

THE EFFECTS OF GLOBAL WARMING ON THE ENVIRONMENT

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Abstracts: One of the most current and widely discussed factors which could lead to the ultimate end of Earth and man is global warming and its devastating effects. Scientists have asked how fast the Earth is heating up, and how the warming effects on Earth may affect crops and climatic conditions. Several current trends clearly demonstrate that global warming is directly impacting on; rising sea levels, the melting of ice caps and significant worldwide climatic changes. This paper will discuss the degree of destruction caused by global warming, contributing factors to warming, and finally, discuss what we can do to decrease the current rate of global warming.

Keywords: Greenhouse effect; Global warming; CO₂; Forest.

WHAT IS THE “GREENHOUSE EFFECT” ALL ABOUT ?

Global warming is also known as the “Greenhouse effect”. The “Greenhouse Earth” is surrounded by a shield of atmospheric gases rather than a glass or a plastic cover. The air that makes up our atmosphere consists primarily of nitrogen and oxygen molecules (N₂ at 78% and O₂ at 21%). A large number of trace gases make up the remainder of air's composition. Many of these, including CO₂ and CH₄ are the so called “greenhouse” gases. If you have ever felt the piercing cold of the clear winter night sky and wondered why you feel warmer on a cloudy winter night, you have experienced the atmospheric greenhouse effect first hand. Physics tell us that any object warmer than absolute zero will radiate energy. Cooler objects emit longer (in the infrared region) while hotter ones radiate shorter wavelength. Our sun, powered by its hot, nuclear fusion reaction, produces radiant energy in the visible and ultraviolet regions with relatively short wavelength. Of the sunlight that strikes the earth, about 70% is absorbed by the planet and its atmosphere, while the other 30% is immediately reflected. If the earth did not reradiate most of this newly absorbed energy back into space the world would continue to get warmer.

The earth is about 60 degrees Fahrenheit (33 degree Celsius) warmer than it would be if it did not have the atmospheric blanket of greenhouse gases and clouds around it. Clouds and

greenhouse gases keep the earth warm. Once warmed, their molecules then radiate a portion of this heat energy back to the earth, creating more warming on the surface of our planet. It is this radiation which causes atmospheric gases to move back to earth that scientists call the “greenhouse effect”.

Carbon dioxide gas generated by man’s burning of fossil fuels and the forests is responsible for about half the greenhouse gas warming. Other gases (CFCs, methane, nitrous oxide, tropospheric ozone) are responsible for the rest. Moreover, fluorinated gases such as chlorofluorocarbons (CFCs) are chiefly a result of various industrial processes and refrigeration [1], [2]. Increases in all these gases are due to mankind’s explosive population growth over the last century, and increased industrial expansion. Approximately 80% of atmospheric CO₂ increases are due to man’s use of fossil fuels: oil, coal and gas. These petroleum-based energy sources first came into use with the burning of coal. Since 1945 petroleum consumption has increased dramatically, due in large part to increase usage of automobiles worldwide, and the substitution of mechanized farm machinery for animal power. “Mankind is in the process of conducting a major, unintentional experiment, that of feeding back into the atmosphere in a short space of geological time the fossil fuels that have slowly accumulated over the past 500 million years”.

The greenhouse effect, combined with increasing levels of greenhouse gases and the resulting global warming, is expected to have philosophical implications. If global warming continues unrestrained and nothing effective is done to limit this evil, it will cause significant climate change, a rise in sea levels, extreme weather events and other ruthless natural, environmental and social impacts (3).

HOW FAST IS THE EARTH HEATING UP?

Much debate in the last five years about the greenhouse effect has centred on interpreting temperature numbers are generated at weather stations all over the world. The data from these thermometers are averaged and plotted in attempts to determine just how fast the earth has heated up since the measurement began. There is now no doubt the world is getting warmer. The thermometers show that the world is warmer now than at any time since the measurements started. The year 1990 was the hottest year in the last century. Together with 1991, the years of 1983, 1987, 1988 and 1989 have been measured to be the warmest 6 years in the last hundred years. 1991 was the second warmest year of the past century, perhaps due to the eruption of Mt. Pinatubo during that year. The ash from the volcano in the upper atmosphere blocks some sunlight to earth, and is expected to generate a temporary two or three year cooling effect.

After that time, most ash particles will have settled back to earth, and most scientists expect to see the global warming trend continue.

According to scientist, we can with “99 % confidence concludes that current temperatures represent a real warming trend rather than a chance fluctuation over the 30 year period”. Most scientists agree that the planet’s temperature has risen 0.5 degrees Celsius since 1900, and will continue to increase at an increasing rate. The environment is responsible to this warming. For instance, a study of mountain plants in the alps (Europe), shows that some cold-loving plants are starting to move to higher and cooler altitude. That is a possible response to increasing temperatures.

Global warming has great effect on crops and weather conditions around the world. The northern hemisphere contains more land areas than the southern hemisphere and conversely, a lower percentage of the world’s oceans. Since oceans absorb more heat than land areas, it is not surprising that most climate models predict faster heating over the northern hemisphere than the global average. In addition, models predict faster temperature increase at higher latitudes.

When many people think of global warming, their first concern is the possible rise of sea levels. With a large number of the world’s cities in coastal areas, this is a significant problem. There are two major causes of rising sea levels. First, extra water is produced when ice melts. Secondly, the natural expansion of sea water as it becomes warmer. The range of sea ice around both poles continues to shrink, as it melts. Even with the level of greenhouse gases present today, the earth may warm enough in the next 50 years or so to completely melt the sea ice located on the poles.

