



**“Population Bomb or Population Boon?: Population Control and
Ethnic Tension During the Global Climate Crisis”**

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The global climate crisis presents itself as, potentially, the defining aspect of the twenty-first century. The sheer scope of the conflict encompasses, essentially, every aspect of modern life, from the production of consumer products to transportation to agriculture. At present, these processes account for significant emissions of carbon dioxide into the atmosphere. In their study on the global climate crisis for the National Atmospheric and Oceanic Administration, international climate scientists Friedlingstein, Knutti, Plattner, and Solomon concluded that the Global North's enjoyment of these modern processes have served to raise atmospheric carbon dioxide concentrations to 385 ppm (in 2009), a sizeable increase from the pre-industrial era (Solomon, Plattner, Knutti & Friedlingstein). The current level of atmospheric carbon dioxide has already been deemed unsustainable, meaning that current resource use practices stand to damage Earth's major life support systems, compromising their availability to future generations, yet only the Global North has caused this environmental catastrophe. The Global North comprises countries with extremely advanced economies, such as the United States and Germany, typically located in the Northern Hemisphere, whereas the Global South consists of nations whose economies are still developing, generally located in the Southern Hemisphere. The Global North is responsible for the vast majority of the world's energy use due to industrialization and mass electricity use by private citizens. The Global South's access to energy

is currently rather unstable, with many individuals never enjoying the benefits of electrification. As the Global South gains greater access to energy and resources throughout the twenty-first century, the climate crisis only stands to grow due to greater resource demand. The United Nations projected that the world's population could grow to a staggering 11.6 billion (from the current 7.6 billion) by the end of the century (UN). This projected growth will occur almost entirely in the Global South, which is problematic because resources in these countries are already strained. If current fuel sources are adopted by the Global South, the current crisis would be exacerbated to an unprecedented degree, leading to a revitalization in calls for population control.

Human population is an often-overlooked aspect of the global climate crisis. Resource use is often considered in regards to energy, but the actual users of those resources are generally not considered in discussions of the global climate crisis. In this paper, I intend to answer the question, "To what extent does resolving the global climate crisis necessitate population control, and if so, can these policies be implemented ethically?". In order to achieve this, I will first establish the environmental and demographic context which forms the foundation for the debate, which is essential in understanding the scholarly debate surrounding population control, as scholars debating the topic focus heavily on the benefits, such as greater individual freedom and avoiding the question of whether or not reproduction can be controlled by the state (an extremely touchy subject) and costs of allowing for unfettered population growth, such as heightened resource use on a fundamental level to fulfill the basic necessities of biological life (food, water, shelter, etc.) and subsequent environmental degradation as a result. I will then lay out the arguments of both sides of the debate. In short, pro-population control scholars, such as Malthus and Ehrlich, argue that the Earth's resources are limited, only being able to sustain a certain level

of population before ecological disasters cull it, whereas those that oppose population control, such as Simon, tend to argue that, historically, challenges with resource accessibility have been addressed through innovation. Therefore, pro-population control scholars view the practice as a necessary evil essential to the survival of humanity, whereas those who oppose population control view innovation as a means of producing greater amounts of resources from the same inputs, circumventing the catastrophes which Malthus predicts in his essay. I will then analyze the extent to which population control is ethical, utilizing China's one-child policies as an example of the unethical and unpredictable nature of population control, drawing attention to what constitutes a horrendous instance of femicide, as well as the Green Revolution as an instance of innovation effectively trumping Earth's carrying capacity, bringing in Paul Ehrlich's *The Population Bomb* and analyzing its contrary perspective, further incorporating ExxonMobil's current algae biofuel project as a representative of a potential "Green Energy Revolution". Overall, while current climatological conditions appear grim, recent innovations in the energy sector, namely the development of algae-based biofuels, have the potential to render the carbon aspect of the population debate null and void, effectively bucking Earth's climatological carrying capacity. Regarding ethics, China's one-child policy is demonstrative that the impacts of population control policies are both unpredictable and unethical, causing major femicide and skewing their population's sex ratio as a result.

