

A Review on Causes and Effects of Global Warming

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ABSTRACT- There are many engineer, scientist, and ecologist are expressing grave worries about the global climate change. Fossil fuels are used as a source of energy indefinitely. When carbon dioxide, methane, and nitrogen oxides are combusted, they release gases that contribute to the global warming. The warmer the temperature are also a result of deforestation. The danger of global warming has always been the biggest threat to the Earth's climate. Nonetheless, the majority of people are unaware of climate change and are unaware that it will be a significant issue in the future years. What the majority of people don't realize is that global warming is happening right now, and we're already seeing some of its Withering consequences. It has and will continue to have a negative impact on ecosystems and disrupt ecological equilibrium. Because of the perilous consequences of global warming, a few remedies must be developed. The article explains global warming, discusses its origins and risks, and offers a few solutions to this pressing issue. The majority of people are unaware that global warming is occurring right now, yet some of its devastating effects are already being felt. Ecosystems are being affected in a crucial way, and ecological balance may be disturbed as a result. Because of the hazardous consequences of global warming, a few remedies should be developed. The article discusses global warming, its

origins and consequences, and offers possible solutions to the pressing problem. Solar, wind, hydro, geothermal, and biomass assets, in particular, would want to be closely monitored. The placement and usage of renewable energy sources is one method for slowing the pace of global warming.

KEYWORDS- Alternative Fossil Fuel, Causes, Climate, Effects, Global Warming Solutions.

I. INTRODUCTION

Global warming starts when sunlight strikes the Earth. Clouds, atmospheric particles, reflecting surfaces, and ocean surfaces subsequently return around 30% of the sun's energy to space, while the remainder of the air, seas, and land absorb it. As a consequence, the ground and atmosphere warm up, allowing life to flourish. When the Earth heats up, solar energy is radiated via thermal radiation and infrared rays, which goes into space and cools the Earth. Some outgoing radiation, however, is absorbed into the atmosphere and reflected back to the earth's surface through carbon dioxide, water vapor, ozone, methane, and other gases. Greenhouse Gases are gases that trap heat and are often referred to as such [1–4].

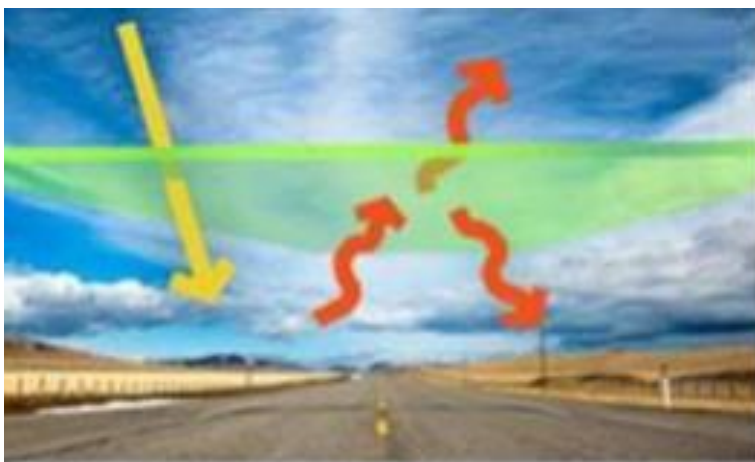


Figure 1: Illustrates the impact between the nature and the environment.

Recent discoveries on global warming may have a significant impact on human health. Stress and heart disease may both be exacerbated by excessive heat. Excessive heat may be stressful. Crop failures and famines linked to global warming may reduce the human body's resilience to viruses and illnesses. Diseases may potentially be shifted from high-temperature regions to low-temperature locations in other places as a result of global warming. Warmer oceans and other water surfaces may

cause severe cholera outbreaks and deadly illnesses in certain types of marine food. The virus spores will be held in the dry wind and soil. Dusting is anticipated to grow in this illness as temperatures get hotter and drier [5–7].

