EMERGENCE OF CLIMATE CHANGE AS A THREAT TO ENVIRONMENT

Mumtaz*

[**Abstract**: *Climate change is undoubtedly the greatest environmental threat facing the planet today. According to a series of reports released throughout 2007 by the Intergovernmental Panel on Climate Change (IPCC) the impacts of climate change are already being felt, particularly in the poorest countries of the world – those with least capacity to adapt and the least historical responsibility for causing climate change. Immediate action is required to keep global mean temperature rise as far below 2˚C as possible compared to pre-industrial levels in oorder to avoid the most catastrophic impacts of climate change. Now the issue is what do we mean by Climate change*?]

INTRODUCTION

Climate change is undoubtedly the greatest environmental threat faced by the planet today. According to a series of reports released throughout 2019 by the Intergovernmental Panel on Climate Change (IPCC) the impacts of climate change are already being felt, particularly in the poorest countries of the world – those with the least capacity to adapt and the least historical responsibility for causing climate change. Immediate action is required to keep global mean temperature rise as far below 2˚C as possible compared to pre-industrial levels to avoid the most catastrophic impacts of climate change. Now the issue is what do we mean by Climate changes?

CLIMATE CHANGE

The most general definition of climate change is a change in the statistical properties of the climate system when considered over periods of decades or longer, regardless of cause.[1] Accordingly, fluctuations on periods shorter than a few decades, such as El Niño, do not represent climate change. This term is also used to refer specifically to climate change caused by human activity; for example, the United Nations Framework Convention on Climate Change defines climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."[2]

Is Climate Change really happening or not?

Much has been written and argued about global climate change since its emergence in the late 1970s. From a total rejection to a gradual and rather reluctant acceptance, the debate on climate change has been wrought with controversy. While the occurrence of global climate change no longer seems to be challenged, the issue now being debated is “how much” and

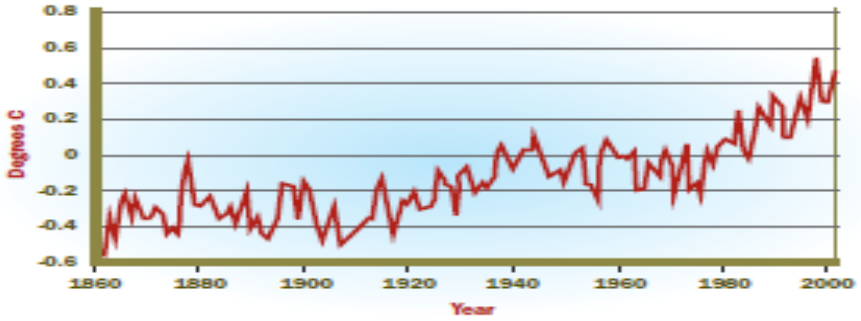
* Assistant Professor of Law, *School of Law, IEC University, Baddi* | Email – mumtajkhan2510@gmail.com.

1 Data Distribution Centre, *Definition of terms used within DDC Pages*, Intergovernmental Panel on Climate Change, *available at* – http://www.ipcc.ch/ipccreports/tar/wg1/518.htm (last visited on February 15, 2020).

2 *Id.*

"when".[3] As early as 1995, the IPCC had strong scientific evidence that climate change was occurring and that human activities were a primary cause. Since then, the IPCC has conducted four detailed assessments of climate change which on each occasion has reported greater confidence in the case for human-induced climate change. By 2019, the IPCC concluded that it is ''extremely unlikely that the global climate changes of the past fifty years can be explained without invoking human activities''. Prominent scientists and major scientific organisations have all ratified the IPCC conclusion. Today, all but a tiny handful of climate scientists are convinced that earth's climate is heating up and that, human activities are a significant cause. The scientific consensus regarding climate change is based on the work of thousands of experts from hundreds of research institutions located across the globe. Scientists worldwide have considered all the possible natural factors that affect climate on Earth, from the output of the sun to the effects of volcanoes. After analysing the possible impacts on both warming and cooling of each of the factors, along with man-made factors, the IPCC concluded that most of the observed increase in globally averaged temperatures since the 1950s is very likely (more than 90% certainty) due to the observed increase in man-made greenhouse gas concentrations over the same period.[4] Following figure further confirms the fact of climate change.

