

A Comprehensive Study of Climate Change and their Corresponding Impacts on Environment and Lives

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Received Date : March 4 , 2022

Accepted Date : March 24, 2022

Published Date : April 07, 2022

ABSTRACT

In recent decades climate change has become a major threat for our planet due to anthropogenic global warming interconnecting with environmental and other social determinants, constituting an extreme risk of health for every life on earth. The ecology of the earth is facing very bad effects such as inappropriate timing of the monsoon, health risk to the human beings, increasing temperature of the earth, increasing water level of the ocean, missing of some small and even bigger species from ecology, and many more due to climate change. Some major reasons such as decrement in the number of trees and forests and huge emissions of greenhouse gases such as CO₂ and chlorofluorocarbon (CFC) are the main factors of climate change. This paper is presented to demonstrate the background of climate change, and its corresponding impacts on the environment and every species on our planet. We cover a wide range of surveys of the research articles published on this issue in the last two decades. This article provides an overview and deep insights of some major reasons behind the evolution of this problem and as well as illustrates some important steps taken towards the reduction of this extreme problem.

Key words: Climate change, Global warming, Ecology, Chlorofluorocarbon, Health risks, Migration.

1. INTRODUCTION

Changes in the environment and seas can extremely change the ecology, the lives on Earth which are intrinsically adjoined to the environment and atmosphere gives the nourishing supplement around which our societies exist. Thus, restoration and degradation of sections of the ecology system are most probably to have planetary and regional

consequences [1]. Firstly, in 1988 the leading NASA climate scientist J. Hansen and their three other colleagues proved and presented to a committee of U. S. A. congress, that the warming fluctuation in the temperature of the earth is 99% certain that, it is not a natural variation, but it is happening due to the accumulation of greenhouse gases [2].

The emission of anthropogenic greenhouse gas, which is the real problem behind the fluctuation in the properties of climate, increasingly threatens the resilience and feasibility of the environmental ecosystem and the human beings that depend upon climate. Mainly, climate change is considered as climate change and its corresponding effects on the patterns of the weather of Earth. Climate change is defined as the long-term shifts in weather patterns and temperatures, these shifts might be natural, such as through fluctuations in the solar cycles [3]. Global warming is becoming a most vital threat to the survival of humans and all other live species on the Earth. This paper provides an initial path for the researchers starting their careers in the field of environmental issues.

2. PREVIOUS WORK

There is various research that has been already done and still going in progress in the field of the major and most important issue of climate change. Turner et al. (2020) [4] illustrate the effects of changing climate and provide statical data proof of climate change that it is the most damaging and powerful threat to the environment. The major problems created by this problematic issue have been discussed in detail. Variability of climate and crucial irreversible and sudden fluctuation in the ecosystems has been also demonstrated. Franca et al. (2020) [5] discuss the effects of extreme events of climate such as storms, heatwaves, droughts, floods, etc. on post-disturbance recovery of the ecosystem in tropical ecosystems of high biodiversity, providing a new approach across the tropical forest and coral reef ecosystems. Local actions to restore or

save ecosystem structure and complexity have been illustrated in this paper. R. S. J. Tol (2009) [6] explains the effect of climate change from an economical perspective. This paper demonstrates a comprehensive literature survey on how the fluctuation in climate impacts our society economically. These illustrations show that variation in climate initially enhances economic welfare, but these are sinking benefits. R. Jakhar *et al.* (2022) [7] present a case study on climate change's effect on the pattern of agricultural land. This paper demonstrates some major impacts of climate change on various agricultural land of Rajasthan, India such as soil moisture, crop cycle, pest control, and fertilizers. A deep analysis of climate change impacts on the pattern of cropping has been carried out in this research article. M. Solan *et al.* (2020) [8] explain the potential of nature-based solutions to protect, sustainability restores, and manage modified or natural ecosystems while giving various other benefits for the economy, health, the environment, and society. Here, the potential of sediment-dwelling flora and fauna to intimate and assist nature-based solutions, and how the adaption plans can be enhanced through the ecology of benthic environments. An innovative resolution to enhance the resilience and condition of ecosystems has been explained. R. Dellink *et al.* (2017) [9] provide an overview of how climate change harms might impact global trade soon and how global trade can assist fix the amounts of climate change. This report focuses on the vital regional differences in the impacts that change the climate will have on sectoral and regional activities of economic and on competitiveness. This article provides an ultimate explanation of how and how much climate change is affecting the process of trade, production of industries, cost of economic activities, and many more ways. S. Vardoulakis *et al.* (2015) [10] provide a study on how climate change is affecting the indoor environment and their corresponding health risks in the United Kingdom. There are various health risks and how to overcome this issue has been discussed in this article. Designing building and passive

