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Towards a Sustainable Humanity

Master's Thesis

Supervisor: Associate Professor Mgr. Bohuslav Binka, Ph.D.

2021

To My Angels

Herein, I declare I have written this Master's thesis by myself, using all cited sources and literature.

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Signature

Acknowledgement

I want to thank Associate Professor Mgr. Bohuslav Binka, Ph.D., for his kind approval to be the supervisor of my Master's Thesis, even though I am not a student of Environmental Studies nor his Faculty of Social Studies.

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Introduction

"Philosophers have hitherto only interpreted the world in various ways; the point is to change it."

– Karl Marx (Marx 1845)

"How would my colleagues and students view my career when I retired – if all I had done was to write academically brilliant papers. 'Where were you, when we lost biodiversity' I heard the ghosts of future years ask."

– Stuart Pimm (Pimm 2021)

Our planet has a huge problem. Humanity faces unprecedented population growth, a phenomenon unparalleled in the history of the world. This growth threatens not only humanity itself but life on our planet. Human overpopulation is the up-stream driver of all environmental ills, namely climate change, mass species extinction, environmental degradation and pollution, and many more. Also, it is a prime driver of many complex and interconnected challenges, such as water scarcity, food insecurity, healthcare and education unavailability, political instability, international conflicts, or resource-driven wars. Last, but not least. it is a major obstacle for achieving the *United Nations' Sustainable Development Goals* and sustainability in general, i.e., a policy concept which goal is to maintain long-term equilibrium between humanity and nature.

Despite how crucial this problem is, it is largely ignored or dismissed – people addressing population issues sadly call it 'the elephant in the room nobody talks about.' Though it was in the public eye in the 1970s and 1980s – mainly thanks to Paul Ehrlich's 1968 *The Population Bomb* and *The Club of Rome*'s 1972 *The Limits to Growth* – it has been vanquished from the agenda for so long – among other reasons, it was due to restrictive coercive programs that were implemented in India and China that discredited population concern in the world – that the general public and often political leaders have no concern about human numbers, and barely recognize it as an issue. This is a crucial mistake because without a sustainable population, there is no hope for achieving sustainable development and sustainability in general.

Sadly, the field of philosophy has not paid enough attention to this problem, either. But it's precisely the instruments of philosophy – namely critical thinking, the art of argument and discussion, and hopefully persuasion – that can play a significant part in changing the current unsustainable paradigm that considers a population growth, and overpopulation, as a part of the equation in which we cannot intervene or in which it is immoral to directly intervene, neither of which is true. Also, philosophy can help to cultivate public discourse and positively influence decision-makers to address it as a serious problem, as well as the many problems it causes. For these reasons, human overpopulation should become one of the major philosophical subjects and challenges, perhaps even deserving its own philosophical sub-discipline, i.e., philosophy of overpopulation.

It seems, however, that neglect of human overpopulation is a matter of the past. Today, philosophers like Philip Cafaro, Travis Rieder, Sarah Conly, and Roman Krznaric – in the spirit of Karl Marx's *The Eleventh Thesis on Feuerbach* – see the urgent need to become a part of the solution and do their best to contribute to the creation of a more sustainable world. As such, they delve deep into the problems of population issues, environmental sustainability, and reproductive health and rights and seek to address these problems humanely while coming up with ethical solutions and proposing a shift towards long-term thinking.

This thesis lies at the intersection of philosophy, environmentalism, demography, economics, sexual and reproductive health, and human rights, but intentionally transcends 'mere' philosophy because just as the problems discussed in this thesis overlap character, their solutions require a holistic and multidisciplinary approach. Only then is there hope to achieving, not only discussing, long-term sustainability – the goal of this thesis.

Originally, it was intended to incorporate the history of concern, so that the ideas of philosophers and thinkers throughout the history could be presented and discussed, but this idea was omitted as unnecessary. Instead, the thesis focuses fully on sustainability. This choice was made because including the history of concern might result in a too-strong focus on the past instead of the present and, especially, the future, in line with the goals of the thesis.

This thesis seeks to fill a gap in the philosophical approach to human population growth and sustainability. It does not take the human overpopulation as given; instead, it uncovers the magnitude of it and the problems it causes. This non-philosophical, but rather empirical

(demographical and scientific) part aims to show readers and philosophers – after familiarizing them with a preponderance of evidence – how urgent it is to discuss human overpopulation and to seek and actively promote solutions on the global scale that will bring humanity towards sustainable numbers.

The structure of the thesis is as follows:

The first chapter deals with human numbers as they were in the past, as they are now, and as they are projected into the future. The second chapter deals with the problems that current human numbers (and human activities) are causing. The third chapter deals with the concept of sustainability, presents the *United Nations' Sustainable Development Goals*, argues that they are unachievable, and discusses an optimal and sustainable size for human population. The fourth chapter discusses solutions leading to a decline in population, including both restrictive and supportive measures, and favours the latter. The fifth chapter discusses the philosophers' input to the problem of human overpopulation and sustainability, namely reproductive and environmental ethics. The sixth chapter deals with objections against bringing down human numbers, including economic, demographic, and religious objections, and lays out a case for their indefensibility. The seventh chapter presents certain perspectives that should be further discussed and embraced if humanity agrees to work towards long-term sustainability while preserving its growth and progress, and assuring its survival among the stars.

1 The Numbers

"The Earth is full of the superfluous, life is spoiled by the all too many."

– Friedrich Nietzsche (Nietzsche 2006, 31)

"There is only one thing that it requires real courage to say, and that is a truism."

– Gilbert Keith Chesterton (Chesterton 1904)

1.1 The United Nations Projections

The United Nations is the leading agency that projects the world population into the future on a regular basis. *The Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat* publishes every two years revised data of the populations of all the world's countries in a publication called the *World Population Prospects*. It has been done since 1951. Researchers, international organizations, and governments further use these projections for planning, social and health research, monitoring development goals, and as inputs for other forecasting models such as those used for predicting climate change and its impact (Raftery et al. 2017). In June 2019, the 26th revision of the *World Population Prospects* was released.

1.1.1 A Rapid Population Growth

According to the *2019 Revision*, the world's population reached 7.7 billion in mid-2019, which means the world has added one billion people since 2007 and two billion since 1994 (UN 2019). From this information, it can be deduced that the human population is growing by one billion people every 12 years. According to the prognosis, the world's population is certain to further rise, even though this growth will be slower than in recent years. In 1965-1970, the world's population was growing by 2.10% per year. Today, it is increasing by 1.10% per year, adding over 80 million people a year (UN 2019).

The world's population is projected to keep growing minimally until the end of the 21st century, even though the population growth will further slow down and fertility rates further decline. The projections of the *2019 Revision* indicate that the human population will reach 8.5 billion in 2030, 9.7 billion in 2050, and 10.9 billion in 2100 (UN 2019). Whereas there is inherent uncertainty in population projections, the document concludes that, with a certainty of 95%, the human population will stand between 8.5 and 8.6 billion in 2030, between 9.4 and 10.1 billion in 2050, and between 9.4 and 12.7 billion people in 2100 (UN 2019).

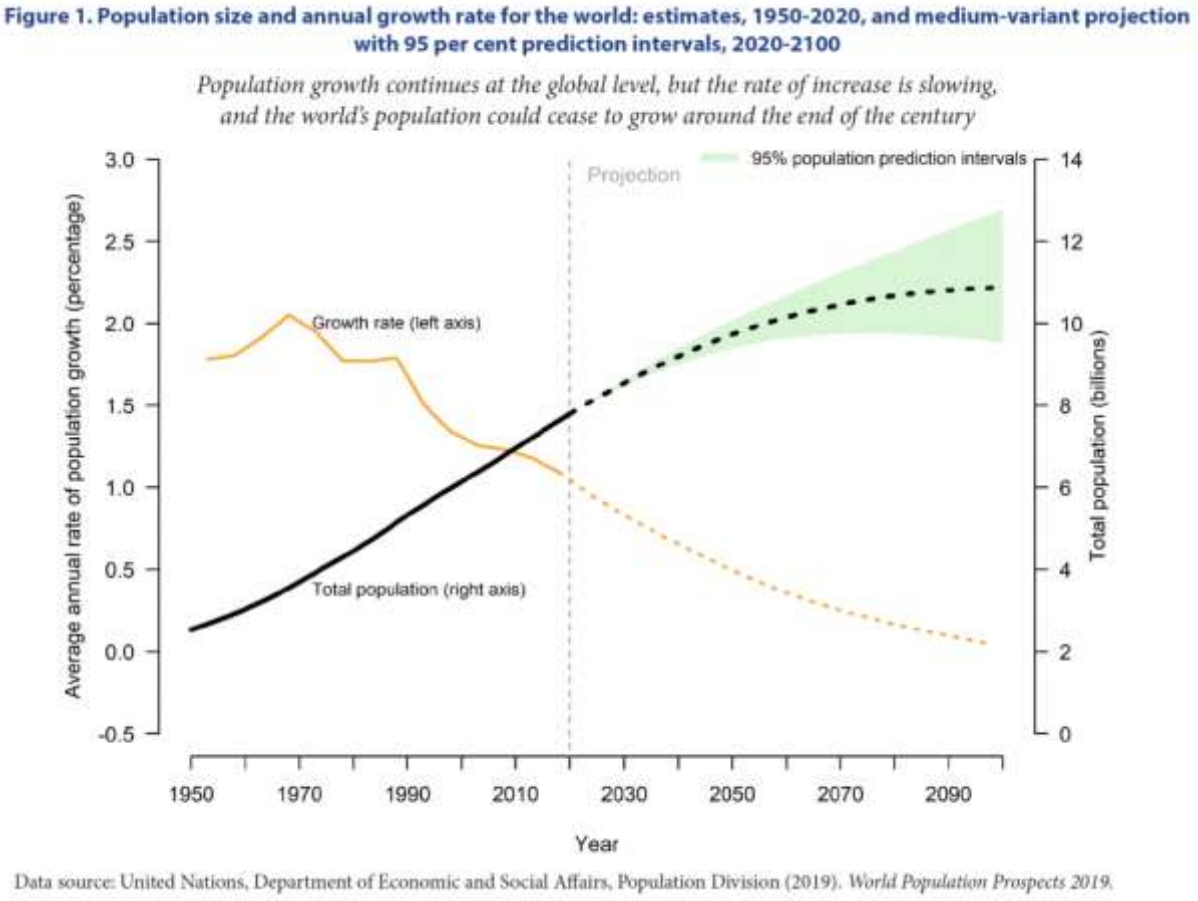

Figure 1. Population size and the annual growth rate for the world, 1950-2020, and medium-variant projection with 95% prediction intervals, 2020-2100. (UN 2019)

1.1.2 The Sub-Saharan Problem

More than 50% of anticipated growth in the global population between now and 2050 is expected to happen in Sub-Saharan Africa. Of the additional two billion people expected between 2019 and 2050, over one billion will be part of the Sub-Saharan Africa population.

Asia is expected to be the second-largest contributor to this future growth, with an addition of over 505 million people between 2019 and 2050. The remaining world regions will not represent a significant contribution to population growth. After 2050, the population of Asia is likely to slowly decline; therefore, Sub-Sahara Africa, still experiencing substantial population growth, will become the main contributor to global population growth (UN 2019). As a result, Sub-Saharan's share of the global population, which was 14% in 2019, is projected to grow to almost 22% in 2050 and reach nearly 35% in 2100.

Though fertility rate (i.e., the number of children per woman) has declined in all world regions in recent years, it remains very high in Sub-Saharan Africa, where it fell from 6.3 children per woman in 1990 to *only* 4.6 in 2019 (UN 2019). Of the 47 countries with the highest fertility rates, 32 are in Sub-Sahara Africa. Moreover, between 2019 and 2050, the population of 18 least developed countries, all in Sub-Saharan Africa, is projected to reach at least double their current size. In one country, Niger, the population is projected to nearly triple (UN 2019).

However, the most striking is the situation in Nigeria. Its population, which was 37 million in 1950, is currently 201 million and is projected to reach 401 million in 2050; in doing so, it will surpass the population of the United States and thus become the third most populous country in the world after India and China. By 2100, the population estimate for Nigeria is 733 million, which means Nigeria itself will outnumber the entire population of Europe (UN 2019).

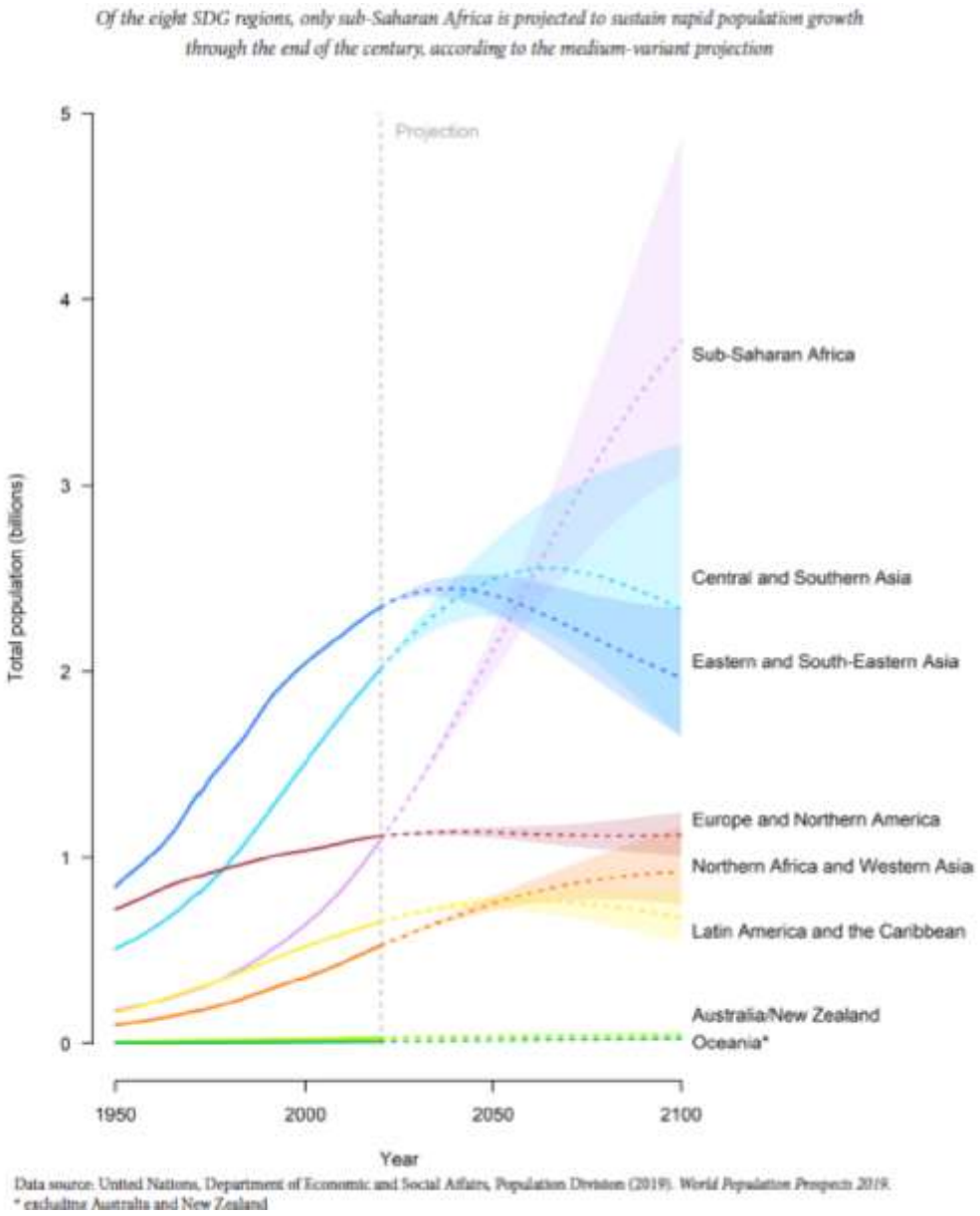

Figure 2. Comparison of world regions, with only Sub-Saharan Africa projected to sustain rapid population growth through the end of the century (UN 2019)

1.2 The Lancet Projections

The Lancet is a world-leading medical journal founded in 1823 by Thomas Wakley, English surgeon who named it after the surgical instrument called a lancet (scalpel). With its unparalleled global reach and impact, it publishes weekly peer-reviewed general medicine papers that make a crucial contribution to science and human health. With its journal Impact Factor of 60.4 is currently ranked second out of 165 journals in medicine. (The Lancet 2021).

In July 2020, a new study was published in *The Lancet* (Vollset et al. 2020) with world population projections that differ from the official *United Nations'* projections. Whereas other demographers challenged the study's approach and results – most notably because the study considers factors that the *United Nations* currently does not, such as access to education and contraception (Basten and Sobotka 2021) – it needs to be presented here because it led to some sensational headlines and dire predictions for humanity. The study predicts that the world's population will peak at 9.7 billion in 2064 and then fall to 8.8 billion in 2100 (Vollset et al. 2020). That differs from the *United Nations'* prediction of 10.9 billion in 2100 and further rising by the end of the century. However, even if the study's projections are correct, two more billion people will be added to the planet Earth over the next 40 years, and there will still be one billion more people than there are today by 2100 – quite the opposite of a population crash as this study is sometimes presented by public media (Gallagher 2020, Gladstone 2020, Tomlinson 2020).

The possibility of a substantially lower population than the *United Nations* currently projects is, of course, welcome. It would significantly reduce the pressure on the environment and natural resources (more on that in chapters 2 and 3). Yet (1) these projections do not mean that will happen – that will depend on continued investment into positive solutions (more on that in chapter 4), and (2) these projections might not be enough (more on that in chapter 3).

It can be concluded here that neither the *United Nations* nor *The Lancet* projections indicate that we are approaching any nearer long-term sustainable human population (again, more in chapter 3). In the next subchapter, the history of human growth will be presented so that readers can see the magnitude and severity of human growth.

1.3 History of Our Growth

Whereas data since 1951 are well documented and can be taken for given, before this time, predictions of human numbers, especially at the dawn of human existence, are mere estimates.

1.3.1 The Past

The human population has been growing since the dawn of its existence. This growth has been mostly slow, slowed down by frequent epidemics and high mortality. At the dawn of

civilization, at about 8000 B.C., the world's population was approximately five million (Worldometer 2021).

The first intense growth coincided with the Agricultural Revolution when human activity shifted from hunting and foraging towards farming. Over the 8,000-year period up to 1 A.D., the population grew from five million up to around 200 million, with a growth rate of under 0.05% per year (Worldometer 2021).

The subsequent growth was then disrupted by the Plague of Justinian between the 6th and 8th century, which dropped Europe's population by around 50%, but most notably by the Black Death in the 14th century, which reduced the world's population from about 450 million to between an estimated 350-375 million by 1400. Since the end of the Black Death, the human population has grown continuously.

The second intense growth coincided with the Industrial Revolution during the 18th century By the end of the 18th century, the world's population was just under one billion, reaching one billion people in 1804 (Worldometer 2021). At the turn of the 20th century, the world's population was about 1.6 billion, reaching two billion people in 1927 (Worldometer 2021).

The third and most dramatic growth coincided with the Green Revolution, beginning in 1950. The Green Revolution has brought significantly increased food production by the industrialization of agriculture. The other reasons for this growth were incredible advancements in medicine, including vaccination and improved sanitation, which helped to reduce high infant and adulthood mortality that was slowing down the population growth throughout the whole history. Since then, humanity is facing a population explosion unseen ever before. The world's population reached three billion in 1960, four billion in 1974, five billion in 1987, six billion in 1999, and seven billion in 2011 (Worldometer 2021). October 31, 2011, has been officially declared the 'Day of Seven Billion' (UNFPA 2011), while the *United States Census Bureau* made a lower estimate, for which the seven billion mark was only reached March 12, 2012 (USCB 2011).

