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1. Climate Change and Environment

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Abstract:

Climate change refers to the change in the environmental conditions of the earth. This happens due to many internal and external factors. The climatic change has become global concern over the last few decades. Besides, these climatic changes affect life on the earth in various ways. Global climate change is one of the major issues of the world today. Anticipating the future under the influence of climate change is one of the most important challenges of this time. The main focus of this paper is to provide an update and a detail report on the wide range of impacts of climate change based on the IPCC report and also suggests some solutions to reduce emissions so that we can protect our environment.

Keywords: *Climate, Environment, Emissions, Adaptations.*

1.1 Introduction:

Climate change refers to long turn shift in temperature and weather patterns. These shifts may be natural, such as through variations in the solar cycle. But since the 1800s, human activities have been the main driver of climate change, primarily due to burning fossil fuels like coal, oil and gas. Burning fossil fuels generates greenhouse gas emissions that act like a blanket wrapped around the earth, trapping the sun's heat, and raising temperature examples of greenhouse gas emissions that are causing climate change include carbon dioxide and methane. These come from using gasoline for driving a car or coal for heating a building, for example clearing land and forest can also release carbon dioxide. Landfills for garbage are a major source of methane emissions energy, industry, transport, buildings, agriculture and land use are among the main emitters and emissions continue to rise. As a result, the earth is now about 1.1°c Warmer than it was in the last 1800s. The last decade (2011-2020) was the warmest on record. Many people think climate change mainly means temperatures. But temperature rise is only the beginning of the story. Because the earth is a system, where everything is connected, changes in one area can influence changes in all others. The consequence of climate change now includes, among others, intense drought, water scarcity, severe fires, rising sea levels, flooding, melting polar ice, catastrophic storms, and declining biodiversity.

Climate change can affect our health, ability to grow food, housing safety and work. Some of us are already more vulnerable to climate impacts, such as people living in small island nations and other developing countries. Conditions like sea level rise and saltwater intrusion have advanced to the point where whole communities have had to relocate and protracted drought are putting people at risk of famine in the future, the number of climate refuges is expected to rise.

In 2018 UN report, thousands of scientist and government reviewers agreed that limiting global temperature rise to no more than 1.5°c would help us avoid the worst climate impact and maintain a liveable climate. Yet the current path of carbon dioxide emissions could increase global temperatures by as much as 4.4°c by the end of the century. The emissions that cause climate change come from every part of the world and affect everyone, but some countries produce much more than others. The 100 least emitting countries generate 3% of total emissions. The 10 countries with the largest emissions contribute 68%. Everyone must take climate action, but people and countries creating more of the problem have a greater responsibility to act first.

Climate change is considered one of the most serious threats to sustainable development, with adverse impacts on the environment, human health, food security, economic activity, natural resources, and physical infrastructure. Global climate varies naturally. According to the inter-governmental panel on climate change (IPCC), the effects of climate change have already been observed, and scientific finding indicate that precautionary and prompt action is necessary. Vulnerability to climate change is not just a function of geography or dependence on natural resources, it also has social, economic, and political dimensions which influence how climate change affects different groups.

Scientists are observing changes in the earth's climate in every region and across the whole climate system, according to the latest intergovernmental panel on climate change report.

Many of the changes observed in the climate are unprecedented in thousands, if not hundreds of thousands of years, and some of the changes already set in motion such as continued sea level rise are irreversible our hundreds to thousands of years.

However, strong, and sustained reductions in emissions of carbon dioxide and other greenhouse gases would limit climate change. While benefits for air quality would come quickly, it could take 20-30 years to use global temperatures stabilize, according to the IPCC working group I report, climate change 2021: the physical science basis, approved on Friday by 195-member government of the IPCC, through a virtual approval session that was held our two weeks starting on July 26.

1.2 Faster Warming:

The report provides new estimates of the chances of crossing the global warming level of 1.5°c in the next decades, and finds that unless there are immediate, rapid, and large-scale reductions in greenhouse gas emissions, limiting warming to close to 1.5°c or even 2°c will be beyond reach.

The report shows that emissions of greenhouse gases from human activities are responsible for approximately 1.1°c of warming since 1850-1900, and that averaged over the next 20 years global temperature is expected to reach or exceed 1.5°c of warming. Their assessment is based on improved observational data sets to assess historical warming, as well progress in scientific understanding of the response of the climate system to human caused greenhouse gas emissions.

1.3 Every Region Facing Increasing Changes:

Many characteristics of climate change directly depend on the level of global warming. But what people experience is often very different to the global average in the coming decade's climate changes will increase in all regions. For 1.5°c global warming, there will be increasing heat waves, longer warm seasons, and shorter cold seasons. At 2°c of global warming, heat extremes would more often reach critical to clearance thresholds for agriculture and health the report shows.

