
CLIMATE CRISIS: AN URGENT CALL TO INVESTIGATE CAUSES, CONFRONT CHALLENGES, AND PIONEER SOLUTIONS

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ABSTRACT

The idea of climate change is not a recently developed idea. The biggest worry for both the current and upcoming generations is this. The crucial query regarding human survival! The causes and difficulties of the prevalent viewpoint on climate change are examined in this essay. The examination of the changing global climate, which is primarily based on statistical data, was conducted using an empirical technique. To preserve our own planet, this research aims to identify ways to lessen the negative consequences of climate change. It was discovered that the rate of population expansion was directly correlated with the rate of increase in global temperatures, which posed serious challenges to human civilization.

1. INTRODUCTION

If one has to define the term climate change, one has to explain the causes and consequences of it. However, the UN gives it a comprehensive definition by describing it as the long-term changes in temperature and weather patterns over a period of time. Such fluctuations may be brought on by natural conditions like significant volcanic eruptions or variations in the sun's activity. But since the 1800s, human activities—primarily the combustion of fossil fuels like coal, oil, and gas—have been the major cause of climate change. Fossil fuel combustion produces greenhouse gas emissions that serve as a blanket around the planet, trapping heat from the sun and increasing temperatures. Carbon dioxide and methane are the primary greenhouse gases responsible for climate change. These are produced, for instance, while burning coal or gasoline to heat a building. Carbon dioxide can also be released when woods and land are cleared. The main sources of methane emissions are oil and gas production and agriculture. The key factors that lead to the emission of greenhouse gases include energy, industry, transport, buildings, agriculture, and land use.

The current narrative looks at climate change in a rather altruistic manner, arguing that the world needs us to be the saviour, as though we as humans can and must save the planet from falling apart. I call this the earth-centred perspective. However, humans are self-centred and ego-centric beings, with their own requirements and wants. Although human needs can be met, human wants cannot as they turn out to be endless. In such a situation, there needs to be a change in the entire narrative of climate change to such an extent that it be acknowledged as a human-made or human-triggered response of the nature. I call this new narrative a human-centred perspective. This calls for a critical appraisal of the way human populations have propelled climate change, leading to the path of a possible annihilation of life on earth. Such a radical perspective looks at climate change as a direct response of human actions on the nature that are not just detrimental but are threatening to human life.

2. REASONS FOR CLIMATE CHANGE

Human activity and natural processes are the main contributors to climate change. The Greenhouse Gas Emissions: The emission of greenhouse gases (GHGs) into the atmosphere is the main cause of the current climate change. Carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O), among other gases, trap solar heat, resulting in the "greenhouse effect." Burning fossil fuels (coal, oil, and natural gas), deforestation, and industrial operations are only a few examples of human activities that have greatly raised the concentration of these gases in the atmosphere.

A significant contributor to CO₂ emissions is the burning of fossil fuels for transportation, industry, and the production of electricity. This causes a significant amount of carbon dioxide to be released into the atmosphere, which causes global warming. Through a process known as carbon sequestration, the clearing of trees or deforestation reduces the Earth's ability to absorb CO₂. While plants and trees serve as carbon sinks, deforestation returns atmospheric carbon to the atmosphere. Changes in land use, such as urbanization and the increase in agriculture, can affect the equilibrium of GHGs in the atmosphere. These modifications could result in the release of carbon dioxide that has been stored, impacting the local and regional climate patterns. Methane and nitrous oxide, two strong greenhouse gases, are produced in substantial volumes during agricultural activities including raising cattle and growing rice. In the case of industries, manufacturing of chemicals and the production of cement are two examples of industrial operations that release GHGs and other pollutants into the environment.

Apart from the aforementioned human activities, the climate of the Earth can briefly be affected by natural phenomena like solar radiation fluctuations and volcanic eruptions. However, the current rapid global warming that has been seen over the past century is not primarily caused by these natural phenomena. As the Arctic ice melts as a result of higher temperatures, for instance, it reveals the darker ocean water beneath, which absorbs more heat and hastens warming. Another major contributor to climate change has been the temperature changes on land and in the Ocean. Increasing global temperatures have the potential to alter ocean circulation patterns and cause climate systems to change, which will have an impact on precipitation and weather patterns.

