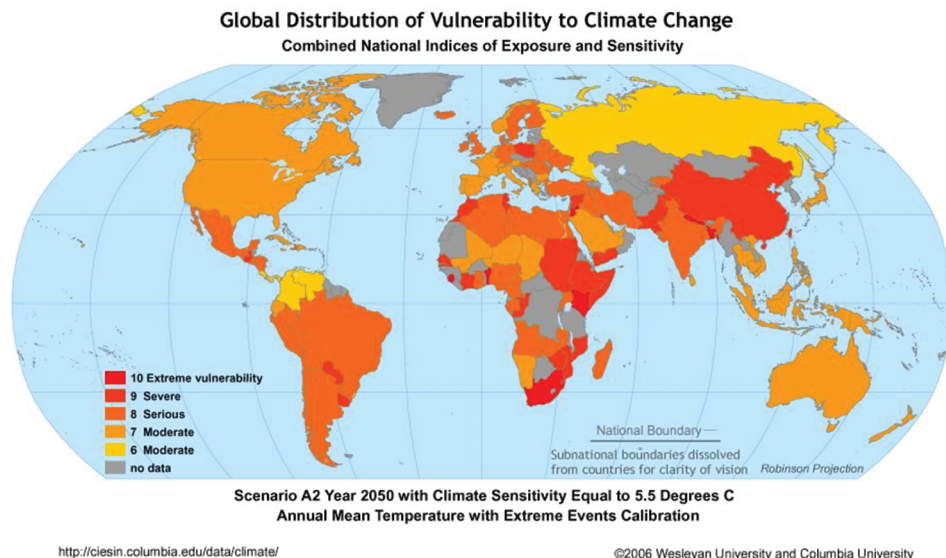


## Population and Climate Change: A Clear Link



There is clear evidence that the rise in carbon emissions has paralleled the growth in population over the past century. The relationship between population and carbon is complex, but at its root, more people simply require more energy. That energy continues to be inexpensively produced by burning carbon-emitting fossil fuels.

In only 40 years, the world's population has doubled from 3.5 billion to nearly 7 billion. The rises in population and carbon emissions have followed the same trend line during that time. Frederick Meyerson, PhD, says that "Per capita greenhouse gas emissions are roughly the same as they were in 1970 on a global scale and also in the United States."

Methane, a much more potent greenhouse gas than carbon (but less prevalent), is produced by rice paddies, livestock, and landfills. Rice and livestock production grow in response to more hungry people to feed. Landfills are larger and more abundant as the number of people producing waste grows.

Brian O'Neill of the National Center for Atmospheric Research (NCAR) and his colleagues published research in October 2010 that provides a new level of insight into the relationship between demogra-

phy and climate change. O'Neill et al. found that achieving the United Nations low population projection could reduce emissions in 2050 by 1.4–2.5 billion tons of carbon (GtC) per year or 16–29 percent of the emissions reductions necessary to avoid dangerous climate change. "In our analysis, emissions reductions in these regions (i.e., the United States and developing country regions other than China) amount to about one-half of the total reductions that result from following a lower global population growth path, suggesting that family planning policies would have a substantial environmental cobenefit."

O'Neill et al. looked at survey data for 75 developing countries and calculated that 23.5 percent of births there are unwanted. Applying this ratio to the 2005 total fertility rate for the less developed region as a whole, the researchers estimated that unwanted fertility in the developing world is 0.64 children per woman. In other words, if couples had access to family planning education and services, they would have, on average, 0.64 children less than they actually have. Eliminating unwanted fertility in the developing world would bring the global fertility rate to below replacement level (2.1 chil-

dren per woman is the number required for population stabilization). O'Neill et al. wrote, "Although there are some uncertainties involved in its estimation, unwanted fertility is an important concept, because, in principle, it can be reduced by ensuring access to family planning services that assist couples in achieving desired family size." Reducing population growth does not require changing stubborn attitudes about ideal family size. It simply requires enabling women and couples to have the number of children that they want.

There are more than 215 million women around the world who want to delay or end childbearing but have no access to modern contraception. Contraception is inexpensive, and decades of experience allows the staff of family planning programs to deliver it to couples safely and efficiently. But, without adequate funding, programs can't reach their potential. We lose precious time in the race to stabilize population—and, therefore, carbon in the atmosphere—before it's too late to avoid the devastating consequences of climate change.

