

## Factors of Global Warming and Its Effects on the Environment

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### ABSTRACT

Global warming is the name given to a phenomenon that has led to an average rise in the Earth's temperature and ocean surface. Over the past 100 years, the Earth has become abnormally warmer by about 0.74 degrees Celsius, which has worried scientists. Some scholars believe that the last decades of the twentieth century were the warmest years of the last 400 years. Reports indicate that 10 of the warmest years in the world were recorded from 1990 to 2007 alone, the highest level in 150 years. Industrial activities seem to be very effective in creating this problem and have a valuable contribution to global warming.

**Keywords-** Climate change, Global warming, Greenhouse gases, Environment

### I. INTRODUCTION

Global warming and the issue of climate change caused by human activities is one of the major environmental problems that has attracted the attention of many scientific and political circles in the world in the last two decades. Climate change reflects the average state of a region in the long run. The Earth has experienced a variety of climates during its lifetime of at least 4.5 billion years. Climate is one of the main and most important factors affecting the characteristics of the ecosystem, therefore small changes affect the various components of the ecosystem. Climate change is caused by an increase in greenhouse gases due to human activities and the industrialization of countries, which leads to an increase in global temperature and an increase in natural disasters. This research is a review that is one of the authoritative scientific books, scientific articles and

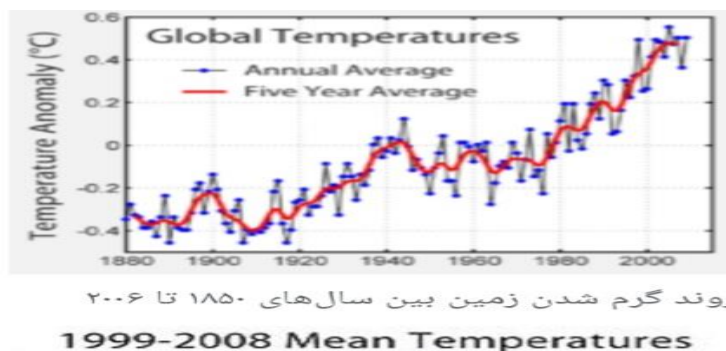
authoritative internet sites and the purpose of this research is to identify various factors of global warming. Discussion of climate change and receiving solutions to prevent global warming and climate change, which is one of the major environmental problems and the main cause of heating, is the use of greenhouse gases, resulting in the depletion of the ozone layer, and various components of the ecosystem Affects.

#### *What is Global Warming?*

Global warming means an increase in the Earth's average in the long run. The phenomenon we know today as Global Warming began in the early twentieth century (after the Industrial Revolution), has intensified since the 1970s, and continues to this day. According to the National Aeronautics and Space Administration (NASA), the average temperature of the Earth's surface has risen by one degree Celsius since 1880. However, the increase in temperature from 1750 to 1880 was 0.15 degrees Celsius. That is, human activity has clearly accelerated and continues to accelerate global warming. You might think that one degree Celsius is nothing special, but the average temperature that NASA is talking about is the entire surface of the earth.

#### *Why is the Earth Warming?*

The sun is always sending light and energy to the earth (through solar radiation). Part of this energy is normally, this energy must be distributed in space. But these impurities in the Earth's atmosphere prevent some of the heat from escaping and gradually warm the earth. This phenomenon is called the Greenhouse Effect. The point is that the greenhouse effect is a natural phenomenon that happens to regulate the earth's temperature and make it liveable. But human intervention has taken it out of regulation and taken the rise of the earth to a critical stage.



**Figure 1:** Shows the average deviation of the temperature of different parts of the earth from its normal state due to the phenomenon of warming.

