

# Think Again: Climate Change

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Act now, we're told, if we want to save the planet from a climate catastrophe. Trouble is, it might be too late. The science is settled, and the damage has already begun. The only question now is whether we will stop playing political games and embrace the few imperfect options we have left.

"Scientists Are Divided"

No, they're not. In the early years of the global warming debate, there was great controversy over whether the planet was warming, whether humans were the cause, and whether it would be a significant problem. That debate is long since over. Although the details of future forecasts remain unclear, there's no serious question about the general shape of what's to come.

Every national academy of science, long lists of Nobel laureates, and in recent years even the science advisors of President George W. Bush have agreed that we are heating the planet. Indeed, there is a more thorough scientific process here than on almost any other issue: Two decades ago, the United Nations formed the Intergovernmental Panel on Climate Change (IPCC) and charged its scientists with synthesizing the peer-reviewed science and developing broad-based conclusions. The reports have found since 1995 that warming is dangerous and caused by humans. The panel's most recent report, in November 2007, found it is "very likely" (defined as more than 90 percent certain, or about as certain as science gets) that heat-trapping emissions from human activities have caused "most of the observed increase in global average temperatures since the mid-20th century."

If anything, many scientists now think that the IPCC has been too conservative-both because member countries must sign off on the conclusions and because there's a time lag. Its last report synthesized data from the early part of the decade, not the latest scary results, such as what we're now seeing in the Arctic.

In the summer of 2007, ice in the Arctic Ocean melted. It melts a little every summer, of course, but this time was different-by late September, there was 25 percent less ice than ever measured before. And it wasn't a one-time accident. By the end of the summer season in 2008, so much ice had melted that both the Northwest and Northeast passages were open. In other words, you could circumnavigate the Arctic on open water. The computer models, which are just a few years old, said this shouldn't have happened until sometime late in the 21st century. Even skeptics can't dispute such alarming events.

"We Have Time"

Wrong. Time might be the toughest part of the equation. That melting Arctic ice is unsettling not only because it proves the planet is warming rapidly, but also because it will help speed up the warming. That old white ice reflected 80 percent of incoming solar radiation back to space; the new blue water left behind absorbs 80 percent of that sunshine. The process

amps up. And there are many other such feedback loops. Another occurs as northern permafrost thaws. Huge amounts of methane long trapped below the ice begin to escape into the atmosphere; methane is an even more potent greenhouse gas than carbon dioxide.

Such examples are the biggest reason why many experts are now fast-forwarding their estimates of how quickly we must shift away from fossil fuel. Indian economist Rajendra Pachauri, who accepted the 2007 Nobel Peace Prize alongside Al Gore on behalf of the IPCC, said recently that we must begin to make fundamental reforms by 2012 or watch the climate system spin out of control; NASA scientist James Hansen, who was the first to blow the whistle on climate change in the late 1980s, has said that we must stop burning coal by 2030. Period.

All of which makes the Copenhagen climate change talks that are set to take place in December 2009 more urgent than they appeared a few years ago. At issue is a seemingly small number: the level of carbon dioxide in the air. Hansen argues that 350 parts per million is the highest level we can maintain "if humanity wishes to preserve a planet similar to that on which civilization developed and to which life on Earth is adapted." But because we're already past that mark-the air outside is currently about 387 parts per million and growing by about 2 parts annually-global warming suddenly feels less like a huge problem, and more like an Oh-My-God Emergency.

"Climate Change Will Help as Many Places as It Hurts"

Wishful thinking. For a long time, the winners-and-losers calculus was pretty standard: Though climate change will cause some parts of the planet to flood or shrivel up, other frigid, rainy regions would at least get some warmer days every year. Or so the thinking went. But more recently, models have begun to show that after a certain point almost everyone on the planet will suffer. Crops might be easier to grow in some places for a few decades as the danger of frost recedes, but over time the threat of heat stress and drought will almost certainly be stronger.

A 2003 report commissioned by the Pentagon forecasts the possibility of violent storms across Europe, megadroughts across the Southwest United States and Mexico, and unpredictable monsoons causing food shortages in China. "Envision Pakistan, India, and China-all armed with nuclear weapons-skirmishing at their borders over refugees, access to shared rivers, and arable land," the report warned. Or Spain and Portugal "fighting over fishing rights-leading to conflicts at sea."

Of course, there are a few places we used to think of as possible winners-mostly the far north, where Canada and Russia could theoretically produce more grain with longer growing seasons, or perhaps explore for oil beneath the newly melted Arctic ice cap. But even those places will have to deal with expensive consequences-a real military race across the high Arctic, for instance.

Want more bad news? Here's how that Pentagon report's scenario played out:

As the planet's carrying capacity shrinks, an ancient pattern of desperate, all-out wars over food, water, and energy supplies would reemerge. The report refers to the work of Harvard archaeologist Steven LeBlanc, who notes that wars over resources were the norm until about three centuries ago. When such conflicts broke out, 25 percent of a population's adult males usually died. As abrupt climate change hits home, warfare may again come to define human life. Set against that bleak backdrop, the potential upside of a few longer growing seasons in Vladivostok doesn't seem like an even trade.

### "It's China's Fault"

Not so much. China is an easy target to blame for the climate crisis. In the midst of its industrial revolution, China has overtaken the United States as the world's biggest carbon dioxide producer. And everyone has read about the one-a-week pace of power plant construction there. But those numbers are misleading, and not just because a lot of that carbon dioxide was emitted to build products for the West to consume. Rather, it's because China has four times the population of the United States, and per capita is really the only way to think about these emissions. And by that standard, each Chinese person now emits just over a quarter of the carbon dioxide that each American does. Not only that, but carbon dioxide lives in the atmosphere for more than a century. China has been at it in a big way less than 20 years, so it will be many, many years before the Chinese are as responsible for global warming as Americans.

