



Climate Change: Causes and Solutions

Dr. Subhash, Assistant Professor, English

Govt. College, Bhattu Kalan, Fatehabad

Mail id - drsihag187@gmail.com

Climate change is a change mainly attributed to human activities that cause abnormal variations to the climate, the earth and the ecosystem over a long period of time. Such variation can also be natural, due to the change in the sun's activity or large earthquake or volcanic eruptions. But since 1800s, human activities are considered the main driver of climate change, primarily due to the burning of fossil fuels (like coal, oil and gas) which produces heat-trapping gases. In simple words, climate change describes global warming- the ongoing increase in global average temperature- and its effects on Earth's climate system. This article deals with the ongoing human induced rise in global temperatures and the various ways to mitigate it. Climate change has an increasingly large impact on the environment and the biggest threat to global health in the 21st century. Because of climate change, humans are migrating, deserts are expanding, heat waves are getting ferocious, wildfires are growing furious, ocean acidification is inflaming, mountains are collapsing, forests are decreasing, air, water and food are polluting and many species are relocating and becoming extinct.

Keywords: Climate, global warming, environment, temperature, weather, extinct, oceans

Objective of the Paper

We need to find out the valuable reply of the question expanded from “what is happening?” to why is it happening and how can we solve this happening”. The purpose of this article is to provide a concise glimpse on climate change including its causes, impacts and solutions to advance our current understanding. The paper aims to analyze the impacts of climate change on species and societies, economies and environment, ecosystems and agriculture, food security and human health and also the various

mitigation actions to avert and avoid the ghastly and gruesome outcomes of climate change. This article will also help us understanding why global temperatures continue to rise from the last two hundred years, how the climate change negatively affects the jobs, health, economy and security of humans and environment and how can we handle this challenge and how can we refuse, reduce, reuse and recycle the natural resources?

The Effects of Climate Change:

The effects of climate change include- intense drought putting people at risk of famine, coastal and rain flooding, severe storms, water scarcity, hotter temperatures, burning fires, warming oceans, rising sea levels, melting polar ice, catastrophic storms, loss of species, scarcity of food, water and fresh air, poverty and displacement, health issues, greenhouse effect, shoreline erosion, heat induced health disorders, decline in forests and wildlife, increase in precipitation and carbon dioxide in the environment, dangerous weather events that bring heavy rains, foods, wind, snow or temperature changes. Predicting the outcomes and consequences of global warming is one of the toughest tasks faced by the climate scientists and researchers. This is due to the fact that natural processes that cause heavy rain, snowfall, wind storms, hailstorms, ocean acidification, rise in sea levels is controlled by many diverse factors. (<https://www.un.org/en/climatechange/science/causes-effects-climate-change>)

Moreover, it is very hard to predict the amount and intensity of emissions of greenhouse gases in the future years as it is reliant on technological advancements and industrial progress. Global warming produces many negative effects some of which are as follow:

1. Hotter Temperatures: Climate change has resulted in hotter days and nights. The heat waves in May and June 2024 were the hottest and most dangerous heat waves ever recorded. Higher temperatures increase heat-related diseases and can make it more difficult to work and move around. Wildfires start more easily and spread more rapidly and can be seen somewhere in the world at any time. (<https://www.un.org/en/climatechange/what-is-climate-change>)



2. More Severe Storms: Changes in temperature cause changes in rainfall. This results in more severe and frequent storms. They cause flooding and landslides, destroying homes and hearths costing billions of dollars. Drought and famine affected areas in the olden time like Jaisalmer and Barmer districts of Rajasthan are facing floods in the last four or five years.

3. Increased Drought: Drinking water is becoming scarcer in more regions in the recent years. Droughts can stir destructive sand tornadoes and dust storms that can move billions of tons of sand across continents. Deserts are expanding, reducing land for growing food. Many people now face the threat of not having enough water on a regular basis. The level of the ground water is decreasing day by day and in some countries of Africa continents people are facing severe drinking water crisis.