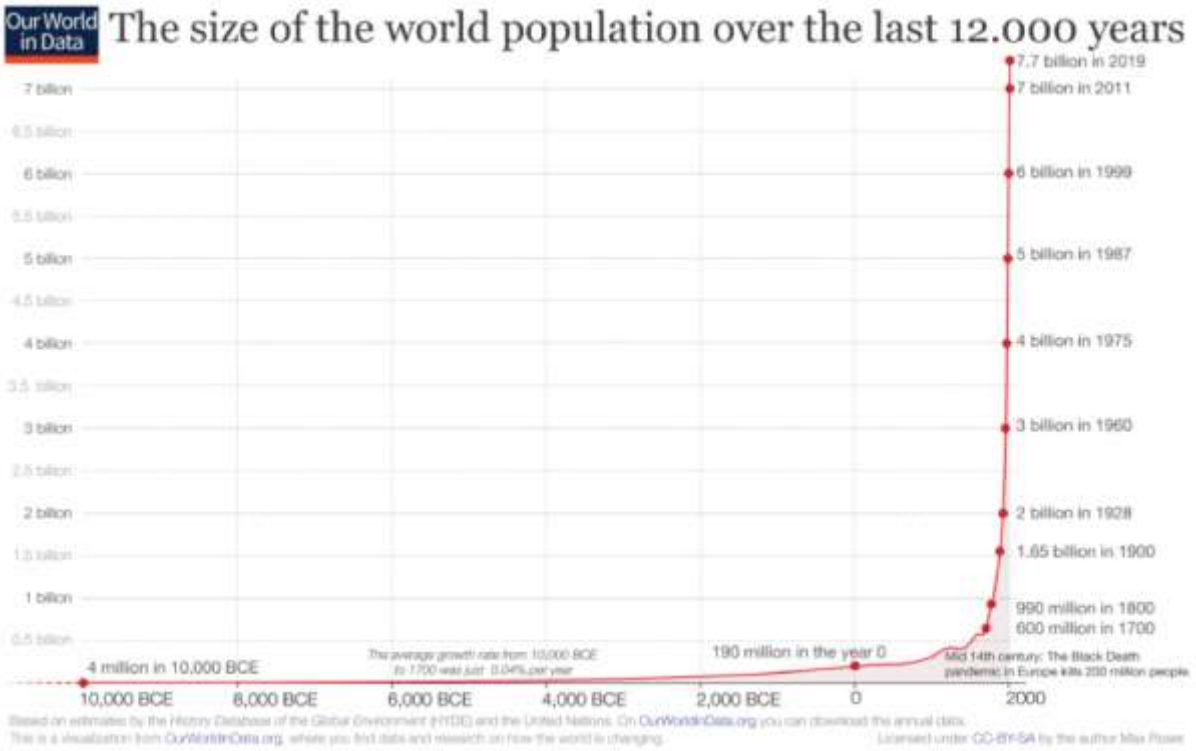

Figure 3. The size of the world population in the last 12.000 years. (Our World in Data 2019)

1.3.2 The Present – 7.9 Billion (2021)

The current world's population at the moment of writing this thesis is 7.9 billion as of April 2021 (Worldometer 2021).

1.3.3 The Future – 8 Billion (2023)

Another milestone is projected to be reached in 2023 when the world's population is expected to reach eight billion people (Worldometer 2021), which means that the predicted time taken to increase by one billion is 12 years.

1.3.4 The Vastness of Numbers

Many readers can have difficulty grasping large numbers, millions or billions, such as when enumerating the ongoing rapid population growth. This may help:

When considering the human numbers, it had taken all of human history until around 1800 for the world population to reach one billion, but only 123 years to reach two billion. Since then, the population growth even accelerated: It took 33 years to reach three billion, 14 years to reach four billion, 13 years to reach five billion, 12 years to reach six billion, 12 years to reach seven billion, and very likely 12 years to reach eight billion. Put in other words, it had taken all of human history until around 1800 for the world population to reach one billion, while the additional seven billion have been added in just 220 years.

1.3.5 The Superspeed of Growth

Further, additional growth of the human population by over 80 million people a year can be vague. To put it differently, this means that more than 219 thousand people are being added to the planet Earth every day, i.e., over nine thousand people every hour, or 150 every minute.

1.4 The Numbers Concluded

From the numbers and data mentioned above, it is clear that humanity is facing unprecedented population growth, i.e., a situation that has never before occurred throughout the whole history of humanity. This population growth and human overpopulation caused by it has important implications for both humans and the planet Earth and threatens both our existence and that of the planet. In chapter 2, these problems and implications will be discussed. This is crucial because without realizing it, there is little hope people will pay much attention to the *phantom* menace of unsustainable human numbers.

2 The Problems

"Once the sacrilege against God was the greatest sacrilege, but God died, and then all these desecrators died. Now to desecrate the Earth is the most terrible thing, and to esteem the bowels of the unfathomable higher than the meaning of the Earth!"

– Friedrich Nietzsche (Nietzsche 2006, 6)

"Those who fail to see that population growth and climate change are two sides of the same coin are either ignorant or hiding from the truth. These two huge environmental problems are inseparable and to discuss one while ignoring the other is irrational."

– James Lovelock (Lovelock 2009)

2.1 Scientists' Warnings

The rapid increase in population is putting an incredible strain on our environment, which threatens the future of sustainable life on Earth. Despite the scale of the threats to the biosphere and all its lifeforms – including humanity – the mainstream of politicians, decision-makers, international organizations, and public media is having difficulty grasping the magnitude of the problem. It places an extraordinary responsibility on scientists to speak out candidly when engaging with government, business, and the public and discussing the ineffectiveness of current and planned actions that are attempting to address the steady erosion of our planetary life-support systems. It is necessary to say; scientists do their best.

2.1.1 World Scientists' Warning to Humanity

In 1992, 1,575 the world's most prominent scientists (including 99 of the 196 living Nobel laureates) signed *World Scientists' Warning to Humanity* (Kendall et al. 1992), which was sent to governments and their leaders all around the world. The document calls for immediate actions to stop the ever-increasing environmental degradation of our planet. Among other things, the warning calls for a fight against our population growth: "If we are to halt the destruction of our environment, we must accept limits to the population growth /…/ We must

stabilize population. This is possible only with the adoption of effective, voluntary family planning" (Kendall et al. 1992), and "We must ensure sexual equality, and guarantee women control over their own reproductive decisions" (Kendall et al. 1992).

There was also a call that developed nations should provide aid and support to developing nations. The document clearly declares that: "Acting on this recognition is not altruism, but enlightened self-interest: whether industrialized or not, we all have but one lifeboat. No nation can escape from injury when global biological systems are damaged. No nation can escape from conflicts over increasingly scarce resources. In addition, environmental and economic instabilities will cause mass migrations with incalculable consequences for developed and undeveloped nations alike" (Kendall et al. 1992).

2.1.2 World Scientists' Warning to Humanity: A Second Notice

Twenty-five years later, in November 2017, the *Alliance of World Scientists* led by Professor of Ecology, William J. Ripple, published *World Scientists' Warning to Humanity: A Second Notice* in *BioScience* (Ripple et al. 2017). Over 21,000 scientists from 184 countries co-signed the report, which states that "humanity has failed to make sufficient progress in solving these foreseen environmental challenges, and alarmingly, most of them are getting far worse" (Ripple et al. 2017).

Alarming findings were detailed including, inter alia: Especially troubling is the current trajectory of climate change, which includes increases in temperature and carbon dioxide, increases in coastal dead zones, deforestation as a consequence of converting forests (especially in developing countries) to agricultural uses, and increased agricultural production. The world's forests, which are crucial for conserving carbon, biodiversity, and freshwater, are also rapidly decreasing. Between 1990 and 2015, the total forest area decreased by 129 million hectares, approximately the size of South Africa (Ripple et al. 2017).

There has also been a rapid decrease in freshwater availability – per capita freshwater availability is less than half of levels of the early 1960s, with many people around the world suffering from a lack of fresh, clean water (Ripple et al. 2017).

The major problem represents a mass species extinction that is the sixth in the planet's history but the first caused by a single species – humans. The world's biodiversity is vanishing at an alarming rate. Between 1992 and 2017, the populations of vertebrate species (i.e., fish, amphibians, reptiles, birds, and mammals) declined by 29%; on the other hand, the human population increased by 35,5%, and the domestic ruminant population (domestic cattle, sheep, goats, and buffaloes) increased by 20,5% (Ripple et al. 2017). Between 1970 and 2012, populations of vertebrate species declined by 58% (Ripple et al. 2017). The number of domestic ruminant animals, which represents a problem with its own environmental and climate consequences, has risen at present to approximately four billion individuals on Earth (Ripple et al. 2017). Also, populations of insects that are crucial for pollination, decomposition of biological waste, and as essential links of the food chain are rapidly collapsing – according to a 2014 study in *Science*, two-thirds of observed insect populations have fallen to half of their former numbers (Dirzo et al. 2014).

The only success is a decline in global ozone depletion, which was achieved by signing the Montreal Protocol in 1987, thanks to which the use of ozone-depleting substances has been limited (Ripple et al. 2017).

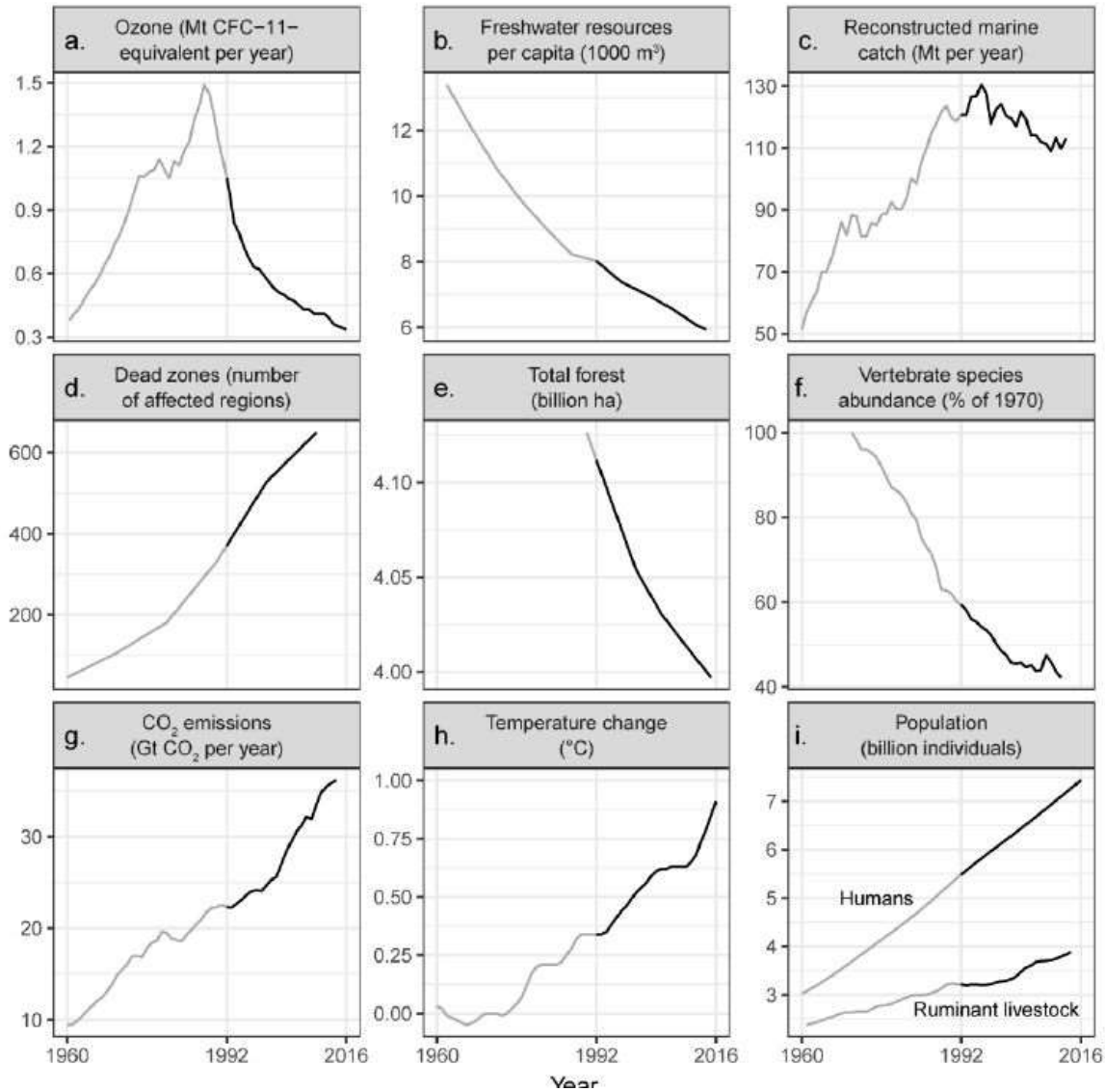

Figure 4. World Scientists' Warning 1992+25. The years before and after the 1992 scientists' warning are shown as gray and black lines, respectively. Panel a. is of interest as the 'solitary good news' graphic, environmentally, demonstrating what can be done. (Ripple et al. 2017)

The *World Scientists' Warning* states that "we are jeopardizing our future by not reining in our intense but geographically and demographically uneven material consumption and by not perceiving continued rapid population growth as a primary driver behind many ecological and even societal threats" (Ripple et al. 2017).

The document calls for changes in public policy and individual behaviors. Actions people can take as individuals include "drastically diminishing our per capita resource consumption" and "limiting our own reproduction" by accepting a small family norm, i.e., not

exceeding so-called replacement fertility (Ripple et al. 2017), which is the state when two adults have just two children that replace them.

The warning states that "rapid decline in fertility rates in many regions was attributable to investments in girls' and women's education," and calls for "further reducing fertility rates by ensuring that women and men have access to education and voluntary family planning services, especially where such resources are still lacking" (Ripple et al. 2017). The document warns that as the consequence of unsustainable human numbers, resource consumption, and so on, "hard-won progress in human rights and social justice could be at risk" (Ripple et al. 2017).

In the end, signatories call for a fight for a sustainable world population "achieved through ethical, humane and non-coercive means that fully respect human rights" (Ripple et al. 2017).

2.1.3 Scientists' Warning of a Climate Emergency

In November 2019, the *Alliance of World Scientists* released a further paper, *Scientists' Warning of a Climate Emergency* (Ripple et al. 2019). More than 11,000 scientists from around the world co-signed the publication, which warns of "untold human suffering" unless governments take urgent action to tackle the climate crisis (Ripple et al. 2019).

The statement, which received wide media coverage, highlights that "economic and population growth are among the most important drivers of increases in CO_2 emissions from fossil fuel combustion" (Ripple et al. 2019). The authors, therefore, call for six critical and interrelated steps relating to energy, short-lived pollutants, nature, food, economy, and population to avert the worst effects of climate change.

This Warning continues: "Still increasing by roughly 80 million people per year, the world population must be stabilized – and, ideally, gradually reduced – within a framework that ensures social integrity. There are proven and effective policies that strengthen human rights while lowering fertility rates and lessening the impacts of population growth on emissions and biodiversity loss. These policies make family-planning services available to all people, remove barriers to their access and achieve full gender equity, including primary and secondary education as a global norm for all, especially girls and young women" (Ripple et al. 2019).

2.1.4 Underestimating the Challenges of Avoiding a Ghastly Future

The most recent and discussed warning was published in January 2021 in the journal *Frontiers in Conservation Science* (Bradshaw et al. 2021). The authors reviewed the evidence that future environmental conditions are and will be far more dangerous than currently believed.

The study summarizes recent relevant studies and confirms that humanity is causing a rapid loss of biodiversity and, with it, Earth's ability to support complex life. A mass species extinction is defined as a loss of around 75% of all species on the planet over a geologically short interval, i.e., a period under three million years (Jablonski et al. 1994, Barnosky et al. 2011). It has been accepted by a scientific community that at least five major extinction events have occurred, the most recent of them 66 million years ago (Sodhi et al. 2009). The sixth mass species extinction is under way right now within mere decades. Over one million species out of seven to ten million species on the planet are threatened with extinction in the nearest future (Mora et al. 2011). Around 40% of plants are considered endangered (Antonelli et al. 2020). Both freshwater and marine environments have been severely damaged, and more than two-thirds of the oceans have been polluted to some extent by human activities (Halpern et al. 2015). With such a rapid loss of biodiversity, the ecosystem services it provides have also declined. Apart from species extinction and biodiversity loss, the authors mention other negative environmental phenomena such as drought, deforestation, and land degradation.

The authors clearly state that "major changes in the biosphere are directly linked to the growth of human systems" (Bradshaw et al. 2021) and that "likely future trends in biodiversity decline, climate disruption, human consumption and population growth will demonstrate the near certainty that these problems will worsen over the coming decades, with negative impacts for centuries to come" (Bradshaw et al. 2021).

The authors notice that while some countries have stopped growing and even decline in their populations, the total fertility rate continues to be above replacement level, globally 2.3 children per woman, with an average of 4.8 children per woman in Sub-Saharan Africa and above four children per woman in other countries such as Afghanistan, Yemen or Timor-Leste (Bradshaw et al. 2021). The authors warn that Sub-Saharan Africa, a region that will experience the worst repercussions from climate change (Serdeczny et al. 2017), is projected to double over the next 30 years.

Large population size and continued growth imply many other problems, including the increase in synthetic compounds and throw-away plastics (Vethaak and Leslie 2016), growing toxification of the Earth (Cribb 2014), increase chances of pandemics (Greguš 2021a,b, IPBES 2020a), desperate hunts for scarce resources (Klare 2012), and massive food insecurity. Some estimate that 700-800 million people are starving, and 1-2 billion are micronutrient-malnourished (Ehrlich and Harte 2015a,b). Further, large population size is a critical factor in many social ills, from crowding and joblessness to deteriorating infrastructure and bad governance (Harte 2007), poverty, inequality, imperfect distribution of resources, weak institutions, political grievance, ethnic divisions, internal and international conflicts that lead to both civil and resource-driven wars (Klare 2001, Toon et al. 2007). Population growth in itself increases the likeness of military involvement in conflicts (Tir and Diehl 1998).

The problem, however, is not only population growth and humanity's size but also humanity's consumption which has grown dramatically from roughly 73% of Earth's regenerative capacity in 1960 to 170% in 2016 (Lin et al. 2018). While inequality among people and countries remains high, the global middle class has grown rapidly and exceeded half of the global population by 2018. The global middle class is projected further to grow, thus creating greater per capita consumption. For these reasons, it is projected that aggregate consumption will further increase as population and affluence continue to grow in tandem (Wiedmann et al. 2020).

The authors continue by stating that "ours is not a call to surrender – we aim to provide leaders with a realistic 'cold shower' of the state of the planet that is essential for planning to avoid a ghastly future" (Bradshaw et al. 2021) and that "our goal is not to present a fatalist perspective, because there are many examples of successful interventions to prevent extinctions, restore ecosystems, and encourage more sustainable economic activity. /…/ Instead, we contend that only a realistic appreciation of the colossal challenges facing the international community might allow it to chart a less-ravaged future" (Bradshaw et al. 2021).

The authors conclude by stating that "there is no shortage of evidence-based literature proposing ways to change human behaviour for the benefit of all extant life. The remaining questions are less about what to do, and more about how" (Bradshaw et al. 2021) and that "science underlying these issues is strong, but awareness is weak. Without fully appreciating

and broadcasting the scale of the problems and the enormity of the solutions required, society will fail to achieve even the modest sustainability goals" (Bradshaw et al. 2021).

