

Committee: Environment Commission, Sub-Commission 2

Issue: Addressing the environmental impacts of overpopulation

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INTRODUCTION

People's lives have seen rapid change over the past century. Due to the industrial and medical revolutions, mortality rates have decreased, while fertility rates have remained stable. There has also been significant progress in food production and migration leading to a rapid rise in urban concentration. Thus, the human population has kept growing exponentially, leading to overpopulation. In 1950, the estimated human population was around 2.6 billion people. It had reached 5 billion in 1987 and 6 billion in 1999. The world's total estimated population was at 7 billion in October 2011, with Asia the most populous continent, with China and India having 19% and 18% of the world's population.¹

As a result, inhabitants of the overpopulated areas are suffering from acute food shortages, limited access to healthcare and other government infrastructure, housing shortages and unemployment. Apart from the economic impact, overpopulation has negative environmental impacts, varying from over-farming to water pollution and deforestation, to eutrophication and global warming. Even though governments and organizations have tried to implement drastic measures in the past, the planet's sustainability is still a challenging task and lasting solutions are extremely difficult to be found and applied by the international community.

Overpopulation causes serious issues and challenges that need to be taken seriously and overcome in the near future. Such issues are deforestation, water and air pollution, exhaustion of natural resources, and environmental degradation. If the aforementioned are not addressed in a short time, the lives of people and every organism on the planet will change dramatically, and we will have to face a new reality. Henceforth, overpopulation must be tackled, the root cause of all those far-reaching problems.

¹"Population." Welcome to the United Nations, 21 Apr. 2020, www.un.org/en/sections/issues-depth/population/.

DEFINITION OF KEY TERMS

Overpopulation

Overpopulation is an unfavorable situation in which the total amount of the existing human population surpasses the capacity of a certain area or the Earth as a whole. It has negative economic and environmental impacts. It is mainly attributed to the falling mortality rate and higher fertility rates, but also migration and urban concentration.

Mortality rate

Mortality rate, or death rate, is a measure of the number of deaths per period of time in a given population, proportional to the volume of that population.

Industrial Revolution

The Industrial Revolution, in the timeframe from about 1760 to sometime around 1820 or 1840, was the change in modern production methods in Europe and the United States of America. The Industrial Revolution transformed economies based on agriculture and crafts into economies based on large-scale production, mechanized manufacturing, and infrastructure of factories.

The First Industrial Revolution (The Age of Mechanical Production) was the shift to new manufacturing methods in Europe and the United States, beginning about 1760 until some point between 1820 and 1840.

The years 1870-1914 have been identified by historians as the period of the Second Industrial Revolution (The Age of Science and Mass Production). Whilst the First Industrial Revolution prompted industry development, such as coal, iron, the railroad, and textiles, the Second Industrial Revolution witnessed electricity, petroleum, and steel expansion.

The dramatic decrease in transaction costs that The Third Industrial Revolution (The Digital Revolution) has brought about contributions in the democratization of knowledge, resources, production, marketing, and logistics, and the initiation of a new age of centralized capitalism that is likely to transform the entire way we conceive commercial existence.

The Fourth Industrial Revolution is the ongoing automation, using modern smart technology, of traditional manufacturing and industrial practices.

Medicine Revolution

Modern medicine, or medicine as we know it, started to emerge after the Industrial Revolution in the 18th century. At this time, there was a rapid growth in economic activity in Western Europe and the Americas. Patients were separated in hospitals by the type of disease they were suffering from as the concept of contagious diseases was beginning to be understood, and doctors were no longer general physicians but rather specialized types of physicians or surgeons.

Progress in Food Production

In the past few decades, food production has multiplied and permitted the global population to grow by 4.5 billion people. As a part of the Green Revolution, this increase in food production prevented widespread starvation but carried with it considerable environmental costs, including degradation of freshwater supplies, eutrophication through excessive usage of fertilizers, greenhouse gas pollution from livestock, rice paddies, mechanization, fertilizer denitrification, and agricultural expansion into natural systems.

