Myths about Overpopulation

Peter Uetz

Editor's note: As a publication based in secular humanist values, we frequently cover and discuss existential risks. In particular, the ecological impact of human overpopulation has resonated deeply with many of Free Inquiry's writers over the years and has been frequently raised as one of our most serious threats. In his article "Save the Earth; Don't Give Birth!" from the April/May 2023 issue, Milton H. Saier, Jr. tells us:

> *Sustainability requires what seems today like a political impossibility. We cannot, and should not, tolerate governments that do not recognize the needs of the human population as a species within Earth's complex biosphere. ... We must somehow eliminate greed, dishonesty, and selfishness at the personal, societal, national, and international levels if we have any hope of humanity persevering on the Earth for longer than just a few hundred years.*

One year later, systems biologist Peter Uetz, a colleague of Saier's, offers a supplement to Saier's article.

"Given that climate change and biodiversity loss are existential threats for humanity, it is absolutely essential that we are aware of these facts, given that climate change is often just attributed to fossil fuel use and thus a merely technical problem," Uetz told Free Inquiry. "The underlying problem is either ignored or actively suppressed, namely the fact that there are too many consumers."

Here, he breaks the problem down into eight myths that are still widely held and that he believes hold the key to many of our planetary problems.

Myth 1: Population Growth Has Largely Stopped, Hence the Problem Is Solved

After birth rates began to drop in the 1960s and 1970s, it seemed to many people that the problems of population growth would soon be solved, defusing the "population bomb." It is true that fertility rates have dropped dramatically in most parts of the world (except Africa), and this process took most countries only a few decades.[1] In fact, in most countries this happened all on its own without government intervention. For instance, the total fertility rate of Chinese women was 6.2 children per woman in 1969. By the time China's one-child policy was implemented in 1979, the fertility rate had already fallen to 2.7.[2] However, after the policy's implementation, it took the Chinese population more than forty years to plateau (in 2022). This same process is happening in India right now: with Indian women having reached replacement level (2.1 children per woman) in 2023, the problem of population growth is considered solved. Well, not quite: like China, it will take India about forty years to reach a stable population.

More importantly, even if population growth stops, consumption will keep growing. While population growth in China stopped in 2023, the number of cars has exploded more than 200-fold from 1.36 million in 1978 to more than 300 million in 2023—and it keeps growing (see Figure 1).[3]

In other words: stopping population growth doesn't solve its problems. Only an end to excessive consumption will do that, which brings us to the next myth.

1. Our World in Data, "Fertility Rate: Children per Woman." Available online at https://ourworldindata.org/grapher/fertility-rate-with-projections.

2. "Global Fertility Has Collapsed, with Profound Economic Consequences." *The Economist*, June 1, 2023, p. 50. Available online at https://www.economist.com/leaders/2023/06/01/global-fertility-has-collapsed-with-profound-economic-consequences.

3. Hailin Wang, Xi Yang, and Xunmin Ou, "A Study on Future Energy Consumption and Carbon Emissions of China's Transportation Sector." *Low Carbon Energy*, vol.5 no.4 (December 2014). Available online at http://dx.doi.org/10.4236/lce.2014.54014.