On top of all this, human activities have caused the urban heat island effect and changes in land cover as a result of urbanization, land development, changes in transportation and energy use. It is crucial to remember that while natural forces can contribute to climatic changes, climate scientists generally agree that human activities, particularly the release of greenhouse gases, are the primary cause of the present global warming trend. Significant hazards are posed by this anthropogenic climate change to ecosystems, economies, and cultures across the globe. Reducing GHG emissions, switching to cleaner energy sources, and implementing sustainable land-use and agricultural practices are all part of the mitigation of climate change effort.

Challenges of Climate change:

Climate change poses a wide range of challenges, many of which have significant impacts on the environment, human societies, and the global economy. For instance, global temperatures are increasing due to the accumulation of greenhouse gases (GHGs) in the atmosphere, primarily carbon dioxide (CO₂) from human activities such as burning fossil fuels and deforestation. Rising temperatures can lead to heatwaves, reduced agricultural productivity, and increased energy consumption for cooling. Climate change is also contributing to more frequent and severe extreme weather events, including hurricanes, droughts, floods, and wildfires. These events can cause significant damage to infrastructure, disrupt communities, and result in economic losses. Moreover, as the planet warms, polar ice caps and glaciers melt, leading to rising sea levels. This can result in coastal erosion, increased flooding, and the displacement of people living in vulnerable coastal areas.

Ocean Acidification is another major challenge posed by climate change. The absorption of excess CO₂ by the oceans is causing ocean acidification, which harms marine ecosystems, particularly coral reefs and shellfish populations. This can disrupt food chains and impact fisheries. It can lead to shifts in ecosystems and the distribution of species. Some species may struggle to adapt or may face extinction, disrupting ecosystems and reducing biodiversity. Furthermore, higher temperatures can exacerbate heat-related illnesses and contribute to the spread of diseases carried by insects (e.g., malaria and dengue fever). Additionally, air pollution resulting from fossil fuel combustion can lead to respiratory problems.

Changes in temperature and precipitation patterns can affect crop yields and water availability, leading to food and water scarcity in some regions. This can increase the risk of conflict and migration. And that is still not it. The costs associated with climate change-related impacts, including damage to infrastructure, increased healthcare expenses, and reduced agricultural productivity, can be substantial and strain economies.

Climate change can aggravate existing inequalities; as vulnerable populations often bear the brunt of its impacts. This can lead to social unrest and displacement, which may result in political instability and conflicts, giving rise to social and political challenges.

Addressing climate change requires international cooperation and agreements. The challenges lie in getting all nations to commit to reducing emissions and transitioning to sustainable energy sources, as well as providing support to developing countries for mitigation and adaptation efforts. Developing and implementing the technologies and policies needed to mitigate and adapt to climate change can be challenging. This includes transitioning to renewable energy sources, improving energy efficiency, and implementing carbon pricing mechanisms. As some areas become uninhabitable due to climate change impacts, there may be increased migration flows, potentially leading to social and political tensions between host and migrant populations.

Due to the very slow transfer of CO₂ to the deep ocean and eventual burial in ocean sediments, if CO₂ emissions were to completely stop, it would take many thousands of years for atmospheric CO₂ to return to the "pre-industrial" levels. Inferring a long-term commitment to a warmer world due to past and present emissions, surface temperatures would remain elevated for at least a thousand years. Long after the temperature stopped rising, the sea level would probably still be rising. The Greenland ice sheet and glaciers, which were built during previous cold climates, would need to experience a significant cooling in order to stop melting. Therefore, on a time scale relevant to people, the current warming of the Earth caused by CO₂ is essentially irreversible. Future climate change scenarios frequently involve the adoption of technology that can reduce atmospheric greenhouse gas concentrations. In these "negative emissions"

scenarios, it was assumed that, in the future, there would be a large-scale effort to remove CO₂ from the atmosphere and reduce its atmospheric concentration, which would begin to slow down CO₂-driven warming on longer timescales. The costs of such technologies would need to be drastically reduced in order to be deployed. Even if such technical solutions were workable, significant CO₂ emission reductions would still be needed.