measures might reduce the overheating risk caused by global warming, adequate ventilation, and reduction of internal resources can enhance the air quality of the indoor environment. Mitigation and adaptation of climate change measures in houses can benefit health. R. S. J. Tol *et al.* (2004) [11] present a distributional aspect of impacts of climate change on ecology. A Gini coefficient has been introduced for climate change effects, which introduces the distribution of effects is very skewed in the near decades and will degenerate for higher than a century before transforming more enlightened. Estimation of distributional impacts importantly make suppose on the relative importance of countries, periods, and sectors has been explained in detail. R. Cavicchioli *et al.* (2019) [12] presents a list of warnings given by scientists on climate change and microorganisms to understand anthropogenic climate change, thus it is crucial to incorporate knowledge of the unseen majority of the microbial. This article illustrates the process of how microorganisms affect climate change and how microorganisms are affected by human activities and climate change.

3. SOME MAJOR CAUSES OF CLIMATE CHANGE

Pollution on earth is also a crucial reason for global warming. If this issue will not be taken seriously by a human being, then this planet will be not safe for all living organisms soon. One of the major bad issues associated with the power system which is known as "Islanding" is mainly generated due to the fluctuation in the climate [13]. Figure. 1 illustrates the major reasons behind the threats of climate change. Some major issues are anthropogenic such as CO₂- emissions, Industrialization, Reduction in forest area, increasing the number of automobiles, and emission of greenhouse gases; and natural such as forest fire, volcanic eruptions, meteorites, ocean currents, and emission of methane gas from the animals behind the climate change on earth. Some major causes of climate change are of mainly two types which are natural reasons and anthropogenic reasons respectively.

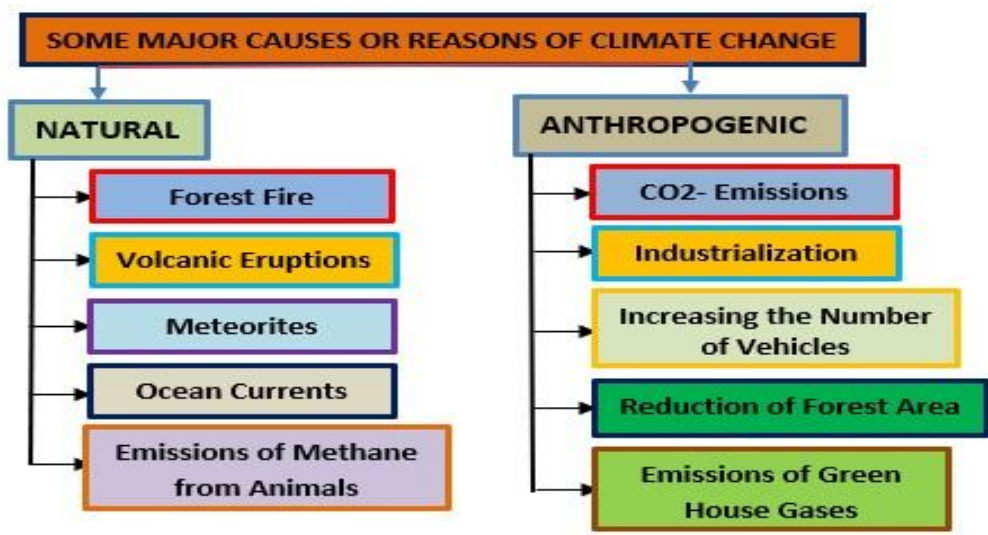


Figure 1: Some major causes of Climate change

4. SOME MAJOR IMPACTS OF CLIMATE CHANGE

Climate change is a very big threat to the humanity and earth. Migration of people from the area where temperature is increasing rapidly is also the biggest impact of climate change. There is various bad impact such as social and economic is development in our surroundings due to climate change. It badly affects almost everything available on our planets such as agriculture, water, human beings, animals,

