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A Catastrophe Deadline Of Earth's Climate

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Abstract

The paper examines our understanding of climate change, and how it becomes a most dangerous threat to the humanity. We must understand what the science says, what we delivered, and what the economy demands. On 9th of August 2021, the intergovernmental panel on climate change (IPCC) released a report on climate change. The report states that the catastrophic impacts of rising climate risks will breach the 1.5˚c barrier within the next two decades and if emissions are not mitigated this made weather conditions more unpredictable or make them worse. In this paper we study the impacts with every increment of global warming on weather conditions, sea level rise and global surface temperature etc.

Keywords: Climate Change, Climate Risk, Global Warming, CO2, GHG, COP26, IPCC Report

I. INTRODUCTION

It's hard to imagine the destruction we are inviting in coming future. The Intergovernmental Panel on Climate Change (IPCC) is the United Nations organisation responsible for evaluating the scientific aspects of climate change, Unveils landmark climate report. IPCC study looked at over 14000 scientific

research papers and the report said to be starkest warning on the climate change. This report represents the most compelling scientific data now accessible, demonstrating that human activities are the primary cause of the observed changes in climate. Experts warn of Massive wake-up Call in this report on climate change. The Figures in the report are hard to believe. The mean rate of sea level increase was 1.3mm annually between 1901 and 1971. It then rose to 1.9mm per year from 1971 to 2006. Recent scientific investigations have confidently shown that this rate further escalated to 3.7mm per year between 2006 and 2018. With every additional amount of global warming, we will see greater changes in the climate which causing irreparable damage. For almost forty years, humanity have been striving to enhance their comfort through continuous technical advancements and progress. One significant limitation of this progress is our vulnerability to the natural environment, which is currently experiencing severe climate changes and many adversities such as floods, earthquakes, droughts, forest fires, cyclones, landslides, and more. Compared to the period prior to industrialization and globalisation, the Earth's temperature is projected to increase by an average of 2 degrees Celsius, which will have an irreversible impact on the planet, leading to even more severe climate problems (IPCC, 2014).

The society is being negatively affected, however gradually, by its own actions. There is a pressing necessity for people to safeguard the environment from many social and environmental problems that have emerged. As a result, several United Nations Conferences have been conducted, starting from 1972, leading to the establishment of the United Nations Environmental Programme (UNEP). The international agencies have recognised that environmental exploitation is causing significant problems such as escalating pollution, loss of ozone layers, climate change, and the release of greenhouse gases like carbon dioxide (Habib, 2010a; Habib, 2010b). People worldwide, upon recognising the severe consequences of natural disruptions, have begun to prioritise raising awareness and

implementing strategic measures to improve the liveability of our planet (IDBT, 2013). To completely comprehend the concept of economic progress, there have been many transformations in paradigms over the years (Meier, 2004; Todaro & Smith, 2012). Following World War II, nations began to prioritise scientific and industrial advancements since they recognised them as the foundations for development, leading to higher Gross Domestic Product (GDP), per capita income, and eventually, economic growth. The term "economic development" was coined in 1960 with the aim of reducing unemployment, gender bias, and poverty (Seers, 1969). Subsequently, development was once again delineated as a method of exerting control and reducing deprivation (Sen, 1999). During this time gap, the term evolved to include the concept of sustainability, which involves implementing a system that promotes development for the current generation without jeopardising the needs and demands of future generations. This concept was referred to as "Sustainable Development" by the World Commission on Environment and Development in 1987.

As the process of global warming advances, alterations in the climate system become more noticeable. Among the impacts include changes in the duration and severity of hot extremes, marine heatwaves, and heavy precipitation, as well as reductions in Arctic sea ice, glaciers, and permafrost. It is evident that a remarkable effort is necessary from the global community to restrict global emissions.

II. STATEMENT OF PROBLEM

It’s clear that we are not on track to meet the Paris target of limiting global mean temperature to ideally 1.5˚c. Even current policies imply greater than 4˚c bombing by century's end. CO2 and other GHG Surrounds Earth, Warming it like a blanket and every year we add 25 billion tons more of it to the atmosphere. As the blanket gets thicker, The planet gets more warmer which results extreme heatwaves, heavy rainfall, flooding coastal regions, droughts, Intensive hurricanes, Rise in sea level, Rise in ocean temperature, melting glaciers, biodiversity loss etc.

What we are bequeathing is a very difficult world to survive for the future generations. In this paper we will study the possible solutions to limit the global emissions on large scale.