Population and the Global Climate Crisis

Population control is the active practice of reducing the human population. In this section of the paper, I will explore how contemporary environmental degradation and a rapidly expanding human population have resulted in calls for limits on the growth of humanity, providing the necessary context for further analysis. In his essay, *An Essay on the Principles of*

Population, demographer Thomas Malthus analyzes the potential impacts of excessive human population. In his essay, Malthus analyzes China, stating that “China is the most fertile country in the world [and] that the people live very frugally, we may infer with certainty that the population must be immense” (18). Here, Malthus employs the phrase “very frugally” to suggest that, in absolute terms, resource consumption by large populations (which, at the time, pale in comparison to today’s) must be individually small to prevent overuse and depletion of vital resources. J. Van Bavel is a member of the faculty of social sciences at the University of Leeuwen, documenting population growth. Contextually, Malthus’ work was first published in 1789, around which the human population grew to one billion people due to the fruition of the first industrial revolution in Europe (Van Bavel). Malthus’ work sets up the conceptually important carrying capacity concept, that humans can only exist at a certain level of consumption based on what technology and the environment allows them to produce. The carrying capacity is essentially the amount of human activity which the Earth can sustain while still providing the services at the core of biological life; in Malthus’ view, the Earth’s resources all have a limit, which cannot be exceeded if humanity is to survive, thus offering a perspective supportive of population control. Interestingly, however, carrying capacity is not necessarily a fixed threshold, as evidenced by the fact that humanity is nearly eight times more numerous today than when Malthus first viewed the human population as a significant environmental concern. That being said, though, the projected population growth which will occur during the twenty-first century presents a looming resource crisis. Almost all of this growth will occur in the developing world, whose capacity to produce basic resources (food, clean water, shelter, etc.) are questionable at present. Within the context of Malthus’ idea of the carrying capacity, this dramatic increase in population will only drive down the amount of resources which people can sustainably consume

in both the Global North and the Global South. However, the most startling aspect of this population growth for people in the Global North is not the resource crisis, necessarily, but the energy crisis. Silvia Hostettler is an author in the environmental science and sustainable development field, studying access to electricity globally. Hostettler found that, of the world's 7.6 billion people, 1.3 billion live without any access to electricity whatsoever, and that global energy demand will grow 45% by 2029 (Hostettler 3). In order to satisfy global demand for energy, it is quite possible that the Global South may adopt fossil fuels, following in the footsteps of the Global North, as fossil fuels are inexpensive, abundant, and suited to existing technology after refinement. However, this presents a potential climate disaster, as energy use in the Global North has already resulted in significant warming; in order to avoid this, many advocate for renewable energy adoption worldwide. However, the viability of traditional renewable energy in the Global South is questionable.

Renewable energy is, generally, extremely expensive and difficult to implement. According to Nancy Averett, a writer for Boston University, installing a residential solar panel system in 2016 cost \$45,000, reduced to \$31,500 through federal and state tax credits, but was able to reduce a \$200 monthly electricity bill to zero (Averett). The upfront cost of such an installation is staggering, even for families that enjoy high incomes in the Global North; such installations are most likely unfeasible for the vast majority of the population of the Global South, especially within the billion who have no access to electricity whatsoever, as reducing a non-existent electricity bill is not a viable benefit (even in the Global North, based on the yearly savings of \$2,400, it would take a little over 13 years to break even on the setup Averett discusses based on the upfront cost of the system). Therefore, the installation of solar panels on residences in the Global South is even further shown as infeasible due to the enticing benefit of

lowered expenses being removed from the mix. In her essay *Hot Money*, climate activist and journalist Naomi Klein discusses how international trade agreements have further reduced the viability of domestic solar panel production. Throughout the world, renewable energy is a target of major scrutiny, as international trade law often takes aim at domestic production provisions within green energy bills as internationally illegal due to being considered protectionist (i.e. favoring one nation's resource output and labor over others); for instance, in India, a major solar panel initiative was targeted by a Washington state lawsuit for its local sourcing provisions, which are designed to revitalize the domestic economy and employ many (Klein 207). As a result, green energy initiatives become even less attractive as a whole; in regard to the global climate crisis, this means that carbon-based fuel sources will be the most likely to be adopted by developing economies. Zero-carbon sources of energy, at present, ultimately face both prohibitive cost and legal barriers, reducing the likelihood of their implementation in most world economies, foretelling a dramatic expansion in the global use of fossil fuels as developing economies begin to use greater and greater amounts of energy throughout the twenty-first century to power their economic development.