Migration and Urban Concentration

Migration is the demographic process that links rural to urban areas, generating or spurring the growth of cities. The subsequent urbanization is correlated to several policy challenges that include demographic, economic, and environmental issues. Growing cities are frequently seen as promoters of environmental destruction. There are numerous forms of migration from counter-urbanization, emigration, relocation, global migration, foreign migration and rural-urban migration. Migration is affected by economic growth and prosperity, technological development and likely conflict and social disturbances, too. It is guided by pull factors which draw people to urban areas and push factors which force people away from the countryside. Urbanization impacts the physical environment by affecting the number of inhabitants, their movements and rising resource demands, having adverse health consequences mostly attributed to noise and overcrowded living conditions.

Water Pollution

The poisoning of water sources is water waste, typically as a consequence of human activities. The bodies of water comprise lakes, rivers, oceans, watersheds and groundwater. This results in water pollution as chemicals are added to the natural world.

Deforestation

Deforestation is defined as the permanent removal of the trees from a forest to allow space for construction, except for woodland. Due to overpopulation, man is cutting down trees, thus, a considerable number of natural habitats are being destroyed. The main reasons for deforestation are agriculture or grazing, and using the timber for fuel, construction or manufacturing.

Global Warming

The rise in the average temperature of the Earth's climate, called global warming, is increasingly changing rainfall patterns, extreme weather, seasonal arrival and more. Global warming and its consequences are defined generally as climate change.

Eutrophication

Eutrophication, dystrophication, or hypertrophication is when an amount of water becomes overly enriched with minerals and nutrients that cause excessive bacteria production. This process can cause oxygen depletion of the water body.

Exhaustion of Natural Resources (resource depletion)

The exhaustion of natural resources is resource depletion and has an impact on the economy by raising the marginal production costs correlated with the depletion of resource supply. Depletion effects arise in the context of mining, as lower-grade ores are discovered as more of the mineral is removed.

Environmental Degradation

Environmental degradation is environmental deterioration through the loss of resources such as air, water, and soil; ecosystem destruction; habitat destruction, species extinction; and pollution.

Background Information

In the 18th century, the estimated human population was less than 800 million people, but after the Industrial Revolution the world's population rose exponentially. The human population is currently over 7.8 billion. It is estimated that by 2025 the world's population will reach 8 billion, 9 billion by 2040, and 11 billion by 2100. The rapid growth of the population outpaces the planet's abilities, and as a result, many issues could occur.

The Population of the Continents

Asia	4.7 billion	61% of the population
Africa	1.3 billion	17% of the population
Europe	750 million	10% of the population
Latin America and the Caribbean	650 million	7% of the population
Northern America	370 million	5% of the population (with Oceania)
Oceania	43 million	5% of the population (with Northern America)

The causes

Even though it took humanity hundreds of years for its population to reach 1 billion inhabitants, in only two centuries the world's population reached 7.8 billion. The causes of this dramatic population growth are:

Falling mortality rate: due to the Industrial Revolution, a new era for medicine was established. Since then, scientific progress has permitted us to overcome diseases that were fatal beforehand. Thus, the invention and discovery of vaccines and antibiotics were a major factor that led to population growth. The mortality rate fell, while the fertility rate remained constant, hence the population increased.

Progress in food production: scientific research and the technological improvements of the Industrial Revolution helped agricultural production become much more efficient, because humans started using machinery, which allowed them to finish most of their work in a much shorter period, while at the same time their products were of better quality. What is more, improvements in other methods that contributed to the provision of more food

were fishing and livestock methods. By creating larger and more durable ships, humans were able to catch larger quantities of fish, which they could store and freeze, so that they would be of good quality after a long time. In addition, techniques were invented that resulted in not only the faster multiplication of animals on farms, but also made them larger, resulting in more milk, eggs, wool and other materials necessary for human survival.

Migration and urban concentration: many countries over the years had a crucial issue with the migration and the accumulation of the population in urban areas. This was not only related to demographic growth, but also to wealth generation, a fact that helped increase population. Nowadays, over half of the world's population lives in the cities, and this is estimated to continue growing until it reaches 70% of the global population.

Poverty: one of the leading causes of overpopulation is poverty. A lack of education but also the high mortality rates lead to high fertility rates, resulting in the Less Economically Developed Countries (LEDCs) experiencing large fertility rates. Many teenagers, mostly girls, are still not aware of the various contraception ways, leading to unwanted pregnancies at a very young age.

