

Global Warming

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Abstract-

Global climate change is a major worry for many scientists, engineers, and environmentalists. Power plants are always burning fossil fuels to keep the lights on. Gases such as carbon dioxide, methane, and nitrous oxides contribute to climate change when these fuels are burned. Rising global temperatures are another consequence of deforestation. The threat of climate change is steadily depleting Earth's natural resources. The majority of people still don't know what global warming is and don't think it will be a major issue in the future. The vast majority of people are blissfully unaware that our planet is really warming up right now, and we are already feeling its dwindling impacts. Ecosystems are already feeling the effects, and they will only become worse. The dangerous consequences of climate change need the development of countermeasures. Introduction to global warming, discussion of its origins and dangers, and proposed solutions to this pressing problem are all covered in this article. Priority number one should be towards developing renewable energy sources including solar, wind, hydro, geothermal, and bio mass. Finding and using renewable energy sources is one way to successfully fight the ever-increasing threat of global warming.

Keywords: Climate, fossil fuels, deforestation, global warming, alternative energy sources

Introduction

The planet's growing temperature is alarming. Global warming is the major cause. World warming begins when sunlight reaches Earth. Land, air, and water absorb most of the sun's rays, although clouds, atmospheric particles, reflecting ground, and ocean surfaces reflect 30%. The consequence is a planet's surface and atmosphere warm enough for life. Infrared and thermal rays spread solar energy as the Earth warms up and cools as it goes into space. However, atmospheric molecules including carbon dioxide, water vapour, ozone, and methane absorb and re-radiate some space-borne radiation to Earth. Many call these gases greenhouse gases because they trap heat. Without greenhouse gases, Earth's average surface temperature would be significantly lower, therefore re-absorption is advantageous. Humans have been steadily increasing the atmospheric concentration of greenhouse gases over the last two centuries, which is when the problem started. The process known as the human enhanced global warming effect is exacerbated by rising levels of greenhouse gases, which have already poured almost 8 billion tonnes of carbon dioxide into the atmosphere. A human-enhanced greenhouse effect is, in fact, what is heating up the world, according to recent data of global warming. Over the last century, Earth's surface temperature has risen at a faster rate than any other planet in recorded history. The average annual increase in Earth's surface temperature from 1906 to 2006 was between 0.6 and 0.9 degrees Celsius. Landfills and agricultural operations like biomass and animal dung degradation create millions of pounds of methane. Nitrogen oxide emissions come from soil management and nitrogen-based fertilisers like urea and diammonium phosphate. Released greenhouse gases stay in the air for a long period. According to the IPCC, carbon dioxide levels have climbed 35% and methane 148% since the industrial revolution of 1750. Climate Change The surface of Earth experiences gentle, constant temperatures, in contrast to the scorching heat or freezing cold of other planets in our solar system. The atmosphere, a delicate layer of gases that envelops and shields Earth, is responsible for the planet's pleasant temperatures. Nevertheless, almost all climate scientists and academics (97%) believe that the Earth's atmosphere has been significantly altered by humans during the last two centuries, leading to the phenomenon known as global warming. Familiarity with the greenhouse effect is a prerequisite to comprehending global warming. The natural greenhouse effect prevents Earth from freezing at normal temperatures. while the human-enhanced greenhouse effect causes the planet to warm . This is because the combustion of fossil fuels raises atmospheric

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concentrations of greenhouse gases, including carbon dioxide, methane, and oxides of nitrogen. [2].

The exchange of incoming and outgoing radiation that boosts Earth's surface temperature is called the greenhouse effect because of its similarities. Greenhouse plants and hard surfaces absorb UV light, which travels through the glass walls. Weaker infrared radiation remains within the greenhouse since it can't penetrate the glass walls. This phenomenon allows tropical plants to grow in greenhouses regardless of weather [2]. Similar things happen in parked cars on cold bright days. Since we seal our car windows, the sun's rays warm the interior but can't leave. This constraint warms the car. Entrapment stops warm air from ascending and wasting energy by design. [2].