But it is not just about temperature. Climate change is bringing multiple different changes in different regions which will all increase with further warming. These include changes to wetness and dryness, to winds, snow and ice, coastal areas, and oceans.

a. A climate change is increasing the water cycle. This brings heavy rainfall and associated flooding, as well as more intense drought in many regions.
b. Climate change is affecting rainfall patterns. Its high latitudes, precipitation is likely to increase, while it is protected to decease our large parts of the subtropics. Changes to monsoon precipitation are expected, which will vary by region.
c. Coastal areas will see continued sea level rise throughout the 21st century, contributing to more frequent and severe coastal flooding in low lying areas and coastal erosion. Extreme sea level events that previously occurred once in 100 years could happen every year by the end of this century.
d. Further warming will amplify permafrost thawing, and the loss of seasonal snow cover, melting of glaciers and ice sheets, and loss of summer arctic sea ice.
e. Changes to the ocean, including warming more frequent marine hea t waves ocean acidification, and reduced oxygen levels have been clearly linked to human influence. These changes affect both ocean ecosystems and the people that rely on them, and they will continue throughout at least the rest of this century.
f. For cities, some aspects of climate change may be amplified, including heat, flooding from heavy precipitation events and sea level rise in coastal cities.

1.4 Human Influence on the Past and Future Climate:

It has been clear for decades that the earth's climate is changing and the role of human influence on the climate systems is undisputed, said Mason human actions still have the potential to determine the future Course of climate.

The evidence is clear that carbon dioxide is the main driver of climate change, even as other greenhouse gases and air pollutants also affect the climate.

"Stabilizing the climate will require strong rapid, and sustained reductions in greenhouse gas emissions, and reaching net zero carbon dioxide emissions. Limiting other greenhouse gases and air pollutants, especially methane, could have benefits both for health and the climate".

1.5 Solutions:

Many climate change solutions can deliver economic benefits while impressing our lives and protecting the environment we also have global agreements to guide progress, such as the UN framework convention on climate change and the Paris Agreement. The broad categories of action are cutting emissions, adapting to climate impacts, and financing required adjustments. Switching energy system from fossil fuels to renewable s like solar or wind will reduce the emissions driving climate change. But we have to start right now. While a growing coalition of countries is committing to net zero emissions by 2050, about half of emissions cuts must be in place by 2030 to keep warming below 1.5°c. Fossil fuels production must decline by roughly 6% per year between 2020 and 2030.

Adapting to climate consequences protects people, homes, business, livelihoods, infrastructure, and natural ecosystems. It covers current impacts and those likely in the future.

Adaptation will be required everywhere but must be prioritized now for the most vulnerable people with the fewest resources to cope with climate hazards. The rate of return can be high. Early warning systems for disasters, for instance, same lives and property and can deliver benefits up to 10 times the initial lost.

Climate action requires significant financial investments by governments and business. But climate inaction is vastly more expensive. One critical step is for industrialized counties to fulfil their commitment to provide $100 billion a year to developing countries so they can adapt and move towards greater economics.

Other strategies include early warning systems for extreme events, better management, and improved risk management, various insurance options and biodiversity conservation. Because of the speed at which climate change is happening due to global temperature rise, it is urgent that the vulnerability of developing countries to climate change is reduced and their capacity to adapt is increased and national adaptation plans are implemented. Adapting to climate change will entail adjustments and charges at every level from community to national and international. Community must build their resilience, including adopting appropriate technologies while making the most of traditional knowledge, and diversifying their livelihoods to cope with current and future climate stress. Local coping strategies and knowledge need to be used in systems with government and local interventions. The need of adaptation interventions depends on national circumstances. There is a large body of knowledge and experience within local communities have always aimed to adapt to variations in their climate to do so they have made preparation based on their resource and their knowledge accumulated though experience of past weather patterns. This includes times when they have also been course rear to and recover from extreme events, such as floods, drought, and hurricanes.

Local copy strategies are an important element of planning for adaptation. Climate changes reading communities to experience climatic extreme more frequently, as well as new climate conditions and extreme. Traditional knowledge can help to provide efficient, appropriate and time – tested ways of advising and enabling adaptation to climate change in communities who are feeling the effect of climate change due to global warming.

1.6 Conclusions:

Human- induced climate change has contributed to changing patterns of extreme across the globe from longer and hotter heat waves to heavier rains. Extreme weather is on the rise, and the indications are that it will continue to increase in both predictable and unpredictable ways. Rise in average temperature, a decrease monsoon precipitation, a rise in extreme temperature and rainfall events, drought, and sea levels, and an increase in the intensity of severe cyclones, alongside other changes in the monsoon system. There is compelling scientific evidence that anthropogenic activities have more influenced their changes in regional climate. To improve the accuracy of further climate projections particularly in the context, it is essential to develop strategic approaches for improving the knowledge of earth system process, and to continue enhancing observation systems and climate models.

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