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[Special Reports](#)

[News Media](#)

[Elections & Voting](#)

[Health](#)

[Religion](#)

[Social Security](#)

[Analysis](#)

[Commentary](#)

[Editors' Blog](#)

[Reclaiming America](#)

[The Splendid Failure of Occupation](#)

[The Lighter Side](#)

[Reviews](#)

[The Mailbag](#)

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[Amazon.com](#)

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All Categories ▼

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ANALYSIS

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Earth needs renewed attention to human population growth

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There's a simple theme in today's environmental writing. It shows up in titles like "Cut Your Consumption by Switching to Fluorescent Light Bulbs," "Lawmakers Developing Fuel Economy Plan," and "Is Wind Power Right for You?"

The trend is to promote reduced personal resource consumption. And it's a crucial part of the solution to our energy and ecological woes.

But it's only half the solution. The other half has faded from prominence in recent years. It's the need to end global population growth. At a time when scientists tell us we've [outgrown our earth](#), it deserves our renewed attention.

Population growth received a good deal of press in the 1960s and 1970s, but since then it's become a taboo subject. China's draconian one child policy and political pressure from social justice groups who saw the population issue as a distraction from their preferred causes saw to that. Indeed, some writers today even [question the contribution](#) of population growth to ecological degradation.

Was attention to population a mistake?

Are they right? Was past attention to population misplaced? Was it overblown as a root cause of environmental problems? Does it even compare with consumption rates in its environmental impact? Fortunately, a simple, unassailable equation answers these questions. Appearing over a decade ago in an [article by John Holdren](#), recent president of the American Association for the Advancement of Science, it's rarely mentioned in today's environmental debates. Yet it shows us precisely what determines our total energy consumption.

In plain English, it says total energy consumption, for a country or the world, equals population size times the average per capita energy use. So if $E = \text{total energy}$

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use, P = population size, and e = energy use per capita, we can say $E = P \times e$. [1]

There is no getting around that simple math. It means we have little chance of tackling our energy and environmental challenges if we ignore either of the two factors, per capita consumption and population.

In fact, though few environmentalists appear to realize it, today's well known "ecological footprint" measure is an elaboration of Holdren's equation. As the experts on the Global Footprint Network [describe it](#), "Resource demand (Ecological Footprint) for the world as a whole is the product of population times per capita consumption, and reflects both the level of consumption and the efficiency with which resources are turned into consumption products."

Hasn't consumption grown faster?

But sometimes someone points out that in the last half century global and national resource consumption rates have increased faster than population numbers. The implication is that the rate of consumption is the more important factor, and the one deserving more attention. Is that correct?

The equation above shows the flaw in such a notion. Comparing population growth to the growth in total energy or resource use is to compare one factor in the equation to the product. Naturally, we would expect the product generally to be larger. To determine which variable is the greater contributor to our environmental problem, we must compare the two factors. The product, after all, *is* the problem. When we compare the factors, as Holdren did, we find population and per capita consumption both contribute heavily to total consumption.

But aren't individual consumption rates much higher in some countries?

Still, there's the observation that per capita consumption rates are much higher in developed countries. In the US, for instance, per capita consumption of most resources is many times higher than is seen in developing countries. Does this mean we should ignore population and focus only on reducing per person consumption? Not at all. Holdren's equation tells us it's never wise to ignore either population or per person consumption. It is precisely because the impact of US population growth is magnified by our high consumption rates per capita that some experts call the US population problem the [worst in the world](#). With regard to oil use, for example, at current per person consumption levels, adding one person to the US population is like adding about 15 in China. In that light, ignoring population growth in the US is perilous.

And addressing population growth in the US need not stir controversies concerning immigration restrictions. Other solutions include social programs to reduce the number of unplanned pregnancies, thereby lowering fertility rates to the sub-replacement levels seen in other developed countries, and assistance to Mexico to improve its citizens' economic opportunities so they're not forced to come to the U.S. to earn even a

subsistence wage.

Nor can we ignore population growth in developing countries. Fertility rates in many countries remain high, and projections have the global population, which has doubled since the 1960s, increasing by another 40 percent or more by mid-century. While it's true per capita consumption levels in the developing world are today much lower than those in the industrialized world, they're growing fast, in line with economic growth. We need only look at Holdren's equation to see that without renewed attention to population, rising per capita consumption multiplied by already large and growing populations puts the Third World on a course toward disaster.

We in the industrialized world can hardly begrudge developing countries their rise toward Western living standards. We can, however, assist them in the transition to renewable energy sources. We can also assist with humane programs to hasten lowering fertility rates. Research and expert consensus tells us such programs should aim to improve the status of women. They need to increase girls' educational opportunities, and women's economic and health care options. They must increase family planning services and improve child survival rates. Such changes give women the social and economic freedom to opt for fewer children.

Having overshot the earth's capacity to sustain our current numbers, living as we do, we must act now to avert catastrophe. We've depleted resources such as oil and groundwater and have damaged the global ecosystem, triggering a wave of extinctions. We're dismantling the web of life. A growing number of analysts warn that if we fail to reduce both per capita consumption *and* to halt the growth of our population no new technology will prevent an unimaginable loss of life. The poorest countries will be the most vulnerable. We in the developed world, with the resources to act on these needs, have a moral imperative to do so.

[1] "E = P x e" is a precursor to I = PAT a better known, slightly more complex equation measuring environmental impact. See the relevant [Wikipedia entry](#) for a brief summary.

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[Top of Page](#)