Poor contraceptive use: even though contraceptive methods are widespread in most countries, poor planning from both partners, but also a lack of sex education, can lead to unexpected pregnancies. This problem occurs more often in the LEDCs. A study by the World Health Organization (WHO) shows that the usage of contraception drops to 43% in countries that are blighted by issues like poverty, which leads to higher birth rates.

Child labor: child labor still exists and is used extensively in many countries all around the world. It is estimated that over 150 million children are working, mostly in countries with lax child labour laws. For the reason above, children are seen by their families as a source of income. Most of them do not have educational opportunities, a fact that leads to a lack of sex education and unwanted pregnancies.

Fertility treatment: even if it is not as important as the above, fertility treatment is an aspect that affects the fertility rates. In the present day, women have the option of using a variety of fertility treatments, such as certain medicines, surgical procedures and in vitro fertilization that allow women to conceive children; otherwise, they would not be able to do so.

The effects

Overpopulation has many negative effects on the environment, such as:

Exhaustion of natural resources: the main and most important issue, caused by overpopulation, is the exhaustion of natural resources. Because of the human population, natural resources are used unequally and unrestrictedly. Individuals, and governments as a whole, tend to ignore the fact that there is a certain and limited capacity of raw materials, which each year decreases. The use of the resources is faster than the Earth can generate them. Hence overpopulation not only reduces dramatically the number of natural resources but also causes conflicts between the countries which control the resources. Such conflicts or geopolitical tensions can end in war.

Environmental degradation: mindless consumerism of natural resources and energy production from fossil fuels are harming our planet. The aftermath of the above is deforestation and desertification, extinction of animal and plant species and changes in the water cycle. However, the most important and direct effect is the emissions of large quantities of greenhouse gases leading to global warming.

Lack of water: a growing population increases the demand for the world's freshwater supplies, but, because under 1% of the planet's water is fresh and accessible to all individuals, this creates a major and crucial issue, since water is vital for the existence of life on our planet. By 2025, it is estimated that freshwater demand will increase to 70% of the Earth's capacity, placing inhabitants of impoverished areas, which have limited accessibility to freshwater, in great danger.

Eutrophication: it is if not the most, it is certainly one of the most important and dangerous effects of overpopulation. Eutrophication is a serious ecological problem for open water sources, for instance, lakes, rivers, oceans and reservoirs. It is characterized by dense algal and plant growth owing to the enrichment by phosphorus and nitrogen nutrients needed for photosynthesis. The direct consequences of eutrophication are fish kills (especially the ones that need high levels of dissolved oxygen), and hypoxic conditions promoting the growth of bacteria that produce toxins deadly to birds and animals. The areas

suffering from these consequences are named “deadly zones” because the majority of the organisms cannot survive in these zones.

Facts about population

It is estimated that in the last twelve years the world’s population has increased by approximately one billion inhabitants. Moreover, every second day around 4.2 people are born, and 1.8 people die. Even though these rates are constantly changing, the rate of population growth has slowed down, but that does not mean that overpopulation does not exist. It is just growing at a slower rate than it did 10 years ago (then it was 1.24%, now it is 1.18%). Furthermore, it is worth noting that there are over 230 million immigrants globally, a fact that helps overpopulation occur in many countries. Most immigrants move from LEDCs to other more developed ones.

A disturbing fact that we need to prevent from happening again in the future, is that in 1985 the demand for resources exceeded its supply, resulting in poverty and the death of many humans and animals, mostly in the LEDCs.