III. REVIEW OF LITERATURE

Yangka. D et al., examined in their study that the Bhutan is the only country in the entire world that has a negative carbon footprint. The forest spread in the country is over 70% which is more than double of most countries around it. The country places great emphasis on Gross National Happiness (GNH), which serves as its interpretation of sustainable development. The GNH concept comprises four primary components: cultural preservation, environmental conservation, economic development, and good governance. The article suggests that adopting a three-pronged approach to sustainable development, including measures of Gross National Happiness (GNH), greenhouse gas emissions (GHG), and Gross Domestic Product (GDP), may be a more favourable strategy for the future.

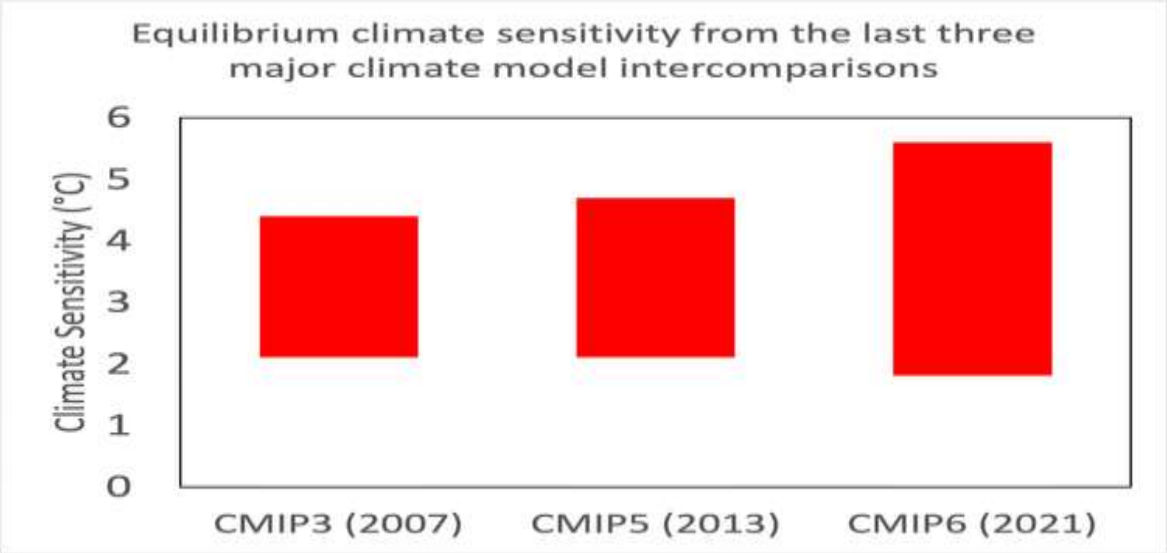
Benjamin. A, head of National grid project in UK, specializes in the process of carbon Capture, Usage and Storage (CCUS). Carbon Capturing is a new model of capture greenhouse gas emissions before releasing them into the atmosphere. National grid company of UK developed a full-chain carbon capture and storage project which helps in cutting carbon emissions and working towards Net zero emissions Goal by 2040.

Athaulla A Rasheed now serves in an academic research position at the Department of Pacific Affairs. It has been seen in his research that islands such as the Maldives are experiencing a significant issue of rising sea levels as a result of climate change. In October 2009, the ex-president of Maldives, Mohamed Nasheed, conducted a Cabinet meeting beneath the water's surface as a means of alerting the international community to the imminent threat of his nation's submersion, which might occur if decisive action is not taken to mitigate global warming. Coastal regions and small islands are widely regarded by experts as being

particularly susceptible to the effects of climate change.

Tristan Bove, a Chinese Graduate of DePaul university, Re-examine the IPCC report on climate change 2021 and study the impacts of humanity's relationship with the environment and found that the CO2 levels in 2019 reached higher than at any time in at least 2 million years. He suggest that the Climate Meet which was held in Glasgow 2021 is so important. With current climate Promises and emission rates we are on track to reach a global mean temperature of 3℃ which is rise by the end of the century. He clearly defines that our future are in our hands, and explains how important it is to move towards renewable energy sources to draw down current level of emissions. A coordinate action will be required and COP26 is a hope for making a stringent policies framework to tackle this Problem.

