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## Population and Sustainability: Can We Avoid Limiting the Number of People? Slowing the rise in human numbers is essential for the planet—but it doesn't require population control

By Robert Engelman

In an era of changing climate and sinking economies, Malthusian limits to growth are back—and squeezing us painfully. Whereas *more people* once meant more ingenuity, more talent and more innovation, today it just seems to mean *less for each*. Less water for every cattle herder in the Horn of Africa. (The United Nations projects there will be more than four billion people living in nations defined as water-scarce or water-stressed by 2050, up from half a billion in 1995.) Less land for every farmer already tilling slopes so steep they risk killing themselves by falling off their fields. (At a bit less than six tenths of an acre, global per capita cropland today is little more than half of what it was in 1961, and more than 900 million people are hungry.) Less capacity in the atmosphere to accept the heat-trapping gases that could fry the planet for centuries to come. Scarcer and higher-priced energy and food. And if the world's economy does not bounce back to its glory days, less credit and fewer jobs.



It's not surprising that this kind of predicament brings back an old sore topic: human population and whether to do anything about it. Let's concede up front that nothing short of a catastrophic population crash (think of the film *Children of Men*, set in a world without children) would make much difference to climate change, water scarcity or land shortages over the next decade or so. There are 6.8 billion of us today, and more are on the way. To make a dent in these problems in the short term without throwing anyone overboard, we will need to radically reduce individuals' footprint on the environment through improvements in technology and possibly wrenching changes in lifestyle.

But until the world's population stops growing, there will be no end to the need to squeeze individuals' consumption of fossil fuels and other natural resources. A close look at this problem is sobering: short of catastrophic leaps in the death rate or unwanted crashes in fertility, the world's population is all but certain to grow by at least one billion to two billion people. The low-consuming billions of the developing world would love to consume as Americans do, with similar disregard for the environment—and they have as much of a right to do so. These facts suggest that the coming ecological impact will be of a scale that we will simply have to manage and adapt to as best we can.

Population growth constantly pushes the consequences of any level of individual consumption to a higher plateau, and reductions in individual consumption can always be overwhelmed by increases in population. The simple reality is that acting on both, consistently and simultaneously, is the key to long-term environmental sustainability. The sustainability benefits of level or falling human numbers are too powerful to ignore for long.

In the U.S., this discussion remains muted all the same. Population concerns may lurk within the public anger over illegal immigration or over the unwed California mother of octuplets earlier this year. But to the extent that the news media address domestic population growth at all, it is through euphemisms such as "sprawl" (the theoretical culprit in pollution of the Chesapeake Bay, for example) or the economy (the theoretical driver of

increased greenhouse gas emissions). You are more likely to read about population growth in a letter to the editor than in a news story or editorial.

When President-elect Barack Obama pledged in late 2008 to bring U.S. carbon dioxide emissions to their 1990 levels by 2020, environmentalists struggled to swallow their dismay. The European Union, after all, had committed itself to 20 percent reductions from 1990 levels. But on a per capita basis, President Obama's pledge was somewhat more ambitious than the E.U.'s was. Because of much more rapid population growth than in the E.U., Americans would be cutting their individual emissions by 26 percent under his plan and Europeans by 25 percent under theirs. Any pledges to lower emissions by a uniform percentage among industrial countries will be much harder for the U.S. to achieve, simply because it is gaining people so fast through immigration and a birthrate that is higher than average for a developed nation.

The bitterness of the immigration debate has helped keep U.S. population growth off-limits in the national conversation. In industrial countries outside of North America, however, population is creeping back into public and even political consciousness. In the U.K., an all-party parliamentary panel issued a report called "Return of the Population Growth Factor" and called for stronger efforts to slow that growth. And the concern in the U.K. is not just about the people "over there" in developing countries. In early 2009 Jonathon Porritt, chair of the government's Sustainable Development Commission, whacked a hornet's nest by calling parents of more than two children "irresponsible" and blasting mainstream environmental groups for "betraying" their members by fearing to call for small families. "It is the ghost at the table," Porritt said of population in an interview with the *Daily Telegraph*, a London broadsheet. Blog comments on his remarks, most of them supportive, soared into the thousands.

Meanwhile, in Australia, as summer temperatures hovered near 117 degrees Fahrenheit (47 degrees Celsius) and murderous flames converted forests into carbon dioxide, a new book entitled *Overloading Australia: How Governments and Media Dither and Deny on Population* issued an unusual ecological battle cry: ignore all admonitions to conserve the country's increasingly scarce water supplies until the government eliminates "baby bonuses" in the tax code and clamps down on immigration. A former premier of New South Wales spoke at the book's launch.