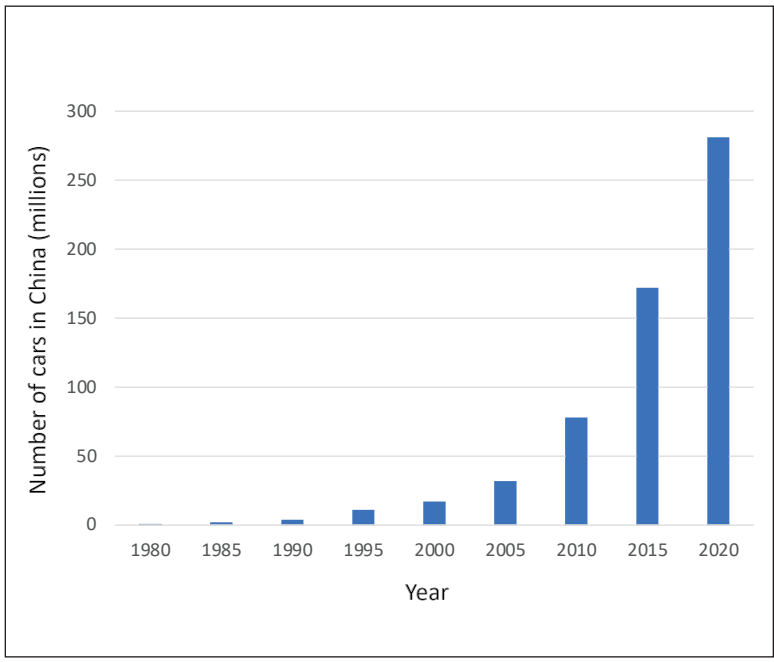

Figure 1. Number of cars in China in millions (2023: 226 per capita).

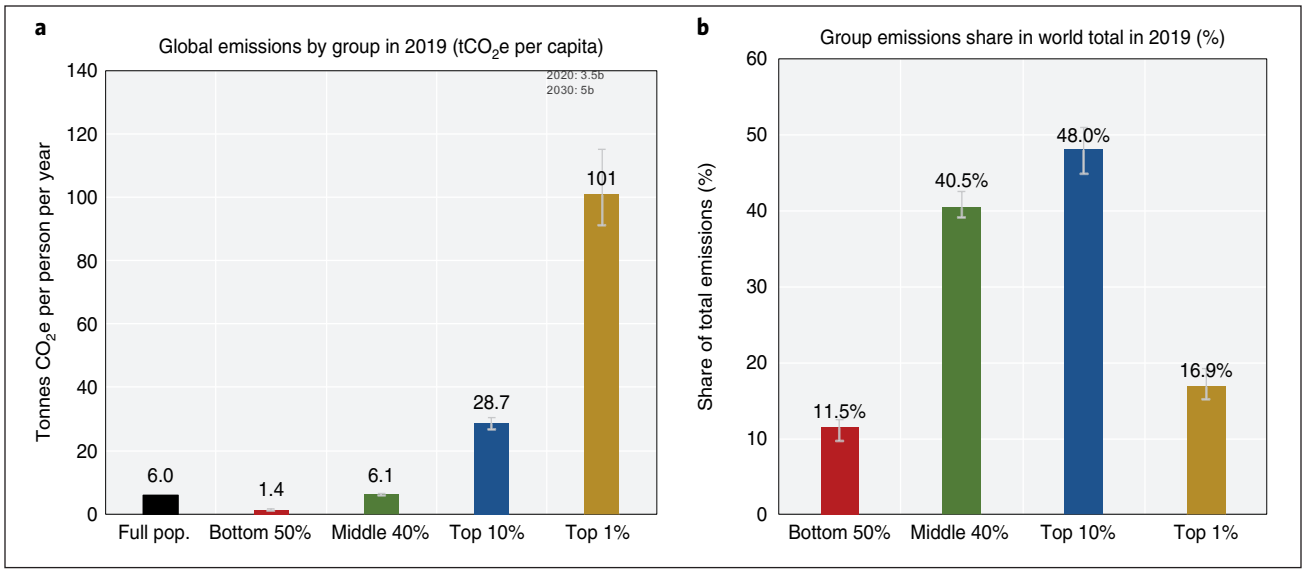

Figure 2. Human CO_2 emissions per income group.

