

# Research paper on global warming causes and effects

[Environment](#), [Animals](#)



## **Abstract**

Global warming remains by far the biggest challenge humans have faced in this century. It affects the entire planet although not the entire plane is to be blamed for it. The emission of greenhouse gases and particularly carbon dioxide has been at all-time peak in this century especially the last half of the century. Studies show that the current concentration of carbon dioxide in the atmosphere is about 385 ppm, up from 285 ppm prior to industrialization. This has sparked an unstoppable change in the climate patterns in the world. The changes are mostly with regard to the precipitation patterns and the temperatures. Most regions are warmer than they used to be and experience more intense rainfall or flooding. Studies have revealed that the sea levels have risen by between 0.09 and 0.88 m. This has an adverse effect on the flora and the fauna because plant and animal species cannot adequately adapt to the climatic changes. Human health is at an even greater risk because they are prone diseases like malaria, typhoid and cholera due to the displacement caused by frequent floods and tropical storms hence exposure to squalid living conditions. Heat stroke and respiratory problems caused by impaired quality of the air present a major threat. The toll on economies is also substantial since the hurricanes and storms result in displacement of people, destruction of homes and destruction of business premises and institutions such as schools, hospitals.

## 1. 0 Introduction

Global warming refers to the gradual rise in the earth's surface temperature. According to recent studies, the average global surface temperature has risen by about 0.5-1.0°F (0.3-0.6°C) in the last century which is the largest documented increase in surface temperature in the last 1,000 years. If this trend continues unabated, even greater increases in the earth's surface temperature are expected. Different parts of the world have warmed or even cooled by varying degrees. It has been observed that the Northern Hemisphere is warmer than the Southern Hemisphere, while regions found in mid to high latitudes have generally warmed more than those found within the tropics.

The changes in temperature in different parts of the world have resulted in climate changes. It is a widely known fact that the rise in temperature has resulted in changes in precipitation and weather patterns. The rising temperatures have also been implicated in the sudden occurrence of hurricanes and tropical storms in coastal areas. The levels of seas around the world are also gradually rising as a result of melting glaciers and the expansion of sea waters.

Scientists predict the rise in sea levels to be between 0.09 and 0.88 m. This would in turn affect the flora and the fauna because plant and animal species are unable to cope with the climatic changes. Human life is also at risk because diseases like malaria, typhoid and cholera could easily spread due to frequent floods and tropical storms. They may also die of heat stroke and respiratory problems caused by impaired quality of the air. The toll on economies is also substantial since the hurricanes and storms result in

displacement of people, destruction of homes and destruction of business premises and institutions such as schools, hospitals.

## **2.0 Causes of global warming**

Global warming is attributed to greenhouse gases. These are trace amounts of gases that occur naturally in the atmosphere. These gases include carbon dioxide, methane, nitrogen dioxide and water vapor. The major contributor to global warming is carbon dioxide although other gases are also potent to the atmosphere. A study done recently in the US shows that nitrogen dioxide is 300 times more potent than carbon dioxide to the ozone layer. Emission of nitrogen dioxide is due to burning of fossil fuels and agricultural practices. Currently the concentration of carbon dioxide in the atmosphere is 385ppm, an increase from 285ppm before industrialization. Scientists report that the concentration of carbon dioxide currently is the highest in 650, 000 years . The greenhouse gases can reabsorb reflected heat waves from the Earth's surface hence trapping the resultant heat within the atmosphere. The process occurs naturally and is vital for life on Earth because it acts as a regulatory mechanism for the earth's temperature. The earth's temperature at the moment is about 140C as a result of the greenhouse effect. However without the greenhouse effect, the temperature of the earth would be -190C. The increase in the concentration of the greenhouse gases in the atmosphere has resulted in the earth becoming warmer. A recent estimate shows that the earth's temperature has risen by 00. 74 degrees in the period between 1906 and 2005 .

Causes of global warming can broadly be classified into two: natural causes

and man-made causes. The natural causes have an insignificant effect on increasing the concentration of greenhouse gases as compared to man-made causes but their effect cannot be entirely neglected. The natural causes of global warming include: volcanic eruptions, oceanic currents, earth's orbital changes and solar variations.