2.2 The Problems Summarized

The problems deriving from rapid population growth and unsustainable human numbers have been widely presented and discussed above. For clarity, they can be systematically divided and summarized into four groups, i.e., environmental, healthcare, political and economic, and social, even though it is evident that such a classification is artificial and does not fully respect the overlapping nature of these phenomena.

(1) Among the environmental problems belong climate change, loss of ecosystems and biodiversity, mass species extinction, consumption and depletion of natural resources, excessive increase of municipal waste, deforestation and desertification, pollution of the environment (air, water, noise pollution), soil erosion and contamination from pesticides and fertilizers.

(2) Among the healthcare problems belong water scarcity, food insecurity, starvation and malnutrition, poor hygiene and living conditions, increased morbidity and mortality, low life expectancy, and increased chance of new epidemics and pandemics.

(3) Among the political and economic problems belong political instability, problems of governments with providing healthcare, education, and employment, fragile economics and slowing economic growth, poor living conditions in overpopulated countries, megacities and slums, radicalization and extremism, elevated crime rate by people struggling for resources to survive, increased tension among individuals, ethnic groups, social classes, and states, local, intrastate and international conflicts over scarce resources and resource-driven wars.

(4) Among the social problems belong inadequate or non-existent healthcare, education, and employment, increased levels of poverty, overcrowded megacities and slums, elevated crime rate, conflicts and wars, and forced migration.

2.3 Overpopulation Introduced

Given the plethora of problems deriving from vast human numbers, it is possible to speak of human overpopulation. Whereas the rapid population growth that was illustrated above needs no definitions, human overpopulation (caused by it) needs to be clarified. There can be many definitions of overpopulation. Human overpopulation can be defined as "the condition of being populated with excessively large numbers" (Oxford Dictionaries 2021) or as "a situation which occurs when the number of human occupants of an area exceeds the ability of that area to provide for those occupants" (Definitions 2021). Alternatively, it can be defined as "the condition of having a population so dense as to cause environmental deterioration, and impaired quality of life, or a population crash" (Merriam Webster 2021) or "the population of an environment by a particular species in excess of the environment's carrying capacity" (Dictionary 2021).

Perhaps the most illuminous definition was provided by Professor of Population Studies, Paul R. Ehrlich in his book *The Population Explosion*. Ehrlich writes: "When is an area overpopulated? When its population can't be maintained without rapidly depleting non-renewable resources, and without degrading the capacity of the environment to support the population. In short, if the long-term carrying capacity of an area is clearly degraded by its current human occupants, that area is overpopulated" (Ehrlich 1990, 39-40).

Human overpopulation can be viewed as the relationship between a part of humanity (a nation) and a smaller geographical area (a country) or between the entire human population and the planet Earth (which is our case). From the definitions mentioned above, it is evident that overpopulation is defined environmentally; in other words, in the relationship with the environment in which it occurs. From what was presented in the first two chapters, it is clear that the Earth is overpopulated.

Discussion why population growth is still ignored or denied extends the frame of this thesis. However, it is well discussed in the 2016 article of the same name published in the *Chinese Journal of Population Resources and Environment* (Kopnina and Washington 2016). In this paper, the authors outline a number of factors why overpopulation and population growth are excluded from sustainability discussion. Independently, the problem of neglect of

overpopulation both as a word and a phenomenon is discussed in the 2020 paper *Philosophy of Overpopulation: Selected Chapters II* (Greguš 2020b). In these chapters, different groups of people denying overpopulation and motives for such behavior are dealt with.

However, for the purposes of this work, it is possible to omit the word ‘overpopulation’ and carry on with the statement that our vast numbers on the face of Earth are unsustainable. In the next chapter, (un)sustainability will be discussed.

3 The Sustainability

"Far too many are born: the state was invented for the superfluous!"

– Friedrich Nietzsche (Nietzsche 2006, 42)

"One would have thought that it was even more necessary to limit population than property… The neglect of this subject, which in existing states is so common, is a never-failing cause of poverty among the citizens; and poverty is the parent of revolution and crime."

– Aristotle (Aristotle 1996, 41)

3.1 Sustainability as an Ideal

In ecology, sustainability is the capacity of biological systems to endure diversity and productivity in the long term. In a broader context, sustainability is the capacity of systems and processes to endure over a relatively long time. In the 21st century, sustainability generally refers to the capacity for the planet's biosphere and human civilization to co-exist.

Sustainability as a policy concept has its origin in the Brundtland Report of 1987. This document dealt with the tension between the aspirations of humanity towards a better life on the one hand and the limitations imposed by nature on the other hand. Over time, the concept has been re-interpreted as encompassing three dimensions, namely environmental, economic, and social (Kuhlman and Farrington 2010). The goal of sustainability is to "create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations" (NEPA 2015). A sustainable approach is a systems-based approach that seeks to uncover the interactions existing among environmental, economic, and social pillars in an effort to protect the environment just as to strengthen human communities and foster prosperity (NEPA 2015).

Sustainability is a process characterized by the pursuit of a common ideal. An ideal that is by definition unattainable in a given time and space. Nevertheless, by approaching it

dynamically and persistently, the process can result in a sustainable system (Purvis et al. 2018). The goal of sustainability is to maintain equilibrium between humanity and nature.

3.2 Unsustainability as a Fact

The problems that vast human numbers are causing were discussed above. Here, they can be further boosted up by official *United Nations'* documents. For example, the *United Nations' Global Environmental Outlook* warns of a steady progression of unprecedented ecological damage, the principal driver of which is the human population. The human population of 2018 "had reached a stage where the amount of resources needed to sustain it exceeds what is available" (UNEP 2019). The *World Wild Fund's The Living Planet Report 2020* is clear when stating: "Our relationship with nature is broken. Biodiversity – the rich diversity of life on Earth – is being lost at an alarming rate. The impacts of this loss on our wellbeing are mounting. And catastrophic impacts for people and planet loom closer than ever" (WWF 2020). Humanity is on track to need more than 200% of the planet's total capacity (forestry, fishery, croplands) by 2050 (WWF 2020).

A sixth major extinction has been mentioned, and it should be repeated that for the first time, it is caused by another single species – humans, and is progressing a hundred times faster than it was in the fossil record. The *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* states in its *2020 Summary for Policymakers* that "the extinction rate of other living species is now 100 times higher than before humans rose to prominence on this planet, and many remaining species are rapidly decreasing in number" (IPBES 2020b).

Our *genocide* of other species, as it was well thought through by Philosophy Professor Philip Cafaro (Cafaro 2015), resulted in the fact that of the total land mammalian biomass, 96% is now the mass of humans and livestock, leaving just 4% for all remaining wild mammals put together (WWF 2020). And this unsustainable trajectory towards our worldly dominion is further predicted, as it was calculated in December 2020 in *Nature* (Elhacham et al. 2020).

Also, the *Food and Agriculture Organization of the United Nations*, in its 2019 report *Meat & Meat Products* states that according to projections, by 2030, the global middle class is expected to reach 5.3 billion people, i.e., there will be two billion more consumers of meat

products. For this reason, the consumption of meat products is projected to double by mid-century (FAO 2019). This agriculture and livestock expansion will (unsurprisingly) happen at the expense of remaining wild species and their habitats.

This does not look like humanity is getting any nearer to the ideal of sustainability. On the contrary. As Jonathan Austen, the author of the book *Save the Earth … Don't Give Birth* that will be discussed later, observed: "We are a nemesis to every other animal alive. We destroy everything in our path, including our own kind through wars and invasions" (Austen 2018, 6).

3.3 The Population Bomb

In 1968, Professor of Population Studies, Paul R. Ehrlich (and his wife, Anna, who was uncredited for her co-authorship) published a best-selling book, *The Population Bomb*. The book that can be considered the classical piece on population (alongside Thomas R. Malthus' 1826 *An Essay on the Principle of Population* and 1830 *A Summary View of the Principle of Population*) predicted worldwide mass starvation in the 1970s and 1980s due to human overpopulation, just as other detrimental effects such as political unrest and environmental degradation, and advocated for immediate actions to limit population growth. Although his predictions of mass starvation in the 1970s and 1980s – due to achievements in creating high-yield crops, new chemical fertilizers, synthetic herbicides, and pesticides (more on the Green Revolution in subchapter 7.3) – proved wrong, they can still happen in the future. Unfortunately, despite his best efforts, i.e., his follow-up books *The Population Explosion* (1990) and *Optimum Human Population Size* (1994), his views and warnings were generally dismissed, only to be resurfacing recently, as was pointed out in the second chapter.

Nevertheless, in due time, due to human ignorance and inactivity, humanity invested a vast quantity of its shrinking resources into propping up unprecedented levels of population growth rather than trying to prevent it. As a result, over that time, the world's population has more than doubled – 3.5 billion in 1968 and 7.9 billion in 2021 (Worldometer 2021). Problems it causes have been discussed above, just as the number of humans who suffer food insecurity and starvation. It is a beauty of statistics to point out and clap on ones' backs that the less percent of humanity suffer starvation than ever before when the total number of people starving (or micronutrient-malnourished) is bigger than ever before (Ehrlich and Harte 2015a,b).

3.4 The Greatest Equation

Whereas the most famous equation in history was formulated in 1905 by Albert Einstein and describes the relationship between mass and energy in system's rest frame and has a formula: $E = mc^2$, the greatest equation in history has been formulated much later, during 1971-1972 by – again – Paul R. Ehrlich. Together with John P. Holdren, he identified the relationship between population and environmental impact (Ehrlich and Holdren 1972). The equation explaining the fundamental causes of environmental degradation was developed into the this formula:

I = P x A x T, where I is the environmental impact, P is population (the number of humans), A is affluence (material resource consumption and concomitant effluence of pollutants such as plastics, industrial chemicals, and carbon dioxide per person), and T is technology (in which fossil fuels measure more highly than renewable energy).

Population's effect on the other two factors is multiplicative. Reducing P-factor reduces environmental impact even if the other factors are constant. However, the concern and talk are currently mainly about technology as the cause and exclusive solution of all our ills, while population (and partially affluence) is taboo to be avoided. But fixing only one factor out of three is unsurprisingly not enough to solve global challenges and prevent catastrophic scenarios. Because the P-factor affects literally everything, it is not possible to dismiss human numbers.

3.5 The Greatest Question

Whereas the greatest equation was formulated in 1971-1972 by Paul R. Ehrlich and John P. Holdren, then the greatest question ever raised was formulated in 1995 by Joel E. Cohen at the inaugural lecture of Columbia University's Earth Institute and later was turned into the eponymous book. The greatest question is: How many people can the Earth support?

Christopher Tucker, who answered this question in his book entitled *A Planet of 3 Billion* (more on this in subchapter 3.7), has rightly said: "Joel Cohen's 1995 question is the most important question that every citizen and leader should be asking themselves and each

other, every single day. Yet, a quarter century has gone by, and we have collectively failed to take it seriously. For a variety of reasons that have been exhaustively covered elsewhere, population growth has not been a mainstream topic of discussion since the 1970s. The doubling of the world population since 1900 was openly discussed as we approached the first Earth Day in 1970 (i.e., from 1.6 billion to nearly 3.7 billion). Since the first Earth Day, a half century ago, we have become transfixed by an endless stream of ecological catastrophes and human tragedies, somehow remaining silent on what has become yet another doubling of the world population from nearly 3.7 billion to more than 7.7 billion" (Tucker 2020).

3.6 Optimum Population Size

There are studies estimating an optimal human population based on various criteria and assumptions. However, they do not deal with the lower bound of the human population, i.e., the minimum viable population, as humanity has crossed well above this limit. Whereas there are estimates that the planet can withhold from four to 16 billion people with a median of about ten billion (Cohen 1995b, UN 2001), the 'maximum' population is not the same as the 'optimal' population. Other criteria should be considered. And they are.

In 1994, Daily et al. included access to resources, preservation of biodiversity and cultural diversity, sufficient wealth, universal human rights, and support for intellectual, artistic, and technological creativity. They estimated the amount of energy necessary to satisfy human needs while keeping ecosystems and resources intact, and as such, they calculated the optimal population size of about 1.5 – 2 billion people (Daily et al. 1994).

In another study, also 1994, Pimentel et al. estimated optimal population size based on the minimal land needed for food production (0.5 hectares per person) and soil conservation – depending on the assumed per capita production that would satisfy everyone's needs, they calculated the optimal population size about three billion people (Pimentel et al. 1994).

In 2010, Pimentel et al. recalculated their previous estimates when they considered a consumption based on European living standards suggesting that only two billion people are the appropriate size of humanity (Pimentel et al. 2010).

In 2016, Lianos and Pseiridis estimated the optimal population size using an objective criterion designed to assure that human resource does not deplete Earth's natural capital. Based on the unitary value of the ecological footprint-biocapacity ratio, they concluded human population needs to reduce to 3.1 billion (Lianos and Pseiridis 2016). If humanity wishes to keep the population at seven billion, the per capita product must be radically reduced to 4.95 dollars from the current 16.1 dollars (CIA 2014).

3.7 A Planet of 3 Billion

In 2019, Christopher Tucker inspired by Joel E. Cohen's 1995 book *How Many People Can the Earth Support?* (Cohen 1995a) presents in his book *A Planet of 3 Billion* (Tucker 2019) a vision of a future world inhabited by three billion people, compared to 7.9 billion today. As a Chairman of the American Geographical Society, Christopher Tucker explores the questions of population and sustainability from a scientific foundation. Tucker observes that ecological destruction caused by humanity demands a robust future population decline, just as reduced consumption and a new economy. He states that economic 'grow-mania' is leading us astray and that national economics must be revised.

Tucker uses a geographical approach, and throughout his book, emphasizes the importance of geographical analysis and thinking. He is convinced that humanity must map how and where problems arose and analyze geographically present and future conditions to be better prepared to solve these problems. Chapter 3 introduces the idea of Homo Sapiens as an invasive species which is a concept used by biologists for plants or animals that invade and negatively affect ecosystems.

However, the most important is chapter 8, in which Tucker discusses Earth's maximum carrying capacity. He reminiscences the world of 1950 (coincidentally when the *United Nations* started publishing their biannual *World Population Prospects*) with about three billion people and refers to considerably increasing ecological debt since then.

When comparing 2010 and 2030, a projection suggests that the poor and the vulnerable will decrease by over one billion, and the rich and the middle class will increase by 1.7 billion. Such growth in product and consumption will further and significantly increase the current

ecological debts. Tucker states: “I have no doubt that capitalism can generate enough food and water to keep nine to eleven billion people served well above their minimum requirements, but the dramatic negative consequences of this scenario are clearly presented in this book” (Tucker 2019, 176).

Tucker does not calculate human population size at maximum carrying capacity. Instead, he focuses on optimum population size, enabling high human wellbeing to coexist with healthy and diverse ecosystems. He concludes this chapter by estimating that “perhaps as many as three billion people inhabiting the Earth” (Tucker 2019) if humanity improves the efficiency of resource use, deals with waste and rewild much of the planet. Interestingly, Tucker’s estimate of three billion people corresponds with the 2016 study by Lianos and Pseiridis, which was presented above.

In chapter 10, Tucker focuses on economic de-growth and ecological economics because he is aware that true sustainability requires both focus on the size of the human population just as on our economy. The rare thing about this book is that it places the population at the center of our environmental challenges.

3.8 Reduce Production & Reduce Population

Studies mentioned above indicate that humanity is nearly five billion humans over its sustainable size and that the current situation cannot be sustained in the long run. Jonathan Austen says: “It is possible that the Earth’s resources could cope with 50 billion people if we all consumed a fraction of today’s average. But in the 21st century, we have been encouraged to overconsume and the system relies on our continued and increased consumption. We talk half-heartedly about consuming less, while at the same time being encouraged to consume more in the interests of boosting the economy. While advertising and free-market forces continue unrestrained, our consumption will inevitably continue to increase” (Austen 2018, 50-51).

Clearly, humanity needs to reduce its consumption, but also stabilize its population, and then reduce it humanely over time to around three billion humans, based on current literature. Of course, there is no absolute number and the goal is not to become an authoritarian world

society; on the other hand, we aim to do this by collaboration. That is why we need further discussion to arrive at a general consensus on the long-term sustainable number of humans.

3.8 The False Clash (Environment Against Economy)

There is a widespread acceptance of the belief that economic growth must be pursued and is the answer to all of our problems. For this reason, economists and politicians continually push for further growth, whether of production and consumption or population. A growing population is good: for manufacturing, construction, business, finance, food processing, and the military. A growing population as a growing customer base and a source of profit is good.

But nature does not listen to economists. Unremitting growth is the doctrine of the cancer cell, as Sir Crispin Tickell put it (Guillebaud 2019), a delusion that leads to instability and unsustainability. But the current economic system that continues pushing for further growth and keeping the system going whatever it takes does not take into account the fact that humanity has long ago far exceeded the carrying capacity of the planetary system, which collapses.

As a threat to perpetual economic growth, environmentalism is often viewed as weaponized political ideology rather a universal mode of preserving both humanity and the planetary ecosystem that transcends political ideologies and tribalism.

Thus, a predominant paradigm ‘environment against economy’ prevails in the current world. Yet in reality, the choice is between existing overshoot by design or disaster – because existing overshoot is inevitable one way or another (Bradshaw et al. 2021). Yet this has started to change as even economists and politicians started realizing that we cannot rely on the current economic system to solve our worsening problems and that ecological balance needs to be restored by design, not by disaster.

3.9 Time and the Generations

In 2019, another important book on the topic of the optimum population size was published. And this time, not by an environmentalist, but an economist. Sir Partha Dasgupta,

Frank Ramsey Professor of Economics at Cambridge University, in his book *Time and the Generations: Population Ethics for a Diminishing Planet*, develops a theoretically rigorous approach to finding an optimal human population on Earth. Unlike the majority of economists, he does not see the clash 'environment against economy.' On the contrary, he takes the environment seriously when stating that "the enormous economic success we have enjoyed in recent decades may be a down payment for future failure as we spend down natural capital and threaten essential ecosystem services" (Dasgupta 2019, 227). Interestingly, Dasgupta sees it as a mistake to reduce all environmental threats to global climate change, as it is often done. The first reason is that it is a simplistic reduction. Second, focus on mere climate change leads to concentrating on technological solutions rather than limiting human numbers and reducing consumption.

Dasgupta is, however, convinced that while technological solutions can mitigate and reduce some environmental impacts (partially even climate change), they do not lead to real sustainability. Not in a world where the goal is always more growth. Dasgupta also notices that new technologies often have unanticipated negative environmental side effects.

Dasgupta further discusses how best to balance average consumption against the number of consumers – as one goes up, the other must go down. Within a range of plausible answers to these questions, Dasgupta comes with a wide range of optimal human population between 0.5 and five billion people. Whereas the second number is two billion people higher than Lianos and Pseiridis' and Tucker's calculations, it suggests all the same that humanity is already vastly overpopulated relative to global ecological carrying capacity.

3.10 The Unachievable *Sustainable Development Goals*

The *United Nations' Sustainable Development Goals* were agreed on September 25 2015, after the previous *United Nations' Millennium Development Goals* have been missed. Countries have adopted a set of goals for the global population to survive, thrive, and prosper. There have been settled *17 Sustainable Goals* to end poverty, protect the planet, and ensure prosperity for all as a part of a new sustainable development agenda (UN 2015a).

