International Journal in Physical and Applied Sciences
Volume 12 Issue 04, April 2025 ISSN: 2394-5710 Impact Factor: 8.202
Journal Homepage: http://ijmr.net.in, Email: irjmss@gmail.com
Double-Blind Peer Reviewed Refereed Open Access International Journal

The Current Scenario of Climatic Change and Global Warming

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Abstract:

Climate change and global warming are the main challenges of forgoing time having consequences for the environment, societies, and economies

worldwide. This research paper explains the various divergences of these matters observing the effects, causes and strategies employed to alleviate and adapt to environment. The paper highlights the essential needs for comprehensive and collaborative efforts on a global scale to illuminate these challenges effectively. Through analysis of environmental, ecological, and societal effects the study tells the importance of understanding and addressing climate change. In addition to it explores the reasons of changing climate mainly focuses on green-house gas emissions, deforestation, and industrial effluent. This study shows a range of mitigation strategies the change of non-renewable energy resources to cyclic energy sources, power capacity development, pollution absorption technologies like forestation programmes and proper planning. In addition adaptative strategies as such environmental structure, ecofriendly agricultural techniques, informative planning and population involvements are lightened.

Keywords: Deforestation, mitigation, resilient, elucidates etc.

Introduction:

It is analysed and imaginary environmental transistion during the prevailing century. It refers to increase in temperature and weather conditions. The environmental heating are the frequent changes that have been observed during the previous years. Climate change is an wide and complex challenge for government as well as globally with its effects over various facets of the ecological, political, and economic streams (Adger et al. 2005; Leal Filho et al. 2021; Feliciano et al. 2022). Climate change mainly heighten temperatures ranges in numerous level. Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. These changes have a broad range of observed e (Battisti and Naylor 2009; Schuurmans 2021; Weisheimer and Palmer 2005; Yadav et al. 2015). It is not easy task to explain the right results of ecoclimatic changes on a simple basis (Izaguirre et al. 2021; Jurgilevich et al. 2017),

Climate change is characterized based on the comprehensive long temperature and precipitation trends and other components such as pressure and humidity level in the surrounding environment. The United Nations Framework Convention on Climate Change (UNFCCC) struck a major agreement to tackle climate change and accelerate and intensify the actions and investments required for a sustainable low-carbon future at Conference of the Parties (COP-21) in Paris on December 12, 2015. As such, it marks a turning point in the global climate fight. The main aim of the Paris Agreement is to improve climatic condition in respect of climate change by keeping the global temperature rise this century well below 2°Cover pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5° C (Sharma et al. 2020; Sharif et al. 2020; Chien et al. 2021.

However, anthropogenic activities are currently regarded as most accountable for CC (Murshed et al. 2022). Apart from the industrial revolution, other anthropogenic activities include excessive agricultural operations, which further involve the high use of fuel-based mechanization, burning of agricultural residues, burning fossil fuels, deforestation, national and domestic transportation sectors, etc. (Huang et al. 2016). Consequently, these anthropogenic activities lead to climatic catastrophes, damaging local and global infrastructure, human health, and total productivity. Energy consumption has mounted

GHGs levels concerning warming temperatures as most of the energy production in developing countries comes from fossil fuels (Balsalobre-Lorente et al. 2022; Usman et al. 2022b; Abbass et al. 2021a; Ishikawa-Ishiwata and Furuya 2022).

Effects of Climate Change:

(A) Environmental effects:

1. Temperature and Heat Waves - As global temperatures continue to increase due to climate change, the intensity of heatwave are becoming more and more frequent. Increased temperatures can lead to heat-related illnesses and needs energy resources for cooling system.

2. Melting of ice - The melting of ice caps and glaciers are responsible of rising sea levels.It results in coastal erosion, boost speed of storm and creates danger to low-lying areas.

3. Precipitation Patterns and Extreme Weather changes- Climate changes lead to shifting in precipitation patterns altering in the timings and amount of rainfall resulting in prolonged droughts and more intense rainfall leading to floods and landslides in prevailing area.

(B) Ecological effects:

1. Ecosystems and Biodiversity Loss - Altered climate disrupts ecosystems by altering temperature and precipitation pattern affecting the distribution of species. This disruption can increase imbalances in predator-prey relationships, shifting of plant communities and reduce habitat suitability for species. Biodiversity loss is a direct consequence affecting ecosystem structurally and functionally. So biodiversity of that area decrease leading to long term loss.

2. Migration and Extinction of Species- With changing environmental conditions due to tolerance limit species are wiped out. Accordingly some species try to migrate for more suitable habitats, while others due to the rapid pace of change extinct. These shifting in species distributions pattern can leads to ecological impairment and affects ecosystem services.

(C) Societal effects – Climatic change not happens in isolation but also people vulnerable.

1. Food Security and Agriculture - Climate change affects agricultural productivity by altering heat and rinfall patterns disrupting growing seasons, and increasing the incidence of pests and diseases. These factors collectively threaten global food security, particularly in that areas which are totally depend on agriculture for livelihoods and sustenance.

2. Human Health Challenges - Rising temperatures and changing climatic patterns have direct and indirect effects on human health. Heat-related illnesses like heatstroke and heat exhaustion, become more common during heatwaves. Additionally changes in temperature and precipitation can change the distribution of disease vectors leading to the spread of infectious diseases like malaria and fever. Global warming is very risky factor and spread intestinal diseases. Flies are the main vectors whose numbers directly increases climatic conditions.