In 1992, a report was published by the United Nations, which proposes that if CO₂ and other greenhouse gases emission continue with present trend (which is the case), the coastal plains of Bangladesh and the Netherlands will flood by the year 2100. Furthermore, the islands of Maldives would completely disappear. This would happen if only a two foot increase in sea level occurred.

FOREST DESTRUCTION CREATES MORE HEAT:

Trees play a unique role in the global cycle. They are the largest land-based natural mechanism for removing CO₂ from the air (CO₂ is also removed by the oceans and oceans organisms).

Trees are able to store a large amount of CO₂ in their structure. An acre of forest will absorb about 10 times the CO₂ amount absorbed by an acre of crop land or grassland. One tree absorb about 13 pounds of CO₂ per year, and each one acre of forest absorbs about 2.8 tons of

CO₂. However, when trees are burned, the carbon locked in the structure is released into the air in the form of CO₂. Today, the shrinking world forests are not able to absorb all the CO₂ created by human beings while burning fossil fuels. Every day over 5500 acres of rain forest are destroyed, and over 50 million acres are destroyed every year. Global CO₂ levels rise approximately 0.4 percent each year, to levels not experienced on this planet for millions of years. Planting more trees and reducing timber cut cuts worldwide will help restore the imbalance and perhaps buy time as ways are found to reduce world greenhouse gas emissions.

POPULATION GROWTH CONTRIBUTES TO GLOBAL WARMING.

The intellectual powers that we enjoy has enabled us to make use of technology and thereby changed the environment. Technology is partly responsible for explosive population growth and responsible for the resulting damage to earth's resources. The industrial revolution caused a rapid increase in the population growth as oil and gas fuels were exploited for use. There is a clear link between the problems of global warming and overpopulation, as increases in CO₂ levels follows growth in population. Presently, we have too many people on Earth, who are using technologies that are destructive for the Earth. We cannot continue to grow, and make use of limited natural resources. Principle consequences of global warming are destabilization of climate like droughts and super storms, rising sea levels, considerable economic dislocation, increased desertification, pole ward migration of species, increases in diseases like malaria and loss of agricultural areas.

ECONOMIC ASPECTS:

Global warming is big business. Some economists argue that a warmer climate could benefit certain crops and the farming communities. However, property insurers are predicting that worsening storms caused by global warming could eventually bankrupt the insurance industry. Insurance companies are now trying to form strategic alliance, and pool resources which could severe economic loss from climatic changes.

WHAT WE CAN DO TO DECREASE GLOBAL WARMING:

First, since the largest portion of electricity in the US is produced by burning coal, we should try to cut down on our demand for electricity. Coal combustion creates the largest amount of CO₂ per energy unit of any fossil fuel. Coal and oil together represent 80% of the US fuel supply used to generate electricity. When we reduce electric power use, we save money, breathe cleaner air and help to reduce the global warming problem. Every kilowatt-hour of electricity saved keeps 1.5 to 2 pounds of CO₂ out of the atmosphere. Americans waste more energy than any other nation. I believe it is time to make our lives, factories, and homes more

efficient. Look around at home, and at your work places, and factories, and you will find several ways in which you can decrease the use of electricity. For instance, plant several trees on the south side of your house where they can give shade during the hot summer months. Also, install an energy efficient thermostat, with day and night timer.

Second, decrease the use of your car. If you can't afford to buy a new efficient car in the next few years, consider selling or junking your gas demanding car and buying a smaller, efficient used car. Besides saving money on gas, oil, tyres, parts and repairs, you can help reduce greenhouse gases. Furthermore, no matter what type of car you drive, be sure to operate it efficiently, try to carpool to work or ride the bus, keep the car turned up, walk or ride your bike for short distances, park and walk do not use "drive thru" services.

Third, try to follow the following environmental policy of "**Reduce.....Reuse....Recycle**". Reuse of anything is the easiest and best way to recycle. Save containers, bags, everything that you may be able to use in the future. Also, use cloth towels and napkins instead of paper ones, and use rechargeable batteries instead of disposable ones.

Furthermore, you can reduce the need to recycle paper by getting off the junk mail lists. Why should trees be destroyed for mail you do not even want to receive? In addition, always remember that recycling is only effective when you products made from recycled materials. Otherwise, what is the point of recycling?

Also, remember that each time you make a purchase, you either reinforce a bad environmental product, or you encourage a good one. I believe that people should try to buy quality products that can be used for a long time, buy products with minimal packaging, and not buy disposable products. We certainly have to make-up our minds whether our success as an individual should not be based on the quantity of our consumption, or on the quality of our natural environment. Reforestation schemes must be started to grow a large number of trees. Forest degradation and deforestation must be discouraged at government level. Nuclear power is also a possible solution as this power results in fewer emissions but this method should be used with care as it can lead to severe accidents therefore, the major hurdle is to overcome the security, propagation, waste disposal and high costs of nuclear power if this method has to be made practical (4).

I believe that it is time to examine our moral values. Examine our attitudes as they relate to our natural world. Each of us needs to ask ourselves: What makes us really happy? What makes us feel secure? It is highly questionable if money and tangible objects make us happier, it is even possible that we tend to be less happy with our life's when we have a lot of tangible object and money to care for. Has our striving for more and more materialistic consumption caused us to forget that we are living human beings? We have to realize that we have much more in common with the plants, animals, air and water than we have with the mechanical, chemical and electronic world we have created around us.

Unfortunately, the imbalance which, we have created between our life's and the Earth is already showing the signs of disaster. "Earth in the Balance" is moving to the Earth in imbalance, which, in the long run will cease to exist. Remember, we are all in the greenhousetogether, nobody can stop the world and get off.

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