A. *Effects of Greenhouse:*

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failures and famines linked to global warming may reduce the human body's resilience to viruses and illnesses. Diseases may potentially be shifted from high-temperature regions to low-temperature locations in other places as a result of global warming. Warmer oceans and other water surfaces may cause severe cholera outbreaks and deadly illnesses in certain types of marine food. The virus spores will be held in the dry wind and soil. Dusting is anticipated to grow in this illness as temperatures get hotter and drier. Researchers have observed an increase in mosquito-borne diseases such as dengue and malaria as a result of the longer and warmer summers. Perhaps the most well-known mosquito epidemic of the West Nile Virus has already occurred, with yearly growth rates quickly increasing [8–10].

B. Causes of Global Warming:

Global warming is mostly caused by greenhouse gases. Carbon dioxide, phosphorus, nitrogen oxides, and, in certain instances, chlorine and bromine compounds are among them. The buildup of these gases in the atmosphere alters the radioactive balance of the atmosphere. As greenhouse gases absorb and refract part of the sun's outgoing radiation into the air, the net effect is to warm the earth's surface and lower atmosphere. Ozone depletion is the second leading driver of global warming. This is due, in part, to the chlorine in the source gasses. When UV light is present, such gases dissociate the release of chlorine atoms, catalyzing ozone breakdown. As the climate changes in two ways, global warming causes aerosols to be discovered in the atmosphere. They do two things: they distribute and absorb solar and infrared light, and they may change the microphysical and chemical characteristics of clouds, potentially influencing the length and breadth of their lives [11–13].

Solar radiation spreads to cool the globe, while solar radiation absorption by aerosols heats the air directly rather than enabling sunlight to reach the earth's surface. Human exposure to the aerosol composition of the atmosphere may take several forms. Furthermore, exhaust emissions from different modes of transportation include a complex combination of contaminants, which originate as aerosols or are transformed to aerosols in the atmosphere via chemical processes.

C. Effects due to Global Warming:

There are many harmful consequences of global warming, which are mentioned here. Evaporation of both land and sea continues as the weather warms. This causes dryness in places where greater precipitation is not offset by higher evaporation. Crop failure and starvation will result in certain parts of the globe, especially where temperatures are already high. The additional water vapor in the atmosphere will descend when the increased rain produces the flux. Cities and towns that rely on melting water from snowy mountains may face drought and water shortages. It's because the world's glaciers are quickly thinning, and the ice loss seems to be more than previously thought. More heat waves, more intense precipitation, and more severe storms and weather are all likely to result from the warmer weather. The most catastrophic consequence of global climate change is the rise in sea levels, since ice and glaciers melt rapidly as temperatures rise. This may result

in higher water levels in the sea, rivers, and lakes, perhaps causing flooding.

D. Living Beings Affected by Global Warming:

Global warming may have a significant impact on human health. Stress and heart disease may both be exacerbated by excessive heat. Excessive heat may be stressful. Crop failures and famines linked to global warming may reduce the human body's resilience to viruses and illnesses. Diseases may potentially be shifted from high-temperature regions to low-temperature locations in other places as a result of global warming. Warmer oceans and other water surfaces may cause severe cholera outbreaks and deadly illnesses in certain types of marine food. The virus spores will be held in the dry wind and soil. Dusting is anticipated to grow in this illness as temperatures get hotter and drier. Researchers have observed an increase in mosquito-borne diseases such as dengue and malaria as a result of the longer and warmer summers. Perhaps the most well-known mosquito epidemic of the West Nile Virus has already occurred, with yearly growth rates quickly increasing.

Global warming affects animals as well. They must migrate to colder regions in order to survive. For example, this cycle has been discovered in the Alps, hilly Queensland in Australia, and the foggy woods of Costa Rica. The impact on the environment is so obvious that its movement may be used as a warning sign of global warming. Fish in the North Sea have also been seen migrating northward. Bush fires are increasingly common in these severely burnt forests, further fragmenting the orangutan's ecological range as global warming increases the duration and intensity of droughts. Elephants confront a variety of difficulties throughout Africa, including increasing dwelling areas, which causes them to diverge more often.