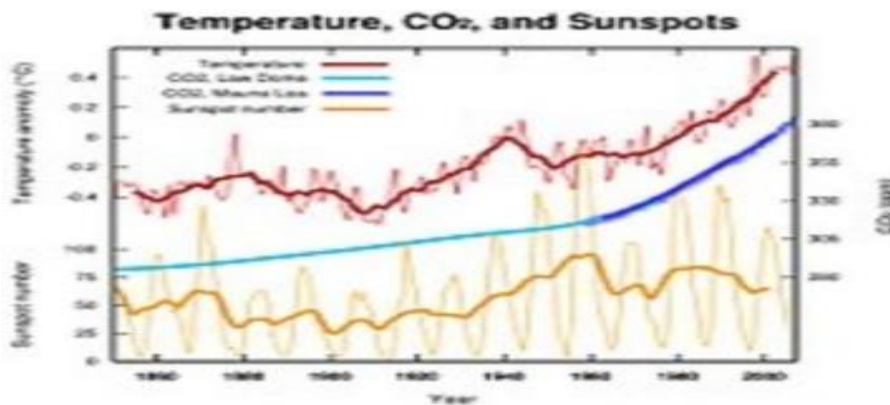
Earth temperature measurements have been started since 1880 and continue to this day. Global warming in 2100 is said to have caused severe drought, Burning heat and terrible storms will be the basis for a series of theories about global warming and the impact of greenhouse gases on this process, with others citing processes such as volcanoes and geothermal as well as solar activity. The citation of these scientists for their statements is the occurrence of hot and cold periods during the period of life (6: 178-179).

According to many scientists, with increasing public awareness, optimal fuel and energy consumption, Increasing the level of green space and preventing the destruction of forests, reconstruction and the use of alternative energy sources of fossil fuels such as wind and solar can control this phenomenon and its negative effects on human life. At the Cancun Climate Summit in December 2010 in Mexico, 193 participating countries

decided to set up a \$ 100 billion fund to help developing countries fight global warming (7: 38-39).

## II. CAUSE OF GLOBAL WARMING

The Intergovernmental Panel on Climate Change (IPCC) says climate change around the world is most likely due to human factors. Introduces the main cause of this phenomenon. Using data collected from plants, glaciers and other samples, scientists have come to this conclusion and believe that this research conclusively confirms that human activities affect the climate. But some scientists believe that rising temperatures in recent years can be attributed to solar activity and radiation. The group says the rise in carbon dioxide and other greenhouse gases is too small to justify the changes.



**Figure 2: Shows the carbon dioxide gas, which is mainly due to the use of fossil fuels, as one of the factors that increase the earth's temperature.**

Also, deforestation and forest fires have become one of the reasons for global warming. In fact, trees store it by absorbing carbon dioxide and release it due to burning light. Therefore, forest fires can be considered as one of the reasons for the increase in the amount of carbon dioxide in the atmosphere and as a result of global warming. Undoubtedly, man has played an effective role in what is now referred to as global warming. The endless interference and perception of human beings in nature has caused a huge change that cannot be denied. But this is not the first time in the history of Earth's habitation that the blue planet has become extremely hot. Extremely hot or cold periods of the earth are the direct or indirect result of several factors that start from the heart of the planet and go deep into space. Natural causes of global warming include periods of solar activity, eruptions of large volcanoes, earth movements, the rotation of ocean salinity, and the impact of comets.

## III. GREENHOUSE GAS EFFECTS

Research shows that there is a direct link between the increase in greenhouse gases in the

atmosphere and global warming. The earth absorbs some of the sun's energy and reflects the rest. During this process, the wavelength of light changes. Some of the gases in mountain cedar fruits absorb this radiation. This radiation is mainly in the purple Marwai range. Greenhouse gas molecules absorb much more red light than other gases. Absorption of energy by gas molecules causes the molecule to move and increase its energy. When this happens on a large scale, it is as if we have covered the ground with a blanket. The degree of total areas of the earth increases. This phenomenon is called the greenhouse effect and the gases in which it is effective are called greenhouse gases (3: 178-180).

### *Industrial Livestock*

The Food and Agriculture Organization of the United Nations (FAO) published a report in 2006 entitled Long Livestock Shadow, stating that raising livestock for human consumption accounts for 18% of total impurities and greenhouse gases. This figure is more than the share of vehicles worldwide in the production of pollutants and greenhouse gases.