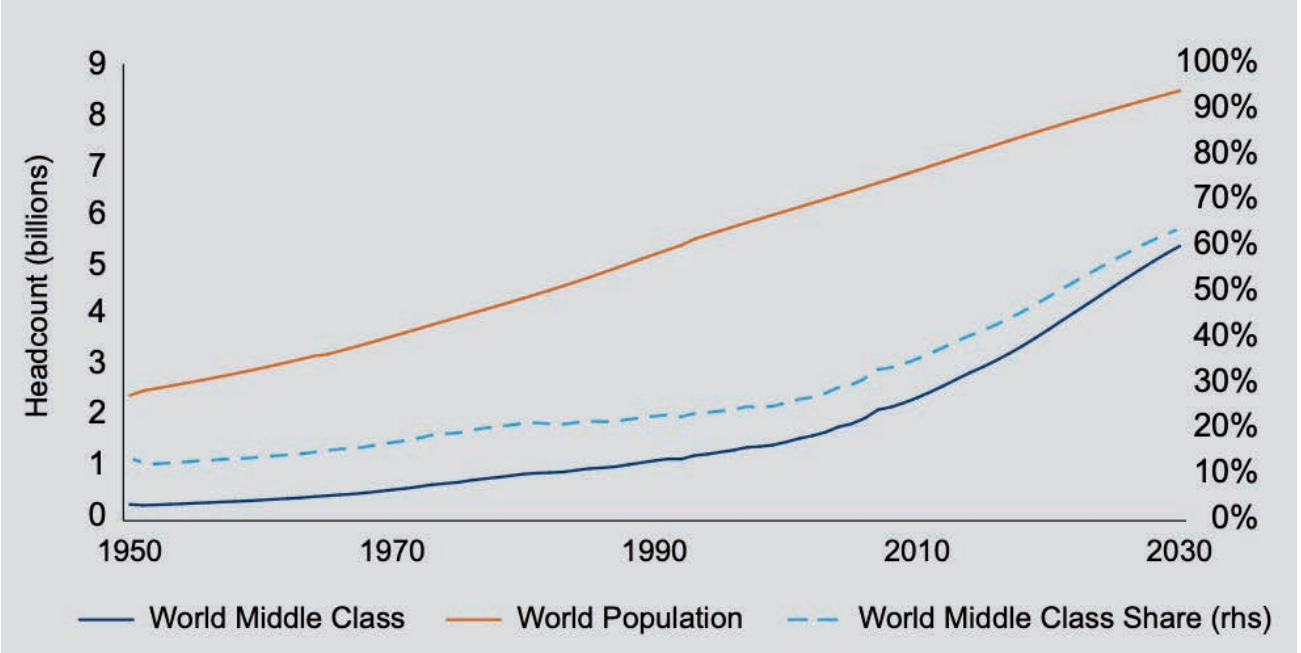

Figure 3. Growth of the global middle class.

Myth 2: Population and Consumption Are Separate Issues

In fact, population and consumption *are* separate issues, but not the way many people think. Those engaged in social justice are especially prone to argue that it is not overpopulation that matters but overconsumption, especially in rich countries. Of course, most rich people consume too much to be sustainable. The top 1 percent of consumers produce 100 tons of CO_2 per capita per year, compared to one or two tons at the bottom, so we can ignore the poor who hardly emit anything, right? Not quite.

It is still the rich half of the world that produces most greenhouse gasses, but the contribution of the poorer half steadily increases as more and more people rise into the middle class.[4] As soon as the poor leave the bottom 50 percent, the resulting middle class (currently 40 percent of the world population) already produces 40 percent of all CO_2, and this global middle class is growing by 70 or 80 million people per year (see Figure 3).[5]

4. Lucas Chancel, "Global Carbon Inequality over 1990–2019." *Nature Sustainability*, vol. 5 (2022), pp. 931–938. Available online at https://www.nature.com/articles/s41893-022-00955-z.

5. Homi Kharas, *The Unprecedented Expansion of the Global Middle Class: An Update*. Global Economy and Development at Brookings, February 2017.

In other words, the global middle class not only grew from 1.8 billion people in 2009 to about 3.2 billion in 2020, but it will keep growing to an estimated 4.8 billion in 2030 (or 60 percent of the world population). It's practically impossible that the resulting population will consume less, and it's very unlikely that the rich will either (except in terms of energy, which will likely shift to renewables to a significant extent). The truly poor have shrunk to about 10 percent of the world population over the past few decades, and that's good! In fact, if poorer people do not improve their situation in their own countries, they will migrate to richer countries as has happened in both North America and Europe. The goal for almost everybody is to live a better life and, of course, to consume more.

