

The Growing Benefits of a Warmer World

Brief Analysis No. 796

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March 18, 2014

Earth's climate has changed many times throughout its history. During the last century and a half, average temperatures have risen modestly, though the warming trend has stalled for the past 16 years. Contrary to popular belief, climate change thus far has had positive effects, and the net benefits of warming are likely to be positive for the foreseeable future.



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The Economic Effects of Climate Change.

Economist Richard Tol recently reviewed 14 studies on the potential effects of future climate trends. He concluded that until 2080 (and perhaps beyond), a modest warming trend would have an overall positive effect on the global economy. The effects depend on the sensitivity of the climate to changes in levels of CO₂, a principal greenhouse gas. Over the past 150 years, the atmospheric concentration of CO₂ has risen from 280 parts per million to 380 ppm. Estimates of the climate's sensitivity to increasing CO₂ have fallen over the past few years, indicating temperatures may not rise as much as previously thought.

Based on his review of climate studies, Tol concluded:

- Over the past century and a half, the earth has warmed about 0.8°C, on average.
- Up to an additional 2.2°C rise in temperature — which the latest estimates suggest may not be reached until the end of the 21st century, if at all — the net benefits will continue to be substantial.
- However, even using older, higher sensitivity assumptions, Tol's analysis suggests net benefits will accrue until 2080.

- The past century's climate change has added 1.4 percent to global economic output, rising to 1.5 percent of GDP by 2025, and falling to 1.2 percent in additional global GDP by 2050.

Specifically, for example:

- The increased CO₂ level has boosted agriculture, adding 0.8 percent to GDP.
- Likewise, the reduced demand for heating added about 0.4 percent to GDP.

Commentator Matt Ridley notes that an additional 1.5 percent of global output is the difference between survival and starvation for many people. Because wealth rates among the most significant factors in health, increasing wealth will help future people better adapt to whatever warming (or cooling) occurs.

Climate Change and Agriculture. According to Tol, enhanced agricultural productivity under higher CO₂ conditions rates among the largest contributors to economic growth from climate change. As the figure shows, increased CO₂ works as a fertilizer for plants, many of which evolved when levels were higher. In addition, higher CO₂ levels enhance the efficiency of plants' water use. Furthermore, since most of the warming so far has simply reduced nighttime lows, there are fewer growth-stunting frost events and longer growing seasons.

Agronomist and geographer Craig Idso calculated the monetary benefit

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of plant growth and crop production due to recent CO₂ increases and estimated future benefits from higher CO₂ levels. Idso found that:

- A 300-ppm increase in atmospheric CO₂ levels increases plant biomass 25 percent to 55 percent.
- The annual total value of improved plant growth grew from \$18.5 billion in 1961 to over \$140 billion by 2011, amounting to \$3.2 trillion over the 50-year period.
- Between now and 2050, CO₂ enhancement will account for an estimated additional \$9.8 trillion in crop production.

Much of the improved agricultural production benefits the people of Africa. Despite ongoing strife and political instability, Africa is growing faster than any other continent, with one-third of African countries topping annual growth rates of 6 percent. In addition, the number of people living below the poverty line has fallen from 51 percent in 2005 to 39 percent today.

Due to various factors, including CO₂ enhancement, much of Africa is greening. African farmers are rediscovering traditional crops better suited to warm, dry conditions than those introduced by colonial governments, and they are reclaiming desert and arid brushy areas. Satellite photographs now reveal verdant blocks of green where once there were only brown and gray. And, according to the World Bank, the growth of agricultural GDP in sub-Saharan Africa rose from 2.3 percent per year in the 1980s to 3.8 percent annually from 2000 to 2005 — a 65 percent jump. Contrary to what the media and charities report, fewer Africans face famine now than at any time since the world began counting.

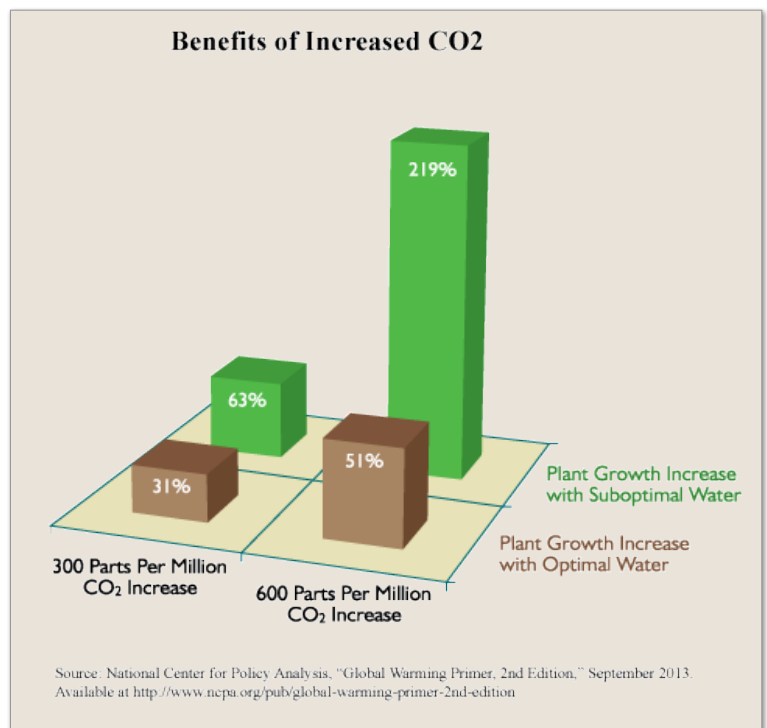
In Uganda and the 15 countries of West Africa, food production now outpaces population growth. In Ghana, for instance, farm output has jumped 5 percent every year for the past 20 years, while the poverty rate has fallen in half. Even Malawi and Ethiopia, infamous for food insecurity in recent years, now grow record amounts of crops, exporting surpluses.

Climate Change and Deaths.

Among the chief benefits of a warming world is fewer premature deaths due to cold. During the last serious climate warming, Vikings established permanent settlements in Greenland, and lifespans grew. When the climate swung back to cooler conditions, ice sheets grew again, the Vikings abandoned Greenland, crops failed, and human lifespans fell.

People everywhere typically live longer with warmer summer temperatures. In both Britain or relatively warmer Greece, mortality rates increase 18 percent each winter. Deaths from the flu, other diseases and heart failure all increase in the winter.

As Matt Ridley documents, “For the last decade, Brits have been dying from the cold at the average rate of 29,000 excess deaths each winter. Compare this to the heat wave ten



years ago, which claimed 15,000 lives in France and just 2,000 in Britain. In the ten years since, there has been no summer death spike at all. Excess winter deaths hit the poor harder than the rich for the obvious reason: they cannot afford heating.” This holds true for the United States as well.

Conclusion. Whether or not human actions are contributing to current climate shifts, the benefits of a warming world have outweighed its costs — even for people in the poorest countries. Governments around the world should note this fact, so their climate policies don’t forgo or reverse the benefits of warming. The climate may shift again, and the increased wealth from a warmer world will allow societies to respond more readily to any resulting costs.

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