



## Population: Thinking about our Future

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*This is a guest post by retired geography professor Gary Peters.*

Death is inevitable; population growth is not. I prefer to discuss the latter and some of its implications in an attempt to convince you that further growth of the human population is unnecessary and will complicate virtually every other problem that we face today.

Writing about his popular blog, [Dot Earth](#), Andy Revkin noted that “By 2050 or so, the human population is expected to reach nine billion, essentially adding two Chinas to the number of people alive today.” The word “expected” is used here and elsewhere as if nothing we do can stop the addition of at least 2.1 billion more people to the planet over the next 40 years. That is absurd. Though nine billion is only a projected figure, based on assumptions about birth and death rates that may or may not be accurate between now and 2050, it is most often accepted as a fait accompli. That leads us, then, not to ask questions about whether we should intervene in that growth somehow, stop it, or even reverse it, but rather to focus on questions about how we are going to provide for it. Rather than ask why we want or need another 2.1 billion humans on the planet, researchers focus almost exclusively on how we are going to provide those additional people with safe drinking water, food, clothing, shelter, medical care, and other needs, even though billions already do without some or all of those things.

Let’s be clear up front. There is nothing natural or necessary about adding 2.1 billion more people to the planet and it can’t be done without either diverting scarce resources from other uses or finding new resources. Rational people in the United States consistently write on blogs and elsewhere that we cannot interfere with nature when it comes to procreation. Most of those people, mysteriously, have only one or two children, indicating to me that either they consistently interfere with nature or, by some highly improbable coincidence, they have all married partners with deficient reproductive systems.

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One of the most common comments that I hear about population is the following: As the poor countries become richer, women in them will have fewer children. This thinking is based on the demographic transition model, which in turn was based on the experience of a number of western nations during earlier phases of the Industrial Revolution. The demographic transition model has no predictive power, as most demographers know, but it has led to the conventional wisdom that economic growth everywhere will lead to lower rates of population growth.

Assume that the conventional wisdom is right. We then must ask where the resources, especially energy resources, are going to come from to bring about enough economic growth to make a real demographic difference. The rich countries have long made the argument that economic growth will bless all those nations that become more like us (e.g. develop free markets, free trade, democratic institutions, etc), but future economic growth is a promise, or a hope, not a guarantee.

If we take an extreme case, the fallacy of such thinking becomes apparent. Assume that we wish to bring the world's current population of 6.9 billion up to an American standard of living, then ask how we might do that. If we focus just on crude oil, the absurdity of such an assumption is striking. In round figures the United States right now consumes about 20 million barrels of crude oil per day and we have about 5 percent of the world's population. If we were to bring the world up to our current oil consumption level, we would need to extract about 400 million barrels of crude oil per day, nearly five times current extraction.

Given what we know about oil extraction, oil deposits, oil reserves, alternative fuels from tar sands, and whatever else you want to throw in the mix, it is clear that we could not even come close to extracting 400 million barrels of oil per day from planet Earth, now or ever. We may not even be able to reach 100 million barrels per day. You can create your own examples, or suggest your own energy fantasies, but the brutal reality is that even if we were to add no more people to the planet we could not possibly raise the world's population to a standard of living even closely approximating ours, period. The promise is a lie.

Here is a different example, still using crude oil. The United States reached its peak oil production in 1970, when our population was about 203 million. Had it been necessary for us to live within our means with respect to oil after 1970, we would have needed to reduce our population, reduce our per capita use of oil, or some combination of the two. However, since 1970 crude oil production in the United States has steadily declined, whereas the population has grown to 310 million. Our demand for oil grew, whereas our oil production declined. We could meet that demand, but only because we were able to import more and more crude oil from elsewhere (and

because we have never been willing to calculate the real cost of doing this, including both environmental costs and the cost of maintaining major military commitments in the Middle East and elsewhere). Now extend this same thinking to the world, where we keep promising economic growth to all, and ask yourself a simple question: When the world population reaches the point where its demand for oil exceeds supply, where is Earth going to import more oil from?

We do not know for sure how much of the world's population growth over the last two centuries has been a direct result of our use of fossil fuels, but we do know that that growth has been totally different from that in any earlier period of our history as a species, which takes us back about 200,000 years. Whatever the current share of world population is that we might attribute directly to oil, that share will begin to decline once we have reached a peak in oil production. If we were prudent, we would realize that and act now to decrease the world's population in humane ways, mainly by decreasing birth rates below death rates and keeping them there for a very long time.

Consider two different disciplinary perspectives, economics and ecology, and their very different implications for the future of humans and our planet. In the economics corner, Larry Summers a few years back stated that there is no limit to the carrying capacity of Earth for humans. More recently, Tim Harford concluded, in [\*The Logic of Life: The Rational Economics of an Irrational World\*](#), "The more of us there are in the world, living our logical lives, the better our chances of seeing out the next million years." Though I don't want to bias you too much, keep in mind that about 99.9 percent of economists failed to predict our recent global financial meltdown.

In the ecology corner, Mark Bush wrote, in [\*Ecology of a Changing Planet\*](#), "If there is one lesson that the geological record offers, it is that all species will go extinct; some just do it sooner than others." He also wrote, "The human population is...the root cause of most environmental problems, and the sheer number of humans plays a very significant role in degrading the environment." In an article in *Science* Harold F. Dorn wrote, "No species has ever been able to multiply without limit. There are only two checks upon a rapid increase in numbers—a high mortality and a low fertility. Unlike other biological organisms, man can choose which of these checks shall be applied, but one of them must be." [Garrett Hardin](#) made one of the most succinct statements ever about the relationship between ecology and economics:

Don't speak to me of shortage. My world is vast  
And has more than enough—for no more than enough.  
There is a shortage of nothing, save will and wisdom;  
But there is a longage of people.