If there are enough gas molecules that absorb thermal infrared light, Lasell College associate professor of environmental science Michael Daley says they may affect the climate. These gas molecules are greenhouse gases. Carbon dioxide and other greenhouse gases prevent infrared radiation from reaching space like a mantle. The outcome is consistent Earth's surface and atmospheric heating. There may be philosophical ramifications to the greenhouse effect, rising greenhouse gas levels, and the subsequent warming of the planet. Climate change, rising sea levels, more frequent and severe weather events, and other devastating social, environmental, and natural disasters are all possible outcomes of unchecked global warming [2]. A Greenhouse Gas Risk Most atmospheric greenhouse gases are human-made. Carbon dioxide is first. It is produced by overburning fossil fuels like coal and oil. The chopping down of trees for construction is another important source of atmospheric carbon dioxide. The heating of calcium carbonate to produce lime and carbon dioxide is another source of atmospheric carbon dioxide in cement production. Methane, more often referred to as natural gas, is the second gas that is responsible. Manure, paddy rice cultivation, and animal digestion are some of the agricultural processes that yield it. Inadequate waste management also leads to methane production. Fertilisers are the primary sources of nitrous oxides. Chlorofluorocarbons (CFCs) and other fluorinated gases are mostly byproducts of refrigeration and a number of industrial operations [5, 6].

These gases are contributing to the worsening effects of climate change. The Earth's temperature is rising due to their actions, which are ongoing. Climate Crisis Origins Earth's warming is mostly caused by greenhouse gases. These include chlorine, bromine, carbon dioxide, methane, and nitrous oxides. The concentration of these gases disrupts atmospheric radiative balance. Greenhouse gases absorb and re-radiate part of Earth's radiation, warming the surface and lower atmosphere. From 1850 to 1900, net warming was 2.5 W/m². About 60% comes from carbon dioxide, 25% from methane, and the remainder from nitrous oxides and halocarbons. In 1985, British Antarctic Survey researcher Joe Farman wrote on Antarctic ozone depletion. Climatic fumigants (CFCs), which were used as aerosol propellants in industrial cleaning fluids and refrigeration equipment, were the object of massive worldwide scientific initiatives aimed at establishing their guilt. More crucial yet was the sudden global response to reduce CFC emissions. The ozone layer's gradual disintegration is the second leading driver of global warming. The major cause of this is the presence of source gases that include chlorine. UV light breaks down these gases, releasing chlorine atoms that deplete the ozone layer. Aerosols affect climate in two ways, both of which contribute to global warming. They absorb and deflect IR and solar energy. Second, they may alter cloud chemical and microphysical properties, affecting duration and size. Aerosols capture solar energy instead of dispersing it, which cools the Earth, warming the air directly. Aerosols in the atmosphere are a result of human activity, which may take many forms. As an example, dust is a result of farming. Soot and organic droplets are byproducts of biomass combustion. Based on the fuels used or byproducts created, a broad variety of aerosols are released into the air throughout many industrial operations. In addition, a wide variety of pollutants, including aerosols either initially or after undergoing chemical reactions in the atmosphere, are released into the air as part of exhaust emissions from several types of transportation [8]. Climate Change: Its Consequences Among the most challenging issues confronted by climate experts is making predictions about the outcomes of global warming. This is because there are a great many different