4. Rising sea levels: The Ocean soaks up most of the heat from global warming. This melts ice sheets and raises sea levels, threatening coastal and island communities. The ocean also absorbs carbon dioxide, keeping it from the atmosphere. More carbon dioxide makes the ocean more acidic, which endangers marine life.

5. Loss of Species: Climate change poses risks to the survival of species on land and in the ocean. These risks increase as temperatures rises. Forest fires, extreme weather, and invasive pests and diseases are among many threats. Some species will be able to relocate and survive, but others will not. 25-30years ago, parrots and peacocks, peahens and pigeons, bulbul and mainas, vultures and godavan, camels and horses were seen in flocks at every village of Rajasthan but now we have to visit birds and animals sanctuaries to see them. If proper heed and monitoring is not done these species may extinct in the decades to come.

6. Food Scarcity: Changes in climate and weather events are among the main causes of poverty, hunger and poor nutrition at global level. Fisheries, crops, and livestock may be badly affected by ocean acidification, pests, weather, scarcity of water and wild animals and garbage. Heat waves can reduce water and grasslands for grazing.

7. More Health Risks: Climate change can cause infectious diseases like malaria, dengue fever; water-borne diseases such as diarrhea, dysentery, typhoid fever and cholera; respiratory and heart diseases and pest-related diseases etc. (Leaf A 1989) It is also linked to weak health and overall poor mental health. Extreme weather events increase diseases and deaths, and make it difficult for health care systems to keep up. Other risks to health include increased hunger and poor nutrition in places where people cannot grow or find sufficient food. (Saurabh Manchanda et al. 2021)

8. Poverty and Displacement: More than 20 million people are forced to leave their homes and hearths every year due to extreme weather events such as heavy rainfall, droughts, famine, food, desertification, environment degradation and cyclones etc. It hits the poorest people first and makes their position worse and poorer. Climate change directly affects the hearth, health, economy and human rights. Climate change increases the factors that put and keep people in poverty. Floods may sweep away urban slums, destroying homes and livelihoods. Heat can make it difficult to work in outdoor jobs. Weather-related disasters displace 2.3 crore people a year, leaving many more vulnerable to poverty.

The Causes of Climate Change:

There are numerous causes of climate change including-- emission of greenhouse gases into the atmosphere, generating electricity and heat by burning fossil fuels, manufacturing, mining and industrial processes of its production, cutting down forests to create farms or pastures or human settlements, urbanization or industrialization; overutilization and exploitation of natural resources, transportation of humans and man made goods, getting, spending and wasting too much, food production, powering buildings, overfishing, offshore drilling, fracking, landfills, fertilizers containing nitrogen, increasing livestock farming and, in a nutshell, overexploitation of natural resources. (Sasmita et al 2009)

The greenhouse effect is the main cause of climate change. Some gases in the Earth's atmosphere mimic the effect of greenhouse gas by trapping solar heat and

preventing it from escaping back into space, which would otherwise contribute to global warming. While many of these greenhouse gases are produced naturally, human are raising the levels of some of them in the atmosphere, particularly: methane, nitrous oxide, ozone, carbon dioxide, chlorofluoro carbons and fluorinated gases. The main source of global warming is the CO₂ created by human activity. There are many causes of climate change. (Shabecoff P, 2018)

1. Fossil Fuels: The use of fossil fuels is the first source of global warming, as burning coal, oil and gas produces carbon dioxide - the most important greenhouse gas in the atmosphere - as well as nitrous oxide. Fossil fuels cause 75% of greenhouse gas emissions and nearly 90% of carbon dioxide globally. These gases act like a blanket around the earth, trapping the heat and energy of the sun and raising temperatures. This blanket prevents solar radiation from passing into the space.