Addressing these challenges requires a coordinated global effort to reduce GHG emissions, transition to sustainable practices, and adapt to the changes that are already underway. Governments, businesses, communities, and individuals all have roles to play in mitigating and adapting to climate change. Data from secondary sources on Human Population and Climate Change is represented as follows:

Table 1: Sources:

S.NO.	YEAR	*Global Human Population (in billions)	** Global Average Temperature (in degrees Celsius)	***Greenhouse Gas Emissions (in Gigatons of CO ₂)
1.	2000	6.1	0.6	26.5
2.	2010	6.9	0.8	34.2
3.	2020	7.8	1.1	42.8
4.	2030 (expected)	8.7	1.4	50.6

*Global Human Population (In Billions): United Nations and World Bank

**Global Average Temperature (In Degrees Celsius): Global Carbon Project

***Greenhouse Gas Emissions (In Gigatons Of Co₂): Nasa andtThe IPCC (Intergovernmental Panel on Climate Change)

Data Analysis:

The data above has been represented in the following line graph through the indicators shown on the X-axis and the Y-axis.

X-axis (horizontal): Time (Years) and Y-axis (vertical): Key Indicators

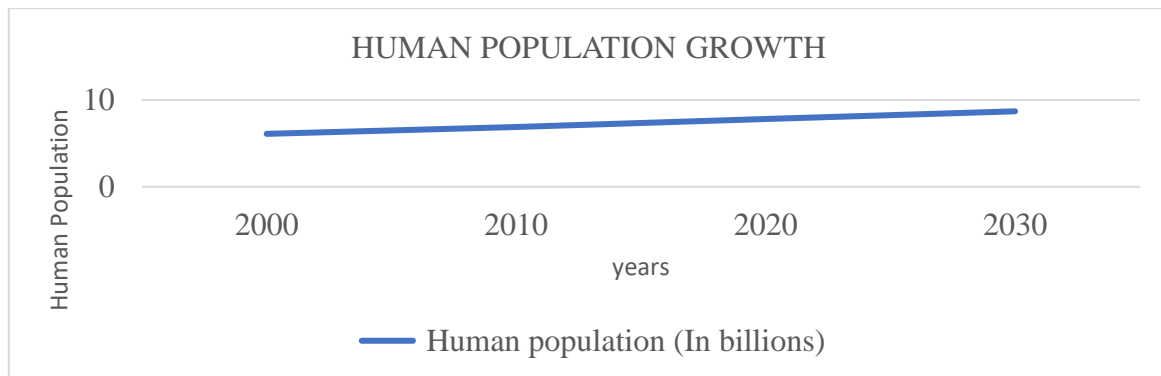


Figure 1.1 : Graph showing the rise in global human population in the time period 2000-2030