These goals are: (1) No poverty, (2) Zero hunger, (3) Good health and wellbeing, (4) Quality education, (5) Gender equality, (6) Clean water and sanitation, (7) Affordable and clean energy, (8) Decent work and economic growth, (9) Industry innovation and infrastructure, (10) Reduced inequalities, (11) Sustainable cities and communities, (12) Responsible consumption and production, (13) Climate action, (14) Life below water, (15) Life on land, (16) Peace, justice and strong institutions, and (17) Partnership for the goals (UN 2015a). Heads of governments have undertaken the responsibility of helping to achieve these goals in their own countries, regions, and the world by 2030.

Humanity has only nine years left to meet these 17 goals of achieving decent lives for all on a healthy planet. However, as things stand, the world is not on track to meet these goals. Many of them are very likely to be missed. Worryingly, the world is going backward in some crucial goals (namely 6, 12, 13, 14, 15). Apart from other reasons, the main reason is that human size and growth have not been addressed. The word population disappeared from the general public's mind and that of governments and international organizations, becoming a semi-taboo project, even at the *United Nations* level. The population has been relegated to only one sub-sub-goal, i.e., *Sustainable Development Goal 3.7.1 Contraceptive Use*, being assumed that fixing the unmet need for contraception is all that needs mentioning and that populations would naturally stabilize by themselves (UN 2015b). This will be further discussed in the next chapter.

While the goals are noble in their aspirations, they cannot be achieved or sustained with an ever-increasing population. If the goals are to be achieved, a holistic approach is essential, and a greater emphasis must be given to the impact of the population. For the world to survive, thrive, and prosper, the population needs to be sustainable. In the presence of population unsustainability, sustainability is just a fragile theoretical construct.

The *Sustainable Development Goals* are interdependent on each other, but they all are dependent on the denominator, i.e., population size. For this reason, the missing denominator must be put back into the equation and addressed, ideally as a Sustainable Development Goal of its own.

3.11 The 18th *SDG* – Sustainable Population

This has been an endeavor of different organizations such as the British *Population Matters* that released in July 2020 a comprehensive new report *Hitting the Targets: The Case for Ethical and Empowering Population Policies to Accelerate Progress towards the Sustainable Development Goals – Call for Urgent Global Action to Empower People to Have Smaller Families*. The document repeats warnings that population growth undermines efforts to cut poverty and protect the environment, that key *Sustainable Development Goals* are set to be missed, and calls for promoting the benefits of choosing smaller families to tackle resource scarcity and protect the environment (PM 2020).

Population Matters also calls for including a sustainable population among the existing 17 goals. However, the sustainable population can be rightly considered vague – in the same vein as other sustainable development goals are vague – a more concrete target is necessary.

3.12 The 18th *SDG* – TRF 1.5 by 2030

In November 2020, Christopher Tucker provided us a better one. In his paper *We Know How Many People Can the Earth Support,* he briefly summarizes conclusions from his book, i.e., humanity has long ago exceeded its planet's long term ecological carrying capacity that *"optimistically can only support three billion modern industrialized humans"* (Tucker 2020).

He notices *The Lancet* 2020 study that projects global population to begin to decrease in 2064 after peaking at 9.7 billion and declining to 8.8 billion by 2100 (i.e., some two billion lower than official *United Nations* projections) and asks the fundamental question:

"Why we don't act now to accelerate this already inevitable trend with enhanced investment in women's empowerment, education, and access to family planning technologies?" (Tucker 2020). And he continues: "Interestingly, there has been no discussion about how this already inevitable bending of the global population curve might be accelerated. If it can happen by 2064, why not sooner?" (Tucker 2020).

If indeed, the planet's carrying capacity can support just three billion modern industrialized humans, while billions are now racing to join the global middle class (thus becoming bigger consumers), then what total fertility rate (TFR) – currently, the world fertility rate in 2021 is 2.438 children per woman, whereas in 2011 it was 2.544 and in 2001 it was 2.701 (Macrotrends 2021) – would get us to the sustainable population plateau?

Tucker calculates that our collective global goal should be TFR 1.5 by 2030. He suggests that the 18th Sustainable Development Goal should be added as a capstone that calls for an end of the runaway population growth that undermines achieving all the other 17 goals. Tucker suggests that the 18th SDG should call for 1.5 TRF by 2030.

Tucker underlines the fact that small changes in complex systems can lead to profound change very quickly. Thus, the inevitable trend of bending the global population curve might be easily accelerated. Tucker also reminds us that in many urban areas around the world, a TFR of 1.5 and even lower is the norm; thus, the promotion of such a policy should not be seen as controversial. Instead, he encourages that small, educated, and prosperous families should be held up as the hallmark of modernity and progress instead of runaway population growth.

He concludes his paper by saying that "we can not only accelerate the bending of the global population curve now, and begin alleviating the population pressure on our planet on or before 2030, but bringing the global TFR down to 1.5 would set us on a course to achieve to a global population of around three billion much sooner than current projections anticipate" (Tucker 2020).

In the next chapter, measures that can help humanity to bring it down to sustainable numbers will be discussed.

4 The Solutions

"Just look at these superfluous! They steal for themselves the works of the inventors and the treasures of the wise: education they call their thievery – and everything turns to sickness and hardship for them!"

– Friedrich Nietzsche (Nietzsche 2006, 43)

"Unlike plagues of the dark ages or contemporary diseases we do not yet understand, the modern plague of overpopulation is soluble by means we have discovered and with resources we possess. What is lacking is not sufficient knowledge of the solution but universal consciousness of the gravity of the problem and education of the billions who are its victims."

– Martin Luther King (King 1966, 1230)

4.1 The Roots of Unsustainability

Before the solutions, both the past, the present, and the possible future, will be presented, the roots of unsustainable human numbers must be discussed, in other words, this subchapter will present five roots of our rapid population growth as were published in the paper *Doctors and Overpopulation 48 Years Later: A Second Notice* (Greguš and Guillebaud 2020).

(1) The first component of population growth results from *mortality decline.*

(2) The second component results from *population momentum.* Population momentum expresses the amount of young people entering into reproductive age or the reproductive pool. In other words: the population is not growing because people are reproducing more, but because more people are reproducing. The population will keep growing until the number of people leaving the reproductive pool is bigger than the number of people entering it. In developing countries, the populations are young, so even when fertility rates drop, the number of people will continue to grow. This component will be responsible for about one-half of the population growth in this century.

(3) The third component is *wanted fertility*.

(4) The fourth component results from *coerced motherhood* of women who have no other choice in life beyond childbearing, especially in societies or countries which limit, suppress, or do not accept women's rights and freedom of choice.

(5) The fifth component results from *unwanted fertility*, i.e., pregnancies that occur at times when women do not want to get pregnant – either sooner than they wish, or when they do not wish any (or any more) children. Globally, this component makes up nearly 41% of all pregnancies (some 86 million out of a total 208 million pregnancies a year) (FIGO 2017).

Though it is possible to influence all five roots of population growth, it is evident that a decline in mortality rates that is globally projected, even in developing countries, is desirable. Any bias in the opposite direction as a means to curb population growth would be unethical and unacceptable. Nevertheless, the remaining four roots can be addressed humanely and ethically.

4.2 Two Groups of Solutions

Two main groups of solutions or policies can be distinguished. Obviously, these measures can be overlapping in their nature and can be applied either simultaneously or separately on international, state, regional, or individual levels.

4.2.1 The Restrictive Measures

The first group of solutions focuses on restrictions and can have these forms:

4.2.1.1 The Economic Measures

Economic measures can have many forms as penalization (or taxation) of additional family members above, for instance, two children per family in its strictest form. The milder form can be general canceling of allowances (or tax deductions) on more than two children per family, i.e., a policy of stopping child benefits.

Or, reversely, it can have a form of implementation allowances (or offering tax deductions) for families who decide to be child-free. Here, it is not possible to speak about restrictive but rather supportive measures.

4.2.1.2 The Forced Regulations (India)

The key example of forced regulations is India, a pioneer in family planning – and coercion – just as the world's largest electoral democracy. India's large and growing population was highlighted already in 1916 in Pyare Kishan Wattal's book, *The Population Problem in India: A Census Study* (Wattal 1916). Population concern had been a huge priority on India's policy list since Independence in 1947. The country was ravaged by colonization, famines, droughts, and floods. However, India's experience with other methods such as intrauterine devices was not as good as in other Asian countries such as South Korea or Taiwan; thus programs for sterilizations were being considered. Starting in 1970, the government set up vasectomy camps to add sterilization as a contraceptive method to slow population growth. This lasted to the so-called 'National Emergency' that Prime Minister Indira Gandhi declared in 1975. This program between June 1975 and March 1977 was linked to mass forced sterilization of men with estimates from 8.3 to 11 million (Ahluwalia and Parmar 2016, 124-155).

Due to its unpopularity, the program was shut down. Nevertheless, because the problem with increasing population in India lasts (India is expected to overtake the population of China by 2030), a new 'sterilization' campaign to reduce high population growth was launched in 2011 in the Indian state of Rajasthan: People are encouraged to volunteer for sterilization, and in return are offered prizes such as cars, television, and many more. (BBC News 2011).

4.2.1.3 The Restricting Policies (China)

The key – and the most prominent – example of restrictive measures is China. The world's most populous country also has a long history of the population concern. Even though a major decline in fertility rates occurred before the one-child policy – from about six children per woman in the mid-1960s to 2.5 in 1980; in the 1970s, the country discovered the population growth threatened the food supplies. As such, China introduced its 'One-Child Policy.' The policy formally began in 1979, even though some forms of coercion were common before, during the marked decline in fertility between 1970 and 1979 (White 2016, 329-368). This

policy encouraged late marriages and late childbearing and urged couples to have no more than one child. People who agreed and signed contracts not to have more children were provided with financial aid and free education for their one child. However, the policy did not imply 'only one child.' Two children were often allowed in rural areas, and the content of the policy had been changing over the decades (Götmark 2021). Other family planning methods, including sterilization, were widely provided. As a result, between 1970 and 2000, fertility rates further dropped, and the number of children per woman decreased, in 2020 TRF being 1.3 children per woman. China is expected to reach a 'turning point' of reversing population growth between 2026 and 2030 (Reuters 2021).

The one-child policy ended in 2015 when Chinese leaders began to worry about the future declining population, reduced labor pool and a support for a growing aging population (Götmark 2021).

4.2.1.4 The Defense of One-Child China

Though it is easy to proclaim that restrictive measures such as those used for 35 years in China, in India 1975-1977, and more recently in Peru (Götmark 2021) are generally unacceptable and must be generally and always condemned, it is better to look if these measures and policies worked or not and what they caused from a long-term perspective.

As for India's forced sterilizations, where "the nations' poorest men were rounded by police vans, taken to hospitals and forcibly sterilized" (Thekaekara 2020, 15), such an approach should be rightly condemned. Nevertheless, it is wrong to condemn India's family planning program as a whole because there were considerable regional differences among the Indian states. Harkavy and Roy, in their review of Indian family planning programs, illustrate that in states where the social setting was favorable for voluntary family planning (Kerala, Punjab, etc.), the uptake of contraception was twice as high as in states where the social setting was unfavorable for family planning (Rajasthan, Uttar Pradesh, etc.) Harkavy and Roy conclude their review by stating that "despite its weaknesses, the Indian family planning initiative of the 1960s and 1970s had significant achievements" (Harkavy and Roy 2006, 301-324).

As for China's restricting policies, the policy introduced in China in 1979 to reduce the growth of the country's enormous population, had given China and population policies in

general, a bad name. Jonathan Austen says: “Since it was introduced, Western media has consistently maligned the policy, reporting on it negatively, and not recognizing it as being a difficult but necessary choice. China has taken media insults on the chin and continued with the program. Given the history of China, with the great famine of 1959-1961 that killed over 20 million people, a population policy was a perfectly reasonable solution to help the situation. The policy may have been draconic in its implementation, but look at the results and the positives far outweigh the negatives” (Austen 2018, 40-41).

Jonathan Austen continues his defense: “The policy had flexibility and exceptions and was not nearly as draconic or coercive as many reports have suggested. There were many ways in which parents could qualify for exceptions to the law towards the end of the one-child policy’s existence” (Austen 2018, 41). In 2007, only 36% of Chinese were subject to a strict one-child limit. 52.9% were permitted to have a second child if their first was a daughter. Ethnic minorities and residents of rural areas were allowed more than one child. Some cities allowed families where both parents were the only children to have additional children (Callick 2007).

Austen underlines the fact that “since Chinese adults can no longer rely on children to care for them in their old age, there is an incentive to save money for the future. The one-child policy has also played a major role in improving the quality of life for women in China. Girls have traditionally held a lower status in Chinese households. However, the one-child policy has prompted parents of daughters to invest money in their well-being. As result of being an only child, women have increased opportunities to receive an education and support to get better jobs” (Austen 2018, 41).

Austen concludes his defense by saying that one-child policy “has resulted in the Chinese population being 400 million lower than if the policy had not been introduced. If the policy had not been introduced, China, and by implication the planet, would be in a far more parlous state than it already is. Despite its enormous success, China has been repeatedly criticized for the policy, when it should be congratulated for its achievement” (Austen 2018, 41-42).

Interestingly, a 2008 survey showed that the one-child policy is popular among the Chinese public: While 21% disapprove, a full 76% approve. Approval was notably higher

among the rich and middle class (85%) and those living in cities (84%). Surprisingly, 63% of those having two and more children also support the policy (Pew Research Center 2008).

Further, a 2014 special report on global efforts to curb greenhouse gas emissions was released, ranking the most important policies and actions contributing towards this goal. First is the Montreal Protocol. Second, worldwide use of hydroelectric power. Third, the spread of nuclear power. And fourth, China's 'infamous' one-child policy, which is credited for the cumulative reduction of 1.3 billion tons of carbon dioxide and other gases (The Economist 2014).

Though it is easy to say that China's one-child policy was not necessary, none of us know what would have happened if it had not been applied. There could be an extra 400 million Chinese, and maybe not because there might have been another great famine in China or an international conflict of some sort that has not happened. Here, one should agree with Austen that China does not deserve condemnation, but our respect given to the unimaginable numbers it needed to deal with.

4.2.1.5 The Backfire Effect of Coercion

Nevertheless, restrictive measures generally tend to create resistance and can compromise the well-meant struggle with population growth and overpopulation. This is precisely what happened and what led to a backlash against family planning and why actions against coercion were taken in some regions and on the international level. So, even though especially the Chinese program was a tremendous success, from a long-term perspective, restrictive measures are better to be avoided. Also, they turn out to be unnecessary, as similar results can be achieved (as they have been) in many other countries by supportive measures.

4.2.1.6 Thailand, Iran and All the Others

Reductions to the replacement fertility (total fertility rate TRF 2.1 children per woman) or even less have been achieved through supportive measures in many countries all around the world. African countries such as Tunisia, Morocco or Rwanda, Latin countries such as Costa Rica, Cuba or Mexico, and Asian countries such as Iran, Bangladesh, Sri Lanka, Indian state Kerala, Singapore, Taiwan, Thailand, Indonesia, South Korea or Japan have halved their

fertility rates as quickly as they happened in China, yet without a controversial one-child policy (Guillebaud and Hayes 2008, Campbell et al. 2013). What had these vastly different countries in common was the fact that their governments recognized the population-poverty connection and enabled access to family planning.

Perhaps the most illuminating example is Thailand, which reduced its fertility rates dramatically in a visionary and inspirational way. In 1974, Thailand's fertility rate was seven children per woman, and the population growth was at 3.3% (Austen 2018, 44). The poor country realized that their increasing population would only mean more people living in poverty. Mechai Viravaidya, Thai politician and visionary, later on, known as 'Mr. Condom,' has conducted research, and instead of a welfare or poverty-reduction program, he initiated a free family planning program for all (i.e., full and free availability of contraception, especially condoms) and an encouragement of its use which helped to create the modern Thailand of today. To support the initiative, the government deployed media to educate the public about population growth. The status of women was boosted as women were allowed secondary and tertiary education. The results were dramatic. From the time Viravaidya started his endeavor, the average number of children has decreased from seven to 1.5 per woman (Austen 2018, 44-45).

Another key example is Iran, where its voluntary family planning program between 1988 and 2010 was so successful that governments' goals were accomplished by 1993, i.e., 16 years ahead of schedule (Austen 2018, 34-35). Nevertheless, these countries and their successes are often ignored or rarely cited; thus, a common myth that any quantitative population concern must necessarily and intrinsically be coercive, particularly of poor people, continues, despite all the evidence.

4.2.2 The Supportive Measures

The second group of solutions focuses on support of availability of family planning methods and services and support of education and empowerment of girls and women.

4.2.2.1 Voluntary Family Planning

As was illustrated in the previous subchapter, the first and most important way of reducing fertility rates is a free voluntary program of family planning with full availability of

family planning methods, services, and counseling. Studies show that the greatest factor for a country's fertility rate is contraceptive prevalence (Arulkumaran 2020). As Professor of Obstetrics and Gynecology, St. George's University of London, Sir Sabaratnam Arulkumaran, pointed out: "If the world is to survive, they have to depend on contraception, contraception, contraception. If not, the world will sink one day" (Arulkumaran 2020). It is worth reminding that safe abortion is also a must, as no contraception is 100% effective, thus a need for a safety net.

Family planning is a directly humanitarian intervention: people, primarily women and children, suffer when it is not available. As James P. Grant, the executive director of the *United States Children's Emergency Fund* pointed out in 1992 *The State of the World's Children:* "Family planning could bring more benefits to more people at less cost than any other single available technology. But it is not appreciated widely enough that this would still be true even if there were no such a thing as a population problem" (UNICEF 1992, 58). Professor of Family Planning and Reproductive Health John Guillebaud says that "Family planning is a science's gift to the world (just as vaccination). To not have it universally available, is, in the 21st century, a crime against humanity and the planet" (Guillebaud 2019). However, though family planning is essential, wanted, needed, and doable, the international community has not yet successfully managed to meet the needs of all people in most countries wishing for it.

As a matter of fact, things go backward here. Though it is possible – just as with the poverty mentioned above – to cite statistics that contraceptive prevalence has been globally rising and, as such, clapping on ones' backs, in absolute numbers, the unmet need is what rises.

In February 2020, a study using data from 185 countries was published. It concluded that while in 1990, there were 232 million women of reproductive age who wished to avoid pregnancy but had no method of contraception, in 2010, it was 255 million women, and in 2019, it was 270 million women lacking access to safe, modern contraception (Kantorova et al. 2020). The trend is apparent, and there are two reasons for that. First, in developing countries, family planning provision is not keeping pace with rapid population growth and slowing progress in improving access.

Second, after the 1994 Cairo *International Conference on Population and Development* (UNFPA 2014), all the focus was taken from 'mere' family planning and turned into the full

range of sexual and reproductive health and rights. Thus, finances that should have gone primarily into family planning endeavors have been squandered elsewhere (Greguš 2020a). Over 50 years, the global community (completely ignoring the incredible achievements of Thailand, Iran, and all the others) has invested 400 billion dollars into the 20 least developed countries with the highest fertility rates, implicitly assuming that socioeconomic development will reduce fertility (Guillebaud 2016). Of this sum, only 0.31% has gone explicitly into contraceptive care (Martin and Wu 2015).

And things do get worse. In April 2021, the United Kingdom that was the single largest donor to the *Family Planning 2030* initiative providing contraception in 69 of the world's lowest-income countries, announced cutting its support for UNFPA' flagship supplies program by 85% and its core funding support by 60% (FP 2030 2021).

It is a historical irony that humanity had the answer (family planning) but got distracted from it. What needs to be done here is to put family planning at the forefront instead of other sexual and reproductive, and socioeconomic endeavors and invest humanity's finances into this direction (Greguš 2020a). Only then, the unmet need for modern contraception will be met.