### Deforestation

In the past forests took much of the carbon dioxide produced by humans and converted it into oxygen. But now not only has carbon dioxide production risen, but deforestation and deforestation have reached their peak. According to statistics released by the FAO, between 1990 and 2000, 16 million hectares were destroyed annually, and between 2000 and 2010, 13

million hectares of forest were lost annually. According to other statistics from the same organization, 20% of greenhouse gases have reached the atmosphere due to deforestation. (If forests were not cut down, 20% of the greenhouse gases produced would be converted to oxygen.) The main reason for deforestation by humans, change is applied to agriculture and livestock.



Figure 3: View of deforestation

### What is Climate Change?

This is how NASA defines climate change- Climate change is a broad set of global phenomena, the main reason for which is the use of fossil fuels and the release of various gases in the Earth's atmosphere. These gases trap heat and prevent it from escaping from the atmosphere.

This set of phenomena includes global warming, rising sea levels, melting of icebergs in the Greenland (Arctic Ocean), Antarctica, the North Pole, and other parts of the world. Planting and flowering plants and severe weather events such as dust storms, floods, dust and so on.

### IV. NEGATIVE EFFECTS OF CLIMATE CHANGE IN RECENT YEARS

Unprecedented heat, long droughts, heavy rains in short periods of time, and severe storms are some of the effects of climate change on different parts of the world. If the current Ron continues, these early effects could turn into massive and uncontrollable fires, longer droughts, more severe drinking water crises, larger floods submerging islands and beaches, and the extinction of various plant species. The emergence of new agricultural pests, the spread of various diseases. Statistics released by the World Wildlife Fund show that from 1970 to 2014, more than 60 percent of all animal species (from mammals, fish, reptiles, and birds) became extinct, a trend that intensified if climate change was not controlled. Will also find (1: 245-247).



Figure 4: View of climate change in the Arctic



### Air Polluting Countries

According to the report of the Global Carbon Project in May 2017

- 1 - China is the largest air polluter in the world with an annual production of 10,357 million tons of carbon monoxide.
- 2 - The United States with 5414 million tons of carbon dioxide in the second row.
- 3 - India with an annual production of 2274 million tons of carbon dioxide in the third row.
- 4 - Russia with 1617 million tons of carbon dioxide in the fourth row.
- 5 - Japan produces 1237 million tons of carbon dioxide in the fifth row.
- 6 - Germany produced 798 million tons of carbon dioxide in the sixth drift.
- 7 - Iran with the production of 658 carbon dioxide in the seventh row.

## V. EFFECTS OF GLOBAL WARMING

Some scientists believe that the increase in hurricanes and strong winds is one of the results of global warming. Most climate experts believe that this trend can lead to droughts, floods, hot winds and more severe storms. But some of them also believe that some of these events are not a sign of global warming because this turmoil is a natural feature of the climate. Other consequences are rising sea levels, resulting in coastal areas and underwater islands, and thinning oceans, resulting in increased rainfall worldwide (2: 94-95). Global warming has caused the internal temperature of glaciers in different parts of the world, including glaciers in the north, south, and China, to rise, melting large

volumes of the glacier's reserves. This is important because these glaciers make up the bulk of the world's drinking water supply, thus reducing the supply of healthy drinking water and increasing the likelihood of diseases spreading through unhealthy drinking water. Global warming is also having a significant impact on reducing the number of penguin chicks, with the World Health Organization estimating that diseases caused by climate change and global warming kill 80,000 people each year in Asian countries. UN officials have repeatedly warned of the consequences of global warming and called for immediate action by UN members to prevent it (8: 376-377).

### The Hottest Year in the History of the Earth

According to the World Meteorological Organization, 2016 was the warmest year on Earth, and this heat is expected to continue in 2017. The El Niño phenomenon has contributed to this heatwave, with 1880 being the warmest year on average worldwide. Scientific research shows that the Earth was last so warm 115,000 years ago, and that the planet has not experienced such a large amount of carbon dioxide in the Earth's atmosphere since four million years ago (9: 55-56).

