

A Study on How Climate Change Affects South Asia

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Abstract

South Asia is vulnerable and most affected by adverse impacts of climate change. The study examines the impact of climate change on South Asia during the past years and predict future, resulting in unprecedented heat waves and drought in summers followed by abnormal rains and floods during the monsoon season. Agriculture is the backbone of South Asia's economy, which has been devastated by both drought and floods. This research argues that water security is an emerging national security challenge for South Asia. The article investigates the status of water availability with relation to the burgeoning population, agriculture, and other uses of water. The impact of abnormal melting of glaciers, the no availability of dams for storage of rainwater, and lack of smart means for agricultural water have been examined to empirically validate the arguments.

Introduction

The most at-risk region for the negative effects of climate change is South Asia. The research looks at how climate change will affect South Asia in future by studying the past, with unheard-of heat waves and droughts in the summers and unusual monsoon season rains and floods. The foundation of South Asia's economy is agriculture, which has been severely damaged by both floods and drought. According to this study, South Asia's most pressing national security issue is water security. The increasing population, agriculture, and other water-related uses are all impacted by the increasing impact of climate change. Human-induced activities, particularly greenhouse gas emissions, are causing various hazards such as heat waves, droughts, heavy precipitation, and tropical cyclones. These disasters affect different geographic areas, affecting the environment, human health, economy, and society. The world is more vulnerable to the detrimental effects of climate change, with nations with the lowest greenhouse gas emissions experiencing the worst effects on health.

The urgency of addressing the climate emergency is posing threats to global water security, food security, agricultural productivity, food supply, and prices, all of which negatively impact poverty, inequality, and sustainable development.

UNICEF warns on the availability and use of water, urging everyone to become water-smart. South Asia's sensitivity to climate change's

adverse effects may lead to abnormal weather patterns, such as rising temperatures accelerating glacier melting and massive flooding due to the unique monsoon. UN Secretary-General Antonio Guterres warns that South Asia is likely to experience food shortages, water shortages, and grave consequences for human security due to the significant loss of life and property.

In response to South Asia's recent flood crisis, it is crucial to recognize everyone's role in addressing the climate emergency and ensuring water security for all.

Objectives

The present study has the following objectives.

- Examine the latest trends in climate change in developing nations.
- Examine the destruction caused by floods, the state of food security, and the detrimental effects on the agriculture sector.

Review of Literature

Numerous studies on the impact of climate change on the economy in developing nations have been conducted. A few of the research projects consist of:

- Manisha Sharma (2022)

India's pursuit of a net-zero carbon economy is a long-term challenge due to its abundant resources and lack of expertise. Climate change, causing economic strain, is a significant concern. Failure to achieve an emissions-free economy could hinder progress, as energy demands and climate change agendas often clash, putting half of India's population at risk.

- Ashraf Hussain (2022)

Climate change is causing rising temperatures, shifting precipitation patterns, and extreme weather events, impacting land, agriculture, forests, food, and human health. Pakistan, among the top ten countries, is among the top ten, with South Asia being particularly affected due to limited information on self-defense and adaptation. Increased fossil fuel use and greenhouse gas use pose risks to Pakistan's food supply and energy security.

- Syed Shoyeb Hossain (2023)

Bangladesh, a riverine country in South Asia, is projected to reach 247 million by 2050, with a population of 1.29%. The country's agriculture sector, crucial for poverty reduction, is particularly vulnerable to climate change. The subtropical monsoon climate, with up to 66% of the country submerged, makes it susceptible to storm surges and cyclones. Rising sea levels in the southern region may limit economic expansion.

Methodology

This paper uses secondary data from the South Asian government's Ministry of Agriculture to study the extreme droughts and floods in South Asia over the past 25 years. The data is based on surveys and studies conducted by the Ministry of Climate Change, with a focus on the past years. The study provides a comprehensive picture of these events, analysing data from various sources. The findings are expected to provide policy recommendations for South Asia's government departments to address the ongoing flood catastrophe and rehabilitation process. The study also investigates South Asia's global susceptibility to climate change hazards to objectively demonstrate the dangers and vulnerabilities.

Findings

For decades, the most discussed but least addressed subject has been climate change. Global leaders have frequently teamed up to address this worldwide issue, but their efforts have shown

mixed results. The effects of climate change on Earth have been repeatedly discussed in everything from motivating speeches to documentaries and movies yet to no result.

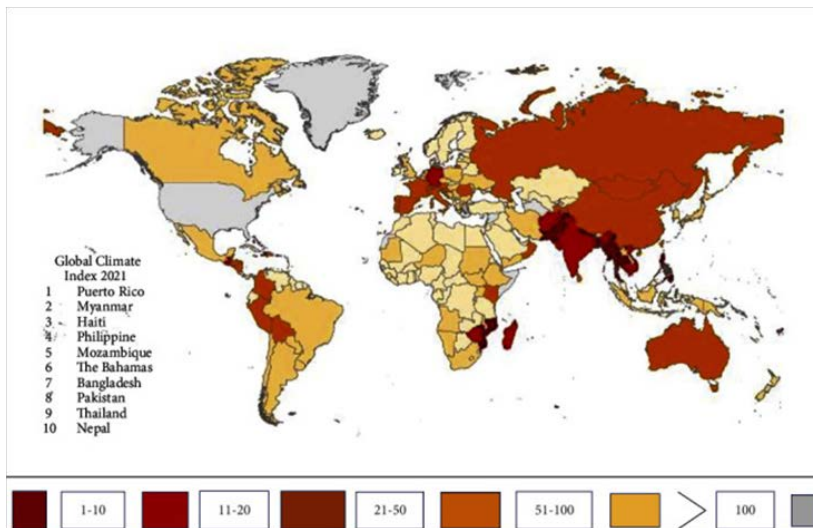


Figure 1 Assessing Climate Risk and South Asia Countries
Source: Pal Arch's Journal of Archaeology of Egypt/Egyptology

Deciphering Climate Change's Effects on South Asia (about Figure 1) The industrialized world is ignoring the devastating impact of greenhouse gas emissions on the ozone layer, which is depleting and exposing Earth's surface to more UV radiation the result can be seen in above figure 1. This has negative effects on human health, including immune system weakness and cancer. The agriculture sector is also affected by low crop production. Recent research has found a hole seven times larger than the Antarctic in the Tropics, close to the equator. Despite these concerns, industrialized nations seem less concerned about ozone depletion and rising global temperatures. The United Nations Framework on Climate Change has launched several agreements and protocols, but these have served no economic purpose, leading industrial countries to withdraw from them due to the non-binding nature of the world order. The following are the main worldwide contributors to CO₂ emissions:

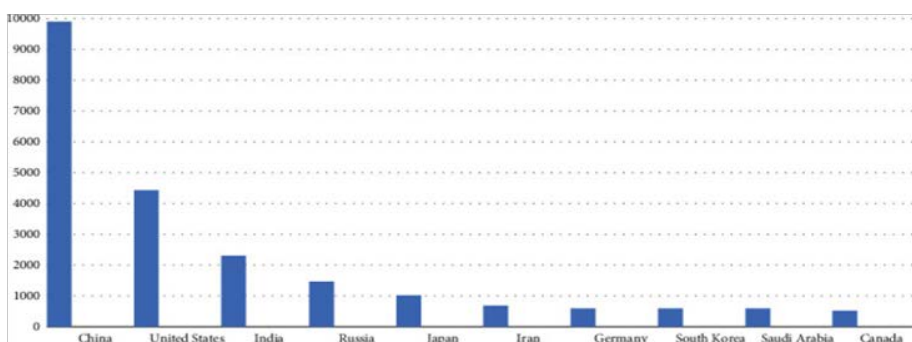


Figure 2: The Top Ten Most Polluted Nations in the World as of 2020 are shown in the Figure
Source: Garrett C. Most Polluted Countries in the World: 2022 Ranking.

In 2024, China will lead in CO₂ emissions, followed by India in third with 2.3 billion tons, and the United States in second with 4.4 billion tons. These nations, despite not ranking among the top

10 global contributors, are among the top 10 per capita contributors due to their high reliance on oil and small population numbers. UN Secretary-General Mr. Antonio Guterres paid an visit to the South Asian country (Pakistan) to express solidarity with flood victims and assess the devastation through official briefings and field visits. He declared that “nature has attacked Pakistan, which contributes less than 1% of global emissions” while being forced to bear the consequences of developed countries’ emissions and climate pollution.

Examination of Damages Cussed by Climate Change in Asian Countries

Pakistan has experienced devastating floods and torrential rains, resulting in at least 50 deaths and over 1700 inured, including children, affecting over 33 million people. Climate change has led to unprecedented effects on the economy and society, with a third of the country underwater. In India, flash floods in Assam have forced thousands to flee their homes and seek safety in temporary relief camps. South Asia, one of the world’s most sensitive regions to global warming, is particularly vulnerable due to poverty, population density, and geographic location. The World Bank reports that at least one natural disaster has affected 750 million people in South Asia, with issues such as water shortages, population dislocation, and a lack of land