Myth 3: We Will Have Too Few Children Soon!

According to Elon Musk, the human population is facing imminent extinction, which seems to be the main reason he has ten children. It is true that most projections predict a decline of the human population toward the end of the century. In fact, most projections agree that the world population will start to fall by the end of the century.[6]

Pope Francis suggested a few years ago that every woman should have three children.[7] What would happen if women followed his recommendation? Right now, the average is about 2.3 children per woman, and the population is still growing by about 70 million per year. If we had half a child more (about three, as per the Pope's recommendation), we would have about 15 billion people by the end of the century! If every woman would have half a child less (on average), the world population would drop to about 6 billion. See Figure 4 for the projection by the United Nations showing this.

Having half a child more or less (2.8 vs. 1.8 per woman) would result in a difference of almost 8 billion people after just eighty years! Dan Spears, an economist who is worried about a falling world population given the dramatic impact on the economy, estimates that it will take about 300 years until we reach 2 billion people. This level would be roughly what the Global Footprint Networks recommends as a "sustainable" level at current Western consumption levels[8]—which is nowhere near sustainability.

So, will the world population collapse? Almost certainly not (if the biosphere hasn't collapsed by then, that is). The main reason women have fewer children today, at least in rich countries, is the difficulty of accommodating both children and a career in a short window within their lifetimes with often little to no support from fathers or governments. In addition, other values have become more important, such as having fulfilling careers and goals that are not centered on children and families. Given that increasing automation and artificial intelligence will replace much of today's work, there will also be much less need for people in the global economy.

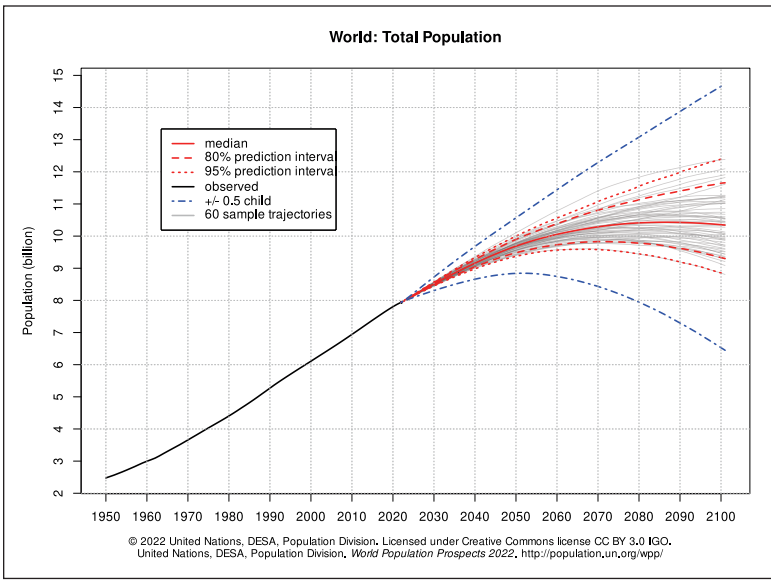

Figure 4. UN population projection.

Even at the "precipitous" decline of fertility that the media have been lamenting about, at current trends it will take at least 200–300 years for the human population to drop to 2 billion people. That will be enough time to figure out solutions for declining birth rates. By contrast, solutions for the environmental crisis need to be found *now*, or at least within the next decade or so, to avoid catastrophic biodiversity loss and climate change.

Myth 4: People Want Children

Most do. And they can have their cake and eat it too. However, the cake—the number of children—will be smaller (one or two), even though they may want to have two children per family again in 100 or 200 years. Until then, we should cut down on reproduction.

If couples have a choice between a high standard of living or a large family, they will almost certainly choose the former, which is exactly what we see today: the number of children born to American women has been consistently at or below two for the past fifty years, simply because most Americans prefer larger houses and cars over large families.

Available online at https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf.

