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# The Effects Of Population Growth On Environment And Supplies

## Introduction

Can technology solve all problems caused by population growth? There is no doubt that development of technology cannot solve the population problem. However, the issues which are caused by population growth will no longer be a problem in a highly technologically developed society. More population means more food demand, more land supply housing demand, more waste emissions and more resource requirements. When technology can meet all of the above needs, technology can solve most problems caused by population growth. This paper will discuss the reasons for the impact of the current increase in population on the earth's resources and the environment, and the relative impact and technical support of these vertical impacts from an engineering perspective.

## Influence of the food supply

Before exploring the relationship between population size and food supply, it is important to understand a person named Thomas Robert Malthus. The increase in urban area and population has led to the need for more arable land to provide adequate food crops. A sharp increase in the population will inevitably lead to food shortages, which will keep the population under control. This idea is consistent with the 'Principles of Population' written by Malthus in 1798. In this book, he believes that the increase in the supply of food is relatively slow and linear. But population growth is exponential. As a result, sometimes the amount of people far exceeds what the food can provide. As a result, humans will die on a large scale. There are many causes of death, such as hunger caused by food shortages, large-scale epidemics, wars caused by uneven distribution of resources, and crime. ( Malthus, 1992). He believes that the above reasons lead to a substantial reduction in the number of humans, which is also reasonable and consistent with the laws of nature. Therefore, when the above disasters occur, they should be allowed to occur, because any remedy is futile, and humans must not fight the laws of nature. In addition, he also thinks that the poor are the most damn, because the poor actually add to the burden on society. He called the poor a surplus. Therefore, he believes that the subsidies to the poor should not be too much, nor should they give the poor a good living environment. ( MacRae, 2019). Karl Marx considered Malthus's views to be extremely immoral. But historically, some people support Malthus's theory, such as some British ministers. As a result, the worst famine in the history of Britain and Ireland was called ' failure of the potato crop.'

Traditionally, the food grown in Europe is mainly wheat, with lower yields. After Columbus discovered the New World, it shipped high-yielding crop potatoes to Europe. The high yield of potatoes has resulted in ample food, which has led to a significant increase in the population of Ireland. According to Malthus, there should be an overpopulation after Ireland's population has grown significantly. If disaster strikes, the poor can die. Coincidentally, the potatoes in Ireland at the time had a fungal-related infectious disease that led to massive potato deaths. When potatoes fell, Ireland's food supply plummeted. Ireland was part of Britain at the time, and the

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British Minister believed that the situation in Ireland was in line with Malthus' theory and that some Irish people should be accepted to die. As a result, Britain's failure to provide substantial relief to Ireland resulted in the massive death and flight of Irish farmers. ( The Irish Potato Famine, 2017)

There are two main arguments for Malthus. First, the slow growth of the world's population can prove that Malthus's point is reasonable. In AD, the total human population was 2.5 billion. By 1500, the population had grown to 500 million. (Current World Population, n.d.).It took humans more than 1,000 years to double the population. The reason for the slow population growth is that once the population grows, there will be various problems leading to human death. As mentioned above, for example, the Black Death killed the population of near 1/3 in Europe. (The Black Death, n.d.).Malthus thought it was accord with natural law. Another thing is that the wages of workers can also prove Malthus's argument. From the 16th century to the 18th century, the wages of workers were little changed. Proponents of Malthus provide an explanation for this phenomenon. They believe that once workers' wages are high, the growth rate will increase. That is to say, the number of workers' children is that the salary level of workers can only be maintained above and below the food and clothing line, and there will be no conductive change.

But in modern times, the human population has been rising steadily but has not fallen sharply. That is, the fact that the human population has continued to increase since modern times runs counter to Malthus's theory. This is mainly due to advances in engineering technology. For example, industrial production has been very developed since Britain entered the industrial revolution. As a result, the productivity of various industries is high. This has caused a dramatic increase in its population. Later, improved crops like hybrid rice were developed around the world, which were characterized by high yields. This has resulted in a significant increase in human food supply. For example, India has had a food crisis in recent times and almost entering the Malthus trap. The invention of hybrid rice saved the Indian people in time. The population avoided the large-scale death period, but continued to increase. From this point of view, the advancement of industry and the development of technology have made some developed and developing countries out of the Malthus trap and allowed the population to continue to grow.

## **The influence of access to clear water**

Before analyzing the impact of population growth on water resources, it is important to understand why human activities pollute water resources. The places of world 's population growing the most are not that developed regions but the developing and underdeveloped countries. Moreover, the underdeveloped regions have the fastest population growth. The less developed countries are characterized by low economic capacity and unadvanced technology. Therefore, in order to satisfy the citizens' quality of life as much as possible, the government and small enterprises are more inclined to develop high-income industries that do not need high technology. However, the disadvantage is high pollution.

Africa and South America is one of the regions with the largest population growth in the world, and its rivers are numerous. Due to the lack of knowledge, many highly polluting items such as various chemical organics, nitrogen and phosphorus, and toxic and hazardous substances have caused pollution of the entire ecology. As a result, water resources are also polluted. Of course,

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there is not only one reason of water pollution. For example, some of the leakage of fertilization in farmland will also cause the discharge of nitrogen and phosphorus; in terms of domestic sewage, most of the rural areas are discharged directly without treatment, and the urban sewage retention rate does not reach 100%. Even after treatment, there is still a small amount Discharge of some pollutants; desertification and weather changes have led to reduced rainfall, increased temperatures, and reduced total water bodies in rivers and lakes, coupled with increased human and industrial water consumption, resulting in insufficient total water consumption. Regarding how to alleviate water pollution, the United Nations and various countries are making corresponding efforts. For example, some countries have invested a lot of infrastructure construction funds in underdeveloped areas to help improve the local living environment. At the same time, they have invested in building factories in these areas and used scientific environmental improvement measures to improve pollution discharge conditions to help less developed countries reduce the harm to the global environment. However, this is just one of the ideas for treating sewage.

Various countries should also strengthen the supervision of industrial wastewater. The level of pollution of industrial wastewater by a drop of water is more than 10 times that of domestic sewage. However, in many small workshops, sewage is basically not treated. There are also hidden emissions from medium-sized and large enterprises. It is also necessary to promote the construction of reclaimed water reuse. After meeting the standard of domestic sewage, it can be used as a source of industrial water supply, thereby alleviating the problem of insufficient water consumption. In the non-industrial environment, the government should pay attention to strengthening the domestic sewage interception rate, ensure that the existing urban domestic sewage is effectively treated, strengthen the rural domestic sewage decentralized on-site treatment, and strengthen farmland pollution control. Finally, the government should strengthen the construction of vegetation coverage, improve climatic conditions, and avoid soil erosion. If people want to make the above ideas a reality, they must rely on engineering knowledge and technical means. For example, research into more complete industrial systems to treat industrial wastewater, and develop new environmentally friendly energy sources, such as solar energy and wind energy.

## **Conclusion**

The growing population does have a major impact on the environment and energy. In this regard, human beings have two solutions. First, each country strictly controls its own population and implements family planning. Second, the continuous development of new technologies has minimized the impact of population growth issues. Either way, they are working for the sustainable development of humanity in the future. However, the implementation of the first option is likely to bring adverse consequences such as slow development or economic recession. Therefore, the idea that each country is focusing on developing technology to maintain the environment is very correct and necessary. After all, the earth will not expand infinitely like the universe, and there will be a day of exhaustion of the resources on the earth. The rational use of these limited resources will eventually be one of the required courses for human beings.