What's more, unlike many of their counterparts in the United States, Chinese officials have begun a concerted effort to reduce emissions in the midst of their country's staggering growth. China now leads the world in the deployment of renewable energy, and there's barely a car made in the United States that can meet China's much tougher fuel-economy standards.

For its part, the United States must develop a plan to cut emissions-something that has eluded Americans for the entire two-decade history of the problem. Although the U.S. Senate voted down the last such attempt, Barack Obama has promised that it will be a priority in his administration. He favors some variation of a "cap and trade" plan that would limit the total amount of carbon dioxide the United States could release, thus putting a price on what has until now been free.

Despite the rapid industrialization of countries such as China and India, and the careless neglect of rich ones such as the United States, climate change is neither any one country's fault, nor any one country's responsibility. It will require sacrifice from everyone. Just as the Chinese might have to use somewhat more expensive power to protect the global environment, Americans will have to pay some of the difference in price, even if just in technology. Call it a Marshall Plan for the environment. Such a plan makes eminent moral and practical sense and could probably be structured so as to bolster emerging green energy industries in the West. But asking Americans to pay to put up windmills in China will be a hard political sell in a country that already thinks China is prospering at its expense. It could be the biggest test of the country's political maturity in many years.

## "Climate Change Is an Environmental Problem"

Not really. Environmentalists were the first to sound the alarm. But carbon dioxide is not like traditional pollution. There's no Clean Air Act that can solve it. We must make a fundamental transformation in the most important part of our economies, shifting away from fossil fuels and on to something else. That means, for the United States, it's at least as much a problem for the Commerce and Treasury departments as it is for the Environmental Protection Agency.

And because every country on Earth will have to coordinate, it's far and away the biggest foreign-policy issue we face. (You were thinking terrorism? It's hard to figure out a scenario in which Osama bin Laden destroys Western civilization. It's easy to figure out how it happens with a rising sea level and a wrecked hydrological cycle.)

Expecting the environmental movement to lead this fight is like asking the USDA to wage the war in Iraq. It's not equipped for this kind of battle. It may be ready to save Alaska's Arctic National Wildlife Refuge, which is a noble undertaking but on a far smaller scale. Unless climate change is quickly de-ghettoized, the chances of making a real difference are small.

## "Solving It Will Be Painful"

It depends. What's your definition of painful? On the one hand, you're talking about transforming the backbone of the world's industrial and consumer system. That's certainly expensive. On the other hand, say you manage to convert a lot of it to solar or wind power—think of the money you'd save on fuel.

And then there's the growing realization that we don't have many other possible sources for the economic growth we'll need to pull ourselves out of our current economic crisis. Luckily, green energy should be bigger than IT and biotech combined.

Almost from the moment scientists began studying the problem of climate change, people have been trying to estimate the costs of solving it. The real answer, though, is that it's such a huge transformation that no one really knows for sure. The bottom line is, the growth rate in energy use worldwide could be cut in half during the next 15 years and the steps would, net, save more money than they cost. The IPCC included a cost estimate in its latest five-year update on climate change and looked a little further into the future. It found that an attempt to keep carbon levels below about 500 parts per million would shave a little bit off the world's economic growth—but only a little. As in, the world would have to wait until Thanksgiving 2030 to be as rich as it would have been on January 1 of that year. And in return, it would have a much-transformed energy system.

Unfortunately though, those estimates are probably too optimistic. For one thing, in the years since they were published, the science has grown darker. Deeper and quicker cuts now seem mandatory.

But so far we've just been counting the costs of fixing the system. What about the cost of doing nothing? Nicholas Stern, a renowned economist commissioned by the British government to study the question, concluded that the costs of climate change could eventually reach the combined costs of both world wars and the Great Depression. In 2003, Swiss Re, the world's biggest reinsurance company, and Harvard Medical School explained why global warming would be so expensive. It's not just the infrastructure, such as sea walls against rising oceans, for example. It's also that the increased costs of natural disasters begin to compound. The diminishing time between monster storms in places such as the U.S. Gulf Coast could eventually mean that parts of "developed countries would experience developing nation conditions for prolonged periods." Quite simply, we've already done too much damage and waited too long to have any easy options left.

### "We Can Reverse Climate Change"

If only. Solving this crisis is no longer an option. Human beings have already raised the temperature of the planet about a degree Fahrenheit. When people first began to focus on global warming (which is, remember, only 20 years ago), the general consensus was that at this point we'd just be standing on the threshold of realizing its consequences—that the big changes would be a degree or two and hence several decades down the road. But scientists seem to have systematically underestimated just how delicate the balance of the planet's physical systems really is.

The warming is happening faster than we expected, and the results are more widespread and more disturbing. Even that rise of 1 degree has seriously perturbed hydrological cycles: Because warm air holds more water vapor than cold air does, both droughts and floods are increasing dramatically. Just look at the record levels of insurance payouts, for instance. Mosquitoes, able to survive in new places, are spreading more malaria and dengue. Coral reefs are dying, and so are vast stretches of forest.

None of that is going to stop, even if we do everything right from here on out. Given the time lag between when we emit carbon and when the air heats up, we're already guaranteed at least another degree of warming.

The only question now is whether we're going to hold off catastrophe. It won't be easy, because the scientific consensus calls for roughly 5 degrees more warming this century unless we do just about everything right. And if our behavior up until now is any indication, we won't.

[http://www.foreignpolicy.com/story/cms.php?story\\_id=4585](http://www.foreignpolicy.com/story/cms.php?story_id=4585)

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