Additionally, approximately 34% of pregnancies were unwanted or accidental, which proves that with proper education and planning methods, change can be brought about. We should also keep in mind that overpopulation is not only attributed to population growth, as life expectancy has also increased. Moreover, there is a tremendous difference of approximately 21 years between the life expectancy of an inhabitant of an LEDC and an inhabitant of a More Economically Developed Country (MEDC). Another important and worrying fact is that more than 44 countries (the majority of which are developed) have fertility rates lower than the replacement level (the number of children a couple must bear to replace themselves), which means that while other countries are overpopulated, they are facing a decline in their population. Last but not least is the fact that over 230 million infants below the age of five have never been officially registered, which means that there might be an even higher degree of overpopulation

MAJOR COUNTRIES AND ORGANISATIONS INVOLVED

Asia

Asia is the most populous continent. Approximately 61% of the world's population is in Asia. China has 1.44 billion and India 1.39 billion inhabitants, comprising 19% and 18% of the global population, respectively. Many overpopulated countries in Asia suffer from the environmental impacts of overpopulation, with rising sea levels the most important and dangerous one. Coastal areas, which are currently inhabited by 300 million people, will suffer from annual flooding by 2050 (three times higher than previous estimates).

Due to climate change, Asia's low-lying land and overpopulation are at the greatest risk. Of all the 300 million inhabitants of the coastal areas, 237 million live in Bangladesh, India, China, Vietnam, Thailand and Indonesia.

A major problem is that the Indonesian capital, Jakarta, is home to more than 30 million people and it is estimated that by 2050 it will be submerged. Therefore, the Indonesian government is considering moving its capital elsewhere.

Asia's 10 most populated countries:

1	China	1,439,323,776
2	India	1,380,004,385
3	Indonesia	273,523,615
4	Pakistan	220,892,340
5	Bangladesh	164,689,383
6	Japan	126,476,461
7	Philippines	109,581,078
8	Vietnam	97,338,579
9	Turkey	84,339,067
10	Iran	83,992,949

Africa

Africa is the world's fastest-growing continent since it has the highest rate of population growth. It is estimated that by 2100, it will have approximately 3 billion inhabitants. This population growth will cause serious and widespread environmental degradation. Thus, it is crucial to create an effective family planning policy, which will have to be followed by everyone, because scientists state that the increased population affects the continent's ecosystem. Most of the environmental issues Africa is facing are anthropogenic, and they mostly occurred because of overpopulation. Africa's inhabitants need to face serious problems, concerning access to safe freshwater, desertification, and more. Anthropogenic climate change is already a fact in Africa, and it is claimed by scientists that Africa is the most vulnerable continent to climate change. There is a huge issue of deforestation, which does not only affects Africa's ecosystem, but also the whole planet.

Africa's 10 most populated countries:

1	Nigeria	195,874,740
2	Ethiopia	109,224,559
3	Egypt	98,423,595
4	Democratic Republic of Congo	84,068,091
5	South Africa	57,779,622
6	Tanzania	56,318,348
7	Kenya	51,393,010
8	Uganda	42,723,139
9	Algeria	42,228,429
10	Sudan	41,801,533

Europe

In sharp contrast with the above, the populations of European countries are about to decrease. By 2050, many countries are expected to see their populations decline by more than 15%. Such countries are Bosnia and Herzegovina, Bulgaria, Croatia, Hungary, Latvia, Lithuania, Republic of Moldova, Romania, Serbia, and Ukraine. Fertility rates are far below the level needed to replace populations. In the majority of the cases, fertility rates have

been below the replacement levels for decades; a fact that makes the situation more serious.

The Overpopulation Project

The Overpopulation Project studies and assesses the environmental impacts of overpopulation, and explores policies so that rapid population growth ends. With the help of the Global Challenges Foundation, it aims to create ecologically sustainable societies, which will allow all kinds of life to flourish, by reducing population growth, and consequently, the effects overpopulation has on the environment.

Most important members are:

United Nations Population Fund	The UNFPA is the UN’s reproductive health and rights agency.
Population Media Center	The Population Media Center is an organization which conducts mass media campaigns
Population Reference Bureau	The PRB is a private non-profit organization which selects information, about population, health and environment
Population-Environment Research Network	The Population-Environment Research Network seeks academic research on population and the environment.
Worldwatch	The Worldwatch Institute is trying to speed up the change to a sustainable world that meets human needs.
World Population Balance	WPB 's goal is to warn and inform citizens that the root cause of environmental scarcity, biodiversity loss, hunger and climate change is overpopulation.
Population Institute	The Population Institute is an international non-profit organisation that aims to facilitate equal access to knowledge, awareness, and resources related to family planning.
Population Council	The Population Council performs work on important

	aspects of health and sustainability, such as voluntary family planning, HIV and education of children. They carry out studies and projects in over 50 countries.
Population Council International	PAI is an international organization promoting the right of every citizen, anywhere, to accessible, good quality contraceptives and reproductive health care.
Partners in Population and Development	PPD is an international alliance of developing countries focusing on improving people's quality of life through continuous advocacy, capacity building, networking, knowledge-sharing and transfer of technology in the fields of reproductive health, population and sustainability within South-South Cooperation