With comments such as these gaining attention—and in some circles, approval—are environmentalists and eventually policy makers likely to renew the decades-old call for "population control"? Would they be wise to do so?

### **A Number of Us**

Two big questions present themselves as population reemerges from the shadows: Can any feasible downshift in population growth actually put the environment on a more sustainable path? And if so, are there measures that the public and policy makers would support that could actually bring about such a change?

Nature, of course, couldn't care less how many of us there are. What matters to the environment are the sums of human pulls and pushes, the extractions of resources and the injections of wastes. When these exceed key tipping points, nature and its systems can change quickly and dramatically. But the magnitudes of environmental impacts stem not just from our numbers but also from behaviors we learn from our parents and cultures. Broadly speaking, if population is the number of us, then consumption is the way each of us behaves. In this unequal world, the behavior of a dozen people in one place sometimes has more environmental impact than does that of a few hundred somewhere else.

Consider how these principles relate to global warming. The greenhouse gases already released into the atmosphere are likely to bring us quite close to the 3.6 degree F (two degree C) increase from the preindustrial global temperature average that many scientists see as the best-guess threshold of potential climate catastrophe. Already the earth is experiencing harsher droughts, fiercer storms and higher sea levels. If the scientists are right, these impacts will worsen for decades or centuries. Indeed, even if we ended all emissions tomorrow, additional warming is on the way thanks to the momentum built into the earth's intricate climate system. (The oceans, for example, have yet to come into equilibrium with the extra heat-trapping capacity of the atmosphere. As the oceans continue to warm, so will the land around them.)

Our species' demographic growth since its birth in Africa 200,000 years ago clearly contributed to this crisis. If world population had stayed stable at roughly 300 million people—a number that demographers believe

characterized humanity from the birth of Christ to A.D. 1000 and that equals the population of just the U.S. today—there would not be enough of us to have the effect of relocating the coastlines even if we all drove Hummers. But instead we kept growing our numbers, which are projected to reach 9.1 billion by midcentury.

Humanity's consumption behaviors consequently did and do matter, and in this arena, all people have not been created equal. Greenhouse gas release has been linked overwhelmingly, at least up until recently, to the high-consumption habits of the industrial nations. As a result, in an ethical outrage as big as all outdoors, the coming shifts in climate and sea level will most harm the world's poor, who are least responsible for the atmosphere's composition, and will least harm the wealthy, who bear the biggest responsibility.

### All-Consuming Passions

What part can the size of the human race play in finding a happy ending to this morality play? Population scenarios cannot directly address the inequity in emissions patterns—but they are far from unimportant.

Countries with the highest emissions per capita tend to have smaller families on average, whereas those with low emissions per capita tend to have larger ones. Americans, for example, consumed 8.6 tons of oil or its commercial energy equivalent per capita in 2007, according to data kept by British Petroleum; Indians consumed just 0.4 ton per capita. (These figures somewhat distort the gap because they exclude biomass and other noncommercial forms of energy, for which data are unreliable.)

So while India gained 17 million people in that year and the U.S. gained three million, by this simplified math the U.S. growth in population counted for the equivalent of an additional 25.6 million tons of oil consumed, whereas India's much greater growth counted for only 6.6 million additional tons. With such large disparities, the climate would be better served if the Americans emulated Indian consumption than if India emulated U.S. population.

End of story? For a variety of reasons, not quite. Population is not a contrasting force to consumption but something very close to its parent. Alone, each of us has no significant impact on the planet, even when our collective behavior overwhelms its natural processes. Historically, population has grown fastest when per capita consumption is modest. Later, consumption tends to explode on the base of a population that is large, but it is by then growing more slowly. Throughout the 19th century, the U.S. population grew at rates typical of Africa today. That century of rapid growth helped to make 21st-century America (with 307 million people now) a consumption behemoth.

The same one-two punch of population growth followed by consumption growth is now occurring in China (1.34 billion people) and India (1.2 billion). Per capita commercial energy use has been growing so rapidly in both countries (or at least it was through 2007 on the eve of the economic meltdown) that if the trends continue unabated the typical Chinese will outconsume the typical American before 2040, with Indians surpassing Americans by 2080. Population and consumption thus feed on each other's growth to expand humans' environmental footprint exponentially over time.