Within contemporary international legal systems, and considering the expenses of zero-carbon energy systems, the adoption of fossil fuels in the Global South is extremely likely. At present, potential future emissions from the Global South notwithstanding, carbon dioxide concentration in the atmosphere is expected to peak at approximately 1200 ppm by 2100, with resultant average global surface temperature warming pegged at a staggering 4 degrees celsius, resulting in irreversible warming (Solomon, Plattner, Knutti & Friedlingstein). The warming will result in major sea level rise, among other ecological catastrophes, such as the revival of frozen virions to which contemporary humans lack immunity, due to the melting of icecaps; this will

effectively reduce the amount of land available for humanity significantly and revitalize epidemic disease as a threat to humanity. Writing for *The Atlantic*, Robinson Meyer documented an instance in Siberia during which the melting of ice resulted in the exposure of a reindeer, killed in 1941, which caused a small, localized, anthrax outbreak; virions have been proven capable of similar survival under permafrost for millions of years, being revived by scientists once thawed (Meyer). The potential devastation of epidemic disease in the conditions projected by the end of the twenty-first century (a significantly increased human population, packed into tighter spaces due to sea level rise) is dramatic, only exacerbated by the fact that the Global South will experience the most population growth (i.e., nations which often lack sufficient healthcare infrastructure). Malthus cites epidemic disease as one of many positive checks (an ecological catastrophe which plays off of overpopulation, actively killing many, such as famine, disease, war over scarce resources, etc.) to an overpopulated humanity which has exceeded Earth's carrying capacity in some facet (Malthus 31). Evidently, then, the revival of epidemic disease caused as a direct result of Earth's climate change indicates an exceeding of the carrying capacity of Earth's atmosphere in regard to greenhouse gas balance. While the growing human population appears to be a central aspect of this problematic cycle, serving to push humanity further past the atmosphere's capacity for greenhouse gas emissions due to heightened energy demand, no limitation of this growth is necessary due to historical instances of human innovation raising the Earth's carrying capacity through science, as well as the historically unpredictable and unethical nature of population control policies.

Population Control, Standards of Living, Ethics, and Resource Creation

In this section, I will explore the ethics of population control, utilizing the Chinese one child policy and its unforeseen impacts on China's demographic structure to demonstrate the

unpredictable, and therefore, unethical, nature of population control policies in their own right, as well as humanity as innovators, utilizing the Green Revolution and contemporary biofuel innovations to analyze the ideas of Paul Ehrlich, the major modern disciple of Malthus, which support of environmentally-tinged population control. Ultimately, within this section, I intend to determine both the extent of climatological necessity and the ethics surrounding population control.

Historically, there have been attempts made at rigid population control, namely in China. In their study of Chinese demographics and population control, public health Professors Zeng and Hesketh focus on assessing the impacts of population control policies in China on the modern and future structure of the Chinese population. Originally, under Mao Zedong, the Chinese government sought to raise GDP per capita (aka the access to a nation's wealth possessed by each individual citizen) by halting the growth of the Chinese population, resulting in the implementation of the two-child policy; however, once Mao died, his successor, Deng, sought to further the reduction in population via the introduction of the one-child policy. The rigidity of the policy, when combined with the Chinese cultural valuation of sons, resulted in the sex ratio of the Chinese population becoming skewed significantly toward males, which is heavily abnormal, as typically, sex ratios skew slightly toward females (Hesketh & Zeng). The Chinese one-child policy evidences that population control policies are, in and of themselves, unethical, as, due to the importance of sons in China, femicide was essentially instigated by the government in the name of China's GDP per capita. Contemporary Chinese demographic structures also evidence the unpredictable nature of population control policies; the Deng regime likely did not anticipate Chinese cultural traditions to interact with a policy intended to increase standards of living to result in a skewed sex ratio. However, despite the regime's intentions of

raising standards of living, it effectively “fetishiz[ed] GDP growth above all else, regardless of the human [...] consequences” (Klein 224). The Deng regime’s motivations for implementing the one-child policy, raising per capita GDP to encourage greater individual economic activity, is representative of a major ethical issue within the context of the global climate crisis. Current levels of development in the Global North have provided its people with an extremely high quality of life, and the people of the Global South deserve to enjoy the many innovations and conveniences characteristic of the Global North, should they choose to develop toward them. Therefore, population control is unethical; the Global North was never subjected to such policies during its development, and the sheer complexity of implementing a policy of that scope presents a sizeable amount of room for unintended consequences, such as demographic anomalies in a similar vein to China’s, or, potentially, population control policies simply being used as a *casus belli* in zones of high ethnic tension to target persecuted minorities. However, the Global South’s development will necessitate a significant amount of energy; in order to develop sustainably and prevent further damage to the Earth’s atmosphere, that energy source will have to act to raise or subvert the atmosphere’s carrying capacity. Contemporary innovations in the energy sector demonstrate significant promise in filling this demand for energy, displaying consistency with humanity’s ability to raise the threshold of carrying capacity.

