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OVERPOPULATION AND THE IMPACT ON THE ENVIRONMENT

by

DORIS BAUS

A master's thesis submitted to the Graduate Faculty in Liberal Studies in partial fulfilment of the requirements for the degree of Master of Arts, The City University of New York

2017

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Overpopulation and the Impact on the Environment

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This manuscript has been read and accepted for the Graduate Faculty in Liberal Studies in satisfaction of the thesis requirement for the degree of Master of Arts.

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Date

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## ABSTRACT

### Overpopulation and the Impact on the Environment

by

Doris Baus

Advisor: Sophia Perdikaris

In this research paper, the main focus is on the issue of overpopulation and its impact on the environment. The growing size of the global population is not an issue that appeared within the past couple of decades, but its origins come from the prehistoric time and extend to the very present day. Throughout the history, acknowledged scientists introduced the concept of “overpopulation” and predicted the future consequences if the world follows the same behavioral pattern. According to predictions, scientists invented the birth control pill and set population control through eugenics. Despite that, population continued to increase and fight with constant diseases. Migration was another component that encouraged population rise, which imposes severe threats to the environment. Urbanization destroys natural habitats and reinforces carbon dioxide emissions, which cause climate change and global warming. Species are becoming extinct and humanity is at threat that it set up for itself. Food scarcity and shortage of water as well as lack of job opportunities and inadequate education are the results of global inequality. Uneven distribution of natural resources, financial means, and individual rights give rise to poverty and define the global culture as greedy, despite the aid of international organizations and agencies. Solutions to overpopulation lie in the efforts of national institutions to implement policies that will correspond to the guidelines given by

international institutions that work for the best of the global community. Within this global network, individuals act in their best interest, leaving the rest in extreme poverty and shortage. The inequality supports issues that contribute to overpopulation and leads to a humanity's extinction.

## PREFACE

As of 2:24 p.m. Eastern Standard Time, on November 17, 2016, the world population clock shows the current world population to be 7, 465, 023, 315 and growing rapidly. At the same time, approximately 884 million people around the globe do not have an access to safe drinking water and one billion does not receive an adequate amount of the minimum dietary requirements, while another billion people are chronically malnourished (Harper 71). Around 2.6 billion people lack basic sanitation (Harper 71) and the remaining 25 percent of Earth that is untouched by the human hand belongs to a desert, arctic, tropical or boreal zones (Wuerthner 123).

One of the global issues impacting the world today is the threat of overpopulation. The growing population of 7 billion is expected to reach "at least nine billion according to the UN's medium projection" (Baird 11). Every year, the world population grows by 1.2 percent (Cascadia 48). Although this number may not sound alarming, the global population is doubling in less than 50 years (Cascadia 48). "Every second of every day, nine lives are brought into the world" (Sorvall 13). Every 10 seconds, 44 people are born, which counts for 140 million people per year (Baird 11). Subtracting this from the total amount of death in a year, 84 million people are brought to the world with an estimate of 230,000 people per day (Cascadia 48). "That's the equivalent of another Germany or a quarter of the US" (Baird 11).

Therefore, it is no doubt that the planet is becoming overpopulated. In the book *Is the Planet Full?*, Ian Goldin writes that on the planet which contains more than 7 billion people, 60 percent live in Asia, 15 percent in Africa, 11 percent in Europe, 9 percent in Latin America and the Caribbean, 5 percent in North America, and less than 1 percent in Oceania (1). In Singapore, "more than 7,000 people live per square kilometre, whereas in Australia three people on average inhabit

the same area" (Goldin 1). Following the World Trade Center attacks in New York City, on September 11, 2011, the reports found 2,819 deaths, but the world population was not severely affected as already in 20 minutes, the numbers recovered (Cascadia 48).

Environmental activists acknowledge the issue, while the rest thinks that they will be able to overcome this crisis as they were able to survive similar environmental events in the past, but do not realize that nature took an irreversible turn and that what occurs cannot go back to how it was before. Most people tend to focus mainly on short-term goals to enrich themselves and to experience pleasure rather than give their full attention to environmental protection for long-term goals. For that reason, the planet is running out of resources, and with every child born, environment suffers. It is paramount for humans to understand that our planet is a bounded system and no help from outside will come to assist the scarcity in natural resources that humans are soon to experience.

Therefore, the aim of this thesis is to raise awareness of the impact of overpopulation on the environment. In order to understand the crisis, the paper answers a set of questions. How did population growth become a global issue? Were scientists and statisticians focusing on population growth correct in their predictions? What methods did countries use in regulating population growth and what barriers did they confront in controlling childbirth? How effective were international agencies and institutions in helping countries deal with an expanding issue? What is the effect on nature and its resources? And lastly, what are possible solutions? Can we really stop the population growth or is this the way the world ends?



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## CHAPTER 1:

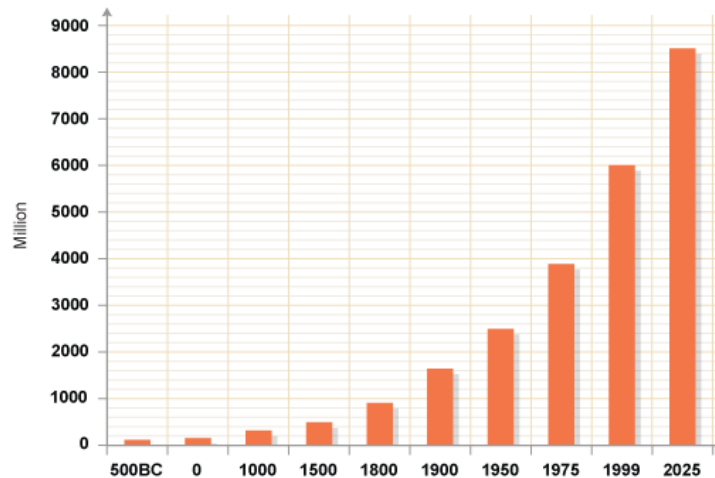
### *History of overpopulation*

In order to understand the crisis our planet undergoes today, it is important to define the term *crisis*. “As one noted ecologist concisely put it, ‘We cannot make the world uninhabitable for other forms of life and have it habitable for ourselves’” (Sorvall 9). If this occurs and a man becomes the only form of life on earth, his future existence is questionable. Among many other scholars tackling the crisis of overpopulation, Vivian Sorvall questions the occurrence of crisis in the first place. Underneath the "obvious answers" (Sorvall 9), such as the growth of people, lack of clean water, and polluted air, Sorvall says the crisis are grounded in the evolution of humans. She states, "man and other forms of life have existed on this planet for thousands of years in relative harmony and balance. Why has this balance been disturbed in the last four hundred years, primarily by Western man?" (Sorvall 10).

In order to understand this, Sorvall suggests that the man of the present time differentiates himself from other forms of life by thinking that he has the right to exploit nature and she further contends that one should understand the evolution of a man from three time periods: as a nomad, as a farmer, and lastly as a technocrat (10). When a man was a nomad, he identified himself with animals. His life depended on the usage of tools, and it is these tools that enabled his transition from a nomadic life into an agricultural one. As a farmer, man obtained food, shelter, and clothing, but this time his location did not change. With the influence of Greek and Judaic beliefs, man became regarded as different and superior to the rest of the natural order (Sorvall 11). Therefore, man started to reproduce, which soon went beyond the limit that the planet and society can support.

In this section of the paper, the history of overpopulation is covered from prehistoric time until the present decade. Figure 1. below shows world population growth since 500 B.C. until

projected 2025. The historical periods and events that occurred in them - such as wars, diseases, birth control, eugenics, migration, and other movements and policies - affected the population growth, and gave rise to statisticians, politicians, and philosophers, who aimed to prevent the outcome of an already existing issue, but confronted nothing other than resistance.



**Figure 1. World population growth 500 B.C.-2025.**

Source: BBC, UK: Geography, *Population change and structure*. Retrieved January 24, 2017.

## **1.1. PREHISTORIC TIME**

At the beginning of human civilization, before agriculture came to the fore, the world is thought to have had a total population of approximately one million (Baird 24). At the end of Ice Age, the melting glaciers raised the oceans' level. Animals and plants that were dependent on the glaciers moved to the cold mountains or to the areas of the north (Steffoff 26). On the other side, animals and plants seeking warmer temperature moved to areas that were previously covered with ice and snow. The planet experienced under population as people seeking adventures settled in the

regions that had not yet been explored. "Some 50000 years ago humans were found only in the tropics and warmer belts of the Old World. Northern Europe was reached 30000 years ago, then Siberia 20000 years ago and the Americas 11000 years ago" (Shah 13), forming "pockets of human population" (Shah 13). During the prehistoric era, the world population was stable until the neolithic transition, about 8,000 or 10,000 years ago, when the estimated world population equaled 5 million, "increasing to 50 million by 1000 B.C." (Davis 93, 97).

The growth was influenced by human's shift from hunting and gathering to farming, which increased his food supply (Davis 93, 97). Nonetheless, "life expectancy decreased from 19 years to 17 years" (Davis 97). Compared to hunter-gatherers, whose diet involved various fruits and vegetables along with the hunt, farmers mostly ate grains. The fact that their diet was poor reveal skeletal remains, where body size, height, and bone thickness is shown as decreased (Davis 97). In this time period, humans had an ability to settle at one location, enabling the development of villages, and to grow food for themselves that could be stored for later. More people could be fed, and "the world population grew from 5-6 million to 250 million in the year A.D. 1. Although the total number was great, the annual rate of increase was only 0.37 per 1,000, less than a tenth of the rate in many third-world countries today" (Davis 97).

In the meantime, in 400 B.C., Greek philosophers took part in discussions on population growth. Plato tried to find solutions to growing population. He was the first to introduce the policy on population when he mentioned the concept of "population control" in the *Republic*, where he suggested that "the 'guardian' class could be bred to rule, with the 'unfit' left to die" (Baird 24). Further Plato proposed the maximum size of the city-state to reach up to 5,040 citizens, as citizens were required to utilize birth control (Davis 97). "Methods were late marriages, prostitution, coitus interrupts, homosexuality, abortion, and infanticide" (Davis 97). Plato and Aristotle, further agreed

on the idea that deformed babies should be destroyed. The government had no power over the decision, as "the parents, with perhaps the advice of the midwife or elders" (Davis 97) could decide what to do. In ancient and primitive traditions, infanticide was not strange, whereas nowadays health care aims to prevent unsafe childbirth. Similarly, Aristotle wrote that the pronatalist policy of Sparta encouraged population growth for the strength of their army. "'He who had three children should be excused the night watch, and that he who had four should pay no taxes'. Unmarried men suffered indignities" (Davis 97).

During the rulership of the Roman emperor Caesar Augustus, the aristocrats feared their class was becoming smaller and they wanted to recover the population size of romans. As a result, bachelors were ordered to marry and the legislation taking stand for the pronatalism provided noblemen various rewards for having children, as women were given distinctive clothing to wear in honor, offered subsidies for children, and forbade abortion (Davis 97). Infanticide turned into a "capital offense" (Davis 97) and the pronatalist policy became a rule for all citizens for the next three centuries.