6. Dean Spears, "The World's Population May Peak in Your Lifetime. What Happens Next?" *The New York Times*, September 18, 2023. Available online at https://www.nytimes.com/interactive/2023/09/18/opinion/human-population-global-growth.html.

7. Lindsey Bever, "Pope Says 3 Children per Family Is about Right. Catholics Don't Need to Breed 'Like Rabbits.'" *The Washington Post*, January 20, 2015. Available online at https://www.washingtonpost.com/news/morning-mix/wp/2015/01/20/pope-says-3-children-per-family-is-about-right-catholics-dont-need-to-breed-like-rabbits/.

8. Mathis Wackernagel and Bert Beyers, *Ecological Footprint: Managing Our Biocapacity Budget*. Gabriola Island, BC: New Society Publishers, 2019.

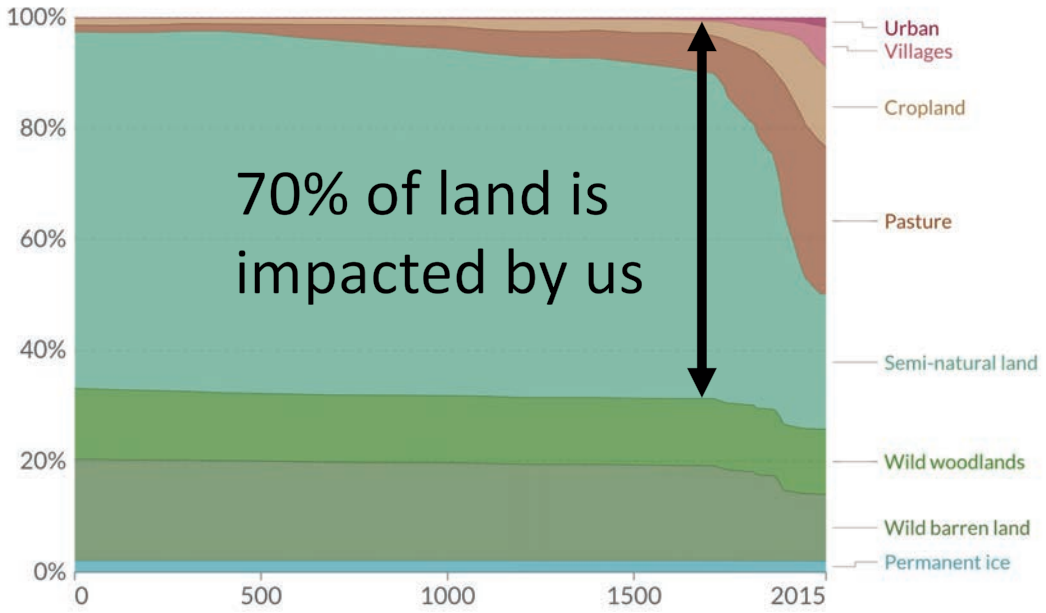

Figure 5. Land use.

Myth 5: The World Can Easily Feed 10 or 20 Billion People

Well, sure, it can, hence it's not a myth. The myth part starts, as usual, with its conditions: *if* we are willing to give up nature as we know it. At 8 billion people, we have already altered and used about 70 percent of arable land.[9] If 20 billion people need industrial agriculture, irrigation, pesticides, and deforestation to grow all that food, there won't be much nature left, if any. Especially if climate change increasingly pummels what natural land is left, which is exactly what we are seeing right now.

Our dominance over nature is directly measurable. For instance, there are about 6,000 species of mammals, ranging from tiny mice to elephants and whales. If we add up the weight of all wild mammals and compare them to the weight (or biomass) of all humans and their livestock, the latter make up a whopping 96 percent of that weight.[10] In other words, we (and our livestock) haven't just replaced wild animals, we are overwhelming their livelihood by our sheer land grabbing voracity.

