

Review Article

Environmental Degradation Due to Over Population

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A B S T R A C T

There is a need for effective curbing of the growing population so that present and future human generations can get an opportunity to live in a healthy environment. As a result of the rapid increase in population, there's an increase in environmental pollution. The challenges posed by the rapid expansion of human populations are multifaceted and extend across the global landscape. This phenomenon, characterised by high birth rates, advances in healthcare, and cultural influences, is underpinned by complex dynamics that impact both the present and the future of our earth. Population growth, often accompanied by the accelerated depletion of finite natural resources and environmental degradation, is not an inherently negative force. When guided by responsible and sustainable practices, a growing population can serve as a catalyst for innovation, cleaner technologies, and increased investment in renewable energy sources. With the right policies and behaviours in place, a larger population can become a driving force for collective action, enabling us to address pressing environmental challenges such as mitigating greenhouse gas emissions, conserving invaluable natural habitats, and enhancing resource efficiency. However, it is undeniable that the escalating global population places heightened demands on our finite resources. The increased consumption of water, energy, land, and minerals often leads to resource depletion, scarcity, and a host of environmental issues, including water shortages, deforestation, and habitat destruction. Furthermore, industrialization, transportation, and agricultural intensification, driven by population growth, contribute to air, water, and soil pollution, which threatens ecosystems and human health alike. Habitat destruction and fragmentation, compounded by urban expansion, pose significant challenges to biodiversity and the delicate balance of our environment.

Keywords: Population, Environmental Challenges, Sustainable Practices, Birthrate, Land Degradation, Global Warming, Climate Change, Water Pollution

Introduction

Population growth is increasing. 1-3 countries, including India, are endangering the environment by destroying natural ecosystems, expanding and intensifying agriculture, and allowing urbanisation and industrialization to grow out of control. The current work makes an effort to investigate population change and its effects on resources such as land, forests, water, and energy. Declining per capita agricultural land, forestry, and water resources are significantly impacted by rapid population increase. In the last century, people's lives have seen significant change. Mortality rates have dropped as a result of the industrial and medical revolutions. A sharp increase in urban concentration has been caused by considerable advancements in both migration and food production. As a result, the number of people has continued to increase dramatically, resulting in overpopulation. The projected number of people on earth in 1950 was 2.6 billion Figure 1.



Figure 1. Population growth

It had reached \$5 billion in 1987 and \$6 billion in 2000. The world's total estimated population was 7.6 billion in October 2011, with China and India having 20% and 19% of the world's population, respectively. It is believed that by 2050, the global population may exceed 10 billion. As a result, there is a severe food scarcity, there is a lack of access to healthcare, and there is unemployment. In addition to its detrimental effects on the economy, overcrowding also harms the ecosystem. The rapid expansion of human populations has evolved into a complex global challenge, presenting substantial environmental consequences. This phenomenon warrants a comprehensive examination, as it reveals an intricate interplay between population growth and environmental dynamics. In this essay, we embark on a profound exploration of population growth and its far-reaching environmental ramifications, ultimately underscoring the pressing need for its incorporation into sustainable development strategies. The inexorable growth of human populations has set in motion a series of events, resulting in the accelerated depletion of finite natural resources and, consequently, the degradation of our environment. The profound implications of this dynamic

are felt across the globe as the burgeoning population places increasing demands on essential resources such as water, fossil fuels, minerals, and arable land. Regrettably, all too often, these resources are exploited without due consideration for their finite nature and the potential ecological consequences of their overexploitation. Consequently, we find ourselves ensnared in a relentless cycle of resource depletion and ecosystem decay, with far-reaching implications for the health and stability of our planet (Figure 2). In this review paper, we will seek to shed light on the multifaceted aspects of population growth, delving into its intricate relationship with resource scarcity, ecosystem disruption, and the dimensions of population growth, highlighting its various impacts on natural resources, ecosystems, and the delicate balance of our environment. The increasing human population has a negative impact on the earth's environment. In order to guarantee that life on Earth will continue to be sustainably throughout the twenty-first century, critical issues such the depletion of resources and biodiversity, the generation of waste, and the destruction of natural habitat must be addressed.

