

GLOBAL WARMING –CAUSES EFFECTS AND SOLUTIONS**Sarvapriya Singh , M. Sc Geography, VMOU Kota****Sarvapriya Singh ***,
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ABSTRACT-

Global warming is currently happening, and we are already experiencing some of its withering effects. It is and will severely affect ecosystems and disturb ecological balance. Because of the treacherous effects of global warming, some solutions must be devised. The present conceptual paper will discuss basic reasons and causes of global warming. How society itself responsible for global warming, how awareness can help people understand and change themselves and their fellow being in improving present scenario. How global warming is created and day by day becoming hazardous in prevailing conditions, what are the effects of global warming today and in future how it can make it more uncomfortable living conditions. This paper will also suggest strategies to improve present conditions by adopting few necessary changes in daily life not only by individuals', institutions and society at large. Lastly this paper suggests global preventive measures which if seriously adopted can definitely reduce Global Warming.

Keywords: Climate change, global warming, impacts, causes, Chlorofluorocarbon, mitigation strategy ,Ecological balance, adaptation measures, greenhouse gas emissions, renewable energy, sustainability.

The hazard of global warming is continuously causing major damage to the Earth's environment. Most people are still unaware of global warming and do not consider it to be a big problem in years to come. What most people do not understand is that global warming is currently happening, and we are already experiencing some of its withering effects. It is and will severely affect ecosystems and disturb ecological balance. Because of the treacherous effects of global warming, some solutions must be devised. The paper introduces global warming, elaborates its causes and hazards and presents some solutions to solve this hot issue. Above all, alternative energy sources - solar, wind, hydro, geothermal, bio mass etc. need to be seriously pursued. Finding and using renewable sources of energy is one of the methods to combat the ever increasing global warming effectively.

At Palmetto, define global warming as follows:



Global warming is a gradual, long-term increase in the average temperature of Earth's atmosphere due to the greenhouse effect where gasses from various human activities, including the burning of fossil fuels, trap heat from solar radiation.

While there are conflicting opinions on the topic, a majority of scientists worldwide agree that global warming is *very* real and, if left unaddressed, could result in devastating effects for humanity. More than **99% of peer-reviewed scientific research** acknowledges that humans are the major cause of this problem.

Global warming is the phenomenon of a gradual increase in the temperature near the earth's surface. This phenomenon has been observed over the past one or two centuries. This change has disturbed the climatic pattern of the earth. However, the concept of global warming is quite controversial but the scientists have provided relevant data in support of the fact that the temperature of the earth is rising constantly.

There are several causes of global warming, which have a negative effect on humans, plants and animals. These causes may be natural or might be the outcome of human activities. In order to curb the issues, it is very important to understand the negative impacts of global warming.

Burning fossil fuels, cutting down forests and farming livestock are increasingly influencing the climate and the earth's temperature. This adds enormous amounts of greenhouse gases to those naturally occurring in the atmosphere, increasing the greenhouse effect and global warming.

Natural Causes of Global Warming

Volcanoes

Volcanoes are one of the largest natural contributors to global warming. The ash and smoke emitted during volcanic eruptions goes out into the atmosphere and affects the climate.

Water Vapors

Water vapors is a kind of greenhouse gas. Due to the increase in the earth's temperature, more water gets evaporated from the water bodies and stays in the atmosphere adding to global warming.

Melting Permafrost

Permafrost is frozen soil that has environmental gases trapped in it for several years and is present below Earth's surface. It is present in glaciers. As the permafrost melts, it releases the gases back into the atmosphere, increasing Earth's temperature.

Forest Blazes

Forest blazes or forest fires emit a large amount of carbon-containing smoke. These gases are released into the atmosphere and increase the earth's temperature resulting in global warming.

Man-made Causes of Global Warming

Deforestation



Plants are the main source of oxygen. They take in carbon dioxide and release oxygen thereby maintaining environmental balance. Forests are being depleted for many domestic and commercial purposes. This has led to an environmental imbalance, thereby giving rise to global warming.

Use of Vehicles

The use of vehicles, even for a very short distance results in various gaseous emissions. Vehicles burn fossil fuels which emit a large amount of carbon dioxide and other toxins into the atmosphere resulting in a temperature increase.

Chlorofluorocarbon

With the excessive use of air conditioners and refrigerators, humans have been adding CFCs into the environment which affects the atmospheric ozone layer. The ozone layer protects the earth surface from the harmful ultraviolet rays emitted by the sun. The CFCs have led to ozone layer depletion making way for the ultraviolet rays, thereby increasing the temperature of the earth.

Industrial Development

With the advent of industrialization, the temperature of the earth has been increasing rapidly. The harmful emissions from the factories add to the increasing temperature of the earth. In 2013, the Intergovernmental Panel for Climate Change reported that the increase in the global temperature between 1880 and 2012 has been 0.9 degrees Celsius. The increase is 1.1 degrees Celsius when compared to the pre-industrial mean temperature.

Agriculture

Various farming activities produce carbon dioxide and methane gas. These add to the greenhouse gases in the atmosphere and increase the temperature of the earth.

Overpopulation

An increase in population means more people breathing. This leads to an increase in the level of carbon dioxide, the primary gas causing global warming, in the atmosphere.

Effects of Global Warming

Following are the major effects of global warming:

Rise in Temperature

Global warming has led to an incredible increase in earth's temperature. Since 1880, the earth's temperature has increased by ~1 degrees. This has resulted in an increase in the melting of glaciers, which have led to an increase in the sea level. This could have devastating effects on coastal regions.

GLOBAL TEMPRATURE INCREASE OVER A PERIOD OF TIME FROM 1880 TO 2023

YEAR	TEMPERATURE
1880	+ 0.0
1900	+0.2
1950	+0.6



2000 +1.0

2023 +1.2

Table Note: The table illustrates the progressive rise in global temperatures since 1880, highlighting the acceleration of global warming.)