Myth 6: We Have Plenty of Nature Left

Many people would say that they are perfectly happy without insects (mosquitos in particular). Unfortunately, 75 percent of our crops are more or less dependent on insect pollinators, as is about 35 percent of crop production.[11] Removing insects would simply be suicidal. And removed they will be. A recent assessment of 71,000 animal species showed that about 50 percent of them had experienced a decline in population size.[12] Only 3 percent increased their population size (and a substantial number of those are invasive species, so that's not exactly good news). My colleagues and I showed that one in eight reptile species (or a total of about 1,000 species) is only known from a single locality.[13] That is, if someone decides to clear a patch of land where they occur, that species would likely be gone (and possibly dozens of others with a similarly restricted distribution).

Conservation biologists have long known that reducing population sizes and thus genetic diversity makes species less adaptable and thus more prone to extinction, especially when factors such as climate change exacerbate extinction pressure.[14]

9. Our World in Data, "Global Land Use Since 10,000 BCE." Available online at https://ourworldindata.org/grapher/global-land-use-since-10000bc.

10. Lior Greenspoon, Eyal Krieger, Ron Sender, et al. "The Global Biomass of Wild Mammals." *PNAS*, vol. 120, no. 10 (February 27, 2023). Available online at https://www.pnas.org/doi/10.1073/pnas.2204892120.

11. Hannah Ritchie, "How Much of the World's Food Production Is Dependent on Pollinators?" Our World in Data, August 2, 2021. Available online at https://ourworldindata.org/pollinator-dependence.

12. Catherine Finn, Florencia Grattarola, and Daniel Pincheira-Donoso, "More Losers Than Winners: Investigating Anthropocene Defaunation through the Diversity of Population Trends." *Biological Reviews*, vol. 98, no. 5 (October 2023), pp. 1732–1748. Available online at https://onlinelibrary.wiley.com/doi/10.1111/brv.12974.

13. Shai Meiri, Aaron M. Bauer, Allen Allison, et al., "Extinct, Obscure or Imaginary: The Lizard Species with the Smallest Ranges." *Diversity and Distributions*, vol. 24, no. 2 (February 2018), pp. 262–273. Available online at https://onlinelibrary.wiley.com/doi/10.1111/ddi.12678.

14. J. A. DeWoody, A. M. Harder, S. Mathur, and J. R. Willoughby, "The Longstanding Significance of Genetic Diversity in Conservation." *Molecular Ecology*, 30 (2021), pp. 4147–4154. Available online at https://doi.org/10.1111/mec.16051; Gopal Murali, Takuya Iwamura, Shai Meiri, et al., "Future Temperature

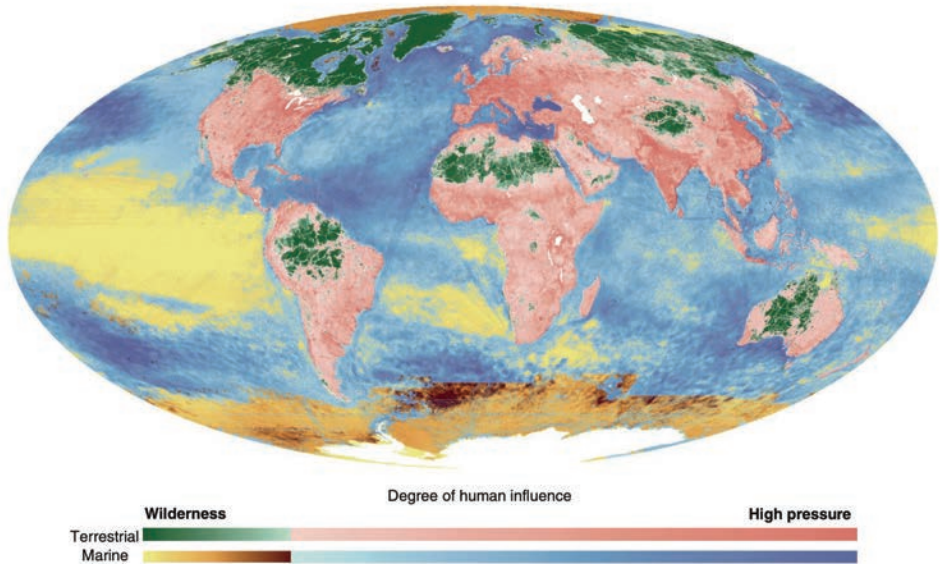

Figure 6. Wildernesses on Earth. Courtesy of James E. M. Watson.