Moreover, because every human being consumes and disposes of multiple natural resources, a birth that does not occur averts consumption impacts in every direction. A person reducing her carbon footprint, conversely, does not automatically use less water. A wind turbine displaces coal-fired electricity but hardly prevents the depletion of forests (now disappearing in the tropics at the rate of one Kentucky-size swath a year) or fisheries (at current depletion rates facing exhaustion by the middle of the century). But unlike wind turbines, humans reproduce themselves. So every smaller generation means that the multipliers of consumption linked to population also shrink on into the future.

Because most environmental challenges emerge on scales of decades and centuries, population growth packs a long-term wallop. With respect to saving the planet, over a few short years it is hard for smaller families to beat sharp reductions in per capita consumption. Since the early 1990s, however, published calculations have demonstrated that slower population growth over decades yields significant reductions of greenhouse gas emissions even in countries where per capita fossil-fuel consumption is modest.

Slower population growth that leads to eight billion people in 2050 rather than to the currently projected 9.1 billion would save one billion to two billion tons of carbon annually by 2050, according to estimates by climate scientist Brian O'Neill of the National Center for Atmospheric Research and his colleagues. The subsequent savings in emissions would grow year by year ever afterward—while the billion-plus fewer people would need

less land, forest products, water, fish and other foodstuffs.

Those improvements still would not be enough on their own to avert significant climate change. Other similar billion-ton savings in emissions (what Princeton University professors Stephen Pacala and Robert Socolow have dubbed “stabilization wedges”) are desperately needed and can come only from reduction in fossil-fuel consumption through energy efficiency, low-carbon technologies and changes in way of life. If two billion automobiles getting 30 miles per gallon traveled only 5,000 miles a year instead of 10,000, that change would save another billion tons of carbon emissions. So would replacing coal-fired power plants that produce 1.4 trillion watts of electricity with equivalent plants burning natural gas. But without a population that stops growing, comparable technology improvements or lifestyle downshifts will be needed indefinitely to keep greenhouse gas emissions sustainable.

The complications that population growth poses to every environmental problem are not to be dismissed. In fact, they are accepted and understood best by the governments of poorer countries, where the impacts of dense and rapidly growing populations are most obvious. During the past few years, most of the reports that developing countries have filed with the U.N. on how they plan to adapt to climate change mention population growth as a complicating factor.

### **Instruments of Policy**

A commonsense strategy for dealing with rising environmental risk would be to probe every reasonable opportunity for shifting to sustainability as quickly, easily and inexpensively as possible. No single energy strategy—whether nuclear, efficiency, wind, solar or geothermal—shows much promise on its own for eliminating the release of carbon dioxide into the air. Obstacles such as high up-front costs hamper most of those energy strategies even as part of a collective fix for the climate problem. No single change in land use will turn soils and plants into net absorbers of heat-trapping gases. Without technological breakthroughs in energy or land use, only higher prices for fossil fuels show much potential for edging down per capita emissions—a “solution” that policy makers have yet to grapple with effectively.

Given the long-term contribution that a turnaround in population growth could make in easing our most recalcitrant challenges, why doesn't the idea get more respect and attention? Politicians' apathy toward long-term solutions is part of the answer. But the more obvious reason is the discomfort most of us feel in grappling with the topics of sex, contraception, abortion, immigration and family sizes that differ by ethnicity and income. What in the population mix is *not* a hot button? Especially when the word “control” is added, and when the world's biggest religions have fruitful multiplication embedded in their philosophical DNA. And so critics from left, right and the intellectual center gang up on the handful of environmentalists and other activists who try to get population into national and global discussions.

Yet newly released population data from the U.N. show that developed countries, from the U.S. to Spain, have been experiencing (at least up through the beginnings of the economic crisis in 2008), if not baby booms, at least reproductive “rat-a-tat-tats.” For the first time since the 1970s, the average number of children born to U.S. women has topped 2.1—the number at which parents replace themselves in the populations of developed and many developing countries. Even if net immigration ended tomorrow, continuation of that fertility rate would guarantee further growth in U.S. population for decades to come.

Those who do consider population to be a key to the problem typically say little about which policies would spare the planet many more billions of people. Should we restructure tax rates to favor small families? Propagandize the benefits of small families for the planet? Reward family-planning workers for clients they have sterilized? Each of those steps alone or in combination might help bend birthrates downward for a time, but none has proved to affect demographic trends over the long term or, critically, to gain and keep public support. When the government of India rewarded health workers for meeting sterilization quotas in 1976, the zeal of some of them for wielding scalpels regardless of their patients' wishes contributed to the downfall of Indira Gandhi's government in 1977.