Global Temperature Changes



Source: Environment Canada. 2002. *Science and Impacts of Climate Change.*

Causes

Many years were lost in the debate on whether the increase of global average temperature was due to anthropogenic causes or due to natural causes such as a slight change in the tilt of the Earth's axis, increased solar activity impinging on the Earth's surface etc. As the amount and accuracy of measured data increased, the consensus in the scientific community coalesced solidly behind the emerging paradigm that global warming was being caused by human industrial activity around the world - the increasing combustion of fossil fuels such as coal, petroleum and natural gas to power activities such as power generation, transportation and all types of industrial production.[5]

---

3 http://ec.europa.eu/environment/climat/home_en.htm, visited on February 16,2020

4 IPCC, *Climate Change 2014 Synthesis Report Summary for Policymakers*, *available at* – https://www.ipcc.ch/site/assets/uploads/2018/02/AR5_SYR_FINAL_SPM.pdf (last visited on Feb. 18, 2020).

5 NCERT, *Coal and Petroleum*, SCIENCE, *available at* – https://ncert.nic.in/textbook/pdf/hesc105.pdf (last visited on February 19, 2020).

The evidence for anthropogenic climate change is now clear and convincing. The Earth's surface has warmed by more than 0.8 °C over the past century and by approximately 0.6 °C in the past three decades.[6] This warming has been linked to more extreme weather conditions such as intense floods and droughts, heavier and more frequent storms, and a possible increase in frequency and intensity of the El Niño Southern Oscillation. These changes are largely caused by human activities, mainly the burning of fossil fuels releasing carbon dioxide (CO2) that traps heat within the atmosphere. These CO2 emissions continue to rise, and climate models project the average surface temperature will rise by 1.1 °C to 6.4 °C over the 21st century.[7]

Now it is beyond doubts that climate change has emerged as a great threat to the environment and it has disastrous effects on many things important to human life and all life around us, including natural ecosystem, human health, agriculture & food supplies, forestry, water resources & availability, energy use and transportation etc.[8]

About the impacts of climate change on human health (which has been discussed in detail in the following chapter) since 1990, WHO has published a series of reports on climate change and has participated in review processes such as the Intergovernmental Panel on Climate Change. These activities have outlined four key characteristics of the health risks generated by a warming and a more variable climate. First, these hazards are diverse, global and probably irreversible over human time scales. They range from increased risks of extreme weather, such as fatal heatwaves, floods and storms, to less dramatic but potentially more serious effects on infectious disease dynamics, shifts to long-term drought conditions in many regions, melting of glaciers that supply fresh water to large population centers, and sea level increases leading to salination of sources of agriculture and drinking water. Second, the health impacts of climate change are potentially huge. Many of the most important global killers are highly sensitive to climatic conditions; malaria, diarrhoea and protein-energy malnutrition together cause more than 3 million deaths each year.[9] Third, these risks are inequitable, in that the greenhouse gases that cause climate change originate mainly from developed countries, but the health risks are concentrated in the poorest nations, which have contributed least to the problem.[10] Finally, many of the projected impacts on health are avoidable, through a combination of public health interventions in the short term, support for adaptation measures in health-related sectors such as agriculture and water management, and a long-term strategy to reduce human impacts on climate.

Difference between climate & weather

Weather is the condition of various elements of the atmosphere at a particular place and time. It is what is happening outside at a certain moment. A thunderstorm or blizzard would be classified as "weather." In most places, weather can change from hour-to-hour, day-to-day and season-to-season. Climate is what you get when you average the weather over a long

---

6 GISS Surface temperature analysis: Analysis Graphs and Plots, NASA: Goddard Institute for Space Studies (2017) *available at* – http://data.giss.nasa.gov/gistemp/graphs/ (last visited on February 19, 2010).

7 Gerald A. Meeh & Thomas F. Stocker, *Global Climate Projections, available at* – http://www.ipcc.ch/ (last visited on February 20, 2020).

8 *Supra* note 4.

9 Diarmid Campbell-Lendruma, Carlos Corvalána, and Maria Neiraa, *Global Climate Change: Implications for International Public Health Policy, available at* – http://www.who.int/bulletin/volumes/85/3/06-039503/en/ (last visited on February 21, 2020).