TIMELINE OF EVENTS

Date	Description of Event
1970	The National Environmental Policy Act is active in the United States. This includes environmental risk evaluations for federally approved infrastructure such as bridges and dams.
1972	The Clean Water Act controls waste which leads to substantial clean-ups of U.S. rivers, streams, lakes, wetlands and coastal areas. Some of them are fishable and swimmable again.
1976	Toxic vapors expose thousands of residents to some of the highest amounts of dioxin ever reported.
1978	Buried dangerous chemicals sicken hundreds of inhabitants in Love Canal, outside Niagara Falls, New York, drawing attention to the risks of industrial waste.
1985	Scientists have observed a significant depletion of the protective ozone layer over Antarctica. The cause: chlorofluorocarbons and

	other chemicals.
1987	World leaders agree to phase out ozone-depleting pollutants within a few years after the ozone hole has been discovered. The convention is recognized by all countries.
1988	NASA climate scientist James Hansen tells the U.S. Congress that carbon dioxide and other heat-absorbing gasses emitted from the combustion of fossil fuels are now warming the earth.
1990	The UN Intergovernmental Panel on Climate Change releases its first study on global change. In the next few decades, most of its predictions have come true.
1990	Amendments to the United States of America Clean Air Act , which significantly reduce acid rain and ozone depletion, require cleaner gasoline, and targets toxic emissions and urban air pollution.
1995	The rate of deforestation is increasing rapidly, mainly due to the creation of cattle pastures, anticipating a spike in Brazilian beef exports. Beef is the main cause of rainforest devastation.
2000	World population reaches 6.1 billion.
2002	The NASA satellite reports a 1,250-square-mile ice shelf floating off the rapidly warming Antarctic Peninsula.
2006	Waste containing hydrogen sulphide and other chemicals is dumped near the port city of Abidjan (CÔTE D'IVOIRE). It kills 15 and strickens 100,000.
2006	With soaring coal use fueling a booming economy, China passes the U.S. to become the largest emitter of CO2. Its per capita emissions remain far lower.
2012	The Arctic Sea Ice shrinks in September to a record minimum, about two areas the size of Alaska less.
2015	Officials of 195 nations seek to limit global warming to two degrees Celsius. Many countries later announce cuts in emissions — though not enough to meet the two-degree goal. President Donald Trump declares the withdrawal of the U.S.

2016	Following the fall of Larsen B in 2002, the next huge ice shelf on the Antarctic Peninsula starts to crack — as predicted from climate change.
2017	For the first time since the 1880s, the birthplace of the manufacturing revolution goes for a day without producing coal-fired energy. The UK plans to close down its power stations by 2025.
2018	World population reaches 7.6 billion.
2019	Amazon rainforest wildfires. Fires connected to deforestation blanket a significant part of Brazil in haze, stroking concerns that areas of the rainforest would transform to dry savannah.
2019	Australian Wildfires destroy a region greater than Iceland, killing up to one billion animals.

UN INVOLVEMENT: RELEVANT RESOLUTIONS, TREATIES AND EVENTS

The United Nations started dealing with the ravaging issue of overpopulation and its environmental effects decades ago. It was the main topic in their first conference and the subsequent one.

The First United Nations World Population Conference was held in Rome in 1954 to share scientific knowledge on population factors, their determinants and their effects. This eminently academic conference ultimately resolved to produce more detailed knowledge about the demographic situation of developed countries and to encourage the establishment of national training centers to help tackle population challenges and prepare specialists for demographic analysis.

In 1965, the International Union for the Scientific Study of Population (IUSSP) and the United Nations hosted the Second World Population Conference; several of the delegates were specialists in the area. Throughout this international conference, the emphasis was on fertility research as part of a city planning strategy. This Conference was conducted during a period when specialist research on demographic facets of growth coincided with the start-up of the U.S. Agency for International Development (USAID) funded community initiatives.