With the arrival of Christian emperor, Constantine the Great, the pronatalist legislation of Caesar Augustus reached its end. Constantine's legislation involved building more church monasteries and increasing the custom of celibacy for secular priests (Davis 98). "Furthermore, many Christians of the period believed that the earth was full and that the maximum number of redeemed souls already existed. Because the Messiah had come, there was no need to continue procreation" (Davis 98). From 300 to 400 A.D., the Roman empire –both eastern and western– counted alone for 55 million people (Baird 24).

Thus, overcrowding of cities caused a rise in diseases which managed to decrease population growth. Smallpox, dysentery, typhus, measles, and bubonic plagues were most

occurring epidemics (Davis 98). In 429 B.C., a number of civilians and soldiers fighting in the Peloponnesian War died due to a widespread plague, decreasing the population by 50 percent (Davis 98). "The number of people living in Europe went from 44 million in A.D. 200 to 22 million in 600" (Davis 98). The situation become worse between years 541 A.D. and 750 A.D., as the number of Europe's population halved. "Bubonic plague struck Constantinople in A.D. 542, killing 70,000 in two years, then spreading to Italy and France" (Davis 98).

In 1340s, Europe was hit with the epidemic of Black Death. It spread from China to the western countries and killed one-third to one-quarter of the population in the period of 1347 to 1352 (Davis 98). "It attacked the Genoese colony of Caffa in Crimea on the Black Sea. The sailors, soldiers, and merchants sailing home infected Constantinople and Messina before arriving at Genoa. From there the plague spread north to France and England, then east to Germany and eventually Russia in only five years" (Davis 98). Before the Black Death, in 1340s the world population equaled 440 million, but the plague took away more than a half of the population (Baird 24).

## **1.2. COLONIAL ERA**

When Columbus reached America, in 1492, he noticed that population was extremely dense, but two decades later the continent was almost scarce of people. "The total numbers in the New World fell from 42 million to 13 million in a century" (Davis 98) due to diseases dominating over the planet. In Cuba, 112,000 Indios lived in 1512 and not a single one survived by the end of the century (Davis 98). Mexico was known for its large population of 6.3 million Indios in 1548, but their number decreased to 1.3 million in 1580 and one million in 1605 (Davis 98). "Prior to European contact, the future United States was home to five million Indians, which fell to mere

60,000. In Canada, where 300,000 Indians were alive in 1600, the number declined by two-thirds two centuries later" (Davis 98).

Although colonization of Americas contributed to a gradual increase in population, as food was distributed from Americas to Asia and Europe, the diseases spread to Americas by colonization further disabled population growth. Smallpox was the first epidemic that came to Santa Domingo and Puerto Rico, and spread on to Mexico, followed by measles, which affected the area of the Caribbean, Mexico, and Central America (Davis 99). Between 1545 and 1574, typhus killed many people along with tuberculosis and chicken pox. "When 12,000 English sailors and soldiers laid siege to the South American port of Cartagena, 8,000 died of yellow fever in two months" (Davis 99). However, Europeans managed to reproduce at a high rate and the vacancy of uninhabited territory gave rise to the growth of population. "The economist Adam Smith observed that 'in the British colonies in North America, it has been found that they double in twenty or five-and-twenty years. Nor in the present times is this increase principally owing to the continual importation of new inhabitants, but to the great multiplication of the species'" (Davis 99).

The density of colonization in North America varied by European nations. For example, compared to British colonists who almost left no trace of existence on North American continent, French inhabitants of Canada reproduced at high rate. "Only a few thousand colonists ever immigrated from France, and since the establishment of Quebec in 1608, the population has grown to 6½ million today. (...) By 1680 the few thousand had grown to 10,000, and this number increased 12 times to become 134,000 by 1784" (Davis 100). Women married at a younger age, some even remarried, and birth occurred at a faster rate than it did in France. Also, life expectancy was higher than for those who never left their home country and an average number of children each mother had was 6.3 (Davis 100). On the other side, Britain colonists inhabited Roanoke Island in 1585, but



none of them remained. "In Jamestown, 66 of the original 104 settlers died in the first year of famine and fever" (Davis 100). Nevertheless, in the middle of the 18th century, the population "showed increases of a sixth and a third respectively in only seven years" (Davis 100), as noted by Benjamin Franklin in 1749.

While European population across the Atlantic Ocean grew, so did the number of people in Europe. Prior to the beginning of 1750, which brought Industrial Revolution to the fore, "life expectancy at birth was 25 years. (...) The infant mortality rate was 400, which meant that 400 out of every 1,000 babies died before their first birthday" (Steffoff 28). The Industrial Revolution gave rise to technological innovations, sanitation, and medical treatments that succeeded in expanding life expectancy of people suffering from illnesses such as cancer. Deaths significantly dropped in Europe, North America, Asia, Latin America, and Africa as these countries were undergoing revolution.

Besides the population increase caused by Industrial Revolution, it was a widespread belief that a larger population makes the nation richer. The Prussian king, Frederick II, who ruled from 1740 to 1786, stated that "the number of the people makes the wealth of states" (Steffoff 33). His view was supported by the mercantilists, who held pronatalist views motivated by the bubonic epidemic in Europe in the Middle Ages. They thought that population can never deceive itself and grow to the point where people will starve, as "any population, whatever its size, could produce enough food and other necessities to sustain itself" (Steffoff 33). To their opposition came the physiocrats, who believed that land is the only ground for economic production, and that population growth will likely be the reason of widespread poverty and suffering.

### **1.3. THOMAS ROBERT MALTHUS AND HIS ESSAY ON POPULATION**

One of the physiocrats was Thomas Robert Malthus, who was the first one to conduct the study on population and form a theory that will later in the years cause his followers to develop the policy of birth control. Malthus was born in 1766 to a wealthy family from a rural area of England, where he was homeschooled. In 1784 he began education at Cambridge University, and pursued both B.A. and M.A. degrees. He married at the age of 38 and had three children (Davis 103). For a brief time of his life, he served as a curate in the Church of England, while the rest he spent working at the college of the East India Company at Haileybury as a professor of political economy (Davis 103).

In 1789, Malthus published his *Essay on the Principle of Population*, where he argued that populations are likely to outgrow their food supplies. "People, he argued, would reproduce until they starved. (...) the number of people would progress geometrically (2, 4, 8, 16, 32), but the food supply would only increase arithmetically (2, 4, 6, 8, 10)" (Davis 104). The first critique was Charles Darwin, who was the only one to give a positive feedback. Darwin's theory on the survival of the fittest coincided with Malthus's explanation of the relationship between population growth and food supply. Animals and plants, Darwin argued, "are kept in check not by limited births, but by food supply and predation. Each individual competes with others of the same and different species, which results in the survival of the fittest" (Davis 105).

But the "fittest" seemed to be the members of the upper-class, mostly rich landlords spending time hunting and making sure the law keeps their game safe from the peasants. Malthus contended that landlords should spend their money on servants because it would give them personal freedom. The lower class had no benefits, such as medical care, schooling and working in places other than the factories. Malthus was a member of the political party that advocated changes for the

lower-class, with an intention of decreasing the population, because the uneducated had too many babies.

Nevertheless, for some theorists, Malthus's view on population provided no reliable empirical basis. In 1844, Friedrich Engels questioned Malthus' evidence by stating, "where has it been proved that the productivity of the land increases in arithmetical progression?" (Davis 105) For Engels, cultivating land was the source of salvation for the occurring population growth, as only a third of a disposable land on the planet was cultivated. Some parts of land, like Mississippi Valley, were large enough " to feed the entire population of Europe" (Davis 105). Similar opinion had Karl Marx, the main opponent of Malthus, who underestimated the importance of Malthus' work by addressing it as "nothing more than a schoolboyish, superficial plagiary" (Davis 105). Malthus' theory contradicted that of Marx, who advocated for communism. Under capitalism, poverty exists because capitalists don't want to give the surplus product of labor back to masses that established work (Davis 105). "But if Malthus were right, the workers would breed until they ate up the surplus, and none would be left" (Davis 105). Today, it seems he was right.

#### **1.4. THE BIRTH OF BIRTH CONTROL**

Regardless of critiques, Malthus's work evoked a number of followers to advocate for birth control to limit reproduction and population size. A first call for birth control pill came from Margaret Sanger, a nurse living in New York, who was affected by the lack of women's rights. Margaret came across women in hospital who were dying of septic abortions. This view struck her and she decided to call for women's rights to their body. "No woman can call herself free who does not own and control her own body" (Baird 27). This thought gave rise to birth control movement.

Opposition to Sanger was strong, as it would have been expected, and it involved powerful political forces, such as Catholic Church, but Sanger did not give up. In the aftermath of World War

I, an outbreak of epidemics took away millions of lives, causing nationalists to demand more children per family. "One bishop warned: 'the races from northern Europe...the finest of people...[were] doomed to extinction, unless each family produces at least four children'" (Baird 27). This did not prevent Sanger to promote contraceptives in her newspaper *The Woman Rebel* and to open her own birth-control clinic in Brooklyn (Baird 27). "Arrested, she refused to be fingerprinted, threatened a hunger strike and spent 30 days in jail" (Baird 27). However, the sudden scientific desire to regulate human race defeated Sanger in the argument that birth control is available to educated women only.

### **1.5. EUGENICS**

In 1865, British biologist and statistician, Francis Galton, invented the concept of eugenics, which in Greek carries a meaning "good in birth" (Davis 130). It is the branch of science that seeks to improve a race by genetic manipulation (Aaseng 60). The inspiration came with theory of evolution, where Alfred Russel Wallace argued that natural selection had an impact on brain. It affected the upper-class of "rational and altruistic" members to advance their mental and moral development. Therefore, Galton conducted a study on scientists of the Royal Society, and found that members showed strong link between variables, such as health, intelligence, and madness, but the noble families lacked children to inherit their characteristics. Even if families had descendants, they were at the bottom of the social pyramid, among the poor and uneducated mass.

This encouraged Galton to call out on the Church and charities to help the poor survive and not to advocate for higher reproduction of the distinguished families. For Galton, the only solution to the problem of the unfit society would be for the bottom class to disappear. Darwin, who was Galton's cousin, agreed that the unfit should not be protected from the threats to their survival, and in his work *Descent of Man*, he stated that "there should be an open competition for all men; and

the most able should not be prevented by laws or customs from succeeding best and rearing the largest number of offspring” (Davis 130). With the concerns of overcrowding, it was easily concluded that world would be better off if the wealthy had more children, and the poor would be satisfied with just a few.