As a last example, coral reefs are almost certainly doomed, given the projected warming of the oceans and their sensitivity to both warming and acidification.[15] Everybody who has seen a nature documentary knows that coral reefs are teeming with a bewildering diversity of life but probably not for much longer.

On a global scale, a pathetically small amount of nature is in a truly pristine state. The map above shows the world's remaining wildernesses; that is, areas that are not or are hardly impacted by humans.[16] Two of them—the Sahara region and central Australia—are deserts that do not have much biodiversity anyway. Three of them are hardly habitable, namely the subarctic areas of Canada, Russia, and the Tibetan plateau, which leaves only the Amazon as a biodiversity hotspot, which is still under immense pressure from deforestation and agricultural expansion.

Myth 7: We Need More People to Drive the Economy and Take Care of Our Aging Society

Yes, more people will increase the number of producers and consumers, which is good for the economy. However, in the long run, a livable planet will be more important for humanity than a vibrant economy. So, the question is how can our society deal with a stagnant or even shrinking population and thus a potentially shrinking economy? Unfortunately, there are no simple solutions,[17] except that there is simply no alternative to a shrinking economy (at least as far as the number of consumers and their consumption goes). There is some hope that further automation and artificial intelligence will increase productivity, and some studies have shown that countries such as China, which faces a shrinking population, can keep up economic output and productivity, especially with an increase in technology. More specifically, an aging society must deal with the changing dependency ratio (DR), that is, the ratio between those who need to be taken care of (children and the elderly in particular) and those in the labor force. More recent attempts have tried to factor productivity at various ages into the dependency ratio, and some studies suggested that such adjusted DRs are predicted to remain relatively constant in countries such as China for the next couple of decades because of improving productivity. However, this will require investments in (life-long) education and child health to maintain social stability even when populations age.[18]

Myth 8: We Need More Young People Who Will Drive Innovation to Combat Climate Change

This is related to the previous myth, but it is different in one important way: it's not true (even though the *Economist* claimed it is[19]). First, it's not the sheer number of peo-

Extremes Threaten Land Vertebrates." *Nature*, vol. 615 (2023), pp. 461–467. Available online at https://doi.org/10.1038/s41586-022-05606-z.

15. Catrin Einhorn, "Climate Change Is Devastating Coral Reefs Worldwide, Major Report Says." *The New York Times*, October 4, 2021. Available online at https://www.nytimes.com/2021/10/04/climate/coral-reefs-climate-change.html.

16. James E.M. Watson and Oscar Venter, "Wilderness." *Current Biology*, vol. 31, no. 19 (October 11, 2021), pp. PR1169–R1172. Available online at https://doi.org/10.1016/j.cub.2021.07.041.

17. Tim Jackson, *Prosperity without Growth: Foundations for the Economy of Tomorrow*. London, UK: Routledge, 2016.

18. Guillaume Marois, Stuart Gietel-Basten, and Wolfgang Lutz, "China's Low Fertility May Not Hinder Future Prosperity." *PNAS*, vol. 118, no. 40 (September 2021), p e2108900118. Available online at https://doi.org/10.1073/pnas.2108900118.

19. "Global Fertility Has Collapsed, with Profound Economic Consequences." *The Economist*, June 1, 2023, p. 16.