Earlier, the World Meteorological Organization declared 2015 the warmest year in world history and June the warmest month in history. This year, nine countries experienced the highest temperature recession. According to data released by NASA and the Japan Meteorological Agency (JMA), June 2015 was named the hottest month since the advent of air temperature gauges in the late 19th century. Polar ice caps and islands in the seas have also shown that the Earth is at its warmest point in the last 4,000 years, with 2010 being the warmest year in Earth history (11).

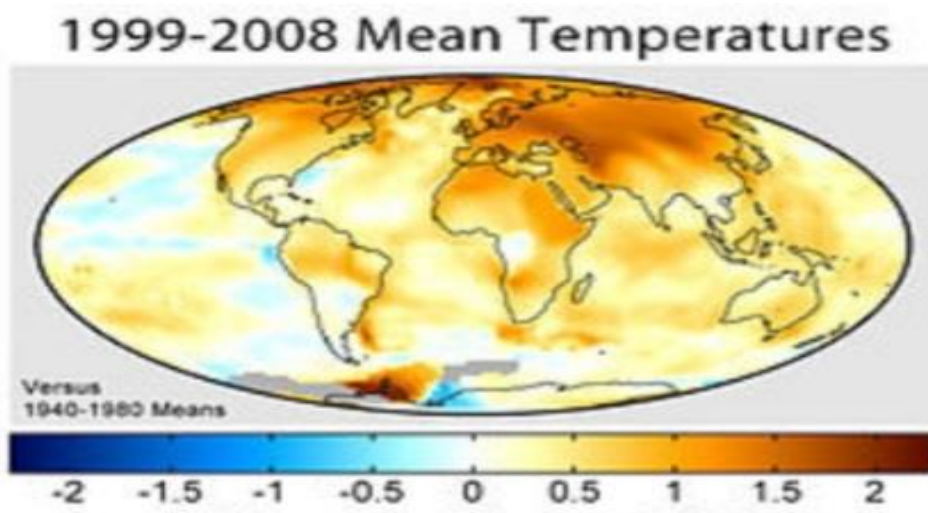


Figure 5: View of global warming between 1999 and 2008

### Economic Losses of Global Warming

The economic effects of global warming are also very obvious, the advancement of seawater in port facilities, the reduction of drinking water quality, the

increase of floods, etc., all cause a lot of economic damage. For example, rising heat and water shortages are replacing water with gas refrigeration systems. Due to the fact that gas refrigeration systems consume more

electricity, the need for investment to build power plants increases. As a result of the increase in power plants, the amount of greenhouse gases also intensifies, and this leads to an increase in global temperature. Some economists have tried to estimate the economic losses of global warming during the global warming debate. So far, more than 100 researches have been done in this field, but the same and definite result has not been achieved yet. The research estimates the global economic impact of global warming from about \$ 3 per tonne of carbon dioxide to \$ 95 per tonne.

The results of their research emphasize one point: Although developed countries have the highest levels of greenhouse gas emissions, developing countries are experiencing the greatest economic damage from global warming.

## VI. THE EFFECTS OF CLIMATE CHANGE ON BIODIVERSITY

Decreased biodiversity and adverse effects on plant and animal species are other consequences of rising global temperatures. Animal migration and vegetation change due to drought and water shortage cause changes in the food chain and adverse effects on the ecosystem of the region. This problem also changes the biodiversity of the aquatic ecosystem in the seas. A clear and tangible example of this is the whitening of corals on the shores of the Persian Gulf. According to scientists, corals die

earlier and turn white due to the average increase in water temperature. Due to the importance of climate change, various studies on bird life have been conducted and interesting results have been obtained. In general, climate change has direct and indirect effects on the lives of birds, which can severely disrupt their life cycle. For example, as the weather warms, birds migrate to more northern latitudes and settle there. In this way, birds travel longer distances than in the past when migrating, which can lead to the extinction of weaker species. An interesting study published by the University of Michigan USA shows that as the concentration of carbon dioxide in the atmosphere doubled and as a result of more global warming, the number of birds that existed in certain areas decreased significantly and in some areas were not found at all. Different birds spawn about a week or two earlier, which makes the birds about a week or two older when migrating. In such cases, when returning or during the trip, the birds are more likely to die and their population decreases day by day. On the other hand, due to global warming, the time of flowering and growth of plant species has changed compared to the past. Many animal and plant species are now extinct due to climatic effects and many species of animals are forced to They migrate, destroying the entire planet's ecosystem. More than half of all living things have been extinct several times in the history of the planet, but its recovery has taken hundreds of thousands of years (10).