4.2.2.2 Education and Empowerment

The second most important way of reducing fertility rates is (girls') education and (women's) empowerment which are among the most powerful forces on the planet. Educated girls and women are healthier. They are wealthier. With education and empowerment, the family size drops without coercion. Middle-class families with aspirations are less likely to have more than two children. Urban families where both partners work often opt for a one-child family.

However, the significance of promoting women's rights, education, and empowerment is far greater than that. Apart from the decline in fertility, other positive consequences are improved general and reproductive health, national and regional economic development, a chance for women to pursue careers, their dreams, and ambitions. For these reasons, providing education and empowerment becomes a goal in its own right.

Here, the aforementioned 1994 Cairo *International Conference on Population and Development* (ICPD) was beneficial because concluded that women are the solution and the universal prescription women need is power. The *Nairobi Summit on ICPD25* in 2019 (UNFPA 2020) confirmed the Cairo consensus that women need to be given more rights and power to be able to make their own decisions in their (reproductive) lives and that women must be free from coerced or excessive childbearing; that childbearing needs to become a woman's personal choice, not her duty or a matter of a chance, i.e., women should have children by choice, not by chance.

That there is still much that needs to be done is reflected in the latest *United Nations Population Fund* report. In April 2021, UNFPA released its annual flagship publication, *The State of World Population*. For the first time, it focuses on bodily autonomy, "the power and agency to make choices about your body, without fear of violence or having someone else decide for you" (UNFPA 2021).

The report brings some disturbing information. Nearly half of all women are denied their bodily autonomy to make choices over healthcare, contraception, and the ability to say yes or no to sex (UNFPA 2021). Other findings from countries where data are available are:

Twenty-five percent of countries still do not legally ensure full, equal access to contraception. 20% of countries still do not have laws supporting sexual health and well-being. 44% of countries still do not have laws and policies supporting comprehensive sexuality education. (UNFPA 2021).

UNFPA Executive Director Natalia Kanem says this: "The fact that nearly half of women still cannot make their own decisions about whether or not to have sex, use contraception or seek healthcare outrage us all. /…/ In essence, hundreds of millions of women and girls do not own their own bodies. Their lives are governed by others" (UNFPA 2021).

According to the report, the solution is clear: Women and girls need to get "the power to say yes, the right to say no" (UNFPA 2021). Natalia Kanem concludes: "A woman who has control over her body is more likely to be empowered in other spheres of her life. She gains not only in terms of autonomy, but also through advances in health and education, income and safety. She is more likely to thrive, and so is her family" (UNFPA 2021).

The 2011 study amongst developing countries reveals how powerful tool education is. Children, primarily girls, removed from schooling (mostly for work in household, agriculture, and having children) at the end of primary education ended up with six to seven children on average. Children removed from schooling at the end of secondary education ended up with three to four children in average, whereas those who completed tertiary education ended up with two children. Also, the latter two groups differed from the former in being better dressed and ensuring that their children had similarly superior education (Bongaarts 2011).

In July 2020, a crucial article *How Do Education and Family Planning Accelerate Fertility Decline?* was published. This study among Sub-Saharan countries confirmed the importance of education. In the discussion, the authors state: "Specifically, we found that larger rates of increase in the proportion of women who have attained lower secondary education or higher corresponded to faster declines in TRF" (Liu and Raftery 2020). However, the authors have come with two fascinating findings.

First, "of the different education levels, we found that lower secondary education had the most important accelerating effect. Primary education had a much smaller effect, and additional education beyond the lower secondary level (typically around ages 14-16) also had a smaller effect. Lower secondary education is generally considered the final stage of basic education, and this suggests that making completion of lower secondary education universal throughout the world would accelerate fertility decline" (Liu and Raftery 2020).

Second, when comparing women's education and contraceptive prevalence, which both have significant effects on fertility decline, contraceptive prevalence has a substantially larger effect. The authors conclude their study by stating: "Contraceptive prevalence had the largest effect size of all covariates we considered, including education" (Liu and Raftery 2020).

4.2.2.3 The Two Combined

Even separately, however, better taken in tandem, voluntary family planning and education, and empowerment are the top solutions. Even *The Lancet* 2020 study clearly shows how access to modern contraception and girls' education can drive a decline in fertility to below replacement levels (Vollset et al. 2020). It needs to be repeated here that contraception and education work best together, combined. Contraception itself does not provide girls and women

agency to make choices about their own bodies, their futures, careers, does not give them decision-making power, etc. Education without contraception is insufficient – no matter how educated women are, they need contraceptives – it is through correct information and access to family planning methods and services that women achieve their desired family size.

Taken together, they improve the outcomes of people and the planet and get humanity closer to a sustainable and equitable world. Because it can be agreed on that slowing and reversing population growth should be *ideally* done by individuals and voluntarily (within the frame of human rights), a call to redouble humanity's efforts to secure rights-based family planning policies and ensure they are available to all women on a regional scale is necessary (Greguš et Guillebaud 2020).

4.2.2.4 Entertainment-Education

The third powerful supportive measure is education via media. Whereas by the second measure, it was meant school education generally and sexuality education in particular, here it is meant primarily environmental and sexuality education provided by media to *all* the public. These both help to raise environmental literacy, i.e., demonstrate to people the environmental consequences of vast and unsustainable human numbers, production and consumption, and also what needs to be done about, i.e., to decrease production and consumption and above all, to decrease human numbers in the first place, because the effect of all other human activities derives from this one. While consuming less, living car-free, avoiding flights, using green energy, or going vegetarian are praiseworthy, they become truly functional only if humanity reins in procreation and reduces the number of producers and consumers (Greguš 2021a).

Environmental literacy and sexual and reproductive health have been successfully promoted in many countries (Mexico, Ethiopia, Rwanda, etc.) through radio and television 'soap-operas,' which educated people through popular characters of these long-running culturally-embedded dramas (PMC 2021). Studies indicate that Sabido methodology utilizing entertainment and infotainment model behavior and social norms, such as change of attitude and behaviors towards women, promote environmental conservation, etc. (PMC 2021).

4.2.3 The Solutions Concluded

Two main groups of solutions have been discussed in this chapter. Though restrictive measures may be effective, they stir up a natural resistance, compromise the well-meant struggle with humanity's unsustainable numbers, and thus are better to be avoided. Hence, supportive non-coercive measures are the ones that should be given priority wherever possible.

From what was showed at the beginning of this chapter, there are five roots of unsustainability; four of them can be addressed – not even countries with the most coercive measures ever have dared to increase the mortality of their citizens to curb their populations.

Nevertheless, supportive measures target only two roots of unsustainability, i.e., unwanted fertility and coerced motherhood. Gynecologists, reproductive health providers, and healthcare providers generally have an important role in providing effective voluntary family planning and partially in empowering women, thus curbing unwanted pregnancies and coerced motherhood. The need for their stronger stance and greater involvement in this has been discussed elsewhere (Guillebaud 2016, Greguš 2020a, Greguš and Guillebaud 2020).

However, given the magnitude of the problems, it is not enough. The remaining two roots must be also targeted, i.e., wanted fertility and population momentum. Here, it needs to be repeated: Population momentum will be the main driver of population growth in this century.

Despite the oft-repeated refrain that such attempts would be restrictive, unethical, thus should not be discussed or even opened, it must be said here, there are ethical ways how to do so. It can be done by encouraging small family norms worldwide. It will be shown in the next chapter that the promotion of reproductive (and environmental) ethics is the most humane and ethical way to solve this problem.

Also, population momentum can be well combated by lengthening generations. It can be achieved by delaying childbearing. As such, voluntary delaying the first child should be encouraged as an effective (and humane and ethical) measure against population momentum.

In the next chapter, two branches of ethics dealing with the population will be discussed.

5 The Ethics

"You are young and wish for a child and marriage for yourself. But I ask you: are you a person who has a right to wish for a child? /…/ Or do the animal and neediness speak out of your wish? Or loneliness? Or discord with yourself?"

– Friedrich Nietzsche (Nietzsche 2006, 51)

"Democracy cannot survive overpopulation. Human dignity cannot survive it. Convenience and decency cannot survive it. As you put more and more people into the world, the value of life not only declines, it disappears. It doesn't matter if someone dies. The more people there are, the less one individual matters."

– Isaac Asimov (Asimov 2010, 120)

5.1 The Reproductive Ethics

In recent years, there has been a significant increase in philosophical attention to reproductive ethics. While Partha Dasgupta's recent book *Time and the Generations: Population Ethics for a Diminishing Planet* has already been discussed, two rigorous philosophical books that have joined a growing list of literature on environment and overpopulation will be discussed now; namely Travis Rieder's *Toward a Small Family Ethic: How Overpopulation and Climate Change Are Affecting the Morality of Procreation* and Sarah Conly's *One Child: Do We Have a Right to More?* The third valuable contribution to reproductive ethics is Jonathan Austen's *Save the Earth … Don't Give Birth.*

5.1.1 Toward a Small Family Ethic

In 2016, Director of the Master of Bioethics degree program and Faculty Affiliate at the Center for Public Health Advocacy at John Hopkins School of Public Health, Travis N. Rieder, published his book *Toward a Small Family Ethic: How Overpopulation and Climate Change Are Affecting the Morality of Procreation*, in which he covers a wide range of arguments in the debate over procreation, arguing that family is a serious decision at every scale (individual just

as global) resulting in building a solid case for a 'small-family ethic.' Though this concise book is directed in the first instance toward scholars in public health programs and climate change, it extends the horizon of climate change and merits the attention of other disciplines.

As Rieder says: "There are too many people on Earth, with many of us using far too many resources. One precious resource that has been terribly depleted is the atmosphere's ability to absorb CO_2 without violently altering the global climate. As a result, we now face dangerous climate change, with catastrophic climate change on the horizon if we do not take decisive action" (Rieder 2016, 65). Rieder takes for granted that overpopulation is a major driver of both climate change, resource scarcity, and other ills. Because these are severe problems that need to be tackled urgently, reducing overpopulation is an imperative for Rieder. From that, his search of what should be our moral responsibility toward procreation derives.

Rieder connects individual deeds to collective effects, declaring that individual actions (such as procreation) have a significant effect on global problems, notably climate change. A single birth may seem to be irrelevant for climate change, given the total size of humanity, but still, Rieder argues that global problems such as climate change generate individual obligations.

Rieder explores three moral principles: (1) the duty not to contribute to harm, (2) the duty of justice, and (3) the obligation to our possible children, and concludes that they oblige us not to reproduce over replacement fertility rates, in other words, they provide a clear justification for small families.

Rieder offers arguments for procreation, such as that an obligation not to procreate would threaten human integrity as a moral agent. However, Rieder points out if an obligation not to have more than one child maintains our integrity as a moral agent (as it does), then more generous procreative freedom and large families are difficult to defend from this moral standpoint. He even underlines the fact that our procreative freedoms are limited by the interests of others.

Rieder further discusses other moral constructs (green virtues, moral reasons, meaning, and blame) as means about procreation. Rieder acknowledges that people have procreative rights, while he adds right away that acting accordingly does not mean people are acting rightly. Rieder furthermore points out that our procreative rights diminish with more than one child.

Given the problems human overpopulation causes, there are very good reasons to limit our procreation, while there are no good reasons to ignore those limits. As a result, Rieder concludes his book by stating that "we are left with a moral burden to have small families. /…/ The case for having one child seems fairly compelling. Might some people be justified in having more than one? Perhaps. But the burden is on them to make the case" (Rieder 2016, 66).

5.1.2 One Child: Do We Have a Right to More?

In 2016, Associate Professor of Philosophy at Bowdoin College, Sarah Conly, published her book *One Child: Do We Have a Right to More?* In this book, she explores population ethics and policy, arguing that given its importance, ignoring population represents a shaky moral ground. While the book primarily aims at philosophers, it is relevant to anyone interested in population matters and environmental sustainability.

For conciseness, Conly summarized her book in her 2016 paper going under the same name in the first issue of *The Journal of Population and Sustainability*. She starts by saying that "we love our children, and for many of us the time we spend with our children is the best part of our lives. The time has come, though, to acknowledge that we need to have fewer of them, and that indeed we don't have a right to give birth to more than one" (Conly 2016).

In chapter 1, Conly discusses the severity of global environmental problems and the connection between these problems and overpopulation. Despite many who claim that the problem is consumption, not the population that is causing environmental problems, Conly responds: It is both – the growing per capita consumption of an ever more growing number of capitas (Conly 2016). For this reason, Conly writes, "that doesn't mean we are justified in having more children than the system can bear" (Cafaro 2018). Under current circumstances, people now have a right to have only one biological child. That is the central conclusion of Conly's book.

In chapters 2 and 3, Conly argues that global environmental problems are significant enough to justify limiting human freedom to procreate. Whereas Conly acknowledges the right to a family and the right to control your body, she goes on to argue that in both cases, these provide 'reasonable grounds' for a right to procreate, but still, they do not entail a right to have more than one child, because these rights can be fulfilled and met well by having one child.

Conly argues that a family with just one child is as much a family as the one with ten and that intergenerational and interpersonal bonds that are cultivated in families do not depend on large families. Indeed, some people may desire to have more than one child, but still, this desire must be balanced by considering potential harms to the environment, current society, or future generations. Thus, like all rights, the right to have a family is not unlimited, Conly writes.

In the same spirit, Conly discusses the right to control your body as respect for autonomy which requires non-interference into other people's lives. But here again, this right to be left alone may be limited if one's behavior threatens to harm others – again, the environment, current society, or future generations. Conly is convinced that current problems deriving from overpopulation are that serious that outweigh claims to a right to have more than one child. Nevertheless, even if they do not outweigh now, these dangers are significant for the future, as humanity continues its downfall to ecological disaster. For this reason, Conly argues, that ethicists, just as decision-makers, must consider possibilities that if freedom is about to lead to great misery, it should be reconsidered. As such, it may be better to limit reproductive freedom now while it is still possible to avert such misery (Cafaro 2018).

Conly gives compelling arguments for her claims on the right to family. She says: "Many people argue that if you absolutely have to have something in order to have a chance at a decent human life, then you can claim that thing as a right. For this reason, many people believe that we have a right to food. The fact, though, doesn't mean you can claim a diet of lobsters, truffles, and champagne, no matter how much you might prefer that. We have a right to basic nourishment, not whatever might most please us. Similarly education: we think there is a right to education, but that doesn't mean that everyone has a right to go to Harvard or Oxford. Similarly for children. Some people think that having a child is necessary for a decent life. But a family with one child is just as much family as a large family. The fact that you would like more doesn't mean you have a right to more" (Conly 2016).

Similarly, she gives compelling arguments for her claims on the right to control your body. She asks: "Do we have a right to have as many children as we want, arising from our general right to live autonomously?" and she answers: "Well, it depends. The truth about these autonomy rights, these rights to choose to live your life the way you want, is that which of these rights you have is always sensitive to context. We say we have a right to free speech, but we also say you don't have the right to falsely yell 'Fire!' in a crowded theater. We have a general

right to practice our religion, but if our religion requires human sacrifice, we obviously wouldn't have a right to that. We often have a right to do things that are somewhat harmful (saying mean things, for instance) but we don't have the right to do things that are devastatingly harmful. Right now, having more than one child is just that" (Conly 2016).

In chapter 4, Conly discusses which limits are possible to justify. First, she reassures readers that "when it comes to stopping an undesirable behavior, punishments shouldn't be the very first thing we think of. There are other steps we can take that would be preferable to all involved" (Cafaro 2018). Education, as previously discussed, may change people's behavior to lower fertility. But Conly adds: "We need to teach, too, that so far we don't see a technological fix that will allow 11.2 billion people to live happily – many people seem sure that we can easily produce lots of fresh water from sea water (not realizing how much energy this takes), or /…/ that we can colonize other planets to relieve the population burden. These things may perhaps be possible, but we have no reason to think they are going to happen. Trusting in such fanciful solutions would be like introducing your child to cigarettes on the chance that someday we will know how to cure cancer – just plain irresponsible. We need to teach that this isn't something anyone has a right to do" (Conly 2016). Further, Conly realizes that "habits are hard to change, and the habit of thinking of something as harmless is particularly hard to get over. We've always celebrated the birth of children, and the idea that it can be dangerous requires a real conceptual shift, and we are very slow to do that" (Conly 2016). For this reason, education, according to Conly, is not enough, and more is needed.

Conly notices a huge unmet need for contraception, particularly in the countries with the highest fertility rates, such as Sub-Saharan countries. Thus, increasing the availability of voluntary family planning methods and services is a way to go and also the right thing even if overpopulation were not a danger (Conly 2016).

Certainly, such efforts are worth doing, but Conly notes that it is an empirical question whether these non-coercive measures would be sufficient to bring back humanity to sustainable numbers in time. Conly comments that people do not rely only on education, voluntary action, or positive incentives when it comes to protecting the environment. In reality, governments issue laws designed to force all parties to do their fair share, along with punishments for those who fail to do so. As such, governments could take important steps by giving tax benefits to one-child families or, alternatively, giving tax penalties to more-children families. She says:

"There is good reason to think, then, that financial incentives and disincentives would be enough to reduce the fertility rate. When a financial disincentive is great enough to change our behavior that may strike some as coercive, but again, the pressure here is to prevent us from doing something we don't actually have a right to do" (Conly 2016). And she continues: "Would everyone be sensitive to such pressures? Perhaps not, but we should bear in mind that sanctions for undesirable activities are not generally designed to make those actions literally impossible. We disapprove wholeheartedly of theft, and we punish it, but we don't do everything we possibly could to stop it. /…/ We do what, combined with education and shared cultural values, will prevent the vast majority of people from stealing. Similarly with children: we want to reduce the fertility rate, but the fact that there are some who would rather accept the sanction than refrain from having more than one child doesn't mean the policy has failed. It means it is like other public policies, where we would like 100% compliance, but don't expect to get it" (Conly 2016).

As such, laws regarding how many children people have may be justified. However, Conly adds that penalties for breaking such laws must be morally justified. Whereas forced abortions or forced sterilizations cannot be morally justified, substantial fines might be, especially if implemented on a sliding scale that equally impacts the wealthy and the poor. That is Conly's preferred approach, should coercion be necessary.

In chapter 6, Conly considers some of the practical 'unwanted consequences' of her one-child ethics, namely the dangers of sex selection and the economy's smooth functioning. She realizes that there could be ethical concerns if one-child ethics/policy would lead to sex selection resulting in a disproportionally male society. Conly agrees that sex selection is something that should be avoided, however, she adds right away that sex selection "is a phenomenon distinct from falling fertility rates. People in the United States, Western Europe, and the Far East have greatly reduced their fertility without resulting in any disproportion between boys and girls. And one of the places that does show a clearly unnatural sex ratio is India, where people can have as many children as they like. The cause of sex selection is, to make a long story short, sexism. When women are not allowed to earn as much as men, or are much more expensive to rise, they will naturally be the second choice for many people. When women have equal standing, there is no preference for boys" (Conly 2016).

Conly realizes that our economy based on eternal growth would need to function differently with a population that would be not growing but shrinking. According to Conly, however, it is not a sufficient reason to oppose one-child ethics/policy. She says: "To take the last first: It's true, we don't know how we are going to run an economy with a falling or stable population. At the same time, we don't know how we are going to run an economy with constant growth, either. A constant increase in the use of resources just isn't possible on a finite planet. It can't happen – we will simply run out of resources. /…/ No one wants a crashing economy, but the way to avoid that isn't just keep doing what we have been doing. Better to change now, while we still have fuel, water, food, and precious minerals, than later" (Conly 2016).

In the final chapter, Conly concludes by saying that "mild population self-regulation now might spare our children and grandchildren more intrusive self-regulation in the future" and that "we need to realize that having children is just not a private matter anymore" and finally that "protecting privacy in the long run will require recognizing the limits of privacy at present" (Cafaro 2018).