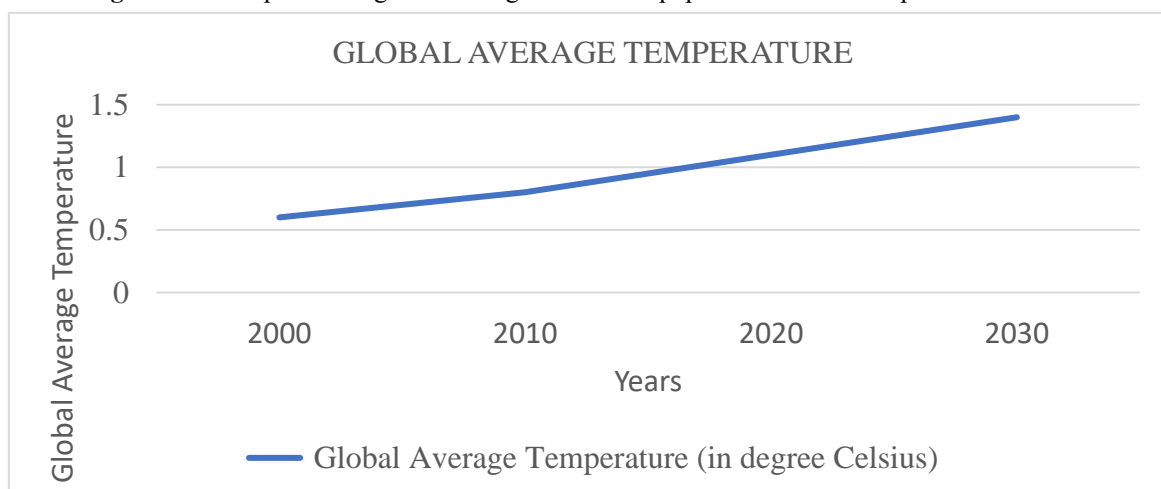


Figure 1.2: Graph showing the rise in global average temperature in the time period 2000-2030

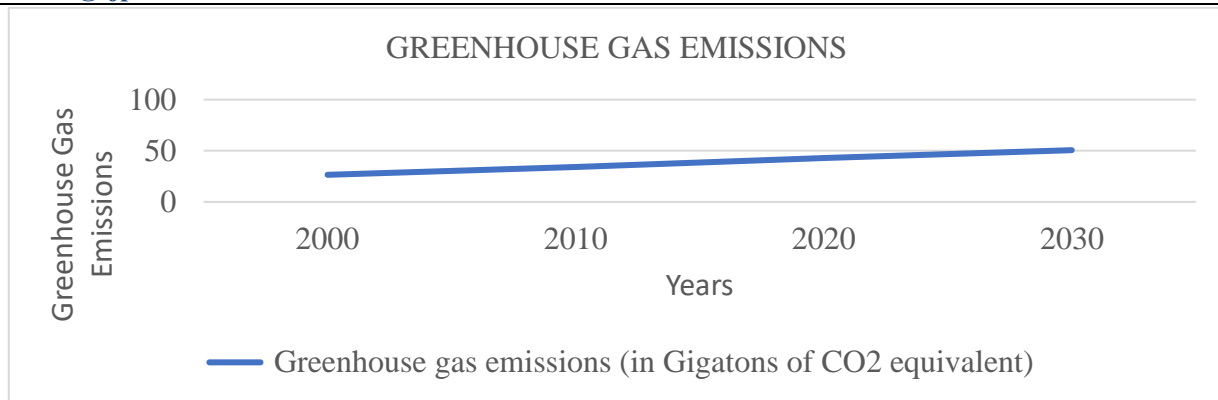


Figure 1.3: Graph showing the rise in global greenhouse emissions in the time period 2000-2030

Data Interpretation:

On the basis of the data findings, it can be argued that the growing human population has resulted in increasing the global average temperature, ultimately giving rise to climate change.

In figure 1.1, we can observe that the human population has been growing magnificently since the year 2000 till the year 2030. The graph indicates that the rise has been steep and not gradual. Across this time period, the population has increased from 6.1 billion to 8.7 billion. Accompanying this change is the increase in global average temperature from 0.6 degrees Celsius to 1.4 degrees Celsius. This has been portrayed by figure 1.2 on the data spanning across the time period of 2000-2030. The graph indicates that the rise has been steep except for the year 2000-2010, with an increase of 0.2 degrees Celsius. Along with this, the greenhouse gas emissions have increased considerably from 26.5 GT CO2eq to 50.6 Gt CO2eq in the time period of 2000-2030, as shown in the figure 1.3. This shows that a rise in human activities, an inevitable outcome of rising human populations, have led to remarkable changes in the climatic conditions of the earth.

3. RESULTS AND FINDINGS

From the data analysis it has been found that there is an adverse effect of population growth on climate change. The population growth is directly proportional to the emission of greenhouse gases and rise in global temperature. This has lasting implications on coming generations. If we want to give a sustainable life to future generation, we need to wake up and start saving our mother nature. Nature has all that we need but it cannot fulfil our greed.