Alex Crawford holds the position of Research Associate at the Centre for Earth Observation Science, which is part of the Clayton H. Riddle Faculty of Environment, Earth and Resources at the University of Manitoba. The researcher analysed the climate sensitivity of the three most recent major climate models and compared them. The study used the current IPCC Report from August 2021 as a reference point. The report utilised the most recent CMIP6 Model, employed by climate experts to accurately assess world temperature. By doubling the CO2 emissions from pre-industrial levels, from 260ppm to 520ppm, researchers have discovered that the climate becomes more sensitive. This implies that in order to remain within a 2˚C temperature increase, greenhouse gas emissions must be reduced at a faster rate.



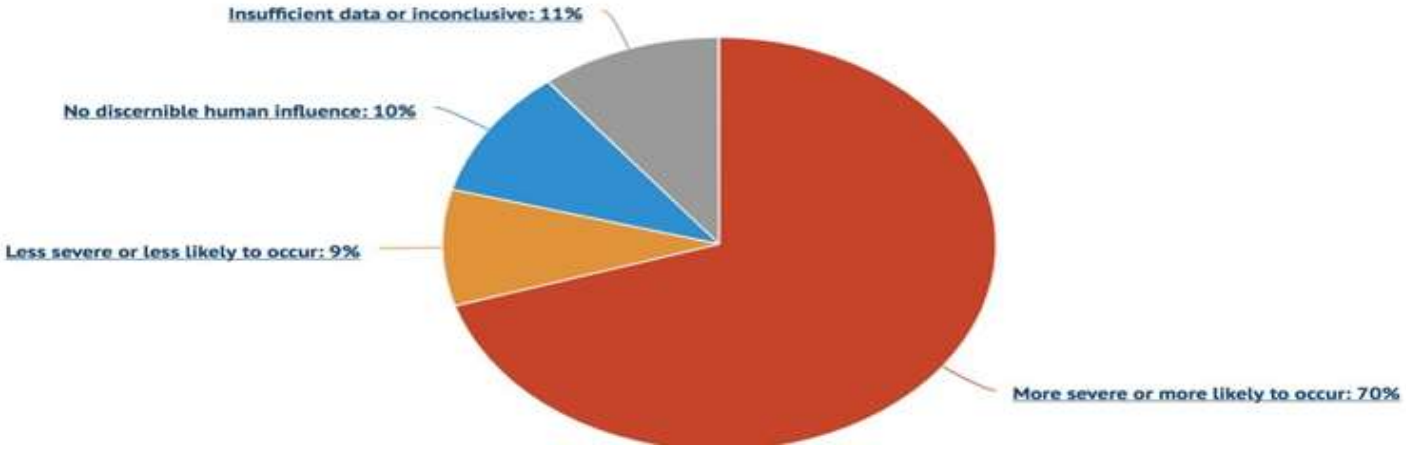
Source: Equilibrium climate sensitivity from the last three major climate model inter comparison (DATA IPCC)

In the study, Alex Crawford states that the climate models assessed by the IPCC are global models. He concludes that as a result, the IPCC study provides a more comprehensive understanding of the impact of climate change on our current situation.

UNICEF states that climate change poses a direct threat to mankind, with those who are least responsible for it bearing the largest cost of its repercussions. UNICEF asserts that climate change poses a direct peril to the survival, development, and flourishing of children. Approximately 90% of the disease burden resulting from climate change is experienced by children under the age of 5. According to the World Health Organisation (WHO), over 2 billion children across the globe are exposed to harmful air pollution, and more than 1 billion children are at a significantly elevated risk of experiencing the effects of climate change. More than half a million children under the age of 5 die each year as a result of causes associated to air pollution.

Roz Pidcock and Robert McSweeney investigated how extreme weather is affected by climate change around the world. They looked at 405

extreme weather events throughout the world for which scientists conducted research. As a result, there is growing evidence that human activity is increasing the danger of certain types of extreme weather, particularly those related to heat. Over 70% of the 405 extreme weather incidents were confirmed to be caused by human-induced climate change. They found that climate change caused excessive heat more likely or more severe in 92 percent of the attribution studies they looked at around the world. Many scientists indicated in their research that human-caused climate change, such as rising average temperatures and rising sea levels, has an impact.