5.1.3 The Case for One-Child Ethics

A strong case has been made for one-child ethics. In 2017, Ferguson and Rimmer calculated the world population for universal two-child and one-child families from 2020 to 2200 and compared these projections with the *United Nations'* medium population projections.

The official *United Nations'* medium projection to 2100 shows a remarkable fact that a projected decrease in fertility – from TRF 2.4 in 2020 to below 2.0 by 2100 – will result in a steadily increasing population of 11.2 billion by 2100 (Ferguson and Rimmer 2017). The reason for that is that decreasing fertility rate is counterbalanced by population momentum.

The chart below compares universal two-child families (a hypothetical assumption that by 2020 all families throughout the world are convinced to have two children) with the *United Nations'* Medium Projection showing that the universal two-child family figures are much lower. Nevertheless, this study further calculated that even though this hypothetical decrease to two-child families would stop the world population from rising above ten billion people, it would take until 2480 to get back to the present population level (Ferguson and Rimmer 2017).

The study reveals the arithmetical fact that the only solution is embracing the universal one-child families (a hypothetical voluntary, global agreement from 2020 that all families throughout the world agree to have just one child), leading to a steep and desirable decline in world human population (Ferguson and Rimmer 2017).

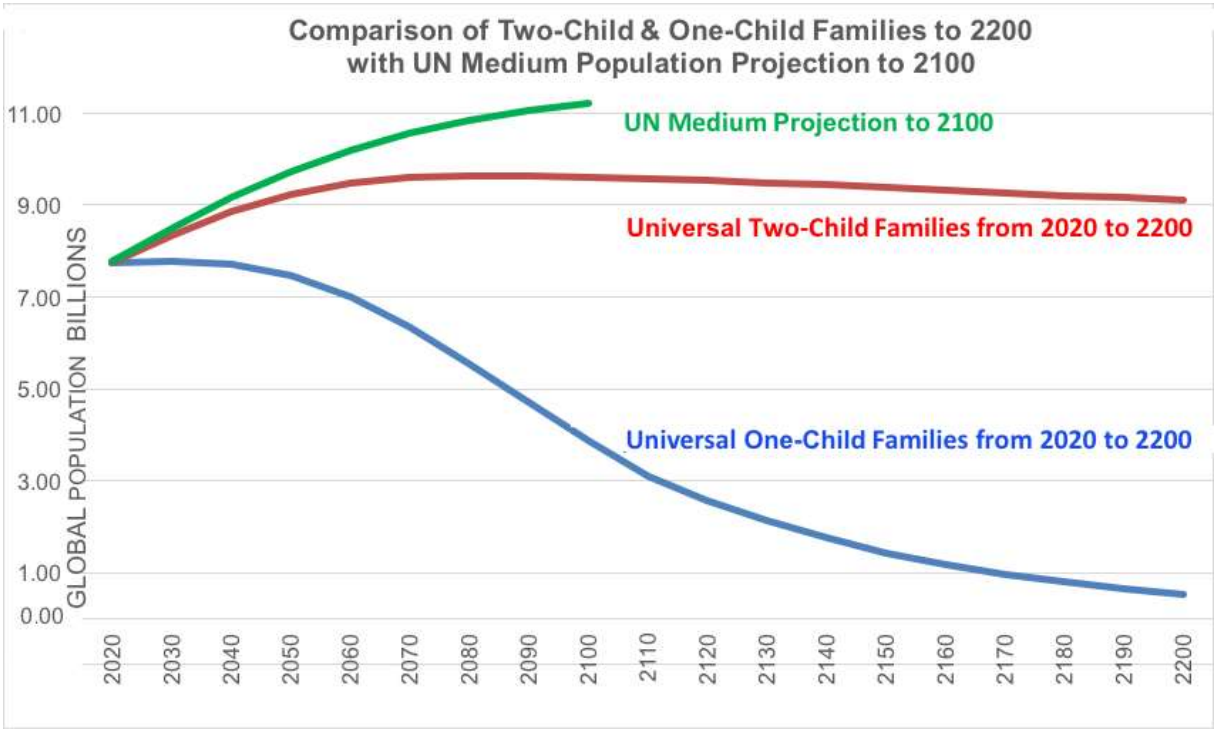

Figure 5. Comparison of two-child and one-child families to 2200 with UN medium population projection to 2100. (Ferguson and Rimmer 2017)

5.1.4 Save the Earth … Don't Give Birth

In 2018, British environmental campaigner Jonathan Austen published his book *Save the Earth … Don't Give Birth*. Despite the title, the book's goal is not to discourage readers from having children at all; instead, it encourages them to have children (ideally just one) intelligently while realizing their (and their children's) ecological footprints.

Austen's central thesis is that the best thing we can do to help the environment, by far, is to have a small family, or even better, not to have children at all. Austen acknowledges that "we are socially expected to have children. Bringing a new person into the world is a profound part of your life, with all the responsibilities that come with it. It is natural, beautiful and brings

joy and meaning to your life" (Austen 2018, 80). However, he adds right away that "in an overpopulated world, it is also the most damaging thing you can do for the planet, adding the impact of an entire lifetime of human consumption" (Austen 2018, 80).

Austen rightly sees that a focus on consumption only is insufficient. For instance, the first Sustainable Development Goal aims to get rid of world poverty by 2030. He argues that humanity is currently using 1.4 carrying capacity of this planet and recalls a recent study, according to which bringing all countries out of poverty would require the resources of 3.4 Earths (Hickel 2015). Further, according to *Food and Agriculture Organization of the United Nations,* food supplies will need to be increased by 70% by 2050 to meet projected demands. Lifting humanity from poverty and increasing food supplies (even with miraculous technological agricultural advances) mean the destruction of what is left of the natural world.

For this reason, addressing only consumption does not solve the problem. Austen further cites another recent study, according to which the best way a person can reduce their carbon emissions is to have one fewer child (Wynes and Kimberly 2017). By choosing not to introduce another life into the world, you have prevented an entire lifetime's worth of pollution, waste, carbon dioxide emissions, and consumption (plus that of their offspring, ad infinitum) (Austen 2018, 91).

Austen anticipates objections of people with large families who may be environmentally altruistic in every other way when saying, "if you have children, they might follow the same no flying, no driving, vegan lifestyle as you and have a low impact, but they might not. And they may have children themselves, redoubling the damage ad infinitum. Having no children ends your environmental impact when you die. So even if you're not the ultimate green and you drive to work and take a flight once a year, your impact will be finite. One less child is an entire lifetime of consumption prevented. The harsh truth to accept to anyone who has a large family is that they are damaging the environment solely through their numbers" (Austen 2018, 126).

Austen admits that "to say this to a young couple, planning their life ahead with a family and all the joy that brings, is very tricky, but does that mean we should ignore it?" (Austen 2018, 127) but elsewhere, he gives a downright answer: "The best response is not the one that makes us feel good; it is the one that makes the world a better place" (Austen 2018, 77).

The problem is that environmental literacy and the awareness of consequences of procreation are absent from mainstream and often even environmental conversation (including about climate change). When asked, people rarely put 'having a small family' to 'top ten' lists of things that they could do to save the Earth when, in fact, it is the most important one. Due to this ignorance, people may think, as Austen puts it: "We're just people, doing what people have always done. We're not hurting anyone – but put us all together and look at the results and we are hurting something – the planet's own life-support systems" (Austen 2018, 78).

So, what has a priority, our rights to give births (and our freedom to have as many children as we want to) or the rights of the planet? Austen is convinced that the planet's rights should take priority over human rights because our human rights depend on the planet (Austen 2018, 141). He even says that "rights of nature and the environment should be revalued to equal, or surpass, those of humans, as we cannot survive without nature" (Austen 2018, 142).

Given that the world is in the state it is, i.e., overpopulated, polluted, resource-depleted, closer to the brink, Austen states that our decision to have children is affecting the world in a way it has never been before. For these reasons, our decision to have one fewer child is a small sacrifice that benefits everyone (Austen 2018, 119). However, the greatest sacrifice and the most selfless act anyone can make for their fellow humans and the environment is deciding not to have children at all. Austen views that such a decision goes against natural instincts just as society's expectations, which makes it "a statement and a real sacrifice. The child-free should be applauded, rewarded, congratulated and praised" (Austen 2018, 124). And he concludes: "We should recognize those who choose not to have children as being benevolent to the world. They have made a sacrifice in a crowded world, so others can have space for their children. Those with children should be eternally grateful to the child-free" (Austen 2018, 125).

If somebody craves a large family, Austen has a very humane and compassionate solution. There are over 130 million orphans in the world waiting for a new home. Austen is right, saying: "Bringing up someone else's child through adoption is one of the greatest things anyone can do" (Austen 2018, 125).

Austen concludes his book by saying that "we are climbing up a very steep mountain. When we reach the top is up to us; the height of the peak is also up to us" (Austen 2018, 146). Inevitable human 'peak' will be the moment in all history that humanity will not be growing

anymore. It will also coincide, as Austen puts it, "with the environmental minimum: the day Mother Earth is at its lowest ebb, but also the starting point of environmental recovery" (Austen 2018, 149). Population reduction is a long-term run that will take generations to achieve. Still, if today's population fully embraces one-child ethics (however unrealistic it looks now), the world population will decline to sustainable numbers of 3.5 billion by 2100.

In Austen's words, "it would be a magnificent achievement, the greatest gift from today for the future generations," the gift that would "give the world a fighting chance to save what is left of nature and make it to the 22nd century as unscathed as possible" (Austen 2018, 147).

5.1.4 To Kid or Not to Kid

In 2018, the first English language feature documentary on making a choice to be child-free had been released. Its director Maxine Trump in her ground-breaking documentary, *To Kid or Not to Kid*, breaks the common taboos and explores the issues of reproductive choice.

Trump challenges common myths and perceptions that living child-free is weird, selfish, or somehow wrong. She argues that there should not be any judgment about one's reproductive choices if one decides to stay child-free. Trump states here, there 'child-free' is a much better word than 'child-less,' which can have a negative meaning. On the contrary, Trump points out that being child-free by choice should be viewed – in this overpopulated world – as something positive rather than negative.

Trump challenges the gender imbalance and realizes that women often face the pressure to have children and are explicitly encouraged by religious and political leaders. Whereas men who have or want no children are rarely viewed negatively, women often are. Trump asks: "Why is this not the same for women? They should not be made to feel they have failed as women or are in some way unfulfilled. It is time to challenge what has long been accepted as the norm" (Trump 2018). And she does.

She states that the choice to have or not to have children is the biggest decision in one's life and, thus, one should not feel obliged to have children and should not be forced to keep one's decisions hidden. She also states that parenting is hard and may not be suitable for everyone.

The documentary can be concluded by saying that it is a human right to have (or not to have) children, and one should exercise this right without criticism or judgment. However, Trump is not an anti-natalist in a way she would credit birth a negative value. She merely says: "My legacy, I decided, was to protect the planet for other people's children" (Trump 2018).

5.1.5 Having Kids

Yet, another positive approach in reproductive ethics is the platform *Having Kids*. *Having Kids* is a platform of "individuals and families who care deeply about children, democracy, the natural world, and our future" (Having Kids 2021). They have realized that while having kids is the thing with the most significant impact on us as individuals and society, many people do not give parenting nearly as much thought as they do when buying commercial products. Many kids are conceived and born due to *accident*, often by chance, not by choice.

Having Kids sees as a major problem that "family planning in the world today is based upon a parent-centered and isolationist model that hurts children, families, communities and our environment (Having Kids 2021). This model is "the product of governments and businesses that profit from population growth, want to avoid collective obligations that require investing in rather than exploiting future generations, and who helped eliminate the responsibilities inherent in having kids as a means of accelerating growth" (Having Kids 2021).

In other words, this isolationist model considers only human beings as individual entities but does not take into account environmental degradation, climate change, mass species extinction, and the plethora of other problems our procreation causes. *Having Kids'* mission is to replace this deeply flawed and "short-sighted way we plan our families which is the driver of most of our ecological and social crisis" (Having Kids 2021) and replace it with a new, child-centered model in which parents consider the state of the environment when making decisions about childbearing. Obviously, such a positive and holistic way of thinking which focuses on the important over the immediate often ends in families with fewer children.

However, *Having Kids'* mission goes further than that. They want all children to have a fair start in life, with a basic level of food, love, attention, healthcare, and other elements. Furthermore, they are convinced that children should be brought up without violence and should have control over their lives, thus forming the basis for a just and democratic society. As such,

they promote their human rights-based and child-centered Fair Start family planning model at various levels (cultural, institutional, and legal) so that "a world of smaller and truly democratic communities surrounded by nature" (Having Kids 2021) can be achieved.

This subchapter can be concluded by quoting John Stuart Mill, who – in a way – briefly summarizes the platform's philosophy: "…to bring a child into existence without a fair prospect of being able, not only to provide food for its body, but instruction and training for its mind is a moral crime, both against the unfortunate offspring and against society" (Mill 1972, 239). Though *Having Kids* does not recall this quotation, it expresses the core of what they stand for.

5.2 Environmental Ethics

Whereas reproductive ethics deals with the population directly, environmental ethics does it so indirectly. For the purposes of this thesis, environmental ethics that is much wider is mentioned after reproductive ethics to support reproductive ethics' claims and conclusions.

5.2.1 Ethics Beyond Our Lifespan

In 2008, an article *Bioethics Beyond the Lifespan* was published in *The Lancet*. Its author, Larry R. Churchill from the Biomedical Ethics and Society, Vanderbilt University, notices that in the field of ethics, the single lifespan was presupposed as the relevant frame of reference and thinking beyond the individual lifespan has been largely absent (Churchill 2008). He recalls philosophers, namely John Stuart Mill, who did not "seem mindful of future generations when he advocates the greatest good for the greatest number," and Immanuel Kant, who was not "eloquent on beneficent duties to a world one will not live to enjoy" (Churchill 2008).

Churchill observes that a Jewish philosopher and bioethicist Hans Jonas was "among the very few who have made responsibility for future generations a priority in this ethical theorising; he rewrote Kant's categorical imperative to read: 'Act so that the effects of your action are compatible with the permanence of genuine human life… or are not destructive to the future possibility of such life'" (Churchill 2008). Jonas formulated this supreme moral imperative in his book *The Imperative of Responsibility: The Search for an Ethics for the*

Technological Age, in which he insists that human survival depends on our efforts to care for our planet and its future (Jonas 1984).

Churchill states that "ethics without a beyond-the-life-span perspective is increasingly problematic as current humanity leaves a larger and larger environmental footprint," and that we need "beyond-the-lifespan-thinking, in which individuals and groups are encouraged to think about their responsibilities to a future that will not include them" (Churchill 2008).

Further, Churchill recalls a powerful theme of religious environmentalism, i.e., "the idea the Earth is not our possession, but that we are caretakers of it so that a major benchmark of ethics is stewardship of resources that are essentially given in trust, to be passed on to future generations. Thus, caring for a future beyond our lifespan is a way of living responsibly in the present" (Churchill 2008).

In the perspective of bioethics, Churchill calls for moving attention from medicine to public health and shifting our focus from personal medical services towards creating sustainable health policies. He concludes his paper by stating that "the legacy of bioethics beyond the lifespan lies in the realization, or the failure to realize, that health is not just about the current wellbeing of individual organisms, but population (species) survival" (Churchill 2008).

5.2.2 Ethics Beyond Our Species

In February 2021, an article *Inter-Species Health Equity* was published in the *European Journal of Public Health*. Its author, Johan P. Mackenbach from the Department of Public Health, Erasmus medical centre, Rotterdam, discusses the phenomena of human altruism. Mackenback recalls the 1981 book *The Expanding Circle* in which a Jewish philosopher and bioethicist Peter Singer describes "how human altruism began as a drive to protect one's kin and community members, but has since developed into a consciously chosen ethic with gradually widening circle of moral concern. In the distant past, humans were only concerned with the well-being of their family and fellow villagers, but in more recent times, this developed into a concern for all their countrymen" (Mackenbach 2021).

Currently, human altruism in its ideal form includes all humanity (as can be seen in the programs of public health, which include everyone in their efforts to improve health – rich and

poor alike, minorities, etc.). However, Singer and other bioethicists argue that "there is no rational argument for limiting our altruistic concerns to the human species" (Mackenbach 2021). If we accept the idea that other living beings and species also have legitimate interests, then, as Peter Singer puts it: "it is as arbitrary to restrict the principle of equal consideration of interests to our own species, as it would be to restrict it to our own race. The only justifiable stopping place for the expansion of altruism is the point at which all whose welfare can be affected by our actions are included within the circle of altruism" (Singer 1981, 120).

Mackenbach notices that "while human life expectancy rose, whole species of other living beings have become extinct. The extinction rate of other living species is now hundred times higher than before humans rose to prominence on this planet, and many remaining species are rapidly decreasing in number" (Mackenbach 2021) and he raises ethical questions:

(1) Can further lengthening of human life, and more generally, further improvement in human health, remain a priority now that we see other species being completely erased?

(2) Should public health not expand its 'circle of concern' to other living species and morph into a form of 'planetary health' that encompasses all life on Earth?

He answers these questions in a way that "if we want to preserve biodiversity for its own sake, it is necessary to set limits on the pursuit of our own interests. If we are serious in our altruism, we can no longer restrict ourselves to pursuit 'intra-species health equity,' but must also strive for 'inter-species health equity'" (Mackenbach 2021). So, we should strive for 'planetary health' that acknowledges the importance of other species and their well-being.

5.2.3 For a Species Rights to Exist

One of the most eloquent defenses of a species' right to exist was published in 2012 *Life on the Brink: Environmentalists Confront Overpopulation*. In chapter 23, entitled *For a Species Right to Exist*, wildlife biologist Winthrop Staples III and environmental philosopher Philip Cafaro argued passionately for other species' right to continue their existence on Earth and for future children's right to know and appreciate them.

Just as people deserve respect, they start, which we show them by upholding their rights and promoting their interests, so do other species. However, in the world of today, where

humanity appropriates more and more of the natural habitat and resource *all* species need, we face an ethical question: "Do we want other species to continue to flourish on Earth? If the answer is yes, then we need to affirm their right to do so" (Staples and Cafaro 2012, 285).

The authors start with an excursion into the realm of rights: "The right to life is a fundamental human right. Without it, our lives and projects hang by a thread. Without it, other rights have little point or purpose. Before we can talk about how rights improve our lives, we must secure life itself. So, the right to life is the first and most important right for persons. In the same way, the right to continued existence is the first and most important right to uphold on behalf of other species. The right against untimely extinction is paramount" (Staples and Cafaro 2012, 286).

And they continue: "Such a right to continued existence is a powerful trumping claim that should outweigh nonessential human interests. Just as the presence of sick, uninsured children in a nation justifies taxing citizens' private property to provide those children with health care, so the presence of an endangered species, reduced to its last population or last few members, outweighs a real estate developer's right to build on a plot of land or a community's right to dam a river or build a new power plant" (Staples and Cafaro 2012, 286).

For this reason, the authors call the nations of the world to create legal rights against untimely species extinction through national legislation, and binding international treaties that would (1) refrain people from certain activities (particularly economic activities) that endanger species, and that would (2) secure the habitat and resources needed for all species to survive and thrive. The authors remind us that "legal rights are purely conventional. They are human creations, and we can deploy them creatively, if that furthers our goals. /…/ Legal rights have proven powerful tools in helping create societies where human beings can flourish, and there is solid evidence that securing species rights can help them to do likewise" (Staples and Cafaro 2012, 290). As an example, they mention Ecuador, where in 2008, a new chapter on the rights of nature was added to their national constitution to preserve species in Ecuador (Revkin 2008).