The view of Francis Galton was followed by Raymond Pearl, a biologist of the early twentieth century, who wrote several articles on the topic of population and his work *The Biology of Population Growth* argues ways population could be reduced. Pearl had the leading role in the eugenics movement and during World War I, he was elected as a head of the U.S. Food Administration’s statistical division under president Herbert Hoover’s mandate. The impact of World War I caused Pearl to conclude that overpopulation played a key role on international conflicts and that high accuracy of population statistics was required to assist with the famine aftermath of war. He was deeply concerned that the unfit will take over the world and so eugenics served as a form of population control left to man’s hands to determine which race and individuals will have a dominant power over the world. Unfortunately, Pearl was not worried about the growth of the whole population, but about the increase of the population he perceived defective.

Nevertheless, Pearl wasn’t too strict on who he thought to be defective. “His genetic research over the previous decade had indicated that offspring would not necessarily be identical to their parents, and he moved away from some of his more crudely formulated eugenics positions, criticizing eugenicists such as Madison Grant for using flawed science to attack poor people” (Robertson 18). He began criticizing the concept of biological superiority, stating that it is a ground for class and racial prejudice set forth as science by social, economic, anthropological, and political forces. Pearl strongly argued that certain traits, like individual’s intelligence and character, cannot be inherited from the parents, because genetics is more complicated than that. As an example, he

could present himself, since his father worked as a grocery clerk and supervisor in a shoe factory (Robertson 18).

However, the support for controlling the population kind was strong and widespread. Surprisingly, Margaret Sanger, the founder of Planned Parenthood, was one of the advocates for a population growth of the fit. Similarly, in the United States, asylums were built by state governments to separate the poor, mentally ill, and diseased from the rest of the society. The captives were again separated, but this time by sex to prevent reproduction, “thus reducing the long-term cost to the society” (Davis 131). In 1907, Indiana state law authorized sterilization of five hundred captives (Davis 131). Two decades later, the Supreme Court finally declared sterilization legal in Virginia, but soon thirty states adopted the same law, resulting in 60,000 men and women being sterilized (Davis 131).

Not only did individuals compete to survive and reproduce, but nations and cultures as well, with considerable support. “Primitive people like the Indians of North and South America, the Australian aborigines, and the Africans would die out” (Davis 130), while other nations, such as Nazi Germany few years later, would thrive. In 1905, eugenists established the German Society for Racial Hygiene and pushed for pro-natalism, improved healthcare, eugenics and sex reform. When Hitler came to power, eugenics reached its peak, leading to massive killings of Jews, Roma, disabled and homosexual people. In the post-war era, laws on sterilization increased only in the United States and Scandinavia.

## **1.6. MIGRATION**

Ever since the evolution of a modern human, migration was a solution for and a source of overcrowding. With Columbus’ discovery of America, mass migration started and within the first four years of its independence, United States welcomed 250,000 immigrants (Davis 106). The

Naturalization Act of 1790 required a waiting period of only two years to get a citizenship. However, following Revolutionary War, French Revolution and Napoleonic wars, migration was delayed, but as a result, immigrants were more welcome than ever. ‘George Washington wrote, ‘The bosom of America is open to receive not only the Opulent and respectable Stranger, but the oppressed and persecuted of all Nations and Religions’’ (Davis 106). As soon as wars ended, immigration increased gradually; ‘only 150,000 arrived in the decade of the 1820s, but the following decade it grew to 600,000’’ (Davis 106). Two decades later, three million immigrants arrived, and added to the already existing population of twenty million, making it one of the greatest immigration waves in the history.

In between the years of the end of Civil War and the beginning of World War I, European immigrants were coming in great numbers. First, northern Europeans arrived, from the countries of Britain, Germany, and Scandinavia. Later, from 1890 to the 1914, southern Europeans began inhabiting America, from Italy and Imperial Russia. Only five million Italians came in these years, and 300,000 Chinese immigrants arrived in 1848 to take part in California Gold Rush (Davis 107). They were given jobs to build the transcontinental railroad, but the idea that they are becoming part of the country threatened whites, and the United States decided to pass Chinese Exclusion Act in 1882 to restrict immigration for 10 years (Davis 107). Nevertheless, immigration from Asia did not cease, as thousands of Japanese entered United States through San Francisco every month, elevating hostility of Americans towards immigration. Whites feared Japanese will take their jobs away, and in 1907, Gentleman’s Agreement was negotiated between President Theodore Roosevelt and Japanese emperor to stop issuing passports to workers (Davis 108).

At the end of World War I, America focused on patriotism and established the Johnson Reed Act in 1924 to allow only 150,000 immigrants per year and set nationality quotas

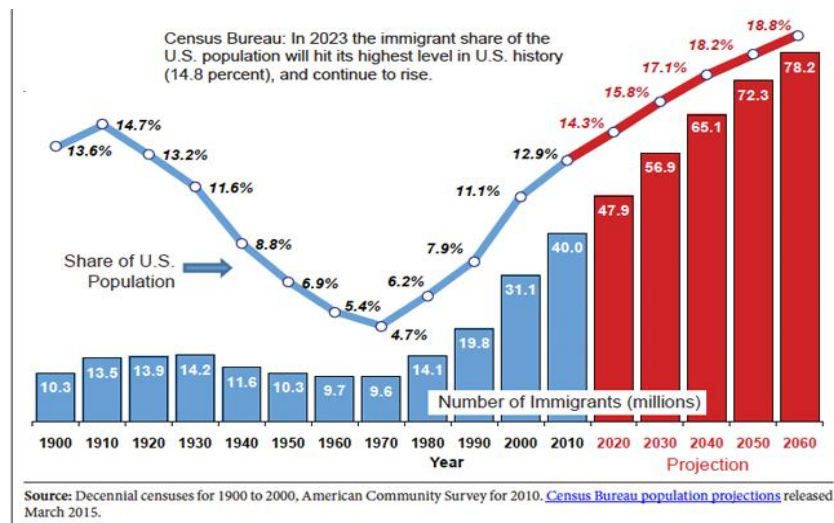
corresponding to the proportion in the U.S. population (Davis 109). At the beginning of World War II and at its end, refugees fearing Nazism and later Communist regime headed west to the United States. In 1948, Displacement Persons Act was passed to accept 400,000 immigrants, while in 1953, Refugee Relief Act allowed only 214,000 people (Davis 109). An additional 200,000 immigrants arrived from Hungary, after its revolution in 1956, including 30,000 more refugees. In the meantime, during the 1940s, immigration involved newcomers from South American countries, who were recruited by the United States government to work in agriculture and railroad construction. These immigrants were mostly of Mexican, Caribbean, Jamaican, and Puerto Rican origin.

From 1950s until 1980, immigration from all over the world into the United States grew substantially. Aiming to represent itself as a Free World opposed to that of Communist, United States kept on accepting immigrants under the excuse of Civil Rights Movement, shortage of skilled workers and itself being a potential asylum for refugees. In 1975, approximately 800,000 Vietnamese came to America and “in 1980 Congress passed the Refugee Act that set a quota of 50,000, abolished the parole power, and extended the definition to include more than flight from communism” (Davis 111). The constant influx of immigrants over decades caused the problem of illegal immigration in the 1980s that remained an unsolvable issue until present days. Miami, New York, and Los Angeles were estimated to have immigrant populations of more than 25 percent (Davis 110).

Their presence in the United States showed a negative effect on the population growth. “Using Census Bureau data, Leon Bouvier calculated that without immigration after 1950, the U.S. population in 2000 would have been 232 million, 43 million less than the actual figure of 275 million” (Davis 113). Immigration resulted in population growth of 61 percent, as in 1960s, the



fertility rate of immigrant women proved to be 34 percent higher than that of native-born American citizens (Davis 113). There are 34 million legal immigrants in the United States today making 12 percent of the total population. Among them 43 percent are Hispanic, 26 percent white, 25 percent Asian and Pacific Islander, and 7 percent black (Davis 113). Foreign-born already add 40 percent of births to the total population, but the projections of Census Bureau predict that immigrant population will almost double by 2050, increasing from current 28 percent to 47 percent, (Davis 113). Data show that Hispanics are the largest group of immigrants, which is supported by the evidence that their total fertility rate is 2.9, whereas non-Hispanic whites count for 1.8 (Davis 113). Figure 2. below shows the number and percentage of immigrants in the United States from 1900 until 2010. The graph also shows projections from 2010 until 2060.



**Figure 2. Number and percent of immigrants in the U.S., 1900-2010; Plus projections to 2060.**

Source: Zeigler, Karen, and Camarota, Steven A. "Immigrant Population to Hit Highest Percentage Ever in 8 Years." *Center for Immigration Studies*. April, 2015.

### **1.7. "THE POPULATION BOMB"**

During World War II, the population increased to 2.5 billion people in Japan (Baird 29). The advancement of medical drugs, nutrition, vaccines and pesticides caused United States, Britain and the Commonwealth nations to experience the same shift. Thus, in 1947 the United Nations Population Commission held its first meeting on the concern of population increasing globally. The UN particularly observed countries of Africa, Asia, and South America, and gathered information on figures of population growth. In Kenya and Algeria, countries of British and French colony, issues of high fertility and poverty evolved, declining the influence of colonies. Population increase was referred to as an explosion, and nations of Third World became a question of stability for the rest of the globe.

In his book *The Population Bomb*, Paul Ehrlich, a famous biologist, wrote about the long-lasting famine that will follow the increasing population. In the streets of Delhi, he came across masses of people, who lived on the streets. Encountered with the problem, Ehrlich proposed possible solutions to deal with the bomb. He understood that no change can happen, unless America comes up with a policy that will persuade other countries to participate, because it contains 6 percent of the world population and consumes 80 percent of the planet's resources (Davis 94). Parents with no children should be awarded and families with children should pay penalties of \$1,200 per child. The government should play its role in establishing an authority that will look after population; as Ehrlich puts it, the government should form a "Department of Population and Environment to educate, persuade, and conduct research on birth control, including mass sterilization" (Davis 94). In a sexually repressive and repressed society, Ehrlich addressed the need to turn the Catholic Church in favor of contraceptives.

On the other hand, humans cannot completely comprehend the threats of reproducing, because they possess a natural tendency to reproduce. Although education and family-planning

programs are given a lot of attention in Costa Rica and are developed on a large scale, ‘an average family size of 3½ children, and a growth rate that will double the population in 20 years’ (Davis 95), represents a troubling fact for the rest of the world. Similarly, Ehrlich noted that Kenya is a nation of a growing issue of overpopulation, as a usual family size equals to eight members doubling the nation’s overall size (Davis 95). In Islamic world, women have no rights to freedom of choice and their low status corresponds to the high birth rate of Muslim countries. Nevertheless, Ehrlich drew attention to China’s one-child policy as a potential solution for nations with increasing populations, and addressed India as a nation that is failing in population control and making the biggest contribution to overpopulation (Davis 95).

## CHAPTER 2:

### *Causes of overpopulation*

Throughout history causes for overpopulation were numerous. This chapter introduces policies in China and India that aimed to reduce population growth by coercive methods that ignored human rights. The reason for the misunderstanding of family-planning efforts is often transcribed to poverty and illiteracy of nations to use contraceptives. In this chapter, United States policy on legalizing abortion is analyzed, and more background on the procedure of abortion throughout years is provided. The impact of Catholic Church could not be neglected in this context, hence religious ideologies are discussed briefly.