and others. Some major impacts of climate change and their corresponding impact on the ecology system have been illustrated in Figure. 2. Some major issues due to climate change such as scarcity of freshwater, relocation of town due to migration, loss of potential to do work due to high temperature, chances of war can be increased to get access to the limited resources, diseases will be spread due to high temperature, rising the water level of the sea, and prices of food items will be increased has been illustrated in this figure.

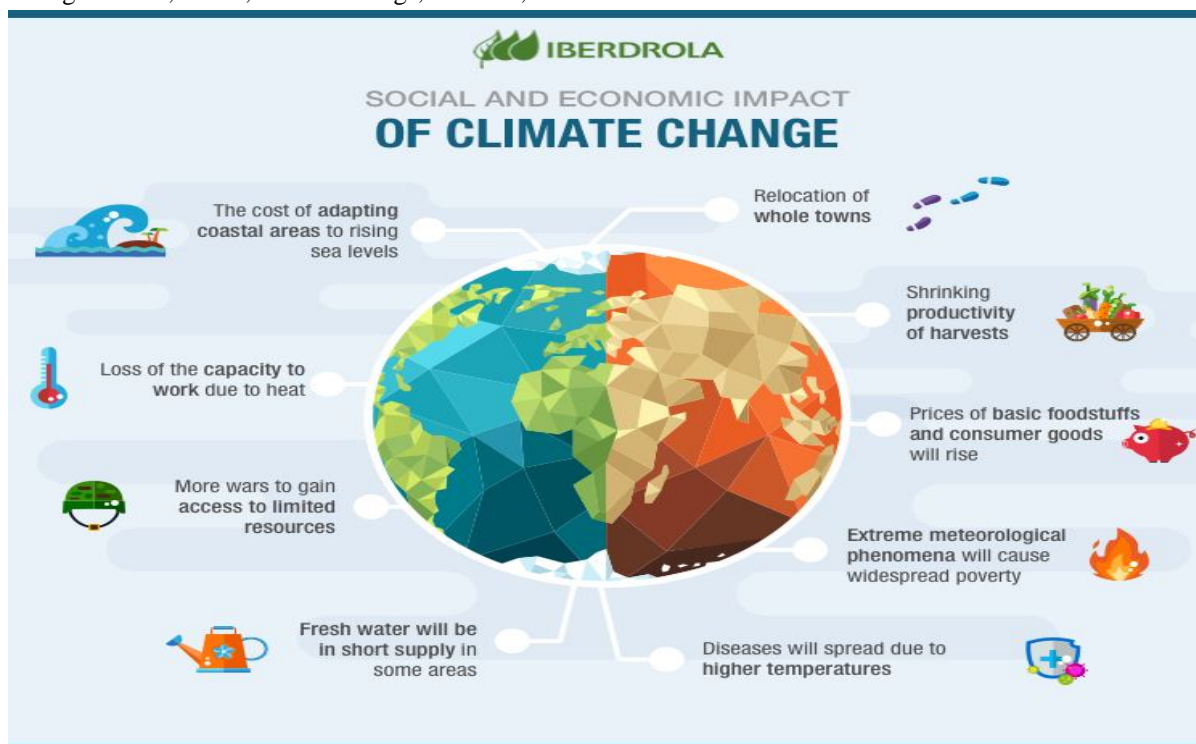


Figure 2: Some major economic and social impacts of climate change [14]

3. MAJOR COUNTRIES RESPONSIBLE FOR CLIMATE CHANGE

There are various ways to compare the responsibility of national for climate fluctuation. These contain emissions of current which might be viewed on a per basis of per capita or in actual figures, as well as previous footprint of the emissions and the carbon consumption, having imported goods. The easiest and most popular path to compare countries by the emissions of CO₂ and greenhouse gases from the production of cement industries and burning of all types of fossil fuels [15]. Fig. 3. Illustrates the percentage of CO₂ and greenhouse gases emission by countries which shows that only six countries of this world produced 60% of the total emission of these harmful gases. Thus, we can say that these countries are mostly responsible for the change in the pattern of climate.