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components that contribute to the natural processes that bring about precipitation, snowfall, hail, and rising sea levels. Furthermore, technical progress and political actions largely dictate the amount of greenhouse gas emissions in subsequent years, making it very difficult to forecast. Listed here are just a few of the numerous detrimental consequences that global warming brings about. The first cause of floods in many parts of the globe is the re-occurrence of rainstorms caused by the atmospheric water vapour. The rate of evaporation from land and sea increases as the temperature rises. Drought conditions develop in areas when precipitation falls short of the enhanced evaporation. This will cause crops to fail and people to go hungry in parts of the globe where temperatures are already quite high. When there is an abundance of water vapour in the air, it will eventually rain down again, leading to flooding. Rural areas that rely on precipitation from snow-capped mountains for their water supply are at risk of experiencing water shortages and droughts. Reason being, ice is melting at a pace that exceeds predictions, and glaciers throughout the globe are melting at an unprecedented rate. A quarter of the world's population resides in areas that would be impacted by less melting water, according to the Intergovernmental Panel on Climate Change (IPCC). Heat waves, intense rainfall, and the frequency and intensity of thunderstorms and hail are all things that a warmer climate is expected to bring about. Because glaciers and ice caps are melting at an alarming rate due to the increase in global temperatures, the most catastrophic consequence of climate change is the fast rise of sea levels. Because of this, sea, river, and lake levels will increase, which may cause devastating floods [6]. Everything was under control before the turn of the twentieth century, but things began to spiral out of control with the turn of the present century. This was all because of the rise in global warming, which was caused mainly by the operation of new industries and power plants that released gases that warm the earth. The study conducted by many climatic and environmental research bodies forms the basis of this data. In a similar vein, The graphic clearly shows that severe weather events including thunderstorms, floods, and earthquakes are happening right now. In the absence of intervention, the rate of devastation will accelerate dramatically. National Aeronautics and Space Administration (NASA) data shows the average world temperature over the last several years. We are confronted with a profound question by the trend. Given the expected increase in global temperatures, how can we expect to remain alive on this planet?

Implications for Live Things All forms of life are vulnerable to the devastating effects of climate change. Heat stress may raise blood pressure and increase the risk of cardiovascular disease. One immediate effect of global warming is a decrease in crop yields and food supplies, which in turn lowers the immune system's ability to fight off diseases. As people relocate from hotter to cooler areas, global warming has the potential to spread illness from one location to another. Some seafood may get infected with dangerous diseases like cholera as a result of ocean and surface water warming [11]. Furthermore, it is well-known that dehydration, brought on by higher temperatures, is a key contributor to kidney stones. Philadelphia's Children's Hospital doctors reviewed 60,000 Americans' medical records and weather data. After a body temperature increase, kidney stones were the leading cause of hospitalisation within three days. Kidney stones have increased from 5% to 9% since 1994. As Earth's temperature rises, this tilt will decrease. "Valley fever is exhibiting a peculiar pattern of infection," says Luis Ostrosky, M.D., medical director for epidemiology at Memorial Hermann-Texas Medical Centre and the Division of Infectious Diseases at UT Health Science Centre at Houston Medical School. He said this mycotic sickness was formerly restricted to California, Arizona, New Mexico, and Texas. Last year, Washington State found it. The rise in patients of this potentially fatal condition in 2010 and 2011 worried California. Valley fever may be rising owing to climate change and drought-related dust storms. Dry air and dirt may propagate viral spores. Dust particles that spread this illness will increase with rising temperature and aridity. Researchers say mosquito-borne diseases including dengue fever and malaria have increased due to summer lengthening. West Nile Virus, a mosquito-borne infection, has increased. The 2012 summer West Nile season was the worst ever, according to the CDC. Summer's heat and dryness certainly contributed. Lyme disease, another deadly illness, is spread via tick bites [12]. Depriving them of food may cause physical and mental harm. Global

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warming affects animals. They must relocate for lower temps. This phenomenon has been seen in the Alps, Queensland, and Costa Rica's foggy jungles. It has also been noted that fish in the North Sea migrate northward. It is becoming possible to utilise species' migration patterns as an indicator of a warming planet because of the noticeable consequences on these groups. They stand by quietly while the planet undergoes rapid transformation. Climate change, according to scientists and academics, is slowly wiping out whole ecosystems and has a negative impact on many species' chances of survival. Take the orang-utan as an example; it's in deep, deep difficulty and the only ape in Asia. The species faces the threat of extinction within the next several decades since its few surviving habitats in Indonesian rainforests are being threatened by many factors, including climate change. Bushfires are becoming increasingly common in these severely deforested areas, further dividing the orang-utan's habitat, while the length and frequency of droughts are also being worsened by climate change. In Africa, elephants have repeated conflicts with humans due to a combination of factors, one of which is the reduction of their habitat. Because of this shrinking habitat, elephants will be much more vulnerable to the effects of climate change, such as increased frequency and duration of dry spells, which threaten their very existence [14].