Solutions for Climate Change:

Addressing climate change is a complex and urgent global challenge that requires a combination of solutions at multiple levels—individual, community, national, and international. One of the most effective ways to reduce greenhouse gas emissions is to shift from fossil fuels (coal, oil, and natural gas) to renewable energy sources such as solar, wind, hydro, and geothermal. This transition can provide cleaner energy while creating jobs and reducing air pollution. Improving energy efficiency in buildings, transportation, and industrial processes can significantly reduce energy consumption and emissions. This includes measures like better insulation, more efficient appliances, and advanced vehicle technologies. Implementing carbon pricing mechanisms like carbon taxes or cap-and-trade systems can incentivize businesses and individuals to reduce their carbon footprint by putting a price on emissions.

Another important measure is planting more trees and restoring forests which can absorb carbon dioxide from the atmosphere and help combat deforestation, a major contributor to climate change. Adopting sustainable agricultural practices, such as precision farming and agroforestry, can reduce emissions from agriculture while improving soil health and food security. A significant amount of emissions come from producing and disposing of food that is never eaten. Reducing food waste at the consumer, retailer, and production levels can help mitigate climate change.

Along with these, promoting public transportation, electric vehicles (EVs), and cycling, as well as improving fuel efficiency in traditional vehicles, can reduce emissions from the transportation sector. Preparing for and adapting to the impacts of climate change, such as building resilient infrastructure and developing early warning systems for extreme weather events, is essential. Nations need to work together to set ambitious emission reduction targets and honour their commitments under international agreements like the Paris Agreement.

Investment in research and development of clean technologies, carbon capture and storage (CCS), and sustainable materials can accelerate progress toward a low-carbon economy. Encouraging investments in sustainable projects and companies through green bonds, sustainable investment funds, and responsible banking practices can accelerate the transition to a low-carbon economy.

More importantly, individuals can make climate-friendly choices by reducing energy consumption, supporting sustainable products and reducing waste. Raising awareness about climate change and advocating for policies and practices that reduce emissions are crucial for driving change at all levels. Governments play a central role in addressing climate change by enacting policies such as renewable energy incentives, emissions regulations, and sustainable land-use planning.

Local communities can take action by implementing renewable energy projects, promoting energy-efficient buildings, and supporting sustainable transportation options. Businesses can reduce their carbon footprint through sustainable practices, supply chain management, and setting emission reduction targets. Participating in climate strikes, advocacy campaigns, and community initiatives can influence policy changes and corporate behaviour.

We almost always refer to the nature and the environment as “mother nature”, personifying it. But, what if, we are disembodied or even dehumanising the humans themselves in the process by putting it all on the nature. This calls for a change in the very conception or perspective of looking at climate change. Humans think of something as urgent when they anticipate it as directly affecting themselves. For as long as the debates and discussions on climate change have been going on, it is always argued that our earth needs us. They refer to solutions for climate change as “save the nature”, “save our earth”. This needs to be changed to “save human life” or “save life on the earth”. Such a change in our conception may appear to be insignificant but it is needed. A mere thought can guide one’s actions and human actions can indeed be altered just by provoking one’s thoughts. So let’s start looking at climate change as a human-induced consequence. This is the human-centred perspective with a striking difference from the nature-centred perspective.

4. IMPLICATIONS

The current paper focuses on the perspective of climate change as a human-triggered phenomenon. Looking at the changes over the years so directly associated with the rising population and the causes of climate change mostly catapulted by human activities, one can start to believe that it is a human-made change and not so much a natural one. The main task at hand is for us to realise fully that we are the creators of the problem and thus, only we can make a difference. The complete onus of climate change is now on us and the clock is still ticking.

5. CONCLUSION

Citizens and governments have a variety of options: they can alter their pattern of energy production and consumption to reduce greenhouse gas emissions and subsequently the severity of climate changes; they can wait for changes to occur and accept the losses, damage, and suffering that result; they can adapt to actual and expected changes as much as possible. Alternatively, they can try to offset some of the climate changes, that would otherwise occur, by using as-yet-unproven “geoengineering” techniques. Each of these possibilities has benefits, drawbacks, and prices, and what gets done may be a combination of these various options. The degree of vulnerability and resilience will differ between nations and groups. Since the most vulnerable groups frequently have little control over the emissions, present or future, the options need to be debated globally.

6. REFERENCES

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