The Third World Conference on Population was sponsored by the United Nations and was conducted in Bucharest, Romania from 19 to 30 August 1974. Representatives from 135 countries participated in this meeting, the first at an intergovernmental level. The debate concentrated on the connection between issues connected to population and growth. Among other values, the conclusion of the Conference, the Global Population Plan of Action, notes that the key purpose is the social, economic and cultural development of nations, that population variables and progress are interdependent, and that population policies and goals are an integral part of socio-economic development policies.

In August 1984, delegates revised and adopted several elements of the 1974 Bucharest Meeting Agreements, and extended the World Population Plan of Action to integrate the effects of the new policy analysis and statistics. Many of the issues presented in the Declaration signed at the Conference were the civil rights of people and communities, standards of safety and welfare, employment and education. Some relevant topics include the intensification of foreign relations and the promotion of greater efficiency in making population-related policy decisions.

Under the auspices of the United Nations, the Fifth International Conference on Population and Growth took place from 5 to 13 September 1994. More than 180 states engaged in this gathering, at which a revised Plan of Action was implemented for the next 20 years as a roadmap for national and foreign intervention in the field of migration and development. This current Plan of Action stresses the indissoluble connection between society and growth, which reflects on addressing the needs of people within the context of internationally accepted human rights principles rather than necessarily achieving demographic targets. The implementation of this System signals a new period of engagement and dedication in addressing population problems effectively.

The gains gained and difficulties faced in adopting population and growth policies have been the core focus of this gathering of world leaders convened pursuant to a resolution adopted by the General Assembly on 18 December 1997. Five years after the International Conference on Population and Growth (Cairo, Egypt, 1994), this Special Session of the United Nations General Assembly was called to study and evaluate the progress of the Plan of Action introduced at the 1994 summit.

Possible solutions

Controlling the world's population might be really difficult. However, there are some solutions, which if implemented universally can, over time, save our planet from the disasters caused by overpopulation.

First of all, better sex education is the key to eliminating the unwanted pregnancies. More awareness can allow women to fully consider the possible implications of having sex when they contribute to childbirth. This would therefore do away with many of the misconceptions about the sexual act and incorporate medically established birth control strategies.

Moreover, there should be changes in any policy that does not permit girls to be enrolled in school. Females must have the same opportunities as males. More than 130 million girls are not given the opportunity to go to school, the majority of whom live in LEDCs, mostly in West and South Asia, and sub-Saharan Africa. These girls are obliged to marry, while they are very young, something that hinders their access to education. A female without proper education is more likely to have more children at a very young age, and be vulnerable to exploitation.

Additionally, drastic solutions that will prevent overpopulation from having damaging environmental impacts must be implemented. First and foremost, disposable products, such as water bottles, food containers, grocery store bags, and batteries, must be replaced by reusable ones. Furthermore, even though we live in a Digital Era, we use paper products on a daily basis, leading to deforestation; thus the daily use of paper goods must be restricted by specific rapid measures. For example, the reusing and repurposing of paper products can be put in place. Another method to limit deforestation is the eradication of the use of products developed by palm oil firms in Indonesia and Malaysia. Also, water and energy should be conserved. Such things can be achieved by becoming aware of our unconscious habits and rituals.

The most significant environmental solution could be innovation. People are focusing on new ideas and solutions across the globe that will revolutionize the way we look at energy and waste. There is no time to waste, and mankind needs policymakers and enterprises to invest in Research & Development projects.

Governments should invest in affordable and clean energy. Various energy resources are sustainable. Renewable electricity options are solar, wind, and hydroelectric energy. An

example of clean energy is nuclear energy, a non-renewable source of energy which contributes little to climate change.

Lastly, another way to reduce the negative effects of overpopulation is taxation, and more specifically carbon taxation. One of the important principles of a carbon tax is that you encourage people to eliminate the utilization and exploitation of fossil fuels by adding a tax on fossil fuels. That is the very same idea that is believed to cause job loss by increasing the minimum wage: as production becomes more expensive, companies will cut down on its use.

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