Economists and ecologists cannot both be right. Or can they? The answer depends in part on the time frame in which we choose to think, with economists thinking in much shorter time frames than ecologists. Barring some catastrophe, the world's population may well continue to increase at its current 80 million per year for a while, though in either economic or ecological terms further growth makes no sense. Economists should not want to divert ever more of Earth's scarce resources to expanding human numbers, except for very selfish reasons. The economic costs of future demographic growth seem to outweigh the benefits, unless one argues that such growth, now confined almost entirely to the poor countries, will continue to provide a supply of cheap labor that can be exploited to provide goods and services for the rich countries. The poor will continue to migrate to ever more crowded cities, live in ever grimmer slums, and plan how they might one day escape to one of the rich countries.

The ecological costs of future demographic growth also outweigh the benefits. Graphs of population growth and species extinctions during the last two hundred years, for example, look enough alike to make reasonable people think twice about how many people should share the planet and how many other species of plants and animals we are willing to see go extinct so that our numbers can continue to grow. Even then, despite what Summers, Harford, and many other economists believe, the number of humans living on the planet will one day reach a limit. It may have already exceeded that limit, but that is a different question.

One final demographic comparison is worth consideration, and I thank the Population Reference Bureau for developing it. In 2010 Germany had a population of about 82 million, Ethiopia had about 85 million. However, the total fertility rate, approximately the number of children that each woman of child-bearing age will have in her lifetime, in 2010 was 1.3 in Germany and 5.4 in Ethiopia. A stable population, once adjusted to its age and sex structure, would require a total fertility rate of around 2.1, so if nothing changes in these two countries then Germany's population will decline and Ethiopia's will grow. Population projections for these two countries for 2050 are as follows: Germany will decline to about 72 million and Ethiopia will increase to about 174 million. At that time it is projected that only 14 percent of Germans will be under 15 years of age, compared to about 44 percent of Ethiopians. Germany will probably still be rich; Ethiopia most likely will still be poor. Both will have numerous problems associated with their projected demographic changes, if they occur as projected.

Demography may not be destiny, but it will always impact the destiny of both individual nations and the planet. To pretend otherwise, or to pretend that we cannot and should not interfere with demographic trends, is to remain in denial. To believe that another 2.1 billion people are going to share the planet, no matter what decisions are made, is nonsense. Population projections for 2050 show that China and India together will have a population of nearly 3.2 billion, more than the total world population 50 years ago. The projected population of the United States in 2050 is 423 million, 113 million more than we have today. Think of that in terms of the oil example for the United States that I mentioned earlier.

The world's population clock continues to tick away, adding about 228,000 people to the planet each day. Each minute humans experience about 267 births and 108 deaths. The United States adds an additional person every eleven seconds. These numbers should make even economists shudder a bit and question our ability to stay ahead of the curve. Unfortunately, as Kenneth Boulding once commented, "Anyone who believes that exponential growth can go on forever in a finite world is either a madman or an economist."

In their recent study, [Running on Empty? The Peak Oil Debate](#), David Ingles and Richard Denniss concluded the following:

Peak oil will arrive; the question is simply one of timing. It will probably be sooner than most people expect and definitely sooner than many would prefer. In an ideal world, governments would anticipate this development and plan for it; the alternative is a laissez-faire scenario likely to impose high economic costs in terms of stagflation and lost output.

If these authors, and many others, are right, then we should recognize how valuable and necessary oil is to the care and maintenance of modern societies. Given its importance, and the

likelihood that its extraction is at or near its peak, it makes no sense to continue using it to support population growth. It would make much more sense to divert some funds today to curtail population growth as soon as possible. It is a clear case where an ounce of prevention (birth control and lower fertility) is much cheaper than a pound of cure (finding more oil or higher mortality).

For those who want to argue that other energy sources are on their way and that we needn't worry so much about oil, I would suggest that you read Vaclav Smil's book, [Energy Transitions: History, Requirements, Prospects](#). He concluded that "Energy transitions have been, and will continue to be, inherently prolonged affairs, particularly so in large nations whose high levels of per capita energy use and whose massive and expensive infrastructures make it impossible to greatly accelerate their progress if we were to resort to some highly effective interventions."

Finally, Smil wrote, "The overall composition of primary energy supply and the principal modes of energy conversions will closely resemble today's arrangements five or ten years from now—but how far we will advance into the post-fossil fuel future in three or four decades will not be determined only by the commitment to innovation but also by our willingness to moderate our energy expectations and to have our energy uses following a more sensible direction, one that would combine reduced demand with a difficult, but eventually rewarding, quest for a civilization powered by renewable energy flows."

Though Smil says nothing about population size or growth, it should be obvious to all but the most obtuse among us that future energy transitions would be easier if there were fewer of us. We have squandered part of our one-time stores of solar energy packed away in fossil fuels to expand our numbers at unsustainable rates. If we eventually do develop a "civilization powered by renewable energy flows" we may find that it will not support 6.9 billion humans, let alone the nine billion or more projected to be living in 2050. Under those conditions a more sustainable number of humans might be only two billion, though we won't know until we get there.

As the sun rises on the dawn of peak oil we will see emerging from the shadows the four horsemen, ready to ride again if we do nothing now to humanely curtail our birth rates and shrink our burgeoning numbers. The choice is ours; the burden of making the wrong choice will fall on future generations.



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