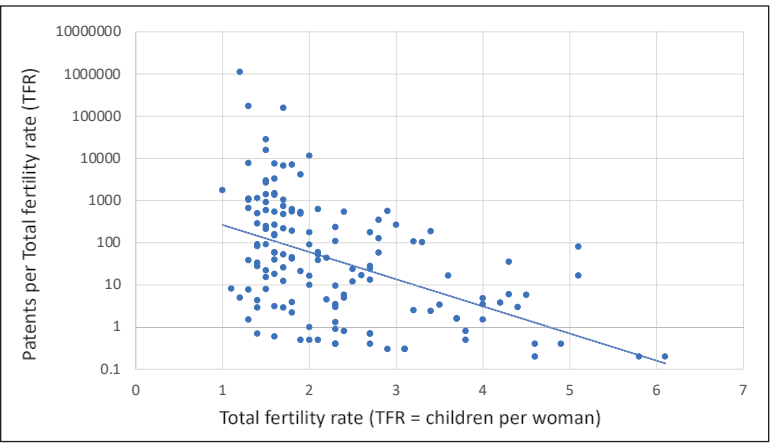

Figure 7. Patents per TFR. There is not a single country with more than two children per woman (total fertility rate, TFR) that is anywhere near the high patent nations (all of which have low fertility rates). Note the logarithmic scale, so the effect is much more pronounced than it seems. TFR from https://unfpa.org, patent numbers from https://indexmundi.com.

ple who drive innovation. A *culture* of discovery and innovation is much more important than the sheer number of people, no matter how old they are. That's why Silicon Valley, MIT, the Institut Pasteur, or RIKEN (in Japan) are centers of innovation. I carried out my master's thesis at the Max Planck Institute for Medical Research in Heidelberg, Germany, which had more Nobel Prize winners than the fifty countries that make up the Muslim world *combined*. Are Muslims more stupid than Germans? Of course not! But we know that some societies foster a culture of curiosity, risk-taking, and discovery and others do not, and at this point in history, the countries in the Muslim world tend to value science and inquiry much less than other regions. Not surprisingly, the least amount of innovation comes from those countries that have the highest birth rates.

Notably, the speed of discovery has constantly increased, and that increase was *not directly* a function of total population size but rather a function of education, wealth, and culture. That is, most technological developments are driven by a small number of highly trained people, hence increasing education and training efforts has a much bigger impact than just making more people. In addition, technology progresses at an ever-increasing rate. For instance, the throughput of DNA sequencing has increased from a few base pairs (per day and researcher) to billions of base pairs within a few decades. Artificial intelligence will almost certainly both bring about another boost in discovery rates and reduce the number of people needed to make such progress.

What Can We Do?

We don't have to go as far as Milton Saier suggested in his essay and comply with the directive "Don't Give Birth!" It would be a breakthrough if humanity could reduce its fertility by half a child (see Figure 4), but it's likely not sufficient. We need a plethora of measures to reduce birth rates (until the world population reaches a stable level of 2–3 billion). At the same time, we need to overcome the problems of an aging population (with a high demand for caretakers and a robust retirement system). However, that's not enough either, as our whole agricultural and industrial systems must be overhauled, with less land-intensive food production, more renewable energy, and a circular economy. Equally important, women and girls need full access to sex education and contraception and the same rights as men. Similarly, our education system should teach the value of our natural resources and the limits to growth.

As a response to declining birth rates in many countries, fifty-five governments have already started to promote pro-natalist policies, that is, they actively encourage women to have more babies.[20] These policies appear justified, given the panic about sinking birth rates, but they are misguided for the aforementioned reasons.

It would be a better short-term solution to coordinate the lack of babies in some countries with the surplus of babies in others. Population growth in the United States and Canada has been entirely driven by immigration. While immigration should be limited to sustainable levels (e.g., toward stabilization of the North American population), that would still allow the immigration of close to a million immigrants to this area every year. The same is true for the European Union and China, both of which could absorb about a million immigrants a year and *still* have slowly shrinking populations. At the same time, rich countries and their immigrants should pay for the development of poorer countries to help them industrialize and develop their infrastructure and education systems.

Further population growth or even stabilization at a high level will be catastrophic for the planet, especially if human consumption and the destruction of nature keeps growing. We need to stop population growth *and* consumption, so that human civilization and nature have a chance to survive. FI

20. United Nations Department of Social and Economic Affairs, *World Population Policies 2021: Policies Related to Fertility*. Available online at https://www.un.org/development/desa/pd/content/world-population-policies-2021-highlights.

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