During a volcanic eruption, large amounts of sulphur dioxide, water vapor and carbon dioxide are released into the atmosphere. The high concentration of these gases in the atmosphere results in an increase in the reflectivity of solar energy by the planet leading to cooling of the planet. Ocean currents are a means of heat dispersion and by extension determine the concentration of carbon dioxide in the atmosphere .

Deep water circulation which is as a result of ocean currents results in movement of cold waters from the poles towards the equator and movement of cold waters from the equator to the poles. Interaction between the ocean currents and the atmosphere can result in climatic changes giving rise to phenomena such as El Nino. The source of energy for the earth's climatic system is the sun. Slight variations in the output of the sun's energy can result in climatic changes on earth. Studies have shown that the variations in the sun's energy output was responsible for a portion of global warming that occurred at the turn of the 20th century.

Scientific evidence gathered recently points to human activity as the major cause of global warming in the last half of this century. The industrial revolution in the 19th century marked the increase in large scale use of fossil fuels such as coal and natural gas in order to generate electricity for running the industries and households and keeping the vehicles moving. This trend

has gone on unabated as the industries continued to satisfy an ever increasing need for the products. Surveys done recently found that about 70% of carbon dioxide emission and 20% of methane emissions are from the industries. Agricultural practices and deforestation are also major contributors to carbon dioxide emission. Methane gas is emitted from bio gas plants, during oil drilling, from leaking pipes, waste dumps and landfills. Practice of agriculture requires altering of land cover in order to pave way for the cultivation of crops or rearing of animals. As a result, the earth's ability to absorb or reflect solar energy is altered giving rise to global warming eventually. Agriculture is also a major contributor to carbon dioxide and methane emissions which end up in the atmosphere and alter the planets reflective abilities .

The carbon cycle is a vital biogeochemical cycle hence any disruption of the cycle has devastating effects eventually. Forests are responsible for sequestering carbon dioxide. They absorb about 20% of carbon dioxide. The ever increasing world population has put pressure on the forests. Most of the forests have been cut to pave way for residential areas and also make way for the construction of factories. The loss of forest cover faster than it can be replaced has resulted in an increase of the concentration of carbon dioxide in atmosphere by about 17%. This figure is on the rise as the demand for land for other uses increases. The loss of the forest cover particularly around the equator has resulted in loss of a cooling band around the equatorial region. Trees also act as a carbon sink. About 20% of the world's carbon is stored in form of biomass in trees in the forests around the world. The decomposition of trees into organic matter acts as a carbon store. Deforestation which

involves cutting and at times burning of the trees disrupts this natural store and sends its contents in form of carbon dioxide into the atmosphere.

### **3.0 Effects of global warming**

As a result of global warming several changes in the climatic pattern have been observed. All over the world, the increase in global temperatures has affected the precipitation patterns. Rainfall in the mid to high latitude areas has become more intense. In the tropics and sub tropic regions of both hemispheres, the season of rainfall marks the beginning of heavy erosion and flooding . In the 20th century the temperatures of the Arctic air have gone up by about 5°C which is 10 times faster than the rise in the mean air temperatures in the rest of the globe while the sea-surface temperatures in the same region have increased by 1°C in the last 20 years. The Northern Hemisphere has also experienced drastic changes involving a 10 to 15% decrease in spring and summer sea-ice cover between 1950s to the year 2000. The extent of sea ice in the Nordic seas has contracted by about 30% over the last 13 decades while Arctic sea-ice thickness has undergone a 40% decline during late summer and early autumn over the past 30 years of the 20th century.

The Antarctic region has experienced a marked increase in the precipitation. The Antarctic Peninsula has undergone a noticeable warming trend over the past 50 years. Surface waters of the Southern Ocean have warmed and their salinity has also decreased; the water that flows from the Atlantic into the Arctic Ocean has warmed considerably. In the Northern, western and southern parts of Africa desertification has been made worse by lower

average annual precipitation, soil moisture and runoff. In some regions such as Central Asia and Sahel drier summers and the increased drought incidences have been reported in recent years .

