



What Changed My Mind About Climate Change?

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I spent the better part of my professional life (1991-2014) working at a libertarian think tank—the Cato Institute—arguing against climate action. As Cato’s director of Natural Resource Studies (and later, as a senior fellow and eventually vice president), I maintained that, while climate change was real, the impacts would likely prove rather modest and that the cost of reducing greenhouse gas emissions would greatly exceed the benefits.

I changed my mind about that, however, because (among other things) I changed my mind about risk management.

If we think about climate risks in the same fashion we think about risks in other contexts, we should most certainly hedge—and hedge aggressively—by removing fossil fuels from the economy as quickly as possible.

Let me explain.

The big debate in climate science right now isn’t whether or not climate change is occurring—or whether human activity is the main cause. The big debate is about scale: How much change will there be, over how long a time frame, and how large (or small) will be the follow-on effects.

Despite many decades of research, scientists are still uncertain about how sensitive the atmosphere is to greenhouse gas loading. Evidence from the peer-reviewed literature suggests that a doubling of greenhouse gases in the atmosphere above pre-industrial levels (which we’re likely to see sometime after mid-century) will eventually warm the planet anywhere between 1.5C and 4.5C (2.7F to 8.1F). That’s a very large spread.

The difference between the low-end and high-end estimates is the difference between a passing event of modest consequence and global environmental and economic convulsion the likes of which we’ve never seen.

The question, then, is largely about what is the most *likely* outcome from this wide distribution of possible outcomes. While their arguments might differ at the margins, the so-called “lukewarmers” (of which I counted myself during most of my years at Cato), contend that warming will likely be at the very low-end of the range of likely outcomes, and that it will prove of little consequence to the future beneficiaries of a growing economy.

Environmentalists, for their part, argue that warming will almost certainly be at the higher end of the distribution of possible outcomes—and that, accordingly, we have no time to lose. “The world is going to end in 12 years,” claims Rep. Alexandria Ocasio-Cortez (albeit figuratively), “if we don’t address climate change.”

And thus, we find ourselves in the midst of a debate about the most likely outcome of climate change, even though the truth is that neither side can know with certainty which variant will come to pass. And, funnily enough, both sides seem to think that the most-likely outcome will dovetail with their preferred political position on other matters. Conservatives insist that environmentalists are greatly exaggerating risks (as is their wont) and that if we follow their climate agenda and abandon fossil fuels, we'll destroy the global economy and surrender economic liberty (a claim that I once embraced but no longer do, given the remarkable technological advances in low-carbon energy technology). The left argues that conservatives are like the man jumping off the top of a skyscraper, claiming no discernible harm has come to him yet even as he plummets to his doom, and that the solutions are giant programs like the Green New Deal, which entail everything from fossil fuel independence to the entire social agenda of the Democratic Socialists of America.

How are we supposed to figure out which side is right?

The answer is that we can't be sure. And that's okay. Because in life you rarely know for certain what's going to happen next. You plan for a range of outcomes and try to mitigate your exposure to the worst possible risks. There's an entire economic discipline on this subject. It's called risk management.

Risk management is not about discerning the optimal response to the most likely outcome. It is about discerning the appropriate response to the most likely *distribution* of possible outcomes. That means incorporating the possibility that climate change, either by a bad roll of the geophysical dice or a large and unexpected societal vulnerability to warming, turns into a bigger problem than we expect.

In his most recent book on the economics and policy of climate change, economist Richard Tol outlines three factors that would motivate greater climate ambition if we look beyond the "most likely" outcomes.

The first is that surprises are weighted toward the bad. Despite some technical ambiguity, scientists believe that the chance of a nasty surprise on the climate front is much larger than the chance of a pleasant surprise. The second is that the risk of locking ourselves into a high-carbon, worse-than-expected climate world is larger than being locked into overly-expensive green energy. That is largely because once CO₂ is in the atmosphere—where natural residence times are measured in centuries—it is very expensive to remove through technical means. Green energy boondoggles, on the other hand, can be reversed rather easily, and will at least deliver some health benefits from reduced air pollution, regardless of how climate change plays out. Lastly, societies have long demonstrated a willingness to pay in order to avoid prompting risks that are asymmetric, ambiguous, and irreversible. Global warming is all three.

While Tol's arguments might strike some conservatives as a suspicious attempt to smuggle in the "precautionary principle" (a principle my friend Indur Goklany once railed against in a book I commissioned and edited when I was at Cato), there is an important distinction between accounting for—and managing—risks and uncertainties on the one hand, and applying something akin to the precautionary principle on the other. Conventional risk management treats *both* sides of the risk equation—the chance that outcomes will be either more favorable or less favorable than anticipated—in an equal fashion. In so doing, it adheres to what economists call the "expected utility" framework.

The precautionary principle does not; it puts its policy thumb on bad outcomes. It just so happens that, in the context of climate change, the asymmetry comes down squarely on the side of managing climate risk, with all its ambiguities and potential irreversibilities.

We make similar decisions about risk in other contexts all the time.

Consider, for instance, that the most likely outcome of investing your money in equities is a better return than you might receive from investing in other financial instruments, such as municipal bonds.

Does this mean you should invest all of your money in equities? No. Most investors understand that there is a great deal of uncertainty in markets, and that the returns on investment in any given year are difficult to predict. Investors thus tend to hedge their bets, particularly when economic risks are nondiversifiable (as they are in the climate context).

Think of the distribution of possible outcomes as a deck of cards. Equities have a greater spread of good and bad draws from the deck than do bonds, which pay the same no matter how the wider economy is doing. Investing in bonds is thus an investment in stability; something that is so attractive to investors that they forgo greater returns elsewhere to secure that stability. Investing in cutting CO₂ emissions is akin to investing in bonds on the financial front. In fact, if we think of CO₂ in the atmosphere as an asset (albeit one with negative returns), then the issue becomes much clearer.

Unfortunately, no analogy is precisely applicable to the climate debate. We have a great deal of historical data, for instance, to inform our sense of the likely distribution of potential outcomes in the finance sector. We have many fewer data points to repair to in the course of informing our sense of the distribution of potential outcomes in the climate arena. We have imperfect geologic records. We have imperfect computer models, which reflect our imperfect understanding of climate dynamics. But that ambiguity is itself a motivating factor for reducing emissions. Never before have we run an experiment where greenhouse gases were loaded into the atmosphere at today's rates. We have no backup planet if things go horribly wrong.

When asked why I changed my mind about federal climate policy, this is a large part of my answer. Building an argument against climate action upon a forceful claim about the most likely outcome of greenhouse gas emissions is to build an argument upon analytic sand.

You don't have to believe with all your heart that the worst-case scenario is sure to happen. You just have to understand that it is one possible outcome. And that we should not be making policy based on an assumption that we are certain of this or that outcome.

When it comes to managing large-scale risks, straight-forward economics suggests that we ought to take climate change very seriously.