And how can we reduce consumption? Ideas such as cap-and-trade plans for limiting greenhouse gas emissions and allowing companies to trade emission rights are based on the same principle: raise the price of what harms the environment to reduce consumption of it. Beyond the consumption cuts, however, such schemes don't have much to recommend them. Governments can also eliminate subsidies of polluting behavior, an approach that is more palatable—except to the often powerful interests that benefit from the subsidies. Or

governments can subsidize low consumption through tax deductions and credits, but the funds to do so on the needed scale will likely be increasingly scarce.

### The Zen of Population

Mostly ignored in the environmental debates about population and consumption is that nearly all the world's nations agreed to an altogether different approach to the problem of growth 15 years ago, one that bases positive demographic outcomes on decisions individuals make in their own self-interest. (If only something comparable could be imagined to shrink consumption.) The strategy that 179 nations signed onto at a U.N. conference in Cairo in 1994 was: forget population control and instead help every woman bear a child in good health when she wants one.

That approach, which powerfully supports reproductive liberty, might sound counterintuitive for shrinking population growth, like handing a teenager the keys to the family car without so much as a lecture. But the evidence suggests that what women want—and have always wanted—is not so much to have *more children* as to have *more for* a smaller number of children they can reliably raise to healthy adulthood. Women left to their own devices, contraceptive or otherwise, would collectively “control” population while acting on their own intentions.

More than 200 million women in developing countries are sexually active without effective modern contraception even though they do not want to be pregnant anytime soon, according to the Guttmacher Institute, a reproductive health research group. By the best estimates, some 80 million pregnancies around the world are unintended. Although the numbers aren't strictly comparable—many unplanned pregnancies end in abortion—the unintended pregnancies exceed the 78 million by which world population grows every year.

In the U.S., which is well informed and spends nearly 20 cents per dollar of economic activity on health care, nearly one out of every two pregnancies is unintended. That proportion has not changed much for decades. In every nation, rich and poor, in which a choice of contraceptives is available and is backed up by reasonably accessible safe abortion for when contraception fails, women have two or fewer children. Furthermore, educating girls reduces birthrates. Worldwide, according to a calculation provided for this article by demographers at the International Institute for Applied Systems Analysis in Austria, women with no schooling have an average of 4.5 children, whereas those with a few years of primary school have just three. Women who complete one or two years of secondary school have an average of 1.9 children apiece—a figure that over time leads to a decreasing population. With one or two years of college, the average childbearing rate falls even further, to 1.7. And when women enter the workforce, start businesses, inherit assets and otherwise interact with men on an equal footing, their desire for more than a couple of children fades even more dramatically.

True, old-style population control seems to have helped slow population growth in China. The country's leaders brag that their one-child policy has spared the world's climate 300 million greenhouse gas emitters, the population equivalent of a U.S. that never happened. But most of the drop in Chinese fertility occurred before that coercive policy went into effect in 1979, as the government brought women by the millions into farm and industry collectives and provided them with the family planning they needed to stay on the job. Many developing countries—from Thailand and Colombia to Iran—have experienced comparable declines in family size by getting better family-planning services and educational opportunities to more women and girls in more places.

With President Obama in the White House and Democrats dominant in Congress, the signs are good that the U.S. will support the kind of development abroad and reproductive health at home most likely to encourage slower population growth. Like almost all politicians, however, Obama never mentions population or the way it bridges problems from health and education all the way to food, energy security and climate change.

Bringing population back into the public conversation is risky, but the world has come a long way in understanding that the subject is only one part of most of today's problems and that “population control” can't really control population. Handing control of their lives and their bodies to women—the right thing to do for countless other reasons—can. There is no reason to fear the discussion.

*Note: This article was originally printed with the title, "Population and Sustainability."*

### Further Reading

[Carbon Cuts Require a Broad Array of Electricity Generation Technologies](#)  
[Stumbling Over Data: Mistakes Fuel Climate-Warming Skeptics](#)

[U.S. and China Meet on Climate Change](#)

[Should Thursday Be the New Friday? The Environmental and Economic Pluses of the 4-Day Workweek](#)

[A Less Shady Future: Could Climate Change Mean Fewer Clouds?](#)

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[Why not split harmful carbon dioxide into harmless carbon and oxygen?](#)

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