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Study: Climate Change Could Make Workers Less Productive

Cool, but not cold, temperatures are ideal for productivity, according to a new report.



Warmer global temperatures could take a toll on worker productivity, according to a new study.

By [Andrew Soergel](#)

Oct. 22, 2015, at 3:15 p.m.

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Water boils at 212 degrees Fahrenheit. Paper is said to burn at 451 degrees (though the jury's still out on the [science behind this one](#)). And global economies reach optimum performance levels at 55 degrees, according to a [new study](#) released this week by a team of Stanford and University of California, Berkeley researchers.

The report, published Wednesday in the science journal *Nature*, profiled 166 countries around the world over the course of 50 years and found that economic productivity peaks when a region's average annual temperature clocks in around 13 degrees Celsius, or 55 degrees Fahrenheit. Above this point, the authors said, productivity begins "declining strongly."

"Cold-country productivity increases as annual temperature increases, until the optimum. Productivity declines gradually with further warming, and this decline accelerates at higher temperatures," said the report, which found that more wealthy countries were "statistically indistinguishable from poor countries" with respect to temperature's impact on business.

This is hardly the first report suggesting more moderate climates are ultimately better for overall worker productivity. A report released last year by the [National Bureau of Economic Research](#) reached a similar conclusion to this week's study, finding that the optimum temperature for U.S. workers is roughly 59 degrees. Productivity was found to decline 1.7 percent for every 1.8 degrees temperatures rose above that threshold.



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"While extraordinary achievements in science, technology, politics and social institutions over the last millennia have lifted modern economies to levels never before achieved, we find that these forces are constantly in opposition to at least one environmental factor, temperature, that continuously slows down economic progress," the report said.

But Wednesday's report takes temperature's role in the workplace a step further and speculates what will happen by the year 2100 if climate change and global warming continue on their expected trends. It actually found that colder countries like Canada, Russia and a handful of Europe's Nordic nations would benefit in terms of sheer productivity by the effects of climate change. Just about everyone else, however, could be significantly worse off.

"In 2100, we estimate that unmitigated climate change will make 77 percent of countries poorer in per capita terms than they would be without climate change," said the report, which estimates about 5 percent of countries worldwide could actually end up poorer than they are today. "Differences in the projected impact of warming are mainly a function of countries' baseline temperatures, since warming raises productivity in cool countries."

But that's not to say that cold-weather states will ultimately be better off economically. Though productivity will likely go up as temperatures become more mild, added costs from droughts, flooding, food shocks and other anticipated climate change complications could offset any accrued benefits.

An uncharacteristically warm summer in Russia back in 2010, for example, led to one of the country's [worst droughts in decades](#) and effectively killed off about 9 million hectares of crops. And considering the [substantial food strains](#) the world's expanding population is expected to present in the next several years, it's difficult to believe that even the coldest countries will be generally better off by 2100 if climate change remains unchecked. The study estimates global incomes would fall 23 percent when compared to a world in which climate change wasn't an issue.



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"Climate change is expected to change a lot of things in addition to temperature, and we are not capturing those effects," the researchers said in a [statement](#). "So if these other changes are harmful to the global economy on net, then our results will understate the costs of climate change."

The U.S. and China are expected to be only moderately impacted by rising temperatures, while warmer countries along the equatorial line are expected to face significant drops in productivity. Africa, South America and India are all highlighted in the study as potential high-risk zones. A productivity drop off in Africa, especially, would be problematic, as many already impoverished nations would face more challenges and would ultimately widen global inequality.

"The data definitely don't provide strong evidence that rich countries are immune from the effects of hot temperatures," Solomon Hsiang, a professor and researcher at the University of California, Berkeley who co-authored both the Stan, said in a [statement](#). "Many rich countries just happen to have cooler average temperatures to start with, meaning that future warming will overall be less harmful than in poorer, hotter countries."

TAGS: global warming, environment, global economy, economy

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