**Causes and Controversies Surrounding Global Climate Change**

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**Abstract**

The perennial notion of human preeminence and idea of anthropocentrism are the fundamental causes of environmental degradation and subsequent climate change. Ever since mankind began developing tools and it has emerged as the hegemon of the seven continents and it has molded the environment to shape its own needs. Initially humans only hunted and gathered and lived largely nomadic lifestyles, but as time progressed they began to settle and form agrarian societies. These agrarian societies burgeoned into towns, cities and later vast empires that spanned the entire globe⁠1.Humans began to permanently alter the environment as populations expanded with the use of new farming technologies such as irrigation and over farming. Human impact on the environment has undergone thousands of years of evolution and it continually progresses to become more pernicious and harmful to our environment. Presently, human exploitation of the Earth and continual disregard for the environment has led to a culmination of rapid climate change that threatens the existence of various ecosystems throughout the world. Although climate change is evidently a global problem, the procedure for solving this burgeoning problem is still greatly debated.

**Underlying Causes of Climate Change**

Rapid global climate change is the direct result of thousands of years of unadulterated exploitation of the Earth and its resources triggered by the idea of human preeminence. Anthropocentrism or the philosophical viewpoint that argues that humans are the central entities in the world has continually been used as justification for the unrestricted destruction of ecosystems and irresponsible consumption of fossil fuels. The irresponsible mass consumption of fossil fuels⁠2 holds its origins in the expansion of the industrial revolution in the mid 18th century. The reliance on fossil fuels continually expanded as the mechanization of different industrial sectors became fueled by carbon based energy reserves such as coal and oil to power machines and later automobiles. This reliance on these sources of power has led to several negative effects on the environment, which ultimately contribute to this problem of global climate change. The production of sulfur and nitrogen oxides from the combustion of organic molecules causes the formation of sulfuric and nitric acid. These acids in the atmosphere then cause acidic rain, which precipitates and alters the pH of affected forests and bodies of water. However, one of the largest problems of the combustion of fossil fuels is the production of carbon dioxide, which traps heat within the Earth’s atmosphere and thus leads to higher temperatures. High concentrations of carbon dioxide and other greenhouse gases such as methane, ozone, water vapor, and nitrous oxide create a blanket around the earth that regulates the amount of thermal radiation that enters the earth and the amount that leaves the Earth⁠3. The greenhouse effect is a natural process that is beneficial in regulating the earth’s surface temperature, but extremely high concentrations of carbon dioxide increase the intensity of the greenhouse effect to such a magnitude that too much heat is kept within the Earth’s atmosphere. The amplification of this effect ultimately leads to the phenomena known as global warming, which is characterized by an increase in average temperature over several years. This global warming offsets the climatic equilibrium as some areas continually get warmer, while others experience drops in temperature. Therefore centuries of disregard for the environment and irresponsible consumption of fossil fuels has resulted in indelible problem that has many negative consequences to many fragile ecosystems throughout the world.

**Problems of Climate Change**

The effects of global climate change are becoming ever more evident as time progresses and they pose a risk to many different species and ecosystems in various regions of the world. The Intergovernmental Panel on Climate Change (IPCC) reported that the average global surface temperature increased by about 0.6°C throughout the 20th century and that the increase in temperature over this span is the largest increase in the past one thousand years⁠4. The IPCC also concluded that the concentration of carbon dioxide in the Earth’s atmosphere has increased by 31% since 1750 (pre-industrial revolution time). The level of carbon dioxide in the atmosphere is increasing by an alarming rate of 0.4% each year, due to the large consumption of fossil fuels as well as deforestation⁠5. However, the rapid increase in carbon dioxide in the atmosphere is not the only cause of global climate change. The growth of methane (another greenhouse gas) is also unprecedented. Since 1750 methane levels have risen 151%, which is a major problem, because methane is a more potent gas than carbon dioxide⁠6. However, since carbon dioxide lasts five to two hundred years in the atmosphere as opposed to methane’s twelve years, high levels of carbon dioxide are considered to be a greater problem than high levels of methane. In addition, the IPCC predicts that if current levels of fossil fuel consumption continue then levels of carbon dioxide will be ninety to two hundred fifty percent above preindustrial levels. Subsequently the IPCC predicts that the average surface temperature on Earth will rise by 1.4°C to 5.8°C over the course of a century⁠7.