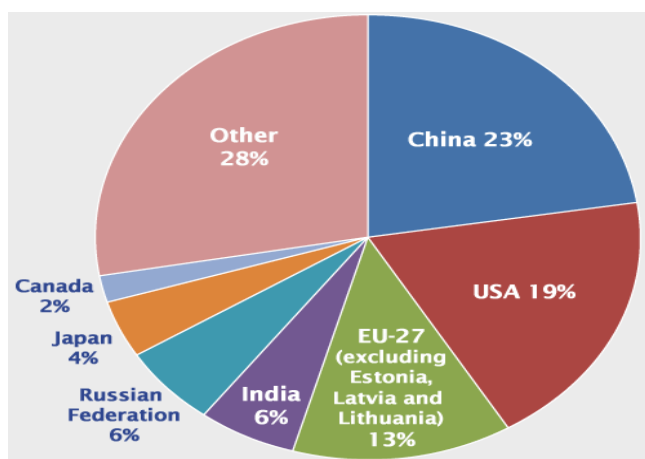


Figure 3: Major countries, and rest of the world contribution in CO₂ and Greenhouse Gases Emissions [16]

3. SOME IMPORTANT STEPS TO STOP CLIMATE CHANGE

As the threat of global warming is increasing day by day, scientists and researchers are working hard on several projects towards the getting techniques or finding the correct ways to reduce the chances of climate change. Some of the measure steps to control the fluctuation of climate are illustrated.

3.1. Academic Research

The major problems of climate change have culminated to heated debate, both within researchers and academia. Despite huge scientific progress in the recent decades, many fields of uncertainty still available as the climate system functioning [17]. A wide range of academic research might facilitate to understanding ecology outcomes to climate change and

understand ecology-based mitigation and adaptation. Scientist can participate to resolve this issue by different ways such as monitoring the changes in climate temperature, identifying the source of evolution of this issue, and finding the better solutions by using research outcomes.

3.2. Nature-based Solution

Rather than becoming the climate change victims, biodiversity might see as an important ally in climate change dealing. Management of ecosystem and evidence-based careful refurbishment and stewardship have the capacity to play vital roles in the adaptation and mitigation of climate change. Some of the major processes such as restoring coastal wetlands, allowing forests to regrow, and switching to agricultural activities in restorative can play major power towards blocking the climate change [18]. These ecosystems help to decrease the chances of change in climate by soaking CO₂ gas from the air. Therefore, increasing the number of plantations of plant in the forest in appropriate number of requirements for our ecosystems can enhance the ability of tackling the climate change.

3.3. Chances for improving societal and ecosystem resilience

As we know ecosystems play a crucial factor in the system of climate, especially through their actor in the cycle of carbon, the cycle of water and other cycles of biogeochemical. Ecosystem based methodologies to climate change adaptation, includes a wide area of management activities of ecosystem to enhance the resilience and decrease the environment and the people vulnerability to climate change [19]. Ecosystems have complex outcomes to change the climate, which are not understood completely and only few incorporated into projections of function and dynamics of ecosystem in future.

5. CONCLUSION

This paper explained the overview of climate change and its impact on our society. Based on the literature reviewed and studies in this paper, there prove that the changes in climate patterns also exerts on mental and psychological health of human being. This study examined the side-effects of global warming on the population, together at-risk peoples, and vulnerable communities. What factors are responsible for the climate change has been discussed. We mainly discuss the issues related to climate change such as increasement in temperature, floods, health risk, wildfire, and droughts. This paper also discusses the steps for tackling this issue towards saving the earth for our future generation. This paper

provides a comprehensive insight for the early-stage researchers and technologists to start their career in a right path to get best outcomes. Some other research articles with more deeper insights of this issue can be proposed in the future.

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