The adverse effects of global warming are not just limited to precipitation but they also spill over to fresh water supplies. . Algae and plants are known to thrive better under in warm climatic conditions. Their decomposition results in higher levels of nutrients collecting in the water. On the other hand, more intense rains will result in an increase of pollutants in water bodies from the surrounding land and from overflowing waste facilities. The quality of water quality has been and will continue to be severely affected. More salty water will end up in coastal aquifers and estuaries, making freshwater brackish unsafe for human consumption and unfit for habitation by some animals. The rise in the global mean sea level by 10 to 20 cm in the twentieth century, a rate surpassing that of the previous 3 millenniums, is another effect of global warming. More water has been evaporating from the sea surface which has resulted in total water vapor present in increasing by several percent in each decade over numerous regions of the Northern Hemisphere. 70% of sandy shoreline has been retreating gradually over the past 100 years.

Plant and animal life has severely been affected by global warming. Studies in the Alps reveal that some plant species have been migrating upwards by one to four meters in each decade and subsequently some plants previously found only on mountaintops have now extinct. Butterflies, dragonflies, moths, beetles and other insects have migrated to higher latitudes and altitudes which in the past had been regarded as too cold for them to



survive. Migratory birds have changed their migration pattern by arriving earlier in the spring and departing later in the autumn.

Cold- and cool-water fish have been displaced out of their habitats with warm-water fish are traversing a wider range in both the northern and southern hemispheres. Some bird species in Europe, North America, and Latin America have resorted to breeding earlier in the season.

#### **4.0 Contemporary issues arising from global warming**

Food security faces a major threat as a result of global warming. This can be attributed to the changes in precipitation patterns which are a major determinant of crop production. Global warming may worsen the negative impacts on plant growth and production by increasing the spread of pests and diseases. Other effects include increased leaching of nutrients from the soils as a result of intense rains and erosion of soils due to stronger winds which both threaten food security because they directly affect food production. The occurrence of wildfires in drier regions is likely to be more frequent.

Global warming is likely to affect the world economies particularly those that are reliant on agriculture and tourism. The climatic changes have led to decline in agricultural productivity thus regions that previously boasted of bumper harvest have been experiencing a gradual decline in the past few years. This has led to a departure from the practice of agriculture altogether in pursuit of more sustainable and reliable means of livelihood. Countries that were dependent on agriculture as a tenet of their economies are therefore caught in dire straits .

The loss of biodiversity as a result of global warming has led to the extinction of rare bird and wild animal species. Individual animal species have either died off or decreased to a large extent in number. Plant species on the other hand can no longer be found in their natural habitats as it was in the past. This means that for countries that depended on tourist being attracted to their country by the diversity of their plant and animal species lose a major source of their income.

It is predicted that climate will cause further increases in sea surface temperature. It has also been predicted that the mean global sea level - a further 9 to 88 cm by the year 2100. The increase in sea levels is likely to affect the human population that resides in coastal areas. The coastal areas are likely to experience floods and hurricanes, intrusion of sea water into fresh water supplies and destruction of mangroves. This will cause displacement of the human population residing in the coastal regions in addition to making their lives difficult.

In conclusion global warming refers to the gradual rise in the earth's surface temperature as a result of both natural and artificial causes that produce greenhouse gases. Global warming has been implicated in the changes in weather patterns such as precipitations; natural catastrophes such as hurricanes and storms; rise in sea level leading to melting glaciers and expansion of sea water; negative effects on plants and animal life and rise in disease incidences.

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-industrial era was 2Right now the level has risen to 375 ppnEffEF50 resulting in 1. 8-3°C increase in temperature eventually. Therefore, global warming will produce a sharp upswing followed by a deep plunge into a glacial period s myriad of potential impacts such as increased cyclone intensity; melting of polar iceberg and glaciers; increased salinity and changes in oceanic currents sea level rise and inundation of low lying cities like Venice, Cairo, New Orleans, Lagos, Amsterdam, etc.; coral bleaching and mortality of coral reef; colonization of invasive species and species

migration; changes in ecosystem; mass extinction; ozone layer depletion; water shortage; and spreading of diseases -- is predicted. "

a decrease in solar activity was thought to have triggered the Little Ice Age between approximately 1650 and 1850, when Greenland was largely cut off by ice from 1410 to the 1720s and glaciers advanced in the Alps