3. Displacement and Migration - Some communities facing sea-level rise, extreme climatic conditions and other adverse impacts at their habitat are main reasons of displacement and migration tends to become vulnerable. These climate victims refugees face problems in finding new homes and accessing basic goods and services. Their integration in new communities leading to potential ,social and political tensions.

Climatic change causes:

Human activities:

Earth's surface and atmospheric composition had been changed due to man based events. Man-induced phenomena change climatic condition like coal burning, deforestation and land generation , industrialization and road formation. All human activities emits green house gases creating global warming.

i. Deforestation

Trees creates a crucial role in the climatic system in different ways. Deforestation decreases rainfall to create climatic change conditions. Water cycle of earth disturbs creating imbalance between water on land and water in soil. Natural filteration in air is stop due to low forest cover. Due to this green house gas carbon-dioxide increases tends global warming. Vegetation cover regulates the temperature of air and surface by sucking carbon dioxide. Flora of aa region put a direct role on the temperature of that area.

ii. Changes in Land Use:

Land management and land use improper management puts a adverse economic effect on climate change. Land cover alters vegetation of a site such as crop field in place of forest creating complexity between land use and climate. So energy flow in ecosystem influenced leading change in species distribution and linking between them.

iii. Emissions of Greenhouse Gases

The temperature of globe cover had increased approximately 0.9°C since ancient. CO2 liberation from fuel burning and industrial activities contributed a lot of GHGs nearly80 % of the total gase liberation rises from 1970 to 2022.

iv. Burning of coal, oil and natural gas

The agricultural food units utilized nearly 50 percent of nature energy demand that is mostly fulfilled by coal and natural gas sources which free around 30% of total man- made greenhouse gases . Oxidation of carboniferous fuels coal, oil, natural gas, lime production rises the level of photosynthetic gas so reduction the CO2 taken up by trees happens.CO2 concentration enhancement is a major reason of global warming.

v. Urban culture

A main driving force of an economy is urban culture which turns the mobilization of surplus workers from the village agricultural region to the cities for livelihood enhancement. (Muntasir M. and Syed Y.S., 2018).

vi. Pollutants

Industries and farm based practices spits various pollution agents that produce small droplets suspended in the atmosphere called aerosols. These droplets also affect clouds formation resulting a warming or cooling effect according to their nature. When vegetation remains are burned black soot liberats resulting a warming effect because they imbibe sun radiations, Chlorofluorocarbons ,hydrochlorofluorocarbons,hydrofluorocarbons, perfluorocarbons (PFCs), and sulfur hexafluoride (SF6), known as F-gases oftenly utilized as good coolants, foam forming agents, extinguishers, solvents, pesticides,and propellants of aerosols. F-gases have a long atmospheric lifetime effects and remains in atmosphere for long duration.

Carbon is a solid not a gas inspite of it also warms the globe. Carbon can directly absorb reflected sunlight in addition to absorbing infra-red radiation .

vii. Agricultural Expansion

In similar ways agricultural events as livestock rearing, rice growing, land-fillings , natural gas rises production of Methane gas having a good rank in climatic changes which in turn is released by degradation of swamps, ruminants chewing specially from cows and leaking during fuel extraction. Due to human activities, methane concentrations increased contributors of climate change which can damage the ozone layer.

Natures Causes

Anthropogenic events are the main reasons of ecoclimatic changes but there are some major natural factors by which the climate system influenced.

i. Solar Intensity

Natural changes influenced the climate that affect how much solar energy reaches the Earth's surface (EPA, 2010; IPCC, 2018). Changes persuing the sun atmosphere also affect the intensity of the sunlight that reaches in environment. The amount of heat energy received on the earth is effect of Sun tilting on climate and angle at which sunlight strikes the Earth varies. location, timings of day and season due to the Earth's orbit around the Sun and the Earth's rotation around its tilted axis also affect it. (Khavrus, V. and Shelevytsky, I., 2010). The changes in solar heat can affect our climate directly and indirectly through changing the rate of solar heating of the Earth and atmosphere and by cloud forming methods. The sunlight can cause either warming and cooling during day and nights.

ii. Changes in the Earth's Orbit position

Earth's climate is influenced by a number of elements related by the Earth as a unit. Relations are with position in space in relation with the sun. These fractions includes the angle of Earth's axial tilt , Earth's orbit eccentricity and Earth's position according to time.

iii. Current Circulation in ocean

An oceanic current is a continuous an repetitive movement in sea water by a number of forces generated in the water due to forces by wind, waves, temperature and salinity .Ice

core records from Greenland suggests that abrupt shift from circulation strength triggered by major temperature changes during years.

Conclusion:

- Findings and Insights – The increasing temperature, melting of ice, precipitation patterns changing climate. Environmentally the disturbance of ecosystems and loss of biodiversity potential for displacement further highlight the far-reaching effects.
- Global Action urgency - The change in climate is an unescapable urgency. Our inter-connected world demands a one way response, intricating geographical boundaries and politica affiliations. The climatic change impacts are not lined by boundaries but they spread across countries affecting economies, culture and ecosystems etc. The isolated efforts has passed need us to forge collaborative partnerships that harness the collective wisdom and resources of countries and individuals.
- Mitigation and Adaptation Efforts - As we reflects the profound challenges posed by climate change is a dual thing comes in focus on mitigation and adaptation. Mitigation strategies like transition of renewable energy resources, embracing energy efficiency and forestation events hold the potential to curtail further environmental deterioration. Simultaneously adaptative measures that build climate-resilient infrastructure, advanced agricultural practices and fortifying policies grounded in climate awareness are essential for applying the changes that are already ongoing.

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