unprofessionalism as an excuse to oppose action on climate change. The release of these emails illustrated the degree to which short-term political agendas have subverted long-revered scientific tenets about objective truth.

> "Everyone would love knowledge to be certain and uncontroversial, of course."

Alarmist messages and exaggerations have led the public to doubt climate change claims, despite ample support for action. Advocates on both sides selectively choose the science that bolsters their arguments. But science itself suffers when insiders make unsupportable claims. Polarization discourages emergent, alternative views. Politicization has unwittingly limited policy choices just when they need to be expanded.

Toward a Policy That Works

An "oblique" strategy to address climate change while extending energy access to the 1.5 billion people worldwide who don't have it would, with the right incentives, effectively decarbonize the economy and drive down emissions while stimulating economic growth. Useful policy rests on the fact that global demand for energy will grow. To meet that demand while decarbonizing the world economy requires greatly expanded access to carbon-free energy sources.

> "Resist the urge to allow narrow policies to become incrementally more complex."

Cost is the primary barrier for those countries and people without energy. The demand for cheaper energy drives technological innovation to achieve accelerated decarbonization. Once science solves these energy-access problems, newly electrified communities will stimulate further economic growth. To keep innovation focused on carbon-free alternatives, policy makers must make a commitment to leaving remaining fossil fuels untapped. Governments must make investments in alternatives and research, and foster competition among institutions and agencies. Additionally, government should follow a "public works model" and invest in demonstration projects for environmentally and commercially promising emissions-reducing technologies. The government can be an early and large customer of such alternatives.

Viable Strategies

Today's sustainable alternatives to fossil fuels must be improved. Investing in a diversity of technologies and policies is the only way to limit financial risks. In the US, a

$5-per-ton carbon tax would modestly affect fossil fuel prices and raise about $30 billion. Enacted globally, this tax would generate further billions to fund energy innovation. The CEO of ExxonMobil is on record as supporting such a tax.

Starting with a low tax that gradually increases as the investment in alternatives also increases makes sense. Government must make a commitment to using these funds solely for energy innovation. Decarbonizing the global economy and providing cheap, clean energy within a set timeframe to those who lack it will require unprecedented innovation and collaboration.

About the Author

University of Colorado professor **Roger Pielke Jr.**, author of *The Honest Broker*, has published articles in the *Washington Post* and *Atlantic Monthly,* and appears on TV and radio. He was formerly a scientist at the National Center for Atmospheric Research.