*Source: CARBONBRIEF.ORG

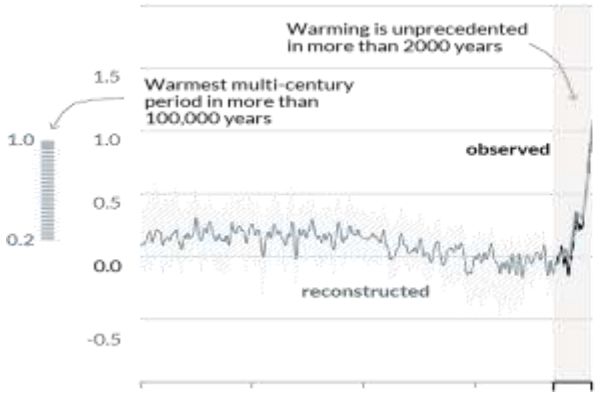
** The pie chart illustrates the distribution of extreme events based on their perceived impact from climate change. The red segment represents events that are deemed to have been exacerbated by climate change, while the orange segment represents events that are considered to have been less severe due to climate change. The blue region indicates events where no link to climate change has been seen, and the grey segment represents events that are inconclusive or lack sufficient data.

Over the past 2000 years, human activities have caused the climate to warm at an unprecedented pace. (The IPCC Report 2021)

A) Decadal average temperature observations from 1 to 2000, as reconstructed, and from 1850 to 2020, as observed.

ºC

2.0

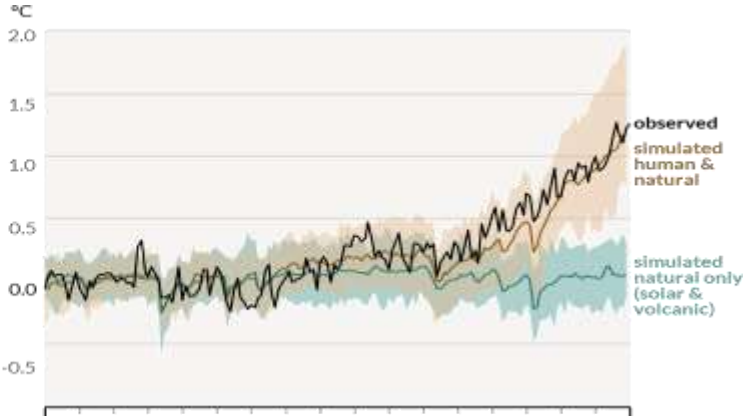


1 500 1000 1500 1850

2020 1850 1900 1950

2000 2020

B) The graph depicts global surface temperature changes resulting from a combination of human and natural impacts, as well as solely natural factors. The time period from 1850 to 2020.



IV. SUGGESTIONS

1. Push for Renewable Energy Investments:

The long-term sustainability of cities is crucial for the existence of humanity, yet they are exhausting our limited natural resources. Businesses, being significant consumers of energy, can make a contribution by investing in solar, wind, and biofuel as forms of renewable energy.

2. Environmental Education & Awareness:

Environmental education and awareness will help in change the thinking pattern and attitude of the people towards our planet and Nature. Both young children and adults can cultivate a profound sense of interconnectedness with the world when they are exposed to the subject from a young age in educational settings. The concept of 'Earth thinking' will progressively become deeply rooted in our ideas and actions, aiding us in the shift towards more sustainable lifestyles.

3. Plan to Execute Global SDG:

From the Paris agreement 2015 to the COP26, globally the 17 sustainable development goals which are an urgent call to achieve which is a still matter of concern globally. More than 178 countries are jointly signed this treaty to cut global emissions and work towards global sustainability goals. These goals were lead to sustainable economy and works to preserve our oceans and forests.

4. Introduce Technology-Specific Policies:

Technology plays a vital role to limit global emissions at a wider rate. Policy framework that involves environmental innovation and sustainability which helps to achieve a sustainable economy shall be involved among them. Clean energy and Sustainable Economies are the few important aspects in technology driven policies worldwide.

5. Human Functioning in Sustainability:

Human influence to tackle the Global emissions at a wider level is an important factor in sustainability worldwide. To remain below the global average mean temperature to below 2℃ as compared to preindustrial level is only going to achieved if the human influence in sustainability shall involves in this global fight of climate change.

V. CONCLUSION

Despite evaluating all the facts and statistics it's clear that the international treaty on climate change of 196 parties, who negotiated and agreed upon the long term's goal is to keep the rise in global mean temperature to below 2˚c as compared to pre-industrial levels is definitely going to break. Around the world, Governments and institutions have spoken to remain intact on their climate promises but now they need to step up their actions. The climate crisis is devastating the earth and we must act on climate to prevent lasting and catastrophic changes to the planet. We can overcome from this crisis only through bold climate action and credible commitments from all countries around the world. The future of humanity depends on everyone's effort.

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