### **2.1. CHINA**

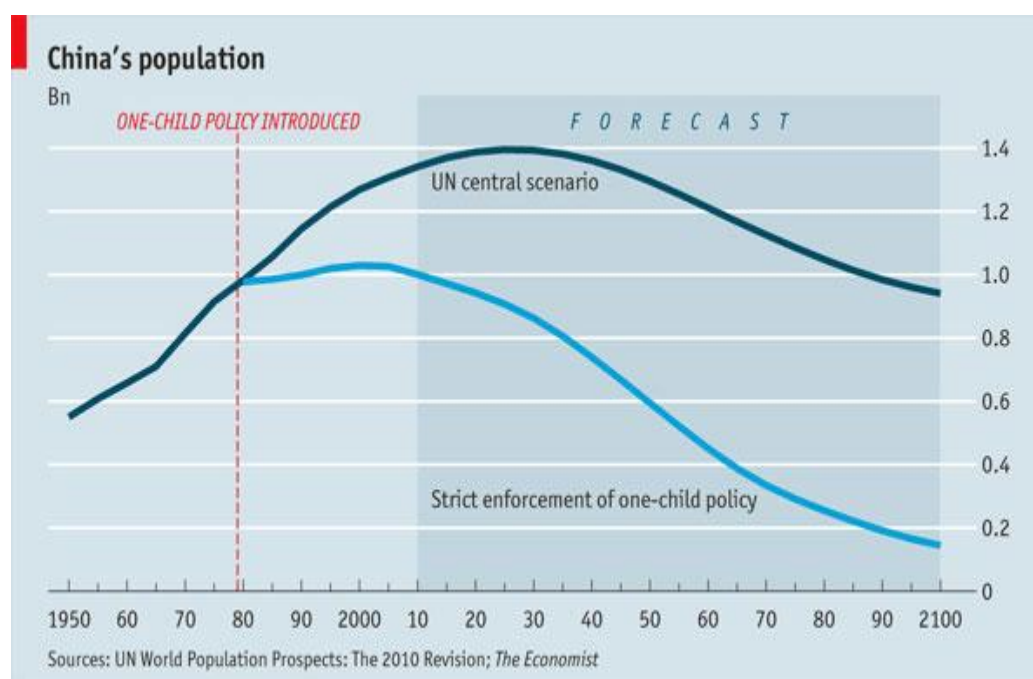
Although China conducted a successful family-planning policy, it was one of the most extreme approaches ever experienced in the human history. In 1978, Chinese scientist Jian Song encouraged Chinese government to advocate for a decrease in population growth by 2000. Otherwise, women will have three children and China’s population would reach four billion by

2080 (Baird 34). “If China did not reduce its fertility to 1.5 or even one child per woman, the resulting depletion of resources would be disastrous” (Baird 34). Thus, strict government monitoring was in act and women were required to undergo monthly gynecological exams. Those women who opted for abortion were awarded 14 days of paid vacation, and “40 days if it occurred in the second trimester and was quickly followed by sterilization” (Baird 34). Furthermore, parents with one child received priority in housing, better healthcare and educational opportunities, while families with a second child had to pay back those benefits. “Those who had more than two would have their pay docked by 10 per cent for 14 years” (Baird 34). They were also at risk to lose jobs.

In rural areas, it was of an extreme importance that male children are born. The one-child policy lead parents to kill the newborn female child or aim for a second child to be a male, but before this slightly “lenient” policy in 1983, a decade earlier women were forced to abort regardless of the pregnancy stage. China conducted 7.9 million abortions, 13.5 million IUDs, and approximately 7 million sterilizations (Baird 35). The situation got worse in 1983, when “more than 16 million women and more than 4 million men were sterilized, nearly 18 million women were inserted with IUDs and 14 million underwent abortions” (Baird 35). When the medicine and technology allowed for ultrasound, abortions could be taken for a female fetuses, increasing the rate of boys from 6 percent to 17 percent by 1995 (Baird 35).

An interesting, yet peculiar fact is that Chinese citizens did not receive protection and support from international agencies. “Although reports of these abuses were beginning to reach the West, family-planning bodies such as the UN Population Fund (UNFPA) kept funding China’s program, with generous help from Japan” (Baird 35). The International Planned Parenthood Foundation (IPPF) became aware of the abuses reported by BBC, but did not take action to prevent abortion of women eight months pregnant and of women committing suicide (Baird 35). The lack

of human rights was shamefully not recognized by these international institutions. Instead they financially supported mass coercion, until ironically Catholic Church and Protestant groups called for morality and justice. “The UNFPA, IPPF and USAID were targeted, with some success; aid grants were cut and department heads lost their jobs” (Baird 37). Figure 3. below shows China’s population before and after one-child policy.



**Figure 3. China's population before and after one-child policy.** Source: The Economist Online.

"China's one-child policy: O brother where art thou?" *The Economist*. August 2, 2011.

## 2.2. INDIA

As of 2016, the current population of India is 1.34 billion and that makes it the second most populous country in the world after China (Indiaonlinepages.com). Despite India’s agriculture and improved farming industry, the increasing population lowered India’s chances for an acceptable standard of living. During its independence movement, Mahatma Gandhi called attention to population growth and relied on abstinence as a solution. However, the government was first in the

world to establish family-planning program first involving birth control, and then moving on to sterilizations. In 1956, seven thousand people were sterilized, and strong campaign advocating along with incentives aimed to encourage couple to limit themselves to two children per family (Aaseng 80).

When this policy turned out to be ineffective, the government ordered sterilization of men with more than three children, but it soon expanded to sterilizations of even homeless and beggars. “Up to 8 million vasectomies were performed in India in 1976, many of them under questionable circumstances” (Aaseng 82). People fiercely opposed entire family-planning movement and when Indira Gandhi came back to power in 1980, her approach to population control was different than before and she remained silent on birth control.

In addition to a lack of attention, different religions in India played a crucial role in population growth. “Approximately 85 percent of the country is Hindu, and 10 percent is Muslim. In addition, there is the small (14 million out of 820 million) but outspoken population of Sikhs” (Aaseng 83). Muslim religion requires reproduction at the highest and fastest rate, so government policies seemed to be intended for this part of population only. Muslim men were forced to leave their homes and they underwent vasectomies against their will.

Another issue that prevents population growth is poverty and illiteracy. Due to expensive contraception, couples rather neglect birth control than undergo sterilization. Aware of the fear, government offered to pay people for sterilization, but only the poor were attracted to this idea, and the illiterate women, who cannot understand the advantages of family-planning groups. Rumors about contraceptives and family-planning efforts caused misunderstandings and affected population number. “Almost forty years after the efforts started, nearly two-thirds of India’s 120 million married women still use no birth control method at all” (Aaseng 87). With poor economy, low

standard of living increases population by “15 million Indians every year” (Aaseng 86), almost allowing India to surpass China in the rank of most populated country. Figure 4. below shows overpopulation in India.



**Figure 4. Overpopulation in India.** Source: Budhbhatti, Abhijit. "Speech on Controlling Over Population in India." Retrieved on January 24, 2017, from: <http://www.shareyouressays.com/116231/speech-on-controlling-over-population-in-india>.

### **2.3. U.S. POLICY ON POPULATION CONTROL**

With an intention to better agriculture and health in foreign countries, the Rockefeller Foundation did not realize that its actions abroad were contributing to global issue. To prevent further growth, it asked the National Academy of Sciences to establish the Population Council with experts in agriculture, health, nutrition, and demography (Davis 114). In 1946, the United Nations formed a division that will focus on population and gather statistics. "In 1952 it forecast a 1980

world population of 3.6 billion, which seemed high. In fact the actual figure turned out to be 4.5 billion” (Davis 114). After the first World Population Conference, United Nations proposed solutions for population control, but “the combined opposition of Catholic and Communist countries voted down its recommendations, and the population division was demoted to become a branch” (Davis 114-115). Catholic religion has always been a barrier in implementing effective birth control. Under President Eisenhower, the administration was addressed as immoral for willing to invest money into planning and executing birth control. President was worried about the problem, but chose not to argue with Church because elections for his second term were coming up.

During Kennedy’s term, research on the birth control began and the Agency for International Development (AID) was assigned to work with foreign governments and private organizations on the issue of growing population. In their assistance to private organizations, such as the Ford Foundation, the International Planned Parenthood Foundation, and the Population Council along with other universities, AID donated grants of \$2 million (Davis 116); however, money was never used on contraceptives. “Aid refused to buy condoms, which the Indian government requested, but it did buy jeeps for local instructors to use to visit rural villages for lectures” (Davis 116). In time of India’s famine, United States shipped wheat after both governments agreed to start program of birth control.

As a Roman Catholic, Kennedy did not show full support for contraceptives, until his successor Nixon emphasized the importance of AID programs and recognized population growth as a world problem that can no longer be ignored. Towards the end of 1960s, “the informed public began to make a connection between population and environmental protection” (Davis 117). In 1968, AID finally obtained financial means from Congress amounting to \$35 million due to Foreign Aid Appropriation Act, which enabled AID to work with governments, private



organizations, UN agencies, and universities (Davis 116). During this decade, discussion on population control was robust, but it resulted in legalization of contraceptives.

In the next decade, a second World Population Conference was held by the United Nations in Bucharest, where the United States invited developing countries to decide on a common goal for a sustainable growth. Although criticized for willing to gain control over other countries, United States cut all funding for abortion and double investment for international population programs under President Carter's administration. At the third conference in Mexico City, which took place in 1984, President Reagan's administration "declared that population growth was not a problem for development, and announced that it would no longer support any private or UN agency that advocated abortions" (Davis 118). Next year, United States no longer wanted to fund abortions in China, so it took away \$10 million from the total of \$46 million that United Nations Population Fund possessed. The support for nativism came from anti-abortion groups, such as Human Life International and the Pro-Life Action League. In 1986, "the International Planned Parenthood Federation lost \$20 million in government grants" (Davis 118) because United States completely withdrew from supporting United Nations program. Under President George H.W. Bush's administration, anti-abortion policy was still standing strong disabling appropriate population control.

In 1993, President Bill Clinton legalized abortions, but at the turn of the century, global goal changed its focus on women's rights and needs. International Conference on Population and Development (ICPD) took place in Cairo, in 1994, and gathered 180 countries to discuss health consequences, gender relationships, and social justice (Davis 119). The Cairo Program of Action emphasized the importance of nongovernmental organizations and addressed the need to define population issues in regards to reproductive health. The program managed to ignore the "neo-

Malthusian” view and rather called for “gender equality and affirmed women’s rights to bodily integrity, informed consent, and sexual relations free of coercion” (Davis 119). Neo-Malthusians, aware of the growing population, criticized the program, claiming that there are not enough resources to disregard the issue and that underdeveloped countries may lack medical approach, along with the idea that “reproductive health is a broad and nebulous concept” (Davis 119). This was the last conference on world population. Bush administration did not aim to support the United Nations, nor did the organization find support among its other members.