Figure 6: Effects of carbon dioxide on the ecosystem

## VII. HOW TO PREVENT GLOBAL WARMING?

### *Ways to Deal with Global Warming*

You may think that we ordinary people have no role in global warming, but global warming starts from the same parking lots, kitchens and even the dining table. Many countries have joined hands to combat global

warming, and have worked together to bring global temperatures down by two degrees Celsius. Carbon dioxide is the worst enemy of the climate and is released if oil, coal and other fossil fuels are burned for energy. The same energy we need for homes, car fuels, and even keeping our cell phones on, we can both reduce our role in climate change and reduce energy costs by reducing energy consumption. Let's relax.



**Figure 7: View of clean energy**

#### ***Use Non-Renewable Energy at Home***

To supply electricity to your home, go to companies that supply at least half of their energy from wind or solar and have internationally recognized certifications. If you cannot do one also look at the electricity bill. There are many power companies in the world today that list ways to support renewable energy on their websites.

#### ***Insulate the Door and Gate***

Most of the energy we use is to heat or cool the house, so it saves a lot of energy by sealing doors and windows and insulating them.

#### ***Use Low-Cost Appliances***

Low energy costs are the cheapest way to reduce emissions, so when buying refrigerators, washing machines and other appliances, look at their energy labels to see which one is more efficient.

#### ***Do not Limit Water***

Saving water can also reduce carbon pollution because a lot of energy is spent pumping, heating and purifying water. So reduce the time of bathing and turn off the tap when brushing, if only one out of every 100 houses saves water consumption, then about 100 million kilowatt hours of electricity will be saved per year. It is interesting that with this simple task, 80,000 tons of air pollution will be prevented.

#### ***Eat as Much as you can and Less Meat***

Approximately 10% of the energy consumed by a country like the United States is spent on growing, processing, packaging and transporting food, but about 40% of this food is left unused and turned into waste, so by not wasting food, fuel consumption is saved. Since a lot of energy is used to raise livestock, meatless foods play an important role in saving energy.

#### ***Use Low-Consumption***

Groups that use LIDs consume 80% less energy than normal groups, since On the other hand, they also reduce costs.

#### ***Unplug Electrical Appliances***

The number of appliances used in homes may not be obvious, but if you start counting them, there are probably even more than 10: TVs, refrigerators, vacuum cleaners, washing machines, water. Fruit picking, etc. If you want to play a role in reducing the heat of the air, unplug it as soon as you are done with these appliances.

#### ***Think of the Airplan, the Train Again***

Choose cities for living whose people are accustomed to walking, and whose public transportation system both saves you money and keeps the air clean. Use less airplanes because air transport is one of the most important sources of air pollution.

## **VIII. CONCLUSION**

Global warming is one of the most important problems in the ecosystem, especially with global warming, mostly drinking water is depleted and causes the loss of humans, animals, and plants, also with the increase of industrial plants and the general use of carbon Due to the degradation of the ozone layer and the ultraviolet ray to the ground (above the ecosystem) generally has adverse effects on human skin cancers, drying of trees and loss of animals. Are the most important solutions that can have very valuable environmental consequences. Nature plays an important role in achieving this goal. Trees that are submerged in fresh water store carbon for a longer period of time than forest trees in non-marine areas and can be effective in removing large amounts of carbon from the air from the environment. Aquatic trees store an average of 2,000 years of carbon, while in forests, the trees' ability to store ambient carbon is reduced to 20 years. Also, the use of white roofs and roads around the world can eliminate 44 billion metric tons of greenhouse gas emissions or a year of carbon production in the world and be effective in reducing carbon dioxide in the future.

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