Threats to the Ecosystem

Global warming has affected the coral reefs that can lead to the loss of plant and animal lives. Increase in global temperatures has made the fragility of coral reefs even worse. In summary, the causes of climate change are multifaceted and stem from human activities that release greenhouse gases and alter land use. Understanding these causal factors is essential for formulating effective strategies to mitigate climate change and develop sustainable solutions for a rapidly changing world.

GREEN HOUSE GAS SOURCE		IMPACT
Carbon dioxide	burning fossil fuels	major contributor to global warming
Methane	livestocks,landfills	potent but short-lived greenhouse gas
Nitrous oxide	Agricultural practices	contributes to warming and ozone

Climate Change

Global warming has led to a change in climatic conditions. There are droughts at some places and floods at some. This climatic imbalance is the result of global warming.

Spread of Diseases

Global warming leads to a change in the patterns of heat and humidity. This has led to the movement of mosquitoes that carry and spread diseases.

High Mortality Rates

Due to an increase in floods, tsunamis and other natural calamities, the average death toll usually increases. Also, such events can bring about the spread of diseases that can hamper human life.

Loss of Natural Habitat

A global shift in the climate leads to the loss of habitats of several plants and animals. In this case, the animals need to migrate from their natural habitat and many of them even become extinct. This is yet another major impact of global warming on biodiversity.

SOLUTIONS

In summary the implementation of mitigation strategy is crucial to combat the adverse effects of climate change. Transitioning to renewable energy sources to enhancing energy efficiency, adopting CCS Technologies, investing to reforestation and afforestations and promoting sustainable transportation and



urban planning collectively pave the path towards a more sustainable and resilient future. These strategies when combined with global cooperation offer hope in mitigating climate changes far reaching impacts.

MITIGATION STRATEGY

Transition to Renewable energy sources

Energy efficiency and conservation

Carbon capture and storage

Reforestation and Afforestation

Sustainable transportation and urban planning

KEY POINTS

utilize solar, wind, hydroelectric and geothermal power for cleaner energy.

Reduce reliance on fossils fuels and carbon emission.

improve energy consumption patterns, incorporate sustainable building designs for reduced energy demands.

Capture CO2 emmissions from industrial sources, stores captured co2 underground to prevent atmospheric release.

Replant trees in deforested areas- reforestation, Establishes new forest areas in non forested areas- afforestation.

-promotes public transits and reduses car usages by car pooling, adopting electric vehicles, focus on walkable and bike friendly cities.

Everyone can help limit climate change. From the way we travel, to the electricity we use and the food we eat, we can make a difference. Start with these 10 actions to help tackle the climate crisis.

Save energy at home- Much of our electricity and heat are powered by coal, oil, and gas. Use less energy by lowering your heating and cooling, switching to LED light bulbs and energy-efficient electric appliances, washing your laundry with cold water, or hanging things to dry instead of using a dryer. Walk, cycle, or take public transport

The world’s roads are clogged with vehicles, most of them burning diesel or petrol. Walking or riding a bike instead of driving will reduce greenhouse gas emissions – and help your health and fitness. For longer distances, consider taking a train or bus. And carpool whenever possible

Eat more vegetables- Eating more vegetables, fruits, whole grains, legumes, nuts and seeds, and less meat and dairy, can significantly lower your environmental impact. Producing plant-based foods generally results in fewer greenhouse gas emissions and requires less energy, land, and water.

GLOBAL WARMING PREVENTIONS AND ADOPTION MEASURES

In summary adoption measures encompasses a spectrum of stratrgies that span from engineering solutionsto informed policies and community engagements, by embracing these measures socities



can proactively address the challenges of climate change and pave the way for a more resilient and sustainable future.

ADAPTATION MEASURES**Building climate resilient infrastructure****Enhancing agricultural practices****Climate informed policies and governance****Community engagement and Awareness**

1. Renewable Energies- The first way to prevent climate change is to move away from fossils fuels. The other alternatives can be renewable energies- like solar energy, wind energy ,biomass energy and geothermal energy.
2. Energy and water efficiency-the first way is to reduce our consumption of energy and secondly using devices like Led bulbs, CNG vehicles, They are less costly and equally important.
3. Sustainable transportation-Energies can be saved by carpooling, promoting public transportation, also by electric and hydrogen mobility which certainly reduce CO2 emissions and help in reducing global warming.
4. Sustainable infrastructure- In order to reduce CO2 emissions from buildings caused by heating, air conditioners, gysers, lights etc. ,it is necessary both to renovate existing buildings and converting in low energy buildings.
5. Sustainable agriculture and forest management-Encouraging better use of natural resources reducing deforestation, growing more trees, moving towards more agriculture and forests.
6. Responsible consumption and recycling- Adopting responsible consumption habits is crucial, be it regarding food, cloting, cosmetics or cleaning products, last but not least, recycling is an absolute necessity for dealing with waste.

KEY COMPONENTS**Costal defences and food protection systems****Resilient building designs****development of drought resistant crops****efficient irrigation methods****Intrgration of climate considerations into****planning, Early warning systems****Education on climate risk and measures**

Throughout this paper, we have delved into the intricate web of climate change and global warming, uncovering a spectrum of effects that reverberate across the natural world and human societies. The rising temperatures, melting ice caps, altered precipitation patterns, and extreme weather events have emerged as undeniable signatures of our changing climate. Ecologically, the disruption of ecosystems and the impending loss of biodiversity paint a stark picture of the challenges we face. Societally, Climate Change and Global Warming threats to food security, human health, and the potential for displacement further highlight the far-reaching consequences of inaction

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