Power Generation Options The Earth is in danger from climate change. Overreliance on coal, gas, and oil is another factor. We must stop using fossil fuels immediately. This disaster must be stopped by using alternative energy. Renewable energy includes wind, solar, biomass, geothermal, and hydropower. The biggest benefit of adopting these sources is their purity. They don't contribute to pollution or harmful gases that might cause the planet to warm. They won't upset the natural equilibrium and are completely safe for the planet. Energy providers may be hesitant to use them because of the large initial investment required for installation and setup, but everyone will benefit from them in the end. First and foremost, we will need to switch to renewable energy sources to replace fossil fuels when their supply runs out. Therefore, switching to renewable energy will eventually put a stop to climate change. Renewable energy sources must be prioritised in order to mitigate the health risks associated with climate change. The entire public needs to take responsibility for their choices about energy efficiency measures. Doing so will guarantee a hospitable environment and consistent weather for those who come after us. The government needs to formulate and enact measures that incentivize energy providers and the general public to switch from conventional to renewable sources of power. The public should be dissuaded from relying on fossil fuels and encouraged to utilise alternative energy sources by means of booklets distributed by non-governmental organisations (NGOs). The risks associated with using fossil fuels should also be explained to them. Renewable energy sources are already producing massive quantities of electricity in several industrialised nations. It is imperative that these nations band together to aid developing nations in their fight against the menace of climate change. To effectively reduce emissions of gases that contribute significantly to climate change, renewable energy sources should be prioritised. For a prompt and effective response to the issue of climate change, the amount should be far higher than what is now in place.

Additional Options Lessening the number of cars on the road is one way to lessen the impact of hazardous emissions, which contribute significantly to climate change as previously discussed. Since many individuals still insist on driving often, this strategy has not been very effective. Certainly, a few have taken to riding bikes and using public transit; yet others, albeit little in number, prefer to stroll. When deciding on a vehicle, it is important to keep in mind the fuel economy and pollution rates as primary considerations. More efficient and less polluting are hybrid vehicles. You can get more gas economy by keeping the tyres inflated, and you can reduce pollutants by changing the air filter often. There should be less traffic on the road if people rode shotgun with their friends or coworkers. Publications in print and online may help reduce the issue. It ought to promote energy conservation and pollution reduction among drivers by drawing on the tenets of vehicle advertising. They provide as a great example of how harmful global warming is to the environment. An other strategy that might help mitigate climate change is recycling. Instead of throwing away batteries, people should use ones that can be recharged. Invest in high-quality items that will last for years. Buying goods from nearby markets may help cut down on petrol and other

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transportation costs. A reduction in wintertime thermostat use and an increase in the use of compact fluorescent lights (CFLs) over incandescent ones are two examples of the kinds of modest individual actions that may contribute to combating global warming. To plant a lot of trees, reforestation programmes need to be launched. The government should take a stand against deforestation and forest damage. Alternative energy sources, such as nuclear power, may reduce emissions; nevertheless, this approach requires caution due to the high risk of catastrophic mishaps. Consequently, if this approach is to become feasible, we must conquer the security, propagation, waste disposal, and high costs associated with nuclear power [1].

Conclusion

There is unanimous agreement among scientists and environmentalists that human activity is a major contributor to the harsh reality of climate change. This study just scratched the surface of a complex engineering and scientific topic. Global warming is a serious threat, therefore we must act now. This condition harms animals and vegetation. Floods from melting polar ice caps might prove devastating globally. The rise in sea levels will hurt agriculture and fisheries. These issues demand immediate action, such as switching to renewable energy and ending deforestation. We need creative methods to put a stop to this danger for good.

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