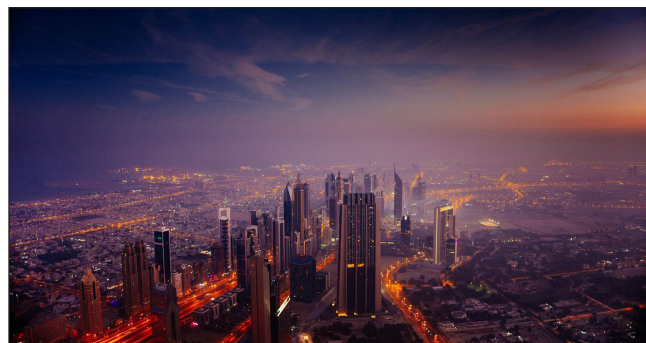


Figure 2. Environmental issues due to overpopulation Causes of the Increasing Population

One of the primary causes of the increasing global population 4-6 is the persistence of high birth rates in many regions, particularly in developing countries. Factors contributing to these high birth rates include limited access to family planning services, cultural or religious beliefs that encourage larger families, and a lack of awareness about the benefits of smaller family sizes. In some areas, particularly rural and less developed regions, children are often seen as a source of labour and security for elderly parents, further incentivizing larger families. Advances in healthcare have played a significant role in the population increase worldwide. Access to better medical care, including vaccinations, antibiotics, and improved maternal healthcare, has reduced mortality rates, particularly among infants and children. This has led to longer life expectancies and increased population growth as more people survive into adulthood and old age. The demographic transition,

where declining death rates precede a decline in birth rates, is a characteristic of many countries as they develop economically.

Economic and social factors also contribute to population growth. In some regions, a larger population is seen as an asset for economic growth, leading to policies and cultural norms that encourage larger families. Additionally, the availability of social welfare programmes, such as pensions and healthcare, can lead to larger families as people have more children to provide support for in old age. Furthermore, in some societies, a lack of education and economic opportunities for women can limit their ability to make decisions about family size, leading to higher birth rates.

Socioeconomic factors also play a significant role in driving population growth. In some regions, particularly those with lower levels of economic development, factors such as limited access to education, healthcare, and family planning services can contribute to higher birth rates. Poverty and a lack of economic opportunities may discourage smaller family sizes, as children are sometimes seen as additional sources of labour and support for parents in old age. Addressing these socioeconomic disparities is crucial to controlling population growth by ensuring that individuals have access to education and economic opportunities, empowering them to make informed choices about family size.

Impact on Human Health Due to Overpopulation

Environmental deterioration has the biggest effects on people's and populations' health.⁷⁻⁹ Environmental deterioration may have negative effects on human health. Respiratory issues like pneumonia and asthma can be brought on by areas where harmful air pollutants are present. It is known that air pollution has caused millions of deaths indirectly. Air toxicity in India's cities ranks among the world's most polluted. The World Health Organisation (WHO) considers the limit for safe pollutant concentrations to be exceeded in metropolitan areas' air. Delhi has suspended particle levels that are significantly higher than what the World Health Organisation (WHO) recommends. It is concerning how India's urban air pollution has increased over the past ten years. The burning of fossil fuels, which claims thousands of lives every year and affects many more through respiratory damage, heart disease, and lung disease, is one of the main causes of the deterioration of urban air quality. Other major contributors include growing industrialization, increasing vehicle pollution, industrial emissions, automobile exhaust, and industrial emissions. In the countryside, nitrates from animal waste and chemical fertilisers damage the soil and water, while lead from vehicle exhaust pollutes the air in urban areas. The impact of population growth on the environment is

multifaceted and influenced by various factors such as the rate of growth, technological advancements, resource consumption, and government policies. Preserving the environment is vital to serving the interests of current and future generations, safeguarding ecosystems, and ensuring the overall sustainability of our planet. When managed responsibly and sustainably, population growth can actually benefit the environment. A growing population can stimulate innovation, promote the development of cleaner technologies, and encourage investment in renewable energy and conservation efforts. Properly guided by effective policies and responsible behaviours, an expanding population can drive collective action to tackle environmental challenges, including reducing greenhouse gas emissions, conserving natural habitats, and enhancing resource efficiency.

The escalating global population exerts increased demand on finite natural resources, such as water, energy, land, and minerals. The consequence of this demand is often overexploitation, leading to resource depletion and scarcity, which manifest in issues like water shortages, deforestation, and habitat destruction. Furthermore, a larger population often translates to heightened industrialization, transportation, and agriculture, contributing to elevated pollution levels. This encompasses air, water, and soil pollution, posing threats to both ecosystems and human health. The expansion of urban and agricultural areas frequently results in habitat destruction and fragmentation, ultimately jeopardising biodiversity as species face challenges of adaptation or extinction. Moreover, the growth in population leads to higher greenhouse gas emissions due to increased energy consumption, transportation needs, and industrial activities, further fueling climate change and its adverse effects.