Humanity has historically succeeded in raising Earth’s carrying capacity throughout its existence through scientific advancements in resource cultivation. Prabhu L. Pingali is the manager of agricultural development for the Gates Foundation, authoring a history of the Green Revolution. One of humanity’s greatest successes in this regard is known as the Green Revolution, spanning 1966-1986, which, in short, saw the advent of genetically modified crops tailored to the harsh agricultural conditions of the Global South, the yields of which were

significantly greater than previous generations of crops (Pingali). The innovations of this revolution were crucial in feeding the world's population, which underwent a baby boom in the wake of the Second World War. The significant population growth, however, alarmed ecologists and environmental scholars. In the words of Stanford's own Professor Paul Ehrlich in his 1968 book *The Population Bomb*, "In the 1970s and 1980s hundreds of millions of people will starve to death" (Ehrlich XII). Clearly, Ehrlich views population growth as an existential threat to humanity; his underlying sentiment is essentially that, if growth is not stopped, humanity faces extinction; to Ehrlich, population control represented a necessary evil in which we must engage to preserve humanity itself. While 5.4 million people died of starvation during the 1970s and 1980s, Ehrlich's assertion that "hundreds of millions" would suffer that fate could not be further from the truth (Lancet). Ehrlich's prediction missed its mark due to overemphasizing the present; he failed to consider that the fledgling agricultural science of the early Green Revolution constituted innovations powerful enough to both stem global food shortages and to propel the human population forward, raising Earth's carrying capacity drastically by producing an unprecedented amount of food. Julian Simon is a prominent demographer and strident opponent of population control. Simon argued that humans are resource creators, capable of innovation which can derive abundance from seemingly insurmountable scarcity (Aligica). The concept that humanity can overcome Earth's limitations through ingenuity demonstrated its validity during the Green Revolution, massively blunting the catastrophes predicted by Ehrlich, and the energy crisis which underpins global warming has the potential to pan out the same way; humanity's salvation may already be upon us. ExxonMobil has recently begun advertising algae-based biofuel whose carbon emissions could be as low as half the emissions of fossil fuels (Growing Fuel). However, the production process for algae biofuels, pyrolysis, yields a byproduct called

biochar (essentially algal charcoal). Current pyrolysis emphasizes the production of algal crude oil, yet if the process is tweaked to mainly produce biochar, according to Darko Matovic, a Professor at Queen's University, 5 gigatons of CO₂ could be sequestered each year, exceeding the 4.1 gigatons which humanity emits in the same timeframe, slowly reversing the global climate crisis (Levitan). The advent of biochar, as well as lower emission fuels which can be produced fairly economically, demonstrate humanity as a resource creator, effectively bucking the carrying capacity of the atmosphere. Algae-based biofuels stand as the most viable alternative to fossil fuels in the Global South. Therefore, because contemporary technology demonstrates strong potential to combat the global climate crisis, population control is not environmentally necessary to any extent (climatologically, at least; further inquiry is needed into the impact of population on other aspects of environmental degradation).

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Ultimately, the concept of population control is ethically questionable at best, and its environmental necessity is further called into question due to the advent of biofuels whose production can be utilized to reduce the amount of carbon dioxide in the atmosphere. The current situation surrounding both the global climate crisis and the implications of a growing demand for carbonaceous energy in the Global South throughout the twenty-first century is heavily tied to the human population, with other potential issues including the availability and quality of water, as well as the availability of arable land due to sea level rise. It is critical to understand that traditional renewables are not a viable answer to the global climate crisis due to their lack of carbon sinking, albeit algae biofuel technology offers a promising alternative that could fundamentally change the way the entire world is powered. The warming of Earth's climate stands as one of, if not the greatest threats to humanity, as warming stands to raise sea levels and