10 Patz, Jonathan A., Diarmid Campbell-Lendrum, Tracey Holloway, & Jonathan A. Foley, *Impact of regional climate change on human health*, 438(7066) NATURE 310(2005).

period (usually 30 years, sometimes more) and when you look at how the weather varies around these averages. For example, a place that doesn't get much rain over many years would be described as having a dry climate. A place where it stays cold for most of the year would be described as having a cold climate.[11]

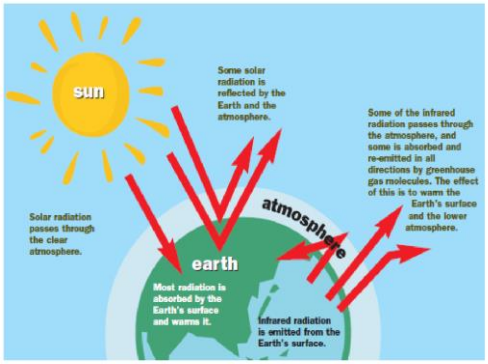
DIFFERENCE BETWEEN GLOBAL WARMING & CLIMATE CHANGE

The terms "global warming" and "climate change" are often used to describe the same phenomenon. In actuality, they are distinguishable as cause and effect, or problem and consequence. Global warming refers only to the increase in the temperature of the Earth's lower atmosphere as a result of the enhanced greenhouse effect. The resulting impacts of this temperature increase changes in many aspects of weather are what we refer to as climate change. This includes shifts in wind patterns and the amount and type of precipitation, which in turn influence the types and frequency of severe weather events that may be expected to occur in an area. Thus, we are experiencing climate change as a result of global warming.[12]

The Natural Greenhouse effect

Energy from the sun drives the Earth's climate. As the sun's energy reaches the Earth's surface, some of it is reflected and some of it is absorbed. The absorbed energy warms the Earth. This heat is then radiated back out towards space as infrared energy. Certain chemical compounds in the Earth's atmosphere act as "greenhouse gases," absorbing the radiated infrared energy and thereby trapping some of the heat in the atmosphere. The greenhouse gases radiate this energy in all directions, including back to the Earth again. This energy is used in several processes, including heating the ground surface, melting ice and snow, evaporating water, and plant photosynthesis. Most importantly this energy remains trapped within the climate system, warming the Earth's surface to an average of 14°C. This phenomenon, called the "natural greenhouse effect," keeps the Earth in a temperature range that allows life to thrive. Without it, the sun's heat would escape and the average temperature of the Earth would drop to –19°C.[13]

The enhanced greenhouse effect



Source: US Global Change Research Program. www.usgcrp.gov.

Human activities can disrupt the balance of the global climate system. Any changes in atmospheric greenhouse gas concentrations will affect the amount of energy stored in the atmosphere. For example, when the amount of carbon dioxide (CO2), a major greenhouse gas is increased, more heat is trapped in the atmosphere. This "enhanced greenhouse effect" causes the Earth's surface temperature to rise. Since the beginning of the industrial revolution (about 1750 AD), the concentration of all the major greenhouse gases has increased in the atmosphere, thereby helping to bring about the changes in climate that the world is currently experiencing.

It is beyond doubt that great achievements, discoveries, and research have been done by human beings in the past and present and hopefully will be done in the future. Though these achievements have made the life of human beings comfortable for the time being but in the

---

11 *Primer on Climate Change and Human Health*, POLLUTION PROBE (Apr. 12, 2004), *available at* – http://www.pollutionprobe.org/Reports/climatechangeprimer.pdf (last visited on Feb. 21, 2020).

12 *Id.*

13 *Supra* note 54.

quest for comfort we have neglected nature. It looks like our understanding of nature and nature itself are on two banks of the same river. Life, even the survival of us, the modern civilization, depends on conditions provided by the nature in which we human all live, and by the climate change system as an integral part of it. With continuity of practice by living, as usual, we may come to the end of present "comfortable" living. Last decade number of natural disasters from tsunami, earthquakes, floods and droughts, strong and more strong winds, volcano activities, desertification, land fertility deterioration, drinking water pollution, food production reductions, ocean and seas fish catch failures, forest depletion, ozone layer deterioration, global warming, and others are beginning of changes due to impact of the climate change system. So, if we want to save the life on planet earth in that case it is *sine qua non* that we must change our understanding of nature.