II. LITERATURE REVIEW

William W. Kellogg et al. discussed on a global scale, humanity has now proven that it can alter the composition of the atmosphere. The related changes in the earth's and atmosphere's radiation balance, as well as the consequent shift in climate, are the repercussions of global air pollution that may have the biggest influence on society in the decades ahead. Carbon dioxide emissions from fossil fuel combustion at current rates may result in a 1°C rise in mean surface temperatures by 2000 A.D., and a 2-3°C rise by the middle of the following century. This prediction of a two-factor increase in mean temperature has certain uncertainties, and the polar areas are anticipated to see an increase many times greater. Other human effects, such as the increase of chlorofluorocarbons, nitrous oxide, and potentially aerosols to the atmosphere, may contribute even more to global warming. If our prediction is accurate, the earth's mean surface temperature by 2000 A.D. will be higher than it has been in the previous 1000 years or more. Shifts in large-scale atmospheric circulation patterns, as well as substantial modifications in regional temperature and precipitation distributions—favorable for some areas, unfavorable for others—will accompany such a climate change, but the specifics of these changes are unknown. This prospect, which is based on theoretical model calculations that scientists can't prove are fully credible ahead of time, forces world leaders to choose between

acting together to avert climate change, waiting for more climate system research to verify our theoretical models, or doing nothing at all [14].

D. Botkin et al. discussed the need for precise forecasting of the impacts of global warming on biodiversity is increasing, yet existing forecasting techniques have flaws. We compare and explain the many applications of four forecasting techniques in this article: (1) species-area curve models that consider all species or large groups of species, (2) niche-theory models that group species by habitat (more specifically, by environmental conditions under which a species can or does persist), (3) general circulation models and coupled ocean-atmosphere-biosphere models, and (4) general circulation models and coupled ocean-atmosphere-biosphere models. We offer eight main recommendations for improving predictions after describing the various applications and limits of these techniques. More use of the fossil record and current genetic research, we believe, might enhance predicting techniques. We see a Quaternary puzzle: While current empirical and theoretical ecological findings indicate that many species may be threatened by global warming, few species went extinct during the previous ice ages. The possible answer to this dilemma sheds light on the need for more precise and dependable forecasting. Our eight recommendations also hint to positive synergies in the solutions to the various issues [15].

According to current understanding, the most significant human effects on the climate system's heat balance are acting in favor of warming, with the carbon dioxide greenhouse effect expected to dominate for the foreseeable future. (Surface changes, although unlikely to be a significant impact, may have a role in either direction.) As a result, it's critical to look at some of the consequences of a warmer planet.

Average global temperature surface temperature might increase by roughly 1°C even by turn of the last century, and 2-30°C by the semi century, again according to tests using current theories and examinations of previous effects on the real environment (give or take a factor of two or so). It is estimated that the rise in the polar areas will be many times larger. As a consequence of the hotter atmosphere's ability to maintain more moisture, it may rain further in the northern winter, so this snow might melt faster in the springtime. Researchers do not even know how much more the Arctic Ocean ice pack will shrink, exposing greater high seas around the United States, Alaska's, and Canada's northern borders, or whether it will ever vanish altogether. The huge ice sheets in Greenland carry the equivalent of almost 80 metres of ocean, thus even a small fractional change in their volumes might alter sea level. We can't predict which way they'll change because their volumes are regulated by a balance among snow on their tops (which can readily expand) and melting + evaporation and breakoff at their edges (which also could increase). However, just on timeframe of our model, we can be quite confident that any change in arctic ice size will be modest. However, if we allow a big CO₂ buildup, we may be locked into an irrevocable lengthy ice volume change (and therefore sea level). We've spoken about how global warming affects the Polar Regions, and there's reason to believe that other portions of the world would respond similarly. Since heating will be greatest at latitudes, where

it would be currently coldest, the gap in temperature rise between the equatorial the poles will narrow. This discrepancy has a big impact on where the main circulation networks are located. The hemisphere shift that occurs every year as we move from hot to cold, when the number of westerly winds decreases and shrinks higher latitudes, might be compared to the global change we expect in the coming decades. According to our current theories, when the earth heats, more drainage from the seas occurs, leading in much more rain on aggregate over the world (not necessarily in each region, however). To have a better understanding of where this extra rainfall would occur and where there might be less, we can look back to a time between 4000 and 8000 years ago, when the world was supposedly several degrees warmer than it is now. During that warmer epoch, known as the Altithermal or Hypsithermal, most subtropical desert areas, such as the Sahara, northwest India, southwestern North America, and parts of Australia, received substantially more rainfall. There was also more rain in Western Europe, but less rain in Scandinavia and the United States' centre Midwest (our primary agricultural region!) than there is now. We can't promise that comparable rainfall patterns would return with another warming because the causes are different, but the comparison shows that even small global climate change can cause major regional changes that benefit some but harm others.