The authors who are aware of possible objections (from economists, developers, etc.) defend other species' right to exist because it is (1) the right thing to do for them and (2) for us.

(1) Species, they argue, in general, "are the primary examples and repositories of organic nature's order, creativity, and diversity. They represent many thousands and often millions of years of activity and achievement. The organisms comprising a species show incredible functional, organizational, and behavioral complexity. Every species, like every person, is unique, with its own history and destiny. All this supports the view that species generally possess great intrinsic value" (Staples and Cafaro 2012, 287). For this reason, we should respect other species for what they are and eschew a fatal mistake to "take human beings as the template for all natural goodness and decide what has importance or ultimate value, what shall live or die, based on their similarities to us" (Staples and Cafaro 2012, 287). This represents a form of destructive anthropocentrism. This first reason can be concluded by the authors' statement that "the flourishing of the diversity of life is a great good, while the anthropogenic extinction of species, ripping great holes in the tapestry of life, is a great and preventable evil. Hence these species have a moral right to continued existence" (Staples and Cafaro 2012, 290).

(2) The second reason we should defend other species' right to exist is because of us. All human beings, both present, and future, have an equal moral right to know, experience, and connect to wild nature. So, establishing species rights to exist further human interests and, in the same way, upholds future generations' moral rights. Authors say: "Imagine your position being accepted and acted upon by your society (i.e., either securing and protecting other species or bringing non-human life to and beyond the extinction). Then imagine explaining the results to your descendants, one hundred or five hundred years from now" (Staples and Cafaro 2012, 294). A very much needed shift in thinking towards ethics beyond our lifespan is obvious here.

Staples and Cafaro realize that "establishing species legal rights to exist necessarily involves some burdens on people limiting our freedom of action; bringing economic costs as well as benefits." But, as they continue, "the same is true for any legal right. Individual rights only find their proper scope and limit within a system of rights, interpreted intelligently, with reference to their overall purpose" (Staples and Cafaro 2012, 293).

The authors then question which actions are necessary to implement. As the most important, they see the preservation of sufficient habitat for other species. This is, however, a grave problem – only 11.5% of Earth's land area was within protected areas in 2008 (Kunzig 2008). And with the increasing human population encroaching further into natural habitats, expanding the number of their houses, needing more soil for harvesting more food, the future

trends are rather pessimistic. The authors realize humanity's continued failure to stabilize its numbers. They say: "If we want to preserve species, then, we must end this demographic onslaught as quickly and possible" (Staples and Cafaro 2012, 295). This is the *sine qua non* of species protection.

For these reasons, they propose that people (1) strictly limit their use of key resources on which non-human species depend, strictly limit air, water and other types of pollution, (2) make transition from endless growth economies to steady-state economies (Daly and Farley 2004, Daly 2007), and (3) humanly stabilize and then gradually reduce the human population. Only this can help us preserve sufficient resources for ourselves and other species in perpetuity. The authors say: "Thus and only thus, we claim, will we have any chance to create genuinely sustainable societies" (Staples and Cafaro 2012, 296) and "even on a selfish, anthropocentric definition of sustainability… humanity must face up to limits to growth" (Staples and Cafaro 2012, 297).

Staples and Cafaro conclude their defenses of a species' right to exist by saying: "This is no cause for lamentation. We believe acknowledging other species right to exist /…/ would create a better world than the one we are constructing by blindly pursuing the demographic and economic status quo; for other species, certainly, but also for people. It would be a world where the human right to experience and celebrate wild nature is more widely ensured. It would be a world with significant room for human activity, but also one where we set aside places where such activity is largely absent; where we cultivate wisdom as well as cleverness, and self-restraint as well as self-development. Thus, it would be a world with happier, freer, more just – and fewer – people; one where, when children asked their parents, 'Where are the animals supposed to live?' they could answer, honestly and proudly: 'Right here, next to us, forever'" (Staples and Cafaro 2012, 297).

5.2.4 Environmentalists Combat Overpopulation

In 2017, *The Overpopulation Project* was initiated. Organized and led by three senior researchers, Frank Götmark, Professor of Animal Ecology and Conservation Biology, University of Gothenburg, Sweden; Philip Cafaro, Philosophy Professor at Colorado State University, US; and Jane O'Sullivan, Honorary Senior Research Associate at the School of Agriculture and Food Sciences, University of Queensland, Australia; its goal "is to study and

highlight the environmental impacts of overpopulation, including human policies to end population growth around the world" (TOP 2021), but above all, to keep reminding decision-makers, scientists, and the public that overpopulation needs to be dealt with urgently.

In December 2020, Philip Cafaro, in his article *Human Rights and Population Policy*, reminded that "environmental degradation directly threatens many human rights taken for granted, such as sufficient food, water and shelter, and the right to basic physical security. It indirectly threatens all human rights, since they depend on a functioning social order which in turn rests on essential ecosystem services which humanity is currently degrading" (Cafaro 2020), and further stresses that "all human rights are environmentally-dependent rights and securing them could be rendered impossible by overpopulation, any serious ethical analysis needs to consider the possibility that limiting reproductive rights might be necessary to secure a decent future for humanity (and other species). Such a conclusion should not be surprising: no rights are absolute and all rights find their proper scope and limits within a larger framework of human interests. Parents exercising their reproductive rights should avoid damaging the interests of future generations, or even their current children" (Cafaro 2020). Rights and responsibilities always go – or they should go – together. In this overpopulated and environmentally declining world, the rights to have children cannot be unlimited. However, TOP supports humane public policies, as Philip Cafaro puts it: "Coercion, no, incentives, yes. Forced sterilization, no, frank reminders that we are overpopulated, yes" (Cafaro 2020).

For this reason, TOP encourages and favors small families. As Christopher Tucker puts it: "Small, educated, and prosperous families are not held up as the hallmark of modernity and progress, instead of runaway population growth" (Tucker 2020). They *should* be.

Similarly, Philip Cafaro says: "It is entirely feasible to achieve a more just and sustainable planet – one where small, educated and prosperous families think deliberately about their impact on each other and the ecosystems that give them life. We need not force future generations to embrace the fear and uncertainty posed by the ecological calamity that awaits if we refuse to change. We need only build bridges to the rest of our brethren, across the globe, to accelerate already inevitable trends" (Cafaro 2020).

By inevitable trends, he means a decline in human numbers to long-sustainable levels. In the next chapter, objections against bringing down humanity's numbers will be discussed.

6 The Objections

"You should build over and beyond yourself. /…/ You should not only reproduce, but surproduce!"

– Friedrich Nietzsche (Nietzsche 2006, 52)

"If only Malthus, instead of Ricardo, had been the parent stem from which nineteenth-century economics proceeded, what a much wiser and richer place the world would be today!"

– John Maynard Keynes (Keynes 1933, 71)

6.1 Economic Objections

The decreasing human population is a major concern for economists and politicians. While environmentalists talk about the need for a zero-growth world, all the economics of the last two centuries have been built upon the idea that economic growth is what leads to the prosperity of a country and the well-being of its citizens. And economic growth with a decreasing population at the global level is not just more difficult but impossible.

The fact that these worries about what population decline would mean for two hundred years of steadily growing prosperity are real can be well illustrated in a recent opinion blog of Tyler Cowen, an influential American Professor of Economics at George Mason University.

In April 2021, he wrote his *What the World Needs Now Is More People*, in which he clearly states that "there is some evidence that shrinking populations are bad for global economy" (Cowen 2021). He tries to find intervening factors to restore fertility. He realizes that religiosity tends to boost family size, but it tends to decline as the wealth increases. For this reason, Cowen continues as follows: "No kind of family planning should be mandatory. But there should be policies that make larger families a more appealing option, both economically and otherwise. /…/ As populations fall to much lower levels, a sense of moral panic will set in.

Families might decide to have more children, feeling that the very survival of their country is at stake" (Cowen 2021).

Interestingly, Cowen sees "depopulation as a major problem that the world in general, and its wealthier countries in particular, are failing even to discuss, much less address" (Cowen 2021), while completely ignores the fact the world population grows by over 80 million people a year. In the same vein, he alarms of falling fertility rates which he sees as a threat to human prosperity, but he completely dismisses the threat of vast human numbers on the environment and human prosperity.

What is worth mentioning is the *United States Census Bureau's 2020 Census* that was also released in April 2021. According to this report, the population of the United States that is currently 331.5 million experienced between 2010 and 2020 a 7.4% increase in population, or – to put in numbers – 22.7 million people, which equates to the current size of Florida (USCB 2021). This does not look like the depopulation of the United States declared by Tyler Cowen.

Not surprisingly, just a few days later, his opinion was countered. Mark A. Young released his *Counterpoint: In Truth, Overpopulation Is Blighting Human Lives,* in which he argues that "we don't need more people on the planet, we need to change the economic system" (Young 2021). Young notices that Cowen is not the only one. In recent years, several other economists argued that fewer people on the planet will lead to decreased consumption and reduced economic growth, which will be devastating for global economy. However, as Young says: "This is the case only if humanity stubbornly pursues an 18th century economic system that understandably did not anticipate the constraints of the 21st century world" (Young 2021).

Young continues with his analysis of the current leading system: "While capitalism has been a tremendous benefit to the material well-being of many humans, one flaw is in critical need of correction – that the effects of scale are not integrated into the economic model. By ignoring scale, capitalist theory could be predicated upon indefinite economic growth – in other words, unlimited material consumption. Ignoring the effects of scale was permissible when the human population and consumption were small, but that is unequivocally not our situation now" (Young 2021).

And he goes on: "Rather than insisting that humanity must pursue unlimited consumption on a finite planet, we need the world's finest economic minds to determine how capitalism can be

modified to function at steady state, while keeping the benefits of free market dynamics. Innovation can, in principle, continue indefinitely; expanding material consumption cannot. Economic systems are human creations and thus can be changed, while the fundamental physical, chemical and biological characteristics of the Earth cannot" (Young 2021).

In the same way as Young, Professor of Economics Herman E. Daly calls for a transition from endless growth economics to steady-state economics (Daly 2007). Staples and Cafaro argue that future well-being depends on slowing economic growth, which currently threatens both human and non-human well-being. As such, they support workers' rights to generous vacation time, or unemployment compensation, or the aforementioned species' rights against extinction as "doubly valuable in achieving their direct purposes and in slowing toxic economic growth" (Staples and Cafaro 2012, 294).

Young ends his counterpoint against Cowen: "Creating more human lives, without sufficient resources for them, should not be our objective. Fewer human lives, with each life having adequate resources to allow increased opportunity for meaning and joy, does not paint a bleak future, indeed quite the opposite" (Young 2021).

6.2 Demographic Objections

Due to achievements in medicine, public health, better diet, and living conditions, people tend to live longer than ever, which leads to the increased portion of older people. Ageing human population, which is a phenomenon unprecedented in human history, just as human overpopulation, has captured the public imagination as a threat to our economy and quality of life. With people living longer and decreasing fertility rates, some people start to worry that we will run short of workers and taxpayers. It is not surprising because public media reports and political discourse often adopt a tone of panic on this topic. For this reason, some argue for boosting fertility. However, there is no need to worry.

In October 2020, Jane O'Sullivan released her discussion paper *Silver Tsunami or Silver Lining? Why We Should Not Fear an Ageing Population,* in which she brilliantly disproves all the myths and misunderstandings about the threat of population ageing. On the contrary, she highlights the benefits of ageing population.

O'Sullivan starts her paper by saying that demographic ageing, or an ageing population, is "a shift toward higher proportions of older people" and "an inevitable by-product of the great advances of human society, which ensure that most people born survive to live long and healthy lives" (O'Sullivan 2020, 4). However, she adds right away that it does not refer to the way how individual people experience getting old, as more and more people have been ageing better over time and are able to live good, prosperous, and healthy lives.

Whereas "few people would choose to reverse this process, to have the numbers of elderly depleted by premature deaths" (O'Sullivan 2020, 4), many suggest boosting fertility because population growth causes lower proportions of elderly people by simply diluting them by bigger young cohorts coming behind them. However, O'Sullivan points out the unsustainability of such an approach: "The younger people being added in ever-greater numbers will also grow old, creating an ever-bigger challenge to dilute them with more young people. This is often referred to as 'Ponzi demography.' Ponzi schemes are named after the fraudulent investment scam run by Charles Ponzi in the 1920s (and emulated by Bernie Madoff in the 2000s), which involve paying current investors not from actual earnings on their investment, but from the deposits of ever greater numbers of new investors. Such scams always collapse because of the impossibility of recruiting indefinitely greater numbers of investors. In a similar vein, Ponzi demography is as unsustainable as the perpetual population growth on which it depends" (O'Sullivan 2020, 10). So, boosting fertility rates and population growth does not solve ageing in the long run.

But not that such an approach is unsustainable; it is largely unnecessary, as O'Sullivan further explains. Ageing is an inevitable but self-limiting process. Demographic transition is a process of shifting from pre-modern conditions with high birth rates matched by high mortality (mostly of children) to modern conditions with low birth rates and long-life expectancy matched by small families. This process occurs all around the world, in all societies (O'Sullivan 2020, 5). During the demographic transition, the proportion of people over 65 years steadily increases, while the proportion of people aged 15-64 years (traditionally referred to as 'working age') temporarily rises in the middle of the demographic transition, only to fall back to 'normal' levels around 55%, whereas the proportion of people over 65 years stabilize around 30-33% (O'Sullivan 2020, 8-9). As O'Sullivan summarizes: This is a new stable level at which "at no point would people over 65 outnumber young adults, even if the population were shrinking steadily" (O'Sullivan 2020, 1). O'Sullivan further targets an oft-repeated 'dependency fallacy'

that people over 65 depend economically on people 15-64, which she calls false and misleading as people over 65 usually maintain economic activity and continue working, if only partially.

Further, O'Sullivan refutes false assumptions of economic models which predict less economic activity as the population ages. Countries that have aged the most (most notably Japan) are experiencing a declining proportion of people aged 15-64 for more than two decades but no decline in the workforce; in other words, they have not seen a shortage of workers (and taxpayers). In fact, due to the same demand for workers but fewer working-age people, these countries have been experiencing less unemployment and underemployment (O'Sullivan 2020, 14-15).

Another common myth about population ageing is that ageing population is a significant contributor to healthcare costs. O'Sullivan points out, however, that "international comparisons show no correlation between the extent of ageing and the amount each country spends on health" (O'Sullivan 2020, 27) as older people are getting healthier over time. The major increase in costs, she underlines, is not because of the rise in the proportion of elderly people, but due to new, improved and more services per person (whether young or elderly).

But even if elderly people incur health expenses more frequently, it is not a reason for boosting population growth because the cost of the growing population exceeds the cost of the ageing population – the costs of extra infrastructure, housing, and education sustain growing population greatly outweigh the costs of pension, healthcare and aged-care burdens. O'Sullivan states that the "inclusion of these costs reveal that the rapid population growth 'cure' is worse than the 'disease' of ageing that it purports to fix" (O'Sullivan 2020, 3). The harsh truth developers do not like the public to know is that "the savings in infrastructure spending would more than compensate for the small increase in ageing related costs" (O'Sullivan 2020, 36).

In conclusion, O'Sullivan repeats that "demographic ageing represents the final stage of the inevitable demographic transition, a process on which our modern quality of life depends. It is, therefore, to be celebrated rather than fearer" (O'Sullivan 2020, 36). "An older, stationary, or declining population," she continues, "offers many benefits for quality of life, environmental sustainability and economic stability." (O'Sullivan 2020, 37). She mentions positive trends of declining populations which could make us richer (with less underemployment), smarter (with more experienced workforce), safer (with less crime), fairer (with better pay and job security),

greener (with lower pollution and more space for nature), healthier (as we will avoid stresses of insecure employment) and happier (with less crowding, queuing and with more time on ourselves and our families and communities) (O'Sullivan 2020, 37).

In the last paragraph, O'Sullivan answers the title question "Silver tsunami or silver lining?" as follows: "These 'depopulation dividends' are there to be taken, if we embrace our demographic maturity and end the counterproductive attempts to dilute the older cohorts. We need to see our generations as collaborating rather than competing with each other. Through an older, stable or declining population we can glimpse a silver lining to the otherwise darkening clouds of environmental and social crises" (O'Sullivan 2020, 37).

O'Sullivan realizes that "with any change, there are winners and losers. The losers from an older, non-growing population would include big employers of low-wage workers who will find it harder to exploit their workforce, and property developers who will have less access to the windfall gains from rezoning land" (O'Sullivan 2020, 36). For this reason, it is not surprising the big business and property groups do their best to persuade both governments and the public about the dangers of population ageing and the need for population growth.

6.3 Religious Objections

Apart from economic and demographic objections, frequent objections or even opposition to bring down humanity's numbers come from religions that push forward pronatalism. Pronatalism operates at a deep level through cultures and is increased by competition between tribal or religious groups ("numbers give power") (Guillebaud 2019).

This claim can be supported by a recent observation of Professor of Ecology Frank Götmark: "Few journalists and educated people in the West are aware of the strong growth in religiosity around the world in recent decades, especially in Africa and western Asia. If the *United Nations'* population projection is correct and current trends continue, the additional 3.1 billion people on the Earth in 2100 will be highly religious" (Götmark 2021).

Religions generally (there are exceptions, however, such as Buddhism, as was pointed out by Jonathan Austen (Austen 2018, 46)) – boost fertility by two means:

(1) By promoting of a 'pro-life' mentality and reinforcement of people's belief that they cannot satisfy their parental instincts by having only one or two children ("the more, the better"). As John Guillebaud observes: "Such attitudes may trump a more altruistic decision by people to consider their climate legacy, changing their preferences in the interests of posterity and the biosphere" (Guillebaud 2016).

(2) By denying women's bodily autonomy and forbidding contraception and abortion, thus forcing women and girls to give births to *unwanted* children or to have more children than they would like to have. In the absence of contraceptive methods, services, and counseling (and legal abortion!), many millions of women and couples face this pro-natalist form of *coercion*.

The most illuminous example is the Catholic Church, the largest Christian denomination with around 1.3 billion people worldwide (Central Office of Church 2017). The Church in its official documents on family issues (namely 1968 *Humanae Vitae – On Human Life*; 1995 *Evangelium Vitae – The Gospel of Life*; 2008 *Dignitas Personae – The Dignity of a Person*; 2014 *Relatio Synodi*; 2015 *Relatio Finalis*, and the latest 2016 *Amoris Laetitia – The Joy of Love*) repeatedly forbids *all* contraceptive methods apart from periodical abstinence. All the other methods (just as sterilization and abortion) are rejected, called "unacceptable even in places with high birth rates," just as "a mentality often opposed to life /…/ promoted by the world politics of reproductive health" is rejected (Pope Francis 2016). The extent of this thesis does not allow to discuss reasons for this opposition (just as their disapproval) – readers can find out more in the 2019 article, *Catholicism and Contraception* (Greguš 2019).

The Vatican's prohibition of modern contraception is wrong and unethical for two reasons:

(1) Periodical abstinence is a method of contraception that often fails. Also, periodical abstinence requires *much* abstinence to work. Recommendation of this outdated method as the only possible method goes against the medical principle of best practice (i.e., providing a practice that has been generally accepted as superior to other alternatives or means).

(2) It is hypocritical and creates a 'double standard.' This ban disproportionally affects Catholics in poorer settings (developing countries) because in *all* developed countries, the use of all modern contraception by Catholics is the same as by non-Catholics (Guillebaud 2019).