2. Deforestation: Deforestation is the clearance and eradication of woodland and forest from the earth. Trees and forests turn carbon dioxide into oxygen, so when they are cut or burned the stored carbon is released into the environment. The primary causes of deforestation are logging activities, construction of roads and dams, livestock grazing, illegal removal of timber from forests for fuel wood extraction, wildfire, infrastructure buildings, global demand for agriculture commodities, wood waste, wood utilization, generating power, manufacturing goods, using transportation, producing food, consuming too much and governance issues. Deforestation is the second largest source of carbon dioxide emissions from human activities, after burning fossil. Forests are the essential to human health serving as the first line of defense against new infectious diseases.

3. Waste Disposal: Humans are creating more and more waste now than ever before, because of the amount of packaging used on the occasions of marriage and other ceremonious occasions. A number of items, wastes and packaging are not recyclable, which result in landfills. When the waste in landfills begins to decompose, it releases harmful gases like methane, carbon dioxide and tons of other pollutants and carbons

contributing to global warming. Organic, inorganic and plastic waste produce greenhouse gas emissions which negatively impact the environment.

4. Power Plants: Establishment of massive power plants affect climate change because they release harmful air pollutants, mercury, greenhouse gases, sulfur dioxide which causes acid rain on the earth to harm the ecosystems. Power plants also emit water vapor as fog into the atmosphere which could influence the growth and survival of certain species and vegetation communities. They create a variety of solid waste like ash, fuel rods and low-level radioactive waste and filtered wastes which adversely affects the environment. The uses of fossil fuels in power plants produce large amounts of CO_2 . Since the beginning of industrial revolution, the atmospheric concentration of CO_2 has increased over 30 percent.

5. Oil and Gas Drilling: Oil drilling is responsible for 30% of methane pollution and around 8% carbon dioxide pollution. Oil and natural gas production, natural gas processing distribution and transmission and storage operations emit a number of harmful pollutants that make the sky smoggier, hazier and more toxic to breathe. Sometimes drilling in deeper and remote waters increases the risk of spills which can damage the ocean and threaten coastal businesses and people's livelihoods and their ways of living.

6. Transport and Vehicles: The large amount of transportation is done by cars, planes, boats, buses, ships and trains, almost all of which rely on fossil fuels to run. Burning fossil fuels releases carbon and other types of pollutants into the atmosphere. This partly makes transportation responsible for the greenhouse gases. We can reduce the effect of transportation on climate change by walking on feet and bikes, scooter, electric vehicles or taking public transportation or carpooling etc.

7. Consumerism: Consumerism has glamourized the postmodern society, negatively influencing the environment and human lives. It simultaneously drives economic growth and carbon emissions. The consumerism habits of the modern businessmen contribute hundreds of tons of carbon emissions in the environment. Due to the innovations in



technology and manufacturing, customers are able to purchase any product of their choice at any time and at any place. Most of the items we purchase are not very sustainable, and because of the reduced lifespan of electronics and clothing items, we are creating more waste than ever.

8. Intensive Farming: Climate change can affect agricultural productivity, soil, water resources, agricultural workers, livestock and rural communities. Heat, humidity and extreme weather events also affect the health and productivity of workers and animals. Temperature, rainfall, soil erosion, water quality and quantity, insects, diseases and pesticides, weather and climate change, recurrent droughts, famine and floods threaten the livelihood of billions of people. Farming takes up a lot of green space to create space for farming. Agriculture sector emits greenhouse gases to contribute climate change.

9. Industrialization: Industrialization is harmful in a variety of ways. The waste the industry produces all ends up in landfills in our surrounding environment. The chemicals and materials used within industrialization can not only pollute the atmosphere but the soil also. The industrial product contributes to global air pollution, and harmful vapors that endanger human health, survival of organism on land and in the ocean.

10. Overfishing: Fish is one of the main sources of protein for human beings. Overfishing is a matter of public concern worldwide. It presents widespread social, economic and environmental issues. By overfishing man will lose a rich source of protein. Fish stocks and ocean ecosystems are in decline in many parts of the world because of overfishing and destructive techniques. Diversity and variety of life in oceans mitigate climate change because the life in them allows for the capture and storage of carbon that world otherwise contributes to climate change in the atmosphere. Due to the rapid growth of population and their ways of buying and consuming fish, there is now a reduced amount of marine life. Overfishing has also caused a lack of diversity within the ocean.