### But Stabilizing Population Alone Isn't Enough

Population stabilization is by no means a panacea for mitigating climate change. According to O'Neill et al., population stabilization could provide between one and one-and-a-half "stabilization wedges" between now and 2050. Scientists Robert Socolow and Stephen Pacala of the Carbon Mitigation Initiative at Princeton University developed the climate stabilization wedge concept to illustrate which technologies and actions could bring about a stabilization of annual carbon emissions at eight billion tons by 2050. Carbon emissions stabilization would require eight "wedges" like making cars more fuel efficient, switching to wind and solar power, and planting trees.

Population stabilization deserves consideration among the proposed mitigation solutions just as much as switching from SUVs to hybrids does. But it can not be the only solution. Per capita emissions must also contract and converge at a level that allows everyone to live a decent quality of life, without overloading the atmosphere with carbon.

### Unequal Energy Use

In the United States, annual per capita carbon emissions have hovered around 5.43 tons for decades. Most of these emissions come from burning fossil fuels to generate electricity, and for industry and transportation. Most African countries have per capita emissions below 0.7 tons. Many industrialized countries emit less than 2.0 tons per capita.

Yet the U.S. was the only major industrialized country that refused to ratify the 1997 Kyoto Protocol, which expires in 2012. The agreement calls for mandatory cuts in greenhouse gases, but the current signatories only produce 28 percent of global emissions.

President Obama has pledged to cut U.S. greenhouse gas emissions 80 percent by 2050. This goal will be much easier to achieve if the U.S. population stabilizes at 350 million Americans, rather than 450 million. According to United Nations projections, the population of the United States will grow to a level somewhere in that range by the year 2050 (from 310 million today).

### Population Growth Makes Adaptation More Difficult

Climate change can alter weather patterns, which in turn, can lead to natural disasters. As the ocean warms, tropical storms pick up more energy from the ocean, making storms more destructive when they hit land.

The Intergovernmental Panel on Climate Change (IPCC) named North Africa, West Africa, and Southern Africa as regions particularly vulnerable to flooding from sea level rise. These are all regions with rapidly growing populations

### Facts & Figures

- The United States accounts for less than 5 percent of the world's population, yet produces 19 percent of global greenhouse gas emissions.
- China contributes 22 percent of global emissions and has 20 percent of the world's population.
- All of the 10 hottest years on record have occurred since 1990.
- Arctic sea ice is melting at a rate of 11.2 percent per decade.
- The severity of hurricanes has increased over the last 35 years along with ocean temperature.

(some more quickly than others). Currently, 80 percent of the people living in West Africa are settled along the coast. Put bluntly, when more people live in regions that will be (and in some cases, already are) hit hard by climate-related disasters, more people stand to lose their homes, livelihoods, and even their lives.

As an example, drought makes growing crops for an ever-growing population much more difficult. Countries that experience severe drought are reliant upon food aid for survival. As the populations grow in drought-prone countries, food aid requirements also grow. It will be very difficult, if not impossible, for these countries to reach agricultural sustainability as long as droughts and population growth continue.

Population Action International (PAI) reviewed the National Adaptation Programmes of Action (NAPAs) of 41 Least Developed Countries (LDCs). Nearly all of the NAPAs (37) recognized the link between population growth and climate change. However, only six recommended that population stabilization be considered a priority adaptation strategy, and only two recommended specific family planning projects as part of their adaptation strategies. Yet, no family planning projects have been funded by the LDC Fund (LDCF). Developed countries have committed \$176 million to the LDCF to help vulnerable countries adapt to climate change. The estimated cost of implementing all 448 of the prioritized projects in the 41 NAPAs is \$2 billion.

### Conclusion

Jeffrey Sachs wrote in his book *Common Wealth*, "Man-made climate change is not a sin of humanity, or even a result we could have easily predicted and avoided; it is, rather, an accident of chemistry, specifically, the accident that carbon dioxide has greenhouse climate effects. This accident is so novel and has come upon us so recently that global society has been caught largely unawares as to how it should respond."

A similar "accident" occurred when mortality decline sparked population growth. The world population was stable for so long that when it exploded in the 20<sup>th</sup> Century, it took the global community by surprise. It then took leaders decades to respond. Appropriate policies took generations to develop and some places still lack any population policy at all (including the United States). Funding has been too little, too late to stop the growth that was set in motion generations ago.

"Global warming is too big a problem to be solved by energy experts alone. It's about people. It's about how many of us there are and how we choose to live our modern lives," says Population Connection President, John Seager. "It's time to open a second front in the battle against global warming by stressing the need for population stabilization—sooner rather than later."

### Sources

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*Population Connection is America's largest grassroots group advocating for progressive action to stabilize world population at a level that can be sustained by the Earth's resources.*