revive epidemic diseases, presenting massive challenges to human health. While this paper has touched on both the ethical issues of population control and the environmental justification for its advocacy, its scope is rather limited in regards to the economic aspect of it; further inquiries into the population reductions which tend to occur with economic growth would be fruitful in further discussion of the topic. The relationship between population and environmental degradation, as well as the control of population as a means to the end of its prevention, is extremely significant because it calls into question just how fundamental reproductive rights actually are in the context of twenty-first century issues; it is also important to raise awareness of the topic as apart from genocides and historical events, as typically, that is how 'population control' is perceived (despite the horrific results of the Deng regime's policies, the topic still deserves a clean slate for empirical discussion). The environment is crucial to sustaining humanity as well, and understanding how population growth fits into the puzzle is critical when addressing the global climate crisis (after all, a growing population is typically associated with improvements in standards of living, yet there is potentially a point at which the opposite is true). Lastly, the dangers presented by population control policies are extremely critical to consider, as they could easily be applied to target persecuted demographics, either inadvertently or actively. Ultimately, the global climate crisis and its resolution will define the twenty-first century and every subsequent century; it is critical to understand the role that something as deceptively simple as population growth may play in that crisis, as at present, billions lack basic necessities, and in the coming century, billions more may join them.

Works Cited

Aligica, Paul Dragos. *Julian Simon and the "Limits to Growth": Neo-Malthusianism.*

Electronic Journal of Sustainable Development,

mercatus.org/uploadedFiles/Mercatus/Publications/JULIAN_AND_THE_LIMITS_TO_GROWTH_NEO-MALTHUSIANISM.pdf.

Averett, Nancy. "Advantages of Solar Energy: Study Finds Solar Power Lowers Cost of

Energy for All Ratepayers and Causes Greater Reduction in Greenhouse Gases:

The Brink." *Boston University*, 25 July 2016, www.bu.edu/articles/2016/solar-energy-advantages/.

"Ending Mass Atrocity and Ending Famine." *The Lancet*,

[www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736\(15\)00480-8.pdf](http://www.thelancet.com/pdfs/journals/lancet/PIIS0140-6736(15)00480-8.pdf).

"Growing Fuel." YouTube, ExxonMobil, 21 Oct. 2019,

www.youtube.com/watch?v=5BnZThae7n0&list=WL&index=1.

Hostettler, Silvia. "Energy Challenges in the Global South".

<https://pdfs.semanticscholar.org/d043/d95bd3736a41304c95a714224160dc361b6c.pdf>

Klein, Naomi. "Hot Money". *This Changes Everything*. Simon and Schuster, New York

City, 2014. Pg. 205-228.

Levitan, Dave. "Refilling the Carbon Sink: Biochar's Potential and Pitfalls." *Yale E360*, Yale University, 9 Dec. 2010, e360.yale.edu/features/refilling_the_carbon_sink_biochars_potential_and_pitfalls.

Malthus, Thomas Robert. *An Essay on the Principle of Population*. J. Johnson, London, 1798.

Meyer, Robinson. "The Zombie Diseases of Climate Change." *The Atlantic*, Atlantic Media Company, 6 Nov. 2017, www.theatlantic.com/science/archive/2017/11/the-zombie-diseases-of-climate-change/544274/.

Pingali, Prabhu L. "Green Revolution: Impacts, Limits, and the Path Ahead." *Proceedings of the National Academy of Sciences of the United States of America*, National Academy of Sciences, 31 July 2012, www.ncbi.nlm.nih.gov/pmc/articles/PMC3411969/.

"Prologue." *The Population Bomb*, by Paul R. Ehrlich, Sierra Club, 1969, pp. XI-XII.

Solomon, Susan, et al. "Irreversible Climate Change Due to Carbon Dioxide Emissions." *Proceedings of the National Academy of Sciences of the United States of America*, National Academy of Sciences, 10 Feb. 2009, www.ncbi.nlm.nih.gov/pmc/articles/PMC2632717/.

Van Bavel, J. "The World Population Explosion: Causes, Backgrounds and -Projections for the Future." *Facts, Views & Vision in ObGyn*, Universa Press, 2013, www.ncbi.nlm.nih.gov/pmc/articles/PMC3987379/.

“World Population Projected to Reach 9.8 Billion in 2050, and 11.2 Billion in 2100 | UN DESA Department of Economic and Social Affairs.” *United Nations*, United Nations, 21 June 2017, www.un.org/development/desa/en/news/population/world-population-prospects-2017.html.

Zeng, Yi, and Therese Hesketh. “The Effects of China's Universal Two-Child Policy.” *Lancet (London, England)*, U.S. National Library of Medicine, 15 Oct. 2016, www.ncbi.nlm.nih.gov/pmc/articles/PMC5944611/.