Solutions to Climate Change:

The key solutions to create a greener, healthier future and to combat climate change are: transitioning to renewable energy sources like solar, water and wind power, ending our reliance on fossil fuels, improving energy efficiency in our homes and buildings, promoting sustainable transportation like walking, cycling and electric vehicles, reducing food waste by supporting sustainable agriculture practices, adopting plant based diets, reforestation efforts, responsible waste management, and advocating for policy change to initiate environmentally friendly activities following the methods of refuse, reduce, reuse, repair and recycle. (Last 1989)

We can contribute a lot to our environment by minimizing climate change through our day to day activities. We can make a difference from the way we travel, to the electricity we use, the food we eat, the air we breathe and the water we drink. We need to minimize the use of air conditioners, freeze, water coolers, ironing, heating and cooling electric devices, switching to LED bulbs and energy efficient electric appliances, washing laundry and kitchen pots with cold water or by hanging clothes and things on strings to dry them up instead of using a dryer and planting plants and trees like a protective shield around our homes, farms and surroundings. Walking must be preferred for routine activities to keep our health fit and pocket economic. If things are not within walking distances, we should ride on bicycle or electric scooter instead of petrol-diesel consuming vehicles. For longer distances we should consider public transportation or a carpool whenever possible. If we are planning to buy a car, always prefer electric models.

In our routine activity we need to choose reusable products like eco-bags for shopping or a reusable water bottle or a cup to reduce plastic waste etc. We must use eco-friendly products like hand crafted hats and hoods from natural fibers, reusable lunch wraps, natural homemade facial and sun creams and skincare products, baskets made of wheat straws, Dari made of old cloths, stainless steel pegs, bamboo products, vegan shoes etc. We need to recycle paper, glass, plastic, metal and old electronics; compost food scraps; take public vehicle or bike or walk on feet etc. For conserving and



harvesting water we must make a meticulous plan to save every drop of water whether it comes from rains, rivers, roofs, waterfalls, ponds, canals and wells, tube wells, hills or mountains. There must be a legal enforcement on people that there must have a rain water tank made of baked bricks in every house and a borehole to recharge the groundwater by regular rainfall.

Refuse, reduce, reuse, repair and recycle old electronics, clothes, plastics and other items because buying new cause carbon emission from extraction of raw materials to manufacturing and transporting them to market. To protect the environment, go green, buy less, save more, repair what we can, reuse and repair books, clothes and shoes and other things of our elders and prefer buying second hand. We should eat and produce plant based foods like whole grains, fruits, legumes, nuts, seeds and vegetables. Shifting from meat and dairy to vegetarian diet can reduce carbon footprint to a great extent. We should purchase what we need, use what we buy and compost if there is any leftovers. If we throw whatever is purchased, we are wasting resources and energy that were used in growing, producing, packaging and transporting it.

We should always prefer plantation of native species. Plants, insects and animals living in the same climate depend on each other. Many of the insects and animals do not eat non-native plants, which means birds other species lose their food source and biodiversity starts suffering. We need to educate people that garbage should be minimized and disposed properly contributing and participating in local clean ups of parks, rivers, sea-beaches and beyond. We are to first think and then invest our savings on environmentally sustainable businesses to reduce carbon pollutants and footprints.

Emergency measures, such as dietary recommendations, access to air-cooled areas, etc., should be followed to combat heat waves. Using air conditioners is not a wise move because it only increases the amount of anthropogenic heat production. Better steps can be taken in their place, such as using cool paints, external shading, and building insulation. These are far more natural because they consume little to no energy once installed. We must always ready for extreme occurrences like tsunami, storms and floods and work to improve our early warning systems (EWS), identify and monitor