As the global population continues to expand, it becomes increasingly essential to acknowledge and address the associated environmental challenges. This expansion drives land use changes, transforming natural landscapes into urban areas or farmland, potentially diminishing green spaces, and contributing to urban heat islands. Concurrently, it intensifies water stress as a larger population places more demands on freshwater resources, risking scarcity in regions with limited availability and affecting aquatic ecosystems. Furthermore, the surge in population results in amplified waste generation, from solid to electronic waste, necessitating responsible disposal and management to prevent environmental pollution. To meet the demands for food, intensified agricultural practices often ensue, with consequences like deforestation, increased pesticide and fertiliser use, and monoculture farming. However, it is crucial to recognise that the negative impact of population growth on the environment can be mitigated through sustainable practices, technological innovations, and

responsible resource management. Effective government policies, international cooperation, and individual choices all play pivotal roles in minimising these adverse effects and fostering a more harmonious relationship between human society and the environment¹⁰⁻¹³. Some of the impacts of growing populations are.

Air and Water Pollution

The effects of population growth on the environment go beyond air pollution. Water contamination is one of the growing issues in today's world as a result of the population increase. Water is regarded as the source of all life. The need for more manufacturing is driven by the growing population, just as it is in the case of air pollution. Water contamination is just one of the pollutions that these factories cause. Additionally, because India is an agrarian nation, chemicals used in agriculture are a contributing factor in water contamination. As we can see, rising population numbers are causing pollution to increase, which in turn is making the environment more unfriendly for people.

Land Degradation

Water and nutrients needed by plants and other living microorganisms are stored in the land. The need for food, energy, and other necessities for humans depends on maintaining and raising land production. Numerous factors, many or maybe most of which are connected to human growth, have contributed to the loss of arable land. Deforestation, over exploitation of timber resources, overgrazing, agricultural practises, and industrialization are the main reasons. Globally, overgrazing, agricultural practises, deforestation, excessive exploitation of land for the production of fuel wood, and industrialization are the main causes of soil degradation.

Global warming and Climate Change

One of the biggest hazards to the globe is global climate change. Both the government and scientists concur that the issue is valid and serious. Climate scientists agree that over the past 120 years, the average global temperature has increased by between 0.4 and 0.8 °C. Among the seven warmest periods on record, the last five years were.

Depletion of the Ozone Layer

The ozone layer shields the planet from the sun's UV rays. The impacts of CFCs have steadily destroyed the ozone layer. These CFCs were employed as cleaners, refrigerants, propellants for aerosols, and in the production of foam plastics. Because of this, the use of CFCs in aerosols has been outlawed globally. The ozone layer may also be harmed by other substances, such as nitrous oxides from fertilisers and bromine halocarbons. Other substances that have a negative impact on the ozone in the stratosphere include

nitrogen oxides and methane. As the human population has climbed, so has the quantity of CFCs, and the ozone layer's thickness has decreased to the point that a hole in the layer has appeared Figure 3.



Figure 3. Sustainable population

Conclusion

The impact of population growth on the environment is multifaceted and influenced by various factors such as the rate of growth, technological advancements, resource consumption, and government policies. Preserving the environment is vital to serving the interests of current and future generations, safeguarding ecosystems, and ensuring the overall sustainability of our planet. When managed responsibly and sustainably, population growth can actually benefit the environment. A growing population can stimulate innovation, promote the development of cleaner technologies, and encourage investment in renewable energy and conservation efforts. Properly guided by effective policies and responsible behaviours, an expanding population can drive collective action to tackle environmental challenges, including reducing greenhouse gas emissions, conserving natural habitats, and enhancing resource efficiency.

The public should be informed and educated specifically. Afforestation and social forestry programmes ought to be put into action at the local level in order to increase the amount of green space and protect the existing woods. Controlling the pollution of water caused by chemical fertilisers, pesticides, and other pollutants requires both preventive and curative treatments. Government should not be the only entity in charge of protecting the environment; instead, local authorities and citizens should be urged to make concerted efforts to solve environmental issues.

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