Two major potential consequences of this rapid increase in temperature are the potential collapse of the West Antarctic Ice Sheet (WAIS) and the disruption of the Ocean Conveyor System. The collapse of the West Antarctic Ice Sheet would cause the global sea levels to rise by four to six meters⁠8. The shutdown of the deep circulation system (Ocean Conveyor) of vast amounts of heat around the Earth, could have catastrophic effects on the different species of the ocean, because the system plays a fundamental role in regulating Earth’s climate⁠9. The disruption of the Ocean Conveyor occurred 12,700 years ago and the sea temperatures plummeted by five degrees Celsius, and caused icebergs to disperse as far south as the Portuguese coast. Therefore, the rapid rise in temperatures in some regions would be accompanied by a rapid decrease of temperatures in another region. It is predicted that the North Atlantic region would cool three to five degrees Celsius and in turn produce winters that are twice as cold as the coldest winters on record in the Eastern United States⁠10.

If irresponsible and unfettered consumption of fossil fuels continues then the process of global climate change will continue, and possibly have dire implications on future generations. Mass consumption of fossil fuels will not only lead to rising surface temperatures, but it can potentially lead to the collapse of the West Antarctic Ice Sheet and the disruption of the Ocean Conveyor. These two major consequences as well as others will greatly alter the conditions of life on Earth and they can potentially lead to the destruction of different ecosystems and different species of animals.

**Controversy Over Solutions to Global Climate Change**

Although global climate change poses a large problem for future generations, the process of ameliorating its effects is still greatly debated amongst scientists and politicians alike. Many people in the United States do not understand the severity of the issue due to the lack of certainty in scientific predictions of global climate change’s effects⁠11. Although the IPCC is 90 to 99% confident in its predictions on the future implications of global climate change, many individuals do not take the problem seriously. Therefore, since the effects of global climate change can not be determined definitively, some Americans believe that the problem can be dealt with in the future instead of in the present⁠12. Due to the uncertainty (regardless of how small it is) some people do not seriously consider the implications of global climate change and thus these individuals are unwilling to attempt to rectify the growing problem.

Another reason some individuals do not support initiatives that aim to limit the carbon dioxide emissions is that some believe that the cost of this project is too exorbitant. However, the inevitable reality is that the cost of reducing carbon dioxide emissions is actually far lower than the cost of adapting to increased temperatures⁠13. Current economic models estimate that the cost to limit carbon dioxide emissions would cost 2% of the international GNP, which will ultimately become a negligible amount as the international GNP is continually rising each year⁠14. Therefore, it is evident that the limitation of carbon dioxide emissions is possible and that the cost of overseeing and conducting this initiative will not debilitate the economy.

Not only is there is there division between groups in favor of the limitation of carbon dioxide levels and those against these initiative, but even proponents of the reduction of climate change are divided amongst themselves. One of the largest topics of controversy within the advocates for the limitation of carbon dioxide emissions is which countries are the leaders of this initiative and what is each country responsible for. Some people support the policy of equal per capita entitlements in which each country would be given a set amount of carbon dioxide that it can emit each year based on the size of its population. Under this system the United States would produce over 5 tons of carbon dioxide per capita and Japan, Australia, and Western Europe would produce between 1.6 and 4.2 tons. However, heavily populated countries such as India and China produce 0.29 and 0.76 tons of carbon dioxide per capita, which would mean that countries such as the United States would have to significantly decrease carbon dioxide emissions while India and China could increase their emissions⁠15. Another concern about this proposal is that it would provide countries with an incentive to increase population growth to in turn allow the country to produce more carbon dioxide⁠16. Another proposal for regulating carbon dioxide emissions is for wealthy countries to lead the initiative so that less prosperous countries are not as affected by the cost in reducing carbon dioxide emissions⁠17. The debate over these two policies as well as other proposed plans in carbon dioxide regulation has hindered the development of a global system of cooperation to solve this problem, but as time progresses more and more nations are beginning to pass legislation to attempt to rectify this growing problem. The phenomena of global climate change is an overarching problem in modern society that has the potential to nefariously impact future generations and thus it is the responsibility of current legislators and populations of the world to take action and end the cycle of human anthropocentrism and disregard for the environment and ultimately save the earth from further destruction.

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