III. DISCUSSION

It should cease utilizing fossil fuels right now. Using alternative energy sources is the most effective approach to put an end to the catastrophe. Wind, solar, organic mass, geothermal, and hydroelectric power all need to be environmentally friendly, since these sources are the most notable. No waste or hazardous gas exists that may contribute to global warming. They are environmentally benign and do not jeopardize the ecosystem's equilibrium. Despite the fact that their high installation and maintenance costs may allow energy providers to get away with it at first, they will undoubtedly benefit everyone in the long run.

More significantly, fossil fuels will be depleted one day, and we will need to utilize renewable energy to provide electricity sooner or later. As a result, it is an alternative energy source that can be utilized to combat global warming in the long run. You should also be shown the impact of consuming fossil fuels. The majority of industrialized nations currently utilize renewable energy to generate large quantities of electricity. Those nations will assist developing countries in aggressively combating global warming's harm.

The global fuel usage is shown in fig.4. Oil, coal, and gaseous gasoline are the three non-renewable energy sources that dominate, accounting for 80 to 90 percent of total vitality usage throughout the time. Oil provides the greatest amount of life, but it has lost ground to coal and, in particular, gaseous gasoline. Coal has seen a boom in the twenty-first century, especially after 2005, and may become the primary petroleum product in the future as oil supplies decline and demand for energy rises in places like China and India, where massive coal contains little oil or

combustible gas. Biomass and hydroelectric force both increased somewhat. Methane is a combustible gas that is emitted into the atmosphere during the production, preparation, capacity, transmission, and conveyance of petroleum gas. Venting, spilling, and flaring are estimated to account for approximately 8% of total annual flammable gas production, resulting in substantial monetary and environmental costs. Similarly to coal, the geographical expansion of oil may create massive methane reserves that are released during drilling and extraction. Oil production, refining, transportation, and capacity, as well as insufficient combustion of petroleum derivatives, are all sources of methane emissions. No, since the burning process is so efficient, whether petroleum products are used to generate electricity, heat, or drive cars, they all contribute to methane emissions.

A. Global Warming Solutions:

Toxic emissions are a significant source of global warming, as previously stated; restricting the usage of cars that emit them will be the most probable way to reduce harmful emissions. This hasn't worked because many people refuse to acknowledge the usage of automobiles. Some individuals have started to utilize bicycles and public transportation, while others choose to walk, although these numbers are still in the minority. The main elements in the vehicle range should be fuel economy and pollutant levels. Hybrid cars have better efficiency and emission rates.

In order to decrease the overall number of road vehicles, people should travel with friends or collaborators. Printing and social media can both help to successfully solve the issue. It should use the idea of vehicle advertisements to urge drivers to be more energy efficient and reduce emissions. It's a unique method of demonstrating why global warming is bad for the planet. Recycling is also a great method to help the environment and reduce global warming. People should utilize rechargeable batteries instead of throwaway ones. Purchases should be made of high-quality, long-lasting goods. Shopping at local markets, which reduces transportation costs, should be done. Even modest actions, such as lowering thermostats in the winter or using compact fluorescent lights, may help to combat global warming. Reforestation plans must be used to plant a large number of trees. Forest degradation and deforestation must be prevented at all levels of government.

IV. CONCLUSION

The scientific and environmental communities are on the same page when it comes to the harsh truth of global warming and the role of human forces. The article presented here has just scratched the surface of a vast area of scientific and engineering study. Global warming is a significant danger, and immediate action is required to address this severe issue. This issue affects not just humans, but also animals and plants. Melting polar ice caps may cause floods all across the world, causing infrastructure to collapse. Increasing sea levels will wreak havoc on farming and fisheries. In order to solve these issues in a timely manner, certain adjustments need be made, including but not limited to the usage of renewable energy and the halting

of deforestation. Innovative methods should be used to eliminate this danger once and for all.

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