eISSN 2583-6986
IDEALISTIC JOURNAL OF ADVANCED RESEARCH IN PROGRESSIVE SPECTRUMS (IJARPS)
A MONTHLY, OPEN ACCESS, PEER REVIEWED (REFEREED) INTERNATIONAL JOURNAL
Volume 03, Issue 12, December 2024

Socio-Economic Impacts of Climate Change: SWOT Analysis with reference to Uttar Pradesh

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Received: 24 Oct 2024 Accepted & Reviewed: 25 Oct 2024, Published : 31 Dec 2024

Abstract

Climate Change has been a buzzword now-a-days. For understanding, climate is the average weather conditions for a particular place or area over a time span of 30 years that includes temperature, humidity, rainfall etc. conditions of that place. Therefore, it will not be an exaggeration to say that climate has impact both positive and negative impact on our social as well as economic lives. Climatic changes affect our society over many parameters, like socially, culturally and naturally as well as economically.

It showcases effect on health of people, infrastructure, and transportation systems, energy, food supplies, water supplies, industry supply chains, financial markets and overall global development. Due to such changes, effects are apparent on agriculture, resulting in higher food prices, food insecurity, and under nutrition, reduce water security, increasing poverty, human migration etc. According to a source, a third of its GDP comes from sectors greatly reliant on nature and researchers have found that the climate crisis could cost the country from 6.4% to more than 10% of its national income by 2100.

Therefore, this paper is an honest attempt that revolves around discovering the socio-economic impacts of climatic changes with special reference to the state of Uttar Pradesh. This paper aims at throwing some light on understanding the concept of climate change and factors that lead to these changes. It also focusses on comprehending the pros and cons of climate changes on our society and economy.

Keywords: Climate, Social factors, Economic factors, SWOT Analysis

Introduction

It is well said that 'nothing is permanent but the change' and also Change is the rule of the nature, and therefore, climate change is also no exception, but, whether this change is for the good and betterment of the society and civilization, is a daunting question before each one of us.

The climate of the earth is continually changing and this change has brought about many pros and cons throughout the globe. It is also imperative to see that how the magnitude of climate change is impacting our earth and how the nature and earth is reacting to these climatic changes. The major contributor to these changes is the emission of greenhouse gases (GHGs), and if are able to significantly reduce the emission of greenhouse gases, then global annual averaged temperature rise could be limited to 2°C or less otherwise, the temperature could reach 5°C or more by the end of this century.

The other important factors for climate change are *temperature, rise in sea level, upper-ocean heat content, melting of glaciers, arctic sea ice, depth of seasonal permafrost thaw, and other climate variables that are responsible for warming our planet.* The observed trends are quite obvious and also confirmed by numerous independent research groups across the globe.

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The focus of this paper is particularly oriented towards the climate change that are pertinent to the state of Uttar Pradesh:

- **Related to Agriculture**

Uttar pradesh is heavily dependent on agriculture and people who specially low income category, the situation for them is very vulnerable due to climate change because the climatic changes tend to decrease production of rice due to shorter growing seasons and higher temperatures. The overall agricultural productivity is also expected to decline by up to 25% in irrigated areas and 50% in rain-fed areas as per reliable sources.

- **Related to Air pollution**

The state's industrial activities, thermal power plants, and transport sector emit high levels of air pollutants, which damage the quality of the air and agricultural productivity.

- **Related to Rainfall**

As per source, annual rainfall is expected to increase by 15–20% by 2050 and 25–35% by 2080.

- **Related to Temperature**

The maximum temperature is expected to rise from 1.8°C to 2.1°C.

- **Related to Labour market**

Health hazards could lead to loss of productivity and migration from areas prone to climate risks.

- **Related to Industries**

Climate-friendly regulations, reduced use of old stock, and diversion of investment towards greener infrastructure could increase operational costs and reduce profits.

- **Related to Services**

The service sector could face pressure on financial services, increased insurance claims, and disruptions in travel and hospitality.

Climate change has mainly negative effects on the environment, economies, and human societies, but there may be some positive outcomes in some cases.
Under given are few pros and cons of climate change:
Positive impact of climate change:

- **Growing seasons have become longer:** Warmer weather can mean longer growing seasons for agriculture and other industries.

Temperatures are becoming milder: Milder temperatures can benefit agriculture and other industries.

Winters are becoming shorter: Shorter winters can benefit outdoor recreation, such as golf, hiking, tennis, and picnicking.

Negative impact of climate change:

- **Environmental impacts:** Changes in climate also lead to reduced productivity of agricultural produce and hence create deficiency for unprivileged countries.

Ocean acidification: Enhancement of carbon dioxide content in the atmosphere that leads to ocean acidification.
Loss of biodiversity: Loss of biodiversity can lead to increased greenhouse gas emissions and exacerbate the impacts of climate change.

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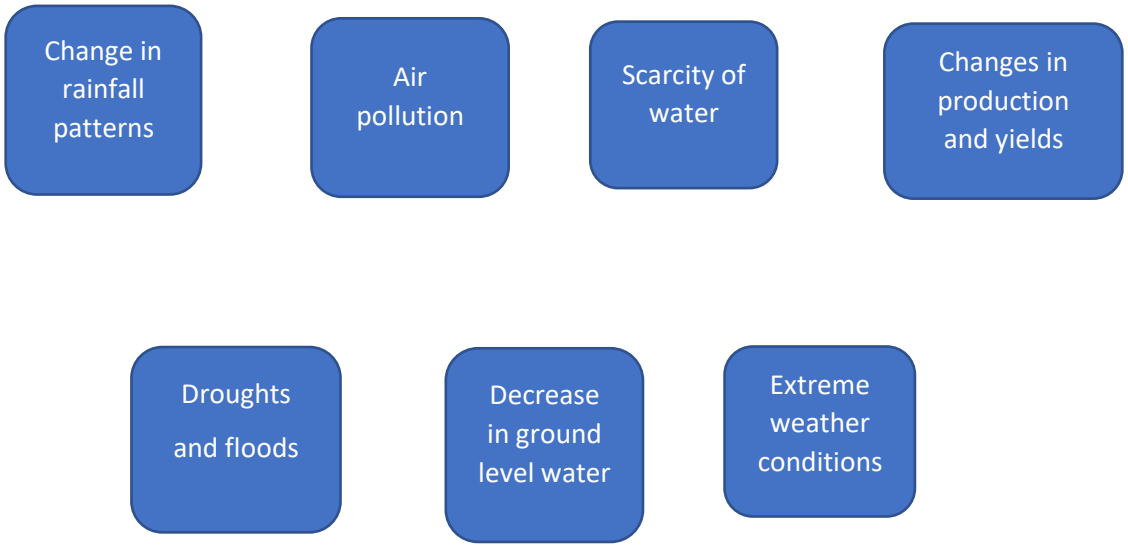
Climate changes result into many consequences:



- **Health related:** Climate change can increase the risk of disease, worsen air and water quality, and increase the frequency and intensity of heat waves.
- **Food scarcity:** Climate change can harm food production, increase food prices, and drive up hunger.
- **Migration:** Climate change can force people to relocate, especially in coastal communities and small island nations.
- **Increase in Poverty level resulting in inequality:** Climate change can increase poverty and inequalities, and disproportionately affect the poorest and most vulnerable.
- **Sometimes it can cause security issues for females:** Climate change can increase security risks for women and girls, particularly at the intersection of conflict and the climate crisis.
- **Economic challenges:** Climate change can reduce the affordability of insurance and cause costly disruptions to society.
- **Unrest:** Higher food prices, hunger, and existing inequalities can lead to unrest. Climate change impacts are uneven across the country and around the world, and some groups are more vulnerable than others.

Climate change is having a significant impact on the economy and demographics of Uttar Pradesh:

Temperature rise: Temperatures are gradually rising, which can lead to more heat waves. According to a statistics, in May 2023, Jhansi recorded the highest temperature in Uttar Pradesh at about 46.5°C.

- **Altered rainfall patterns**: Monsoon patterns are changing, which can lead to droughts and floods.
- **Extreme weather events**: More frequent and intense weather events like storms and heavy rainfall can cause significant damage.

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- **Air pollution**: Industrial activities, thermal power plants, and the transport sector are emitting air pollutants like sulphur dioxide, nitrogen dioxide, ozone, and suspended particulate matter. This is damaging the quality of the air and reducing agricultural productivity.

- **Water scarcity:** Scarcity of water is another problem that arises due to climatic changes. The problem persists in both urban and rural areas.

Uttar Pradesh is all the more prone to climatic changes. This is because of Inadequate infrastructure, Heavy dependence on agriculture, Rapid urbanization, Concrete structures, and Limited green spaces.

Under mentioned are few ways to reduce the impact of climate change :

- **Renewable energy:** Renewable energy can provide stronger energy security by opening up new opportunities for domestic energy production. **Carbon capture and storage:** Carbon capture and storage can reduce carbon dioxide emissions, which are responsible for a significant portion of global warming and climate change. **Environmental conservation:** Environmental conservation can protect and safeguard the environment from climate change. **Global Warming:** Shorter winters would benefit most outdoor recreation, such as golf, hiking, tennis, and picnics etc.

2. Environmental issues of Uttar Pradesh

Issues
▪ Water quality
▪ Indoor air pollution
▪ Urban ambient air pollution
▪ Surface water pollution
▪ Municipal solid waste
▪ Hazardous waste
▪ Biomedical waste
▪ Forests and biodiversity loss
▪ Land degradation
▪ Water availability And Trees

[Source: UP ENVIS]

Extreme weather or extreme climatic events are those conditions that are featured by some bizarre, severe, or unseasonal weather that occurs at the extremes of the historical distribution. Generally, extreme events are more or less based on a location's recorded weather history. It is defined as lying in the most unusual ten percent. Thus, Climate change has already increased the frequency and severity of some of the EWEs.

The state of Uttar Pradesh is also prone to EWEs such as heat waves, cold waves, floods, droughts and lightning etc. The State has experienced an increase in prolonged periods of extremely high temperatures, torrential rain, and, in certain areas, devastating floods and droughts over the last 20 years. Not only this, these EWEs have resulted in loss of lives and damage to property too.

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Total mortality caused by various extreme weather events (EWEs) in India during 1970–2019

Category	Events (Number)
Heat wave	706
Cold wave	548
Floods	3175
Lightning	2517
Tropical Cyclones	117
Total	7063

Source: Kamal Jeet Ray et.al.,2021; An assessment of long-term changes in mortalities due to extreme weather events in India.

Number of death due to extreme weather events in Uttar Pradesh

Year	Cold Wave	Flood and Heavy Rainfall	Heat Wave	Lightning	Thunderstorm	Total
2019	240	32	9	26	64	371
2020	88	48	53	-	167	356

Source: PIB Press release, Ministry of Earth Science, GOI (Dated: 19 MAR 2021)

Emissions For U.P.

GHG Emission Estimates for Uttar Pradesh 2005-2015

Emission Estimates (Mt CO2-e)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Per Capita	0.57	0.60	0.63	0.65	0.65	0.67	0.70	0.73	0.77	0.78	0.77

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Emission Estimates (Mt CO2-e)	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Overall	102.5	110.5	118.0	122.6	125.5	131.6	139.8	148.1	157.9	164.0	163.9

Source: GHG Platform India Report – CSTEP, 2019

The Standing Of Uttar Pradesh In Terms Of Sector-Specific GHG Emissions In India

Conclusions

Therefore, I could conclude by saying that nature and climate is our mother that nurtures and sustains us, so, it is our prior most duty to save our environment so that not only the present generations but also the future generations can survive. The current scenario is very alarming and we all must pay heed to our climate and address its problems with in time else human race will have to pay a huge price in generations to come.

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