communities that are more exposed and vulnerable, and plan effectively and efficiently for their welfare. To prepare its inhabitants for every conceivable circumstance, national health authorities should run emergency programs or disaster management programs as well as various fitness programs. One of the greatest worries that climate change causes is infectious diseases. It would be difficult to combat a widespread disease that occurred during any catastrophic event as it might spread like wildfire and result in a large number of fatalities. The government needs to start funding public health in order to combat these contagious diseases. The gates of education and healthcare must be opened to all people without any differences between rich and poor, the king and the cobbler. Infrastructure can be extremely important in determining how vulnerable and resilient people are. The UN Framework Convention on Climate Change (UNFCCC) estimates that the overall costs of adapting the health sector in developing nations will be between US\$4 and 12 BN by 2030. The cost of the consequences if the public health sector does not invest in public health will be much higher. Additionally, coping with climate change will not only lessen its effects but also boost the immunity of people. In order to maintain the environment and human health, collaboration across numerous academic fields and geographical regions is necessary. Pathogens and poverty are both factors in the development of more than 70% of these illnesses. In order to effectively deal with an infectious disease, a strong national system for people's health like expert teams of doctors, reliable diagnostics, sufficient infrastructure and long-term funding is required. (Rich N 2018)

Conclusion:

Climate change is a big task for all of us. It is matter of great concern to us. A single person cannot break the furnace; we can only do it together. For this we will have to raise our voice and appeal to our neighbors, colleagues, friends, family, local and world leaders to accept this challenge and to act to go green. We will survive and advance only if we value the earth, the air, the water, the sky, the environment and nature, humans and other living organism. It is possible if we start living within limits without greed making measurable and meaningful progress. Shifting from fossil fuels to



clean energy is the key to winning the fight and fright against climate change. We need to develop positive thinking framework for nature and its various aspects. We have to give priority to natural resources over our needs and greeds. Natural resources should be as much as a hungry person loves his bread, a thirsty person loves water, blind loves eyes, a deaf loves ears and a lame loves feet. It must be our prior concern that harming the climate is equivalent to harming human civilization. (The International Panel Of Climate Change)

Many climate changes contribute to the anticipated environmental health issues. Changes in agriculture and quality of water, air and food may have a variety of effects on humans and other living species of the earth. Heat waves, altered precipitation patterns, glacier and sea ice melting; endanger the lives of the people. Since the resources are finite, human society at global level must work together to save these natural bounties available to mankind. We should switch to a more sustainable and natural life style using more and more green and renewable resources. A civilization that values humans, nature and the environment without misusing natural resources can advance in any field of great eminence. If human keeping the message of worldly brotherhood in their mind start loving nature and environment like their kith and kin, my purpose of writing this paper will be accomplished.

REFERENCES

1. Last J.M. A vision of health in the 21st century: Medical response to the greenhouse effect. *Can. Med. Assoc. J.* 1989; **140**:1277–1279.
2. Leaf A. Potential health effects of global climatic and environmental changes. *N. Engl. J. Med.* 1989;**321**:1577–1583. doi: 10.1056/NEJM198912073212305.
3. McMichael A.J. *Planetary Overload. Global Environmental Change and the Health of the Human Species.* Cambridge University Press; Cambridge, UK: 1993. p. 352
4. Rich N. Losing earth: The decade we almost stopped climate change. (Accessed on 15 October 2018);
5. Sasmita Mohanty, Bimal Prasanna Mohanty, “Global Climate Change: A cause of concern”, National Academy of Science Letters, 2009.



6. Saurabh Manchanda et al. "Global Climate Change and its Impact on Environment and Public Health: Risks and Responses", International Research Journal Of Engineering and Technology, 2021.
7. Shabecoff P. Global warming has begun, expert tells senate. (Accessed on 15 October 2018)]; *The New York Times*. The International Panel Of Climate Change (IPCC), "Climate Change widespread, rapid, intensifying", 2021
8. United Nations, "Causes and Effects of Climate Change", <https://www.un.org/en/climatechange/science/causes-effects-climate-change>
9. United Nations, "What is Climate Change?" <https://www.un.org/en/climatechange/what-is-climate-change>