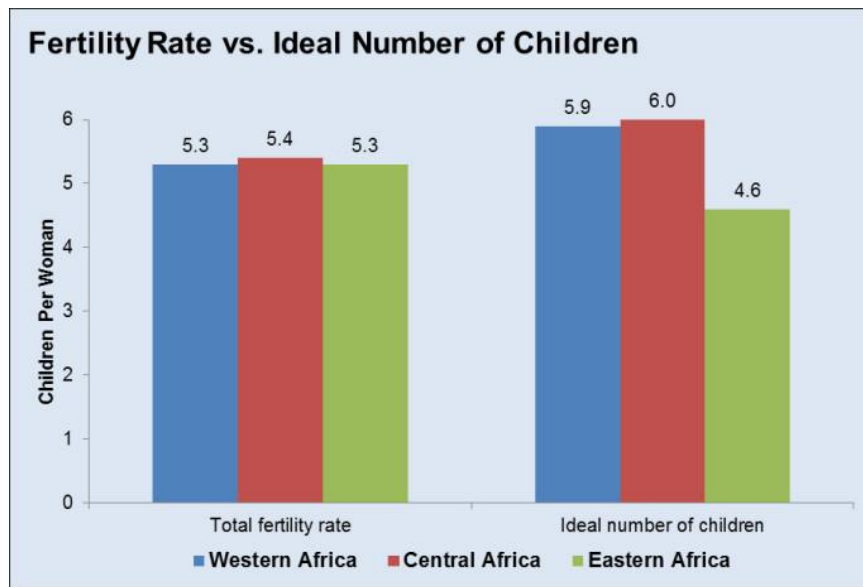
#### **2.4. ABORTION VS. RELIGION**

In the nineteenth century and throughout the twentieth century, bearing a child would often result in death of the infant. Therefore, women predisposed to have a difficult delivery would secretly execute abortion as a lifesaving procedure (Aaseng 59). In Europe, abortions were legal even in the early stages of pregnancy, until in 1869 Catholic Church, under Pope Pius IX, addressed all abortions a murder, impacting the global security. This did not stop women’s demand for illegal abortion, but fortunately advancements in medicine allowed abortion to be a solution only for preventing births and attention to medicine permitted safe pregnancies and childbirths. No longer needed as a lifesaving procedure, abortion became one of the most controversial ethical issues, especially within the context of overpopulation crises. Although it encounters fierce opposition, “it remains the most widely used form of birth prevention in the world” (Aaseng 57).

The Catholic Church always deemed the use of contraception as an evil and it advocated against birth control in various and colorful ways. The propaganda was transparent, and it involved campaign advertisements to evoke emotions against killing “tomorrow’s children” as well as false beliefs that condoms as “the latex demons ‘encouraged promiscuity’ and, (...) thereby *caused* the spread of HIV” (Baird 55). Fortunately, many women around the world find the right to their own

bodies more important than the opinions of the male priesthood. In countries of Latin America, where majority of population is Catholic, 70 percent of women use contraception (Baird 56). Among the western European nations, the lowest fertility rates is found in Italian women.

However, anti-contraceptive campaigns have been frequent in areas of sub-Saharan Africa, where they have proved to be most effective, as this region has the highest fertility rates in the world, lowest contraceptive use, and the most cases of unsafe abortion (Baird 56-57). The area is also highly affected by AIDS, but health professionals in Kenya believe “condoms were useless because they had ‘lots of tiny holes in them’” (Baird 57). Catholic Church made sure that contraception is regarded as an assault on African culture and an intention to stop African childbirth (Baird 57). Figure 5. below shows the existing fertility rates in Western, Central, and Eastern African regions and the ideal number of children.



**Figure 5. Fertility Rates vs. Ideal Number of Children in Western Africa, Central Africa and Eastern Africa.** Source: Elizabeth Leahy Madsen. "What's Behind West and Central Africa's Youthful Demographics? High Desired Family Size." *New Security Beat*. May 11, 2015.

Furthermore, abortion rate is increasing in sub-Saharan Africa, although it is forbidden in fourteen countries (Baird 58). Illegal abortion occurs in at least 29 per 1,000 women (Baird 58), and with lack of medical attention to the procedure, it is carried out unsafely resulting in high mortality rates. Nigeria ranks as the nation with the highest rate of unsafe abortion, which “claims the lives of more than 3,000 women a year” (Baird 57). Whereas in other parts of the world abortions declined from 45.5 million in 1995 to 41.6 million procedures in 2003, in Africa they increased from 5.0 million to 5.6 million (Baird 58). Out of these, only 100,000 were carried out safely (Baird 58).

The main reasons for abortion lie in the poverty, lack of education, and social norms. Many African young women are forced to trade their body for money, while other women experience inadequate support from their husbands, who fear women will be unfaithful and perhaps contraception will make them infertile: therefore, “abortion is perceived as safer than contraception” (Baird 60). Similarly, the need for education is clear from the fact that Nigerian young women thought antibiotics and aspirin are used as contraceptives. The more educated a woman is, chances are higher that she will have control over her fertility and the number of children she wants to have. In Peru, 300,000 men and 30,000 women have been sterilized as a result of governmental program of “effective” family-planning to combat poverty (Baird 65). Many women who underwent procedure of tubal ligations were either forced to go or illiterate.

### CHAPTER 3:

#### *Effects of overpopulation*

The reason for environmental degradation is the humanity’s footprint. With the growing population, degradation increases. Expanding of urban areas, race for food and water resources, and lack of housing and employment opportunities arise as consequences of overpopulation. Burning of

fossil fuels and unsustainable use of other natural resources provided developed countries with a “cheap ride to growth” (Goldin 3), but left undeveloped nations with an excessive demand for that resources which are taken.

### ***3.1. Population and Climate Change: Degradation on the environment***

#### **3.1.1. URBANIZATION**

In comparison to rural areas, the fertility rate in urban areas is low due to a broad range of opportunities offered to women. More economic opportunities, a better access to education, expansive programs of family planning, and adequate health care all have an impact on women’s decisions over reproduction. “For example, urban fertility rates in Kenya, Tanzania, and Uganda are around 40 percent lower than rural rates, and well below the national averages” (Leiwen et al. 2). Nevertheless, migration from the countryside or expansion of villages into cities are factors that contribute to urban growth. According to statistics, “6.5 billion people will live in cities by 2050, more than the world’s total population today” (Brown et al. 40).

Excessive urbanization has a devastating impact on the environment. “Cities create 80 per cent of greenhouse gases, we are told by such bodies as the US-based Clinton Climate Initiative” (Baird 122-123). An International Institute for Environment and Development released estimates of urban and rural carbon footprints, which show that cities contribute 30 to 40 percent of emissions (Baird 123). This is explained by the urban-heat island effect under which rural surroundings have lower air and surface temperature than the urban areas (Leiwen et al. 2). The main causal factors of the effect are architecture of the city, especially the high-rise buildings that trap heat, the size of the urban area, and the land covered with surfaces impervious to water, such as buildings and roads, as

well as aquatic and vegetation lands (Leiwen et al. 2). The process of urbanization enabled pollution of water resources, biodiversity, air, and the functioning of ecosystems (Leiwen et al. 2).

The water resources, such as rivers, deltas, and coastlines, are the main features urbanists seeked when constructing and expanding cities. However, following urbanization, aquatic sources have been altered to meet the needs of cities, which came as a cost to these local ecosystems that proved to be protection against natural disasters (Leiwen et al. 2). “In India and Sri Lanka, for example, depleted mangrove forests left coastal communities vulnerable to the 2005 tsunami, while communities where those ecosystems remained intact fared much better” (Leiwen et al. 2). Furthermore, another consequence of urbanization is eutrophication, or an increase in chemical nutrients in the water resources, which occurs due to urban production of carbon dioxide and other greenhouse gases and pollutants that wash off impervious surfaces into water resources. The process ultimately pollutes the quality of water and affects the marine ecosystems. This is a consequence of developing countries undergoing rapid urbanization without implementing environmental protections and identifying modern chemicals that deteriorate infrastructure. At this stage, developing countries pollute the environment as they do not implement constructing facilities to deal with hazardous wastes (Leiwen et al. 3). “In those cities, stormwater infrastructures often do not separate storm runoff from wastewater discharges, creating acute pollution problems in recipient waterways” (Leiwen et al. 3). In addition, urban areas in Africa lack basic sanitation systems and water resources serve as large sewers. “Sixty percent of rivers flowing through Chinese cities, for example, do not meet minimum drinking-water standards” (Leiwen et al. 3).

The impact of human activity is devastating for the biodiversity. The growth of cities pushes animals out of their habitats that are becoming urbanized. In the process of mass migration to cities and lack of family planning programs, massive extinction of species takes place. “US scientists say

the Earth is in the midst of its sixth mass extinction of plants and animals with nearly 50 per cent of all species disappearing” (Baird 117), whereas in 2008 the International Union for Conservation of Nature (IUCN) reported that “half the world’s mammals were declining in population and more than a third probably face extinction” (Baird 117). The highest number of species eliminated is in primates and marine mammals, where the number “could be as high as 36 per cent” (Baird 118). Although most of ecosystems on Earth have been affected by urbanization, migration into rural areas has worse impact, as larger surfaces of land and more resources become exploited. Human activity is therefore the only cause of extinction. “We have converted land to agriculture, allowed our towns and cities to sprawl, built roads through fragile ecosystems, drilled for oil and gas, and expanded destructive mining activities. We have cut down forests for logging, polluted lakes, seas and rivers, degraded coral reefs and fragmented the wilderness. And we have pumped tonnes and tonnes of greenhouse gasses into the atmosphere” (Baird 118-119).

Besides pollution of water resources and degradation of biodiversity, air quality suffers as well. The amount of pollution released into atmosphere from factories, households and automobiles is far greater than the environment can sustain. This particularly refers to developing countries, such as urban areas of Asian countries where leaded gasoline is still widely used, compared to developed countries that managed to decrease their automotive lead emissions (Leiwen et al. 3). “Moreover, emissions of automotive sulfur dioxide, particulate matter, and lead are likely to be significantly higher in the future because of increasing car ownership in many cities-enabled by the introduction of cheap cars such as the Indian automaker Tata Motors’ ‘Nano’, whose US \$2,500 price tag makes it affordable to the country’s growing middle class” (Leiwen et al. 3). Therefore, compared to countries in Western Europe and to the rest of the Western Hemisphere, where for example “each New Yorker produces just 30 per cent of the emissions of the average US resident”

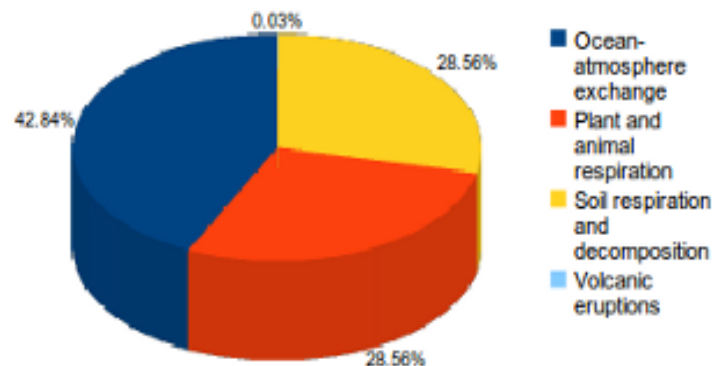
(Baird 124), in China city-dwellers emit much more emissions than their rural counterparts. Residents of urban areas, such as Beijing and Shanghai, are not themselves responsible for the amount of emissions these cities emit. Chinese urban areas are major producers of goods for Western countries and thus, their factories contribute a large part to global greenhouse gas emissions, leaving city-dwellers to breathe in a “daily reminder of environmental limits” (Baird 125).