Pope Francis, in his *Amoris Laetitia*, speaks of "a mentality often opposed to life /…/ promoted by the world politics of reproductive health" (Pope Francis 2016). This statement must be refused as misleading because efforts to bring down fertility rates and human numbers in the world that is vastly overpopulated are not "a mentality opposed to life," as it is precisely the opposite. By bringing down fertility rates and human numbers, we are giving a chance to other species, which makes such efforts truly 'pro-life.' On the other hand, a stubborn demand to multiply in the overpopulated world cannot be viewed as 'pro-life' because what, in fact, it is, is 'pro-extinction,' as it leads to reduction and extinction of whole species as discussed.

Also, all religions (including the Catholic Church) encourage to love one's neighbor. But as Christian John Guillebaud puts it: "How can we ever claim to really 'loving our neighbour' if we leave out of consideration our neighbour overseas (who will suffer most from climate change) or, our future neighbour (receiving from us a potentially trashed planet)?" (Guillebaud 2019)

In the world that was filled (according to God's instruction?) and now even overfilled, the ethical and unselfish way-to-go is to choose small family size and embrace ethics beyond our lifespan and beyond our species. For this reason, we need to view 'pro-life' in a broader context, not strictly anthropocentrically, and such we need to rethink our procreative behavior.

A dialogue with religions and churches is a must, and communication with religious leaders should be added to the agenda of all population and environmentalist organizations. Religions, and their leaders, can play a crucial role in creating a better world by the promotion of a new, real 'pro-life' and sustainable ethics and by the promotion of human autonomy and fundamental human right to free reproductive choice.

To paraphrase Young's words: Religions, just as laws and economic systems, are human creations and thus can be changed, while the fundamental physical, chemical, and biological characteristics of the Earth cannot.

However, there is some good news. It appears that the Vatican is preparing to make moves to revise its stance a bit. Without mentioning the population, they are looking to drive a focus on small families. Obviously, a shift by the Vatican would be a real game-changer here.

7 The Perspectives

"A thousand goals there have been until now, for there have been a thousand peoples. Only the fetters for the thousand necks are still missing, the one goal is missing. Humanity still has no goal. But tell me, my brothers: if humanity still lacks a goal, does it not also still lack – humanity itself?"

– Friedrich Nietzsche (Nietzsche 2006, 44)

"Our Earthly problems are obstacles to our Solar challenges, i.e., colonization of our Solar system and far beyond, which in itself, shall become a true humanity's goal."

– Jan Greguš

7.1 Towards Sustainability

Though there have been many doomsayers throughout human history, it is without any doubt that humanity has brought, by overpopulating and overconsuming, severe problems on itself and the world around it. The unsustainable ecological debt it caused must be paid down promptly, or else a cataclysm awaits. As Christopher Tucker proclaimed: Our planet has a people problem. And, as humanity and nature struggle to coexist sustainably, it is time for all of us to focus all our efforts on bending the human population curve downward.

Tucker asks how to bring our more than 7.8 billion population down. He says: "Many actions and innovations will be required just to make the three billion number a legitimately viable option, and indeed to actually bring the population down to that number. First, though, we must reverse runaway population growth. In short, it is a question of women's empowerment. To be clear, women's empowerment is an inherent good, in and of itself. It should not be viewed as a means to an end. Women's empowerment, education and autonomy over their bodies are things we should support for their own sake. Yet they are clearly central to how our species can align with the long-term sustainability of the planet" (Tucker 2019, 181). As shown above, free and full access to family planning methods and services are also vital.

However, the problem here is that international organizations and their documents on the topic (most lately the newest *United Nations Population Fund's* report *State of World Population 2021*) focus exclusively on 'bodily autonomy,' thus continuing the course of former reports in which women's 'freedom of choice' was highlighted, while reproductive responsibilities have been neglected (van Weeren 2021). This course was set at the *International Conference on Population and Development* in Cairo, 1994. The Cairo conference meant a paradigm shift, in which the original goal of reducing global population growth by promoting family planning was replaced by the individualistic goal or women's empowerment, generally denoted as 'sexual and reproductive health and rights' (van Weeren 2021). The Nairobi summit in 2019 reinforced this course (Greguš 2020a).

But with a rapidly growing population and the plethora of problems it causes, what we need right now is a shift from bodily autonomy back to family planning. International organizations must stop focusing 'only' on women's sexual freedom and return to programs focusing at family planning and birth control (Greguš 2020a, van Weeren 2021). International family planning programs should be prioritized, and finances going into them highly increased.

7.2 Humanity's Deadly Sins

While some may argue that religions with their pro-natalist policies are insurmountable barriers that will always do their best to prevent or suppress women's education, empowerment, and access to family planning methods, it may not be absolutely true. Costa Rica is an example of a Catholic country that dramatically lowered birth rates in a short amount of time through supportive measures, namely through modern family planning methods and services, including vasectomies (Tucker 2019, 187). Most countries in Europe (more or less Christian), Muslim Iran, and Buddhist Thailand are similar success stories. So, despite the prejudices, religions may not be an obstacle, but powerful allies, thus dialogue and cooperation with them need to be established. Religions with their ethical teachings can also greatly contribute. As a possible example, it can be embracing Konrad Lorenz's *Civilized Man's Eight Deadly Sins*.

In 1973, the very same year Austrian zoologist and ethologist Konrad Lorenz received the Nobel Prize in Physiology or Medicine, he published his book *Civilized Man's Eight Deadly Sins*. In the foreword, he writes: "I feel I should give some justification for my writing the kind

of sermon contained in this book. To do so is not generally considered the task of the scientist. However, in medical science it is legitimate to give warning whenever there is reason to suspect a threatening illness, even if its cause is not yet fully analysed. This is indubitably the case of the epidemic mental illnesses afflicting present-day humanity" (Lorenz 1973, xii).

Apparently, it turns out it is up to scientists to give such sermons that warn humanity as was shown in chapter 2, i.e., Kendal et al.'s 1992 *World Scientist' Warning to Humanity*, Ripple et al.'s 2017 *World Scientists' Warning to Humanity: A Second Notice*, and many others.

In the book, Lorenz introduces and discusses eight new deadly sins humanity is committing, namely: (1) Overpopulation, (2) Devastation of the environment, (3) Man's race against himself, (4) Entropy of feeling, (5) Genetic decay, (6) The break with tradition, (7) Indoctrinability, and (8) Nuclear weapons (Lorenz 1973).

Religions could embrace Lorenz's *Deadly Sins* and make overpopulation (and large families), and devastation of the environment *sins* officially accepted and *condemned* (however unlikely it seems right now). It would have tremendous positive impacts on our future.

Lorenz's book can be concluded by words from his foreword: "Only a few years ago, those who raised their voice to warn humanity about dangers threatening it from its own short-sightedness really were prophets crying in the wilderness" (Lorenz 1973, x). "True, the dangers threatening humanity have in no way diminished, but the number of people who are aware of them is rapidly increasing. /…/ True, a dark cloud of collective stupidity is still obscuring the minds of many influential people. /…/ But in general, awareness of humanity's predicament is spreading with exponentially increasing speed. It needs to, because the dangers are doing exactly the same" (Lorenz 1973, xi).

7.3 Becoming Better Ancestors

The 19th and 20th centuries could be viewed as lessons in half-blindness or short-sightedness. Humanity aggressively used technologies to achieve many forms of progress. Between the 1930s and the 1970s and especially during the so-called Green Revolution, humanity invested enormous resources into increased agricultural production (instead of

decreasing the human population). Due to high-yield crops, new chemical fertilizers, synthetic herbicides, and pesticides, agricultural production manifold increased. However, the 'Father' of the Green Revolution and Nobel Laureate Norman Borlaug was not as optimistic as the mainstream media praising the success of the Green Revolution. Borlaug knew he 'only' gave humanity a temporal breathing space and time to stabilize human numbers.

At the end of his 1970 Nobel Lecture *The Green Revolution, Peace, and Humanity*, Norman Borlaug said: "The Green revolution has won a temporary success in man's war against hunger and deprivation; it has given man a breathing space. If fully implemented, the revolution can provide sufficient food for sustenance during the next three decades. But the frightening power of human reproduction must also be curbed; otherwise the success of the Green revolution will be ephemeral only… Most people still fail to comprehend the magnitude and menace of our burgeoning population" (Borlaug 1970). But humanity, due to its short-sightedness, completely failed to recognize this.

In October 2020, Australian philosopher Roman Krznaric, who frequently writes about the power of ideas to change society, published his latest book, *The Good Ancestor: How to Think Long Term in a Short-Term World.* He also runs *Long Now: Seminars About Long-term Thinking*, which are freely available online (Krznaric 2020a). In his book, which *The Observer* rightly labeled as "a philosopher's contribution to save the world" (Krznaric 2020b), and in his seminars on the history and future of long-term thinking, he challenges our obsession with the here and now and tries to extend our empathy to future generations.

He writes: "Human beings have an astonishing evolutionary gift: agile imaginations that can shift in an instant from thinking on a scale of seconds to a scale of years or even centuries. The need to draw on our capacity to think long-term has never been more urgent, whether in areas such as public health care, to deal with technological risks, or to confront the threats of an ecological crisis. What can we do to overcome the tyranny of the now? The drivers of short-termism threaten to drag us over the edge of civilizational breakdown, while ways to think long-term are drawing us towards a culture of longer time horizons and responsibility for the future of humankind" (Krznaric 2020a).

Long-term thinking is precisely what we need in the 21st century so that we do not repeat the follies of the past, such as *procreation philosophies* and "so-called pro-natalist policies in

the face of the near vertical population growth on our planet" (Tucker 2019, 186) but think and care about the fate of our planet from which all species including us evolved and the fate of humanity, and thus so that we become better ancestors to our progeny.

In his October TED presentation, Krznaric said: "It's time for humankind to recognize a disturbing truth: we have colonized the future. In wealthy countries especially, we treat it like a distant colonial outpost where we can freely dump ecological damage and technological risk as if there was nobody there. The tragedy is that tomorrow's generations aren't here to challenge this pillaging of their inheritance. /…/ They're granted no political rights or representation; they have no influence in the marketplace. The great silent majority of the future generations is rendered powerless. It can be hard to grasp the scale of this injustice. So, look at it this way: There are 7.7 billion people alive today. That is just a tiny fraction of the estimated 100 billion people who have lived and died over the past 50 thousand years. But both of these are vastly outnumbered by the nearly seven trillion people who will be born in the next 50 thousand years, assuming that current birth rates stabilize. In the next two centuries alone, tens of billion people will be born. Amongst them, all your grandchildren, and their grandchildren and the friends and communities on whom they'll depend. How will all those future generations look back on us and the legacy we're leaving for them? (Krznaric 2020b)

7.4 Towards Japonization

Though it is true that the world is ageing rapidly, especially in developed countries, economic arguments that birth rates ought to increase (or that immigration is necessary) to support the ageing population are short-sighted and simply not necessary. It was pointed out above that the ageing population provides many benefits, with most people living longer and healthier lives, being active and economically productive for the majority of their lives through to old age, thus contributing and benefiting their society. Also, Jonathan Austen contributes with two relevant observations to this topic. First, "contrary to commonly held views, the old are far more beneficial than the young. With increases in levels of education often to degree level, children are a drag on the economy and of no benefit until they are in their twenties" (Austen 2018, 128) and second, "as automation and technology have increased, jobs have disappeared by the millions, leaving a massive workforce looking for employment. With 40-

50% of jobs predicted to disappear by 2050, there will be huge opportunities for the care sector, and for people who decide to care for their own parents" (Austen 2018, 128).

It is true that humanity needs to prepare for a world with different demographics than we had in the past (and that working age will likely have to change), but these challenges can be met. The most illuminous example that it can be done and that is working well is Japan.

Japan is ahead of the demographic curve. Its population peaked at 128 million in 2009, and then it started declining. It is projected to decline to 88 million by 2065, i.e., to decline by one-third in the coming 50 years. Japan is already the oldest society on the planet, in 2015, with 2.1 working people to support every person over the age of 65. It is projected that by 2065, there will be only 1.2 working people to support every person over the age of 65. However, Japanese society is still very successful and wealthy, with many positives deriving from its declining population – small families mean that large fortune is bequeathed to fewer recipients, each receiving a larger share (Austen 2018, 43). Japanese Prime Minister Shinzo Abe has said that the nation's declining demographic are not a burden but an incentive to bolster productivity through robotic technology and artificial intelligence (Austen 2018, 42).

Austen observes that "another positive side effect of a reduced population in Japan is research and development into automation. With a low unemployment rate, labour is scarce, but urgently needed to help with care of the elderly. Rather than take the politically difficult option of introducing large-scale cheap labour via immigration to help with the ageing population, Japan is looking to automation and robots to do the work instead. This makes perfect sense in a country with the unique homogeneous cultural identity of Japan, which has never invited large numbers of people to its shores from other parts of the world. It also makes sense in one of the most technologically advanced countries in the world" (Austen 2018, 43).

Japan is a great example of "shaking off past over-industrialism and the detrimental enslavement of economic growth and replacing it with a post-modern, post-growth economic order" (Austen 2018, 44). If Japan saw it as a good thing to eliminate undesirable, low-paid, and repetitive manual jobs, why not us? Why should we not follow their example and *japonize* our European or American countries in the same way they did? Japan serves as a perfect disproval of a false clash of environmentalism and economy as Japan manages to combine both.

To conclude this part, without any doubt, the ageing population will bring new and demanding challenges, which will also work as great opportunities and stimuli to the creation of new technologies, artificial intelligence, robotization, etc. On the other hand, challenges of increasing human numbers, increased consumption and waste, destroyed environment, and running-out resources are more profound and far more threatening. *Population Matters* member Esther Philips stated in February 2021: "It was finally recognized that a large cohort of elderly are easier to manage than floods, subsidence, droughts, hurricanes, and rising temperatures. It was also realized that the risk of future pandemics locking us all in was not worth carrying on as we are" (Phillips 2021).

7.5 Beyond Sustainability

There are some who claim that the extra-terrestrial settlements may be the way of solving our Earthly problems such as human overpopulation. It is true that colonization of our Solar system and space generally may solve some of our problems (though the question is, if in time) and that humanity must spread into space to seek its further existence – it is a future must. In reality, it should become one of the global targets when we start discussing another set of goals beyond 2030, i.e., beyond the *Sustainable Development Goals*.

However, there are serious objections to such claims. Most notably – and most current commentators have not made the connection yet, it is not even on their radar – that our Earthly problems (or our incompetence to solve our global problems, most notably human overpopulation) are our major obstacles to our Solar challenges, i.e., colonizing our Solar system. Our overpopulated world with its increasing population means increased demand for infrastructure, housing, education, healthcare, and many more. This takes away humanity's focus, time, energy, resources, and finances from our out-of-Earth endeavors. To put it in other words: Money *wasted* on infrastructure, housing, education, healthcare, etc., for additional millions of people is money not spent in space programs. Human overpopulation is blocking and slowing our expansion to space and our colonization efforts.

But even if it were possible to colonize space ever-increasing human numbers, the problem of human overpopulation remains. We must not consume and destroy this planet, run out of its resources and then, send rockets to Mars and bring resources from there to here only

to survive. Counting on Mars to solve our problems is not the solution. It is only the elongation of agony. We should not proclaim a 'Mission Mars,' but a dual 'Mission Earth and Mars.' We must not resign on saving Earth and its unique environment. We must promote the solutions so that our planetary system can work long-term. We must not colonize space with our home world left in ruins because so far, this planet is our only home. We need to save it for posterity.

In the same spirit, Jeff Bezos said: "We need to preserve this unique gem of a planet which is completely irreplaceable – there is no plan B. We must save the planet. But we must not give up on the future of our children and grandchildren on dynamism and growth. We can have both. Who is going to do this work? It is this generation's job to build that road to space, so that the future generations can unleash their creativity. This vision sounds very big, as it is. None of that is easy and all of that is hard. But think about this. Big things start small" (Bezos 2020). Jeff Bezos and other visionary entrepreneurs represent the hope that humanity manages to bridge both environmentalism and economy, both sustainability and further progress.

Whereas some call for abandoning capitalism or its radical change or transformation, space expansion and colonization can preserve economic growth in the world with the declining population. So, it is not as much about changing the current economic system as it may be about finding new targets – instead of developers' focus 'on the ground,' we can start to 'focus on/towards the stars.' Surely, with any change, there are losers and winners. The winners from an older, non-growing population could include those who will grasp the opportunities, such as corporations who will find their way to space and thus profit from new business opportunities that colonization of space (and the provision of compartments for it) will bring. This would be a win-win-win scenario for both the environment and economy and the future of humanity.

Sustainable humanity is a humanity that sustains. Right now, we have no plan B or planet B. But long-term thinking suggests there can be one, perhaps more. We need to do our best to seek our further future among the stars so that – in case plan A fails and we loose planet A – humanity sustains elsewhere. However, to secure planet A – which is our moral duty towards the planet, its species and our posterity – and to save time, focus, energy and finances for our space endeavours, we must stop human overpopulation in the first place and bring our numbers to sustainable numbers as soon as possible.

Conclusion

"Which is the greater danger – nuclear warfare or the population explosion? The latter absolutely! To bring about nuclear war, someone has to do something; someone has to press a button. To bring about destruction by overcrowding, mass starvation, anarchy, the destruction of our most cherished values, there is no need to do anything. We need only do nothing except what comes naturally – and breed. And how easy it is to do nothing."

– Isaac Asimov (Asimov 2011, 145)

"Philosophers have hitherto only interpreted the world in various ways; the point is to SAVE it."

– Jan Greguš

Human overpopulation is the greatest challenge to our generation and one of the greatest threats to the generations to come. Centuries from now, our posterity will look back at our ignorance and stupidity and wonder how we could have allowed all this to happen. The solutions were so very simple – only to limit our procreation – and we failed so bitterly.

However, we are not centuries from now – We *are* here *and* now. We still can – and *must* – do our best to (1) stop population growth, (2) stabilize our population, and finally (3) bring it down to long-sustainable numbers: somewhere around three billion human beings, based on current literature. And we need to do it humanely, on voluntary basis by full availability of all family planning methods and services (including access to safe abortion in case contraception fails), by the promotion of education and empowerment of all human beings, and by the promotion of small families worldwide with one or two kids.

Of course, three billion human beings is no absolute number and the goal is not to become an authoritarian world society. That is why we need further discussion to arrive at a general consensus on the long-term sustainable number of humans.

But first, we need to acknowledge the magnitude of the problem and discuss it. This is what we need to do as human beings, as citizens of states, as good ancestors, and in our case, as long-term thinking philosophers. Long ago, Karl Marx formulated his ground-breaking thesis

that the goal of philosophy is to change the world. More recently, it was rephrased by Odo Marquard that the goal of philosophy is "to preserve the world," or in the original German, *Die Geschichtsphilosophen haben die Welt nur verschieden verändert, es kommt darauf an, sie zu verschone* (Marquard 1982, 13).

Even if we want to preserve the world, we must do so by changing it – now more than ever before. This was well formulated by Italian writer Giuseppe Tomasi di Lampedusa, who wrote in his only novel, *Il Gattopardo*: "If we want things to stay as they are, things will have to change" (Lampedusa 2007, 40). This perfectly fits on human overpopulation and other phenomena discussed in this thesis. We need to change the world and ourselves to save the world. And philosophers can greatly contribute to this.

To bring more philosophers to this cause is the *immanent* goal of this Master's thesis.

Literature

"Thus the saying 'One sows and another reaps' is true. I sent you to reap what you have not worked for. Others have done the hard work, and you have reaped the benefits of their labour."

– John, 4:37-38 (Holy Bible 2000, 1182)

"In a conversation with Eckermann, Goethe advised an author accused of plagiarism to say 'What is there is mine, and whether I got it from a book or from life is of no consequence. The only point is, whether I have made a right use of it.'"

– Ibn Warraq (Warraq 2003, xvi)

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