

Climate Change: An Overview

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Abstract

Climate change is not novel in our lexicon and is becoming increasingly highlighted in the modern world. Climate change has affected human health, agriculture, biodiversity, and the ocean, and has taken an overall toll on the economy. It is evident that the effects are multifaceted and far-reaching. This paper will talk about climate change, its causes, its impact and solutions offered.

Keywords: climate change, human health, agriculture, biodiversity, ocean, economy, multifaceted, far-reaching

Climate change, by definition, refers to long-term shifts in temperatures and weather patterns or a periodic modification of Earth's climate. Earth's dynamic climate, from being warmer in some seasons to being cooler in others, has raised questions regarding the concern for climate change. Environmental geologists have detected a 1-degree Fahrenheit increase in the planet's average temperature during the past century. Although it seems insignificant to the uninformed, its adverse effects are tremendous and hazardous at times. The 1800s saw more curiosity than alarm in response to studies that suggested human-produced carbon dioxide and other gases could build up in the atmosphere and insulate Earth. In the 1820s, Jean-Baptiste Joseph Fourier, a French mathematician and physicist, speculated that the energy entering the planet as sunlight must be counterbalanced by the energy leaving since heated surfaces emit radiation. Her research would serve as a precursor to that of Irish scientist John Tyndall, who focused on the gases that were most important in heat absorption. By the late 1950s, carbon dioxide readings offered some of the earliest evidence to support the notion of global warming. Eventually, a wealth of information that was gathered, along with climate modelling and actual weather events, would demonstrate not just the reality of global warming but also the number of catastrophic effects it could produce [1,2,3].

The combustion of fossil fuels, which include coal, oil, and gas, to generate energy is by far the primary contributor to global climate change, producing more than 75% of the world's greenhouse gas emissions and almost 90% of its carbon dioxide emissions. In the most basic terms, as greenhouse gases are increasingly emitted into the atmosphere, they blanket the Earth, thus trapping the sun's heat and causing a rise in temperatures. In addition to burning fossil fuels as a contributor, deforestation yields a role too. When trees are cut, they release the carbon they have been storing into the atmosphere. The destruction of forests reduces nature's capacity to keep emissions out of the atmosphere since they absorb carbon dioxide. Deforestation, together with agriculture, is credited with an estimate of a quarter of global greenhouse gas emissions. A quarter of all greenhouse gas emissions are attributable to deforestation, agriculture, changes in land use for food production, and other factors. Similarly, transport accounts for nearly one-quarter of global energy-related carbon dioxide emissions, of which road vehicles account for the largest part, due to the combustion of petroleum products in internal combustion engines. Further, emissions from ships and aircraft also continue to

grow. Since the 1980s, each decade has been warmer than the previous one, and presently, nearly all land areas are seeing more intense temperatures and heat waves [4].

As temperatures rise, more moisture evaporates, aggravating extreme rainfall and flooding. In already water-stressed areas, global warming makes water shortages worse, increasing the probability of ecological and agricultural droughts, making ecosystems more vulnerable, and endangering the survival of species on land and in the ocean. More species are disappearing from the planet than at any other period in recorded human history, a 1,000-fold increase. Moreover, the rate of ocean warming has sharply accelerated during the past 20 years because the ocean absorbs the majority of the heat from global warming. Melting ice sheets also cause sea levels to rise, endangering coastal and island communities. Global hunger and poor nutrition are on the rise for a variety of reasons, including climate change and extreme weather events. Marine resources that provide food for billions are in danger as a result of the ocean's decreasing pH value. Air pollution, sickness, harsh weather, forced displacement, stress on mental health, increased hunger, and poor nutrition are just a few of the health effects of climate change [4].

The primary strategy for combating climate change is reducing greenhouse gas emissions. Eradicating them to an all-time low is crucial. This can be accomplished through mitigation and adaptation. This involves reducing the flow of greenhouse gases into the atmosphere, either by reducing their sources or enhancing the “sinks” that accumulate and store these gases. The goal of mitigation is to avoid major human involvement with Earth's climate. While adaptation entails responding to the predicted environment in the future, the objective is to lessen our vulnerability to negative climate change effects like rising sea levels, extreme weather, or food poverty. Making the most of any favorable chances related to climate change is also part of it [5].

The UK-based startup Biocarbon claims to be able to grow a billion trees per year by utilizing drones to spray tree seeds throughout depleted woods. The ideal planting method for a given area is first determined by these mapping drones, after which planting drones hover six feet above the ground and rapidly spray seeds into the earth. Recognizing that wind power is a largely underutilized resource, a team of researchers found that a wind farm the size of Greenland in the Atlantic Ocean could generate sufficient energy for all of humanity, eliminating the need for fossil fuels and working towards its progress. Next, a group of researchers is attempting to launch a satellite into orbit that can identify when and where methane leaks occur so that they can be stopped as soon as possible, preventing harmful gas leakage. Since coral reefs are highly sensitive to heat increases, as global warming gets worse, coral reefs around the world are affected. An engineer named Mo Ehsani uses an underwater conduit that can pump chilly water onto reefs to cool them down and stop a process known as coral bleaching. Next, a team of researchers in Japan inadvertently developed an enzyme that can break down plastic in a matter of days, far more quickly than the hundreds of years it often takes to do so. If used, we won't need to dig up any more oil, and, fundamentally, it should reduce the amount of plastic in the environment. To capture sunlight unhindered, solar panels are typically mounted on roofs or in broad fields. However, researchers are constantly exploring novel approaches to harnessing solar energy. Recently developed solar panels in China harvest energy from raindrops; solar panel roads are being tested; and a team of researchers from Michigan State University believe that all windows and cell phone screens could begin cultivating solar energy. Barring a radical reduction of global greenhouse gas emissions, researchers at Harvard are proposing to send sun-blocking particles into the air

to cool the planet. Additionally, by introducing genes that are pest-resistant, drought-resistant, or able to endure saltwater intrusion from rising sea levels, genetic manipulation could strengthen crops against these environmental changes. GMOs have been around for a while, but despite the fact that most experts agree that they are completely safe to eat, the controversy surrounding them has hindered their spread globally [6].

Climate change is the single biggest health threat facing humanity. This can involve transitioning to renewable energy sources, improving energy efficiency, and adopting eco-friendly manufacturing processes. Additionally, it is crucial for them to collaborate with policymakers and support the development of policies that incentivize emission reductions and promote a green economy.

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