### **3.1.2. CARBON DIOXIDE AND GREENHOUSE EFFECT**

A humanity’s footprint on global environment is evident in increase of carbon dioxide and decrease of ozone in the atmosphere (Dodds 37). Burning of wood, coal, and oil, along with volcanic eruptions and respiration process of animals, plants, and microorganisms, are compounds that produce carbon dioxide (Dodds 37). In the past 200 years, carbon dioxide has been increasing exponentially and in this period, it increased by one-quarter in the atmosphere (Dodds 37). However, until humans have begun burning fossil fuels and changing the rhythm of carbon dioxide production, the natural process of releasing carbon dioxide into the atmosphere has been at balance. When plants die, the carbon dioxide they absorbed is left in the soil and later serves to form oil, gas, and coal reserves under the ground (Dodds 38). “Carbon dioxide absorbed into oceans is used by microscopic photosynthetic plants to produce carbon-containing compounds that make up their cells” (Dodds 38). The carbon then sinks to the bottom of the ocean and remains buried. In the meantime, volcanoes have been quite active throughout the history, and over time, they have been releasing carbon dioxide into the atmosphere, but plants would take up these excessive amounts of carbon dioxide for photosynthesis and deposit in the soil, forming a balanced natural process of carbon dioxide emission and absorption (Dodds 38). Figure 6. below shows portions of natural sources that produce carbon dioxide.



### Natural sources of carbon dioxide



**Figure 6. Natural sources of carbon dioxide.** Source: Main Sources of Carbon Dioxide emissions. *What's Your Impact*. Retrieved from: <http://www.whatsyourimpact.org/greenhouse-gases/carbon-dioxide-emissions>

With the beginning of Industrial Revolution, humans started to heavily rely on energy produced from burning of fossil fuels. As forests are an abundant source of carbon, deforestation allowed humans to leave their trace in environmental pollution. The loss of forest cover has significantly increased in the past few hundred years (Dodds 38), but tropical rainforests in Brazil, Indonesia, and Zaire, are under a special spotlight as “these rainforests are being destroyed at the rate of 100 acres a minute, or 52.6 million acres a year” (Steffoff 44). Inevitably, therefore, deforestation is closely related to an increase in population. With population growth, forests are reduced and trees are cut down or burned in order to meet the growing demands of people, especially in developing countries that rely on firewood as their only source of fuel. The statistics provided by the United Nations Food and Agricultural Organization (FAO) show that in 1989 more than 70% of families in the Third World used firewood for fuel (Steffoff 47). Thus, “the famine in Africa has its origins in erosion and soil degradation resulting from deforestation in the search of

firewood” (Steffoff 47). In the past, people have tried to use firewood sustainably, so that in the future the nature does not face a shortage of wood. However, nowadays the firewood is used at a higher rate and in some parts of the world, the forests are almost cut to the ground. The expanding population of India and Nepal uses firewood for cooking and heating, leaving the bottom of Himalaya Mountains entirely deforested, making farming difficult due to floods. The topsoil washes away and the forest needs a longer period of time than humans allow for to renew itself (Steffoff 45).

Moreover, deforestation contributes to formation of other environmental issues, such as global warming, erosion and desertification. Deforestation leads to combustion of carbon and releases carbon dioxide into the atmosphere. Trees no longer protect the topsoil by absorbing rainfall during vegetation and storing water in the layers of topsoil, but instead the rainfall runs off into springs and streams, which causes erosion and floods. In contrast, droughts can occur if streams are not filled with rainfall, and crop may suffer as well. Extinction of species is another result of deforestation, as each living organism becomes adapted to his natural habitat, which when destroyed threatens the survival of the organism. Even though every natural habitat is experiencing crises today, tropical rainforests are in particular danger because they possess most of world’s living species that are destroyed due to deforestation. “According to biologist Edward O. Wilson of Harvard University, each year 10,000 to 17,500 species of plants, birds, insects, reptiles, and mammals vanish forever” (Steffoff 45). Figure 7. below shows deforestation.

**Figure 7. Deforestation.** Source: World Wildlife Fund. Deforestation. Retrieved from:

<https://www.worldwildlife.org/threats/deforestation>



Scientists predict that human activity of deforestation will have a long-lasting impact on the environment. The end of nineteenth and the beginning of twentieth century showed that global deforestation significantly increased the concentration of carbon dioxide in atmosphere due to burning of fossil fuels, which count for an increase of “more than three times the CO<sub>2</sub> emissions” (Dodds 38). Since oil, coal, and natural gas are burned at a higher rate than before, there is a strong correlation between the use of global energy and carbon dioxide in the atmosphere. Burning of fossil fuels releases carbon dioxide “at a rate of 6 million trillion tons of carbon per year” (Dodds 39), and these particles will remain in the atmosphere for at least 100 years (Dodds 39). “Decades or centuries are required for global processes to reach equilibrium (that is, to return to a stable state)” (Dodds 39).

The amount of carbon dioxide in the atmosphere is less than one percent, but it nevertheless has an impact on global temperature. In 1890s, a Swedish Nobel Prize winner, Svante Arrhenius was the first one to observe the effect of carbon dioxide on temperature. His observations introduced the “greenhouse effect”, or an increase in temperature of the Earth that warms up as greenhouse that traps solar heat (Dodds 40). The process of greenhouse effect starts when carbon dioxide traps the heat energy in Earth’s atmosphere. The Earth is then heated by sun, and it emits

energy back into space, but some of the energy gets trapped before it reaches the space, and the temperature of the atmosphere increases (Dodds 40). The amount of energy trapped is proportional to an increase of carbon dioxide concentrations, which shapes the atmospheric temperature.

Even though China is the biggest polluter, United States takes the second place as its economy is built on fossil fuels. “Although United States has 4.5 percent of the world’s population, it produced 18 percent of the world’s carbon dioxide emissions in 2010, according to the U.S. Energy Information Administration” (Parham 25). Scientists and experts on climate change estimated that the highest acceptable threshold of carbon dioxide in the atmosphere equals 350 parts per million, and if the amount reaches beyond the suggested estimation, the Earth will experience serious consequences of global warming. “Today, the planet has 392 parts per million CO<sub>2</sub>” (Parham 25).

### **3.1.3. GLOBAL WARMING**

Despite the widespread debate and controversy about global warming as a potential threat to our environment, experts provide statistics to show that Earth is in danger. Compared to the beginning of the twentieth century, global temperatures have increased for 1 degree Fahrenheit and they still continue to rise (Miller 63). In 1920, Montana’s Glacier National Park had 150 glaciers, but today it contains less than 30 (Miller 63). “The snows of Mount Kilimanjaro in Tanzania have melted 80 percent since 1912, and many claim that these symbolic snows could disappear by 2020” (Miller 63). At the same time, burning of fossil fuels resulted in the increase of carbon emissions for almost the double of the rate of population (Brown et. al 38). In the atmosphere, carbon dioxide increased 30 percent over the industrial levels (Brown et al. 38). Burning of fossil fuel and strong economic activity resulted in increase of carbon emissions in highly developed urban areas. “Emissions in China are projected to grow over three times faster than population in the next 50

years due to booming economy that is heavily reliant on coal and other carbon-rich energy sources” (Brown et al. 38). Scientists predict that in the next 500 years developing countries will quadruple carbon emissions, whereas developed nations will increase the contribution of carbon by 30% (Brown et al. 38).

The consequence of a rise in carbon emissions in the atmosphere has a devastating impact on the climate change. Every year, forests in California undergo severe fires, while floods destroy coastal villages in Bangladesh (Current Events 26). The ice caps in the Arctic are melting at a fast rate and polar bears are drowning, whereas frogs are becoming extinct species in the Costa Rican rainforest (Current Events 26). In the report on global warming, United Nations’ Intergovernmental Panel on Climate Change (IPCC) predicted in 2007 that climate change will have a disastrous effect on the nature. “By 2080, scientists estimate, the number of people going hungry in the world could increase by between 140 million and 1 billion, depending on the amount of greenhouse gases emitted over the coming years” (Current Events 26). Furthermore, diseases such as malaria, fever, heat-related deaths, and other illnesses are far more likely to occur (Current Events 26). By 2020, approximately 250 million people living in developing countries in Africa could face water shortages (Current Events 26). “If average temperatures rise by 2.5 to 4.5 degrees Fahrenheit, about 20 to 50 percent of plant and animal species face increased risk of extinction” (Current Events 26). There is no doubt that the poorest of the global population will be hit the hardest, but even countries with powerful resources, such as United States, will undergo impact of climate change. In Midwestern United States, people are likely to experience water shortages due to rising temperatures, while on the East Coast water levels may rise and along with storms, New York and Boston are predicted to be entirely flooded.

Moreover, in the next couple of decades, demand for energy is predicted to double and wealthy nations will use as much energy as their population will grow. If energy consumption per capita is high, the population growth does not need to increase significantly for energy to be used excessively, as total energy demand will increase by itself. “In the United States, for example, the 75 million people projected to be added to the population by 2050 will boost energy demand to roughly the present energy consumption of Africa and Latin America” (Brown et al. 38). The production of oil worldwide reached its peak in 1979, and is predicted to reach its peak again by 2025, which will impact price levels as oil is still the only dominant fuel on the world (Brown et al. 38). In the near future, the factors of climate change will originate from countries that have the highest economic activity, such as Asia, “where consumption is expected to grow 361%, though population will grow by just 50%. Energy consumption is also expected to increase in Latin America (by 340%) and Africa (by 326%)” (Brown et al. 38).

### ***3.2. How can a population of nine billion be fed?***

#### **3.2.1. SCARCITY OF FOOD**

The relationship between the number of people on the planet and the amount of food is direct. Each individual needs a daily intake of two to three thousand calories, where the diet is balanced and filled with necessary nutrients (Angus and Butler 72). As the number of people grows, the demand for food ultimately rises. Therefore, according to biologist Paul Ehrlich, “the race between population and food can never be won” (Sorvall 45). Although United Nations claims that the world produces enough grain to feed humans 3,500 calories every day, the statistics prove different. “The global cereal crop in 2010 was the third highest ever, but 950 million people were desperately hungry, and over a billion more couldn’t get enough nutrients to support good health.

Even more shocking, 60 percent of the world's hungry people are small farmers and 20 percent are landless agricultural workers" (Angus and Butler 74).

In the period between 1950 and 1984, the grain production globally exceeded the population size, but after 1984 the world experienced slower growth as grain harvest declined per person by 7% or 0.5% a year (Brown et al. 36). The lack of the cropland area and the drop of irrigation water per person as well as ineffective use of fertilizers are factors that contribute to a wide food gap. In the middle of the century, the cropland has increased by 19%, but the population globally grew 132% (Brown et al. 36). This has led developing nations to lose the ability to feed themselves, and population growth managed to eliminate farmland from production. In Pakistan, Nigeria, Ethiopia, and Iran, the population is growing the fastest, but the cropland area per person shrunk by 40%-50% between 1960 and 1998, and is expected to shrink up to 60%-70% by 2050 (Brown et al. 36).

However, inequality in the production and distribution of food is another contributor to the world food gap. Giant agricultural corporations operate to maximize their profits by placing food in areas where people have financial ability to buy it. Therefore, "the daily availability of food is about 4,000 calories per person in the North but only 2,500 calories in the sub-Saharan Africa" (Angus and Butler 74), including unequal distribution within these countries. For example, in the United States, thirty-six million suffer from hunger and 17 percent of children are under a risk of developing health related illnesses and cognitive damages due to inadequate nutrition (Angus and Butler 74). On the other hand, in Canada 40 percent of all food produced is wasted. Consumers waste about 20 percent of food, whereas the rest goes in harvesting, transportation, packaging, restaurants, and stores (Angus and Butler 76).

Moreover, studies show other examples of food inequality, where approximately forty percent of the grain harvested is converted into beef and fuel. Instead of feeding themselves,

humans feed animals and send the corn to factory farms, where cattle will substitute it for grass. Nonetheless, this seems to be a wasteful method of grain usage because “a single half-pound burger eaten daily by a consumer in Brazil or the United States uses up enough grain to meet the entire total daily energy and protein needs of three people in India with a combined grain and milk diet” (Angus and Butler 75). Similarly, instead of feeding the growing population of the economically poor countries, wealthy nations took advantage of corn to burn in it into a biofuel that will turn on the car engines of their wealthiest consumers. Therefore, between 2002 and 2008 the world food prices more than doubled (Angus and Butler 75). In the research conducted by the World Bank, it was concluded that the main reason for an increase in prices was a rise of biofuels production in United States and among nations of European Union (Angus and Butler 75). “In 2007, US vehicles burned enough corn to cover the entire import needs of the eighty-two poorest countries” (Angus and Butler 75). Two years later, ethanol makers in the United States produced more biofuels than did Canada’s and Australia’s combined grain production turn out to be (Angus and Butler 75).

While developed nations are placing more value on their profit and proposing programs for modern farming methods, a large percentage of people in the world have never seen meat, milk, fish, and eggs in their daily meal. Large coffee plantations in Brazil take up a vast amount of land to grow a crop that has little nutritional value. As coffee is a profitable crop, Brazil exports it to North America and Europe, instead of focusing on domestic issues of hunger (Sorvall 50). Thus, a lack of necessary nutrients, such as amino acids that form proteins, results in starvation and inadequate energy, which leads to illnesses caused by protein deficiencies. In United States, “the steak dinner takes six times more land to produce because the steer needs space to roam and graze. More acreage is required to grow grain and hay to fatten the livestock” (Sorvall 48). However, developing nations thus see help from United States, which sets its residents taxes for foreign aid programs that



reach up to \$10 billion per year (Sorvall 48). In recent years, this has helped poor nations increase their income by 3%, which means each person within these countries receives \$1.00 per year (Sorvall 50).

Similarly, in India more than half of the population is involved in farming, and yet religious and traditional obstacles increase an already insufficient food intake. Religion does not allow consumption of food, and ineffective agricultural methods further spread starvation. As a result, “the average Indian diet totals 1,500 calories in comparison with over 3,000 for an American” (Sorvall 50). Therefore, people in the streets are found lying down on the streets dying. Despite that, the population of India is rising and children are born to sleep with fifteen more people in one room (Sorvall 50). Their parents work in the fields to harvest plants before they dry in the hot sun, as the family may otherwise die. The scarcity of food in India is not the nation’s only problem; the shortage of water is another issue that is strongly linked to the global increase in population.

### **3.2.2. SHORTAGE OF WATER**

The growth of global population resulted in the pressure on water, the only valuable resource that has a finite rate of supply (Dodds 26). In the past half of the century, humans used one half of the resource which signifies that a strict amount will remain available in the next half of the century. Water will no longer be available for indirect uses, such as watering the golf courses or filling up swimming pools, and many species may become extinct in severely dry areas, like Phoenix or Las Vegas (Dodds 26). The impact will be dreadful in developing countries that rely on water for crops to fight persistent malnutrition and starvation. Nevertheless, the shortage of water is already experienced worldwide, as “more than one-third of all people on Earth live in areas where water is in short supply, and 1.7 billion people reside in regions where chronic water shortages hinder crop production and economic development” (Dodds 26). In India’s fourth largest city,

Madras, people have to line up at public taps from 4:00 AM to 6:00 AM in order to get water (Steffoff 64). In Africa, women walk for miles every day and carry jugs of water (Steffoff 64). Approximately one billion people still have no access to drinking water today (Dodds 26).

The demand for water increases faster than the population itself. “Between 1950 and 1980, worldwide water use more than tripled; in the United States it increased by 150% during that 30-year period, although the country’s population grew by only 50%” (Steffoff 57). In 1990, each day an American family of four would use 243 gallons of water, which nationally equaled to 400 billion gallons of water per day (Steffoff 57). There are three fundamental ways that people use water. Most of beliefs are grounded on the argument that domestic use, which implies drinking, cooking, bathing, washing, and sanitation, is the biggest factor of insufficiency. Others contend that industries use water beyond an acceptable level to power plants and cool or clean processes in them, but the biggest factors of all is the use of water in agriculture for irrigation, which “accounts for 73% of all fresh water use around the world and for more than 80% of water use in the United States” (Steffoff 57-58). Irrigation is a very sensitive process, in which an adequate amount of water is necessary to combat salinization of the soil, but at the same time to prevent fertilizers and pesticides spilling into aquatic habitats (Steffoff 58).

The consequence of water shortage is evident in the draining of the Nile, the Yellow, and the Colorado rivers, which are have almost no water to spill into the sea. Nonetheless, in the United States the government built dams that would supply water to the farmers in the West at a price under its real cost. “For example, in 1981 the U.S. Government Accounting Office reported that farmers who grew cattle feed with water from a \$500 million project near Pueblo, Colorado, were paying seven cents for a quantity of water that cost \$54 to produce” (Steffoff 59). Meanwhile, United Nations World Health Organization reported that about 80% of human diseases are related

to unsafe drinking water and substandard sanitation (Steffoff 59-60). The water is contaminated and polluted with human waste, which forms bacterial illnesses, such as cholera, polio, and infectious hepatitis, but it also contains parasites and toxic chemicals that lead to cancer and neurological diseases (Steffoff 60).

The fact that population growth is exceeding total amount of water available proves the slow process of water replenishing in groundwater sources, or aquifers, that are almost considered nonrenewable sources. Underground reservoirs have been filling for over a thousand years by the rainfall cycle, but nowadays most of them are empty and contaminated. An example of increased demand on wells is the Gaza Strip, located between Israel and Egypt, where the aquifer has been half emptied (Steffoff 63). As the fresh water became depleted, salty water from the Mediterranean Sea entered the well and left it contaminated. Not only are humans excessively taking away natural sources necessary for their survival, they are also destroying habitats of animals.

### ***3.3. Economic impacts of overpopulation***

#### **3.3.1. JOBS AND QUALITY OF LIFE**

A global population growth had its effect on the economy, where it caused a boost of labor demand. “Since 1950, the world’s labor force has more than doubled—from 1.2 billion people to 2.7 billion—outstripping the growth in job creation” (Brown et al. 39). In order to employ population surplus, more than 1.9 billion jobs will have to be formed in the developing world (Brown et al. 39). Consequently, increase in labor demand will give rise to labor supply, decreasing wages. “And in a situation of labor surplus, the quality of jobs may not improve as fast, for workers will settle for longer hours, fewer benefits, and less control over work activities” (Brown et al. 39). Furthermore, economy is impacted by nations in which the majority of population is below the age of 25, such as Peru, Mexico, Indonesia, and Zambia. These nations are most likely to feel labor surplus, as

employment is “the key to obtaining food, housing, health services, and education, in addition to providing self-respect and self-fulfillment” (Brown et al. 39).

In some developing countries, the quality of life has increased due to family-planning programs that enabled population decline. In South Korea, Taiwan, China, Indonesia, and Malaysia incomes have risen due to family-planning programs that have enabled population decline (Brown et al. 39). However, African nations that neglected family-planning programs have faced a large number of individuals seeking education and employment (Brown et al. 39). Moreover, population growth increased the number of housing available, and therefore encouraged homelessness. “The United Nations estimates that at least 100 million of the world’s people - roughly equal to the population of Mexico - have no home” (Brown et al. 39). Similarly, developing countries have a growing population of children that is expected to rise above the average of 93% within the next half of the century (Brown et al. 39). “Africa as a whole will see its school-age population grow by 75% through 2040” (Brown et al. 39), but if the educational system of the countries will turn its focus on developing lifelong learning, compared to developed nations that have implemented family-planning programs which result in the ability to provide every child with adequate education, developing nations will need to enact provisions.

#### CHAPTER 4:

##### *Solutions to overpopulation*

The main question of addressing the issue of overpopulation is how to come to grips with the issue that is growing above its limits. Environmental activists and experts on population argue that global governance is a key element in implementing measures, but the global network cannot enforce laws and exert social pressures equally among nations. For a global population change to be seen, international institutions must set goals for domestic institutions to accomplish within their

own borders. This seems impossible, as certain countries aim to reduce carbon emissions, while others utilize natural resources to acquire material gain. However, if nations force each other to ratify treaties for the well-being of the global community, then the world is already one step ahead to control environmental degradation. The treaties have the power to enforce further environmental efforts and are likely to lead countries to an effective policy on population control that will focus on domestic deficiencies, such as lack of education among young women.

#### **4.1. NATIONAL VS. INTERNATIONAL INSTITUTIONS**

Even though climate change, as a result of overpopulation, is a global issue that crosses borders, national institutions possess more power to regulate carbon emissions compared to international institutions. “Emissions reductions need to take place within the territories of over 200 sovereign states of the world” (Goldin 214). While international institutions serve as guides to national institutions in fulfilling their goals, domestic institutions have more legitimacy than global structures and their enforcement is more effective as they are “generally accepted by citizens as a legitimate source of binding law” (Goldin 214). The advantages of domestic institutions lie in the non-existence of barriers in communicating policies, because nations have common values and a common culture which simplifies policy implementing (Goldin 214). In addition, the established policies and laws can be enforced by nation’s apparatuses rather than multinational enforcement mechanism (Goldin 214). Another important feature that makes domestic institutions advantageous over global networks is the ability of social norms to reinforce social pressure and therefore affect individual’s behavior (Goldin 214).

However, global institutions are crucial in addressing challenges of population growth and economic growth. Domestic institutions cannot act alone in addressing issues that transcend borders. They would be unable to reach unilateral agreement “to address global issues without

assurances that other states will follow suit, as few global issues could be resolved by even the most powerful countries acting alone” (Goldin 214). Thus, local and national institutions need to be powerful within their own territory in order for global governance to be effective, as institutions build on each other in layers.

## **4.2. GOVERNANCE AND SUSTAINABILITY**

### ***Urbanization***

With respect to urbanization, local and national governments plan on expanding cities and the policies they bring affect the population size of the urban areas. In densely populated cities, carbon emissions decrease due to public transportation that is shared and because of reduction in the use of private cars. As the world’s second-largest economy and the largest carbon emitter, China aims to take action and “reduce its industrial energy demand in 2020 by 20 per cent while increasing productivity” (Goldin 221). Moreover, urban areas generate large amount of waste, which could be regarded as beneficial, since it provides more space for green initiatives that are already taking place in forms of “organic vegetable growing and ‘guerilla gardening’” (Baird 124). To develop potential for green incentives, city planners need to have vision and strategic planning supported by political will (Baird 124). Technological innovations can aid urban areas address their challenges, but to transform innovations into a process, “regulations, investment in research, and market incentives” need to take place (Goldin 221).

### ***Food and water***

In response to a growing demand for food and water, international agencies and organizations have implemented projects to help nations deal with consequences of climate change, but the core of the problem is grounded in unequal distribution of sources. The Consultative Group for International Agricultural Research (CGIAR) worked on projects that deal with adjusting to

climate change, the United Nations' Food and Agriculture Organization (FAO) has "sponsored a range of projects, an example being one that has dramatically reduced the overexploitation of aquifers in Andhra Pradesh, India" (Goldin 225), and Chinese government managed to reforest large areas of highlands to avoid desertification (Goldin 225). Nevertheless, the problem shakes sustainability of the global community and even when nations come together, the solution to the issue is out of their reach because the problem is not in the availability, but in the power to the access of food and water resources. Large agricultural corporations, supported and encouraged by governments, must stop exploiting nature to acquire material gains in the production of food and absorption of water. The global community needs to establish "a new kind of economy, based on clean and renewable energy sources, on the conservation and preservation of biological diversity, and on working with natural systems to provide for a sustainable number of people" (Ryerson 253).

### ***Environmental pollution***

The environmental system is overloaded and the humanity's footprint is breaking it down. Many nations sign the treaties on prevention of environmental pollution, but only few ratify them. Air and water pollution almost reached its peak, and breathing air or drinking water can cause disease (Steffoff 47). "The American Lung Association says that air pollution from automobile exhausts causes 30,000 deaths each year in the United States alone" (Steffoff 47). Further on, pollution of oceans takes place as people throughout the years treated ocean as a place of discharge for sewage and toxic materials. The waste materials come from urban areas that discharge waste into the waters, polluting the entire ecosystem, and their own inhabitants who reside at the seacoasts. "In 1991 more than half of the world's population lived within 60 miles of a seacoast" (Steffoff 48). An increase in urban population will push urban development toward outer borders, and cities on the coast will expand as well, bringing more people to reside along the shores.

Even though overpopulation is argued to be one of the main characteristics of environmental degradation, some scientists argue that with a lower rate of population the impact on the environment would be the same. A smaller number of people would not ensure an end to global warming and deforestation, as fewer people could still conduct “misguided or destructive policies of economic development and environmental mismanagement” (Steffoff 48-49). Nevertheless, the process of environmental degradation would take a slower pace and governments would have more time to take measures of prevention. Environmental issues of global ecosystem link experts in a “network of connections” where a solution to each question lies in primarily resolving the question of overpopulation (Steffoff 49).

### ***Opportunities for women***

A number of studies have shown that educating women decreases fertility rate in a given country. Women who are more educated are more likely to use effective methods of birth control (Steffoff 82). Thus, the more education women have, the fewer children they bear. This is linked to traditional customs and opportunities women have. Except education, an average number of children per woman depends on her employment status and gender equality. “Today fertility among European and North American women is the lowest in the world, with an average of 1.7 children per woman in Europe and 2.0 children per woman in the United States, as compared with 3.5 in Latin America, 3.9 in Asia, and 6.1 in Africa” (Steffoff 84). In the past, Western societies had a higher fertility rate, but because of implementing laws that give equal rights to women as to men, marriages started to take place in later ages and women consequently bore less children (Steffoff 84). Moreover, scientists on population control believe that education and job opportunities provide women with satisfaction, self-confidence, and financial security, and “they feel less pressure to ‘prove’ their worth to their husbands and families, or to society in general” (Steffoff 84). Compared



to other countries of Central America, Costa Rica highly developed its educational system, which set its fertility rate to 3.3 while other countries struggled with 4.1 (Steffoff 84).

### ***Effective policy on population control***

Besides United States, many nations did not formulate an effective population control policy. In addressing the issue of population growth, demographers and other experts claim that excessive population growth cannot find its solution without the strict policy to control it. While each government offered vague answers to the problem, China implemented a coercive one-child policy that has become controversial in the Western world (Steffoff 87). A China's national policy supports abortion, "but forbids local officials from forcing it on unwilling women" (Steffoff 87). Nevertheless, following China's history on coercion and abuse, including high female infant mortality rate, Westerners understand its efforts on population control as a violation of individual rights (Steffoff 87). In the Western world, personal freedom has a priority over society's well-being and therefore, these nations lack control over the growing population. Chinese government, on the other hand, understood that prevention is necessary sooner better than later, as the nation suffers malnutrition, lack of water, and environmental degradation. As a result, its population decreased from 5.5 billion in 1960 to 2.3 in 1991 (Steffoff 88). Therefore, governments must implement "comprehensive reproductive health care, including family planning basis and, more broadly, provision of maternal and child health care that is affordable and free of charge" (Ryerson 252).

### **CONCLUSION**

Four "apocalyptic" threats are upon our feet; the increase in greenhouse gases leads to global warming, nuclear weapons are perceived as the only weapon in the outbreak of a war, population growth and the shifts in demography shrink political and economic scenes, and access to energy crisis encourage international debates and disputes (Davis xi). This research paper provided

an insight into the growing issue of overpopulation. Although scientists cannot predict what the future world will look like, they argue that devastating impacts of growing population cannot be ignored. Disease, climate change, shortage of food and water, inequality in distribution, lack of family planning, and a declining economy are warning signs that domestic and global institutions need to act on time. As overpopulation is not the only global threat, one would not be wrong to conclude that apocalypse is coming at a faster rate than ever.

However, it is widely believed that technology may be the only factor that will save the planet from destruction. Technological innovations and devices produce large sets of data that are able to predict what actions should be taken to maintain environmental sustainability and support humanity. Nevertheless, these innovations have not yet been acknowledged by governments, and therefore their use, beside the scientific one, seems irrelevant. To find a solution to population growth, nations rely on each other to contribute to the well-being of the global community, while at the same time, individuals within this circle act in their own interest. The real solution to overpopulation, or an apocalypse, is in the answer to whether the natural resources and financial means can be distributed equally to maintain sustainability and implement measures on future fertility rate. If the humanity surrenders in its combat to fight overpopulation, then this issue may as well be the way the world ends.

## **BIBLIOGRAPHY**

### Books:

Aaseng, Nathan. *Overpopulation: Crisis or Challenge?*. Franklin Watts, Inc. New York, New York: 2010.

Angus, Ian, and Simon Butler. *Too Many People: Population, Immigration, and the Environmental Crisis*. Haymarket Boos. CHicago, Illinois: 2011.

Baird, Vanessa. *The No-Nonsense Guide to World Population*. New Internationalist Publications Ltd. United Kingdom: 2011.

Cafaro, Philip, and Eileen Crist. *Life on the Brink: Environmentalist Confront Overpopulation*. University of Georgia Press. Athens, Georgia: 2012.

Carpenter, Ted Galen. *Delusions of grandeur: the United Nations and Global Intervention*. Cato Institute. Washington, D.C.: 1997.

Davis, David Howard. *Ignoring the apocalypse: why planning to prevent environmental catastrophe goes astray*. Praeger Publishers. Westport, Connecticut: 2007.

Dodds, Walter K. *Humanity's Footprint: Momentum, Impact, and Our Global Environment*. Columbia University Press. New York, New York: 2008.

Gerdes, Louise I. *The Environment*. Greenhaven Press, Gales, Cengage Learning. Farmington Hills, Michigan: 2009.

Goldin, Ian. *Is the Planet Full?*. Oxford University Press. Oxford, United Kingdom: 2014.

Miller, Debra A. *Conserving the Environment*. Greenhaven Press, Gale, Cengage Learning. Farmington Hills, Michigan: 2010.

Reimer, David M. *Unwelcome Strangers: American Identity and the Turn Against Immigration*. Columbia University Press. New York, New York: 1998.

Robertson, Thomas. *The Malthusian Moment: Global Population Growth and the Birth of American Environmentalism*. Rutgers University Press. Piscataway, New Jersey: 2012.

Shah, Anup. *Ecology and the Crisis of Overpopulation: Future Prospects for Global Sustainability*. Edward Elgar Publishing, Inc. Northampton, Massachusetts: 1998.

Sorvall, Vivian. *Overpopulation: How many are too many?*. Pendulum Press, Inc. West Haven, Connecticut: 1971.

Steffoff, Rebecca. *Overpopulation*. Chelsea House Publishers. United States of America: 1993.

#### ARTICLES:

Angell, Marcia. "Our Beleaguered Planet." *The American Prospect*. Spring 2016.

Brown, Leister R., Gary Gardner and Brian Halweil. "16 Impacts of population Growth." *The Futurist*. February 1999.

Browne, Malcolm W. "Will Humans Overwhelm the Earth? The Debate Continues." *The New York Times*. December 8, 1998.

Current Events. "Climate Change Is a Serious Problem." *Conserving the Environment*. Greenhaven Press, Gale, Cengage Learning. Farmington Hills, Michigan: 2010.

Harper, Sarah. "Demographic and Environmental Transitions." *Is the Planet Full?* Oxford University Press. Oxford, United Kingdom: 2014.

Kasun, JR. "Population Scapegoat for Poor Governance: Overpopulation." *Forum for Applied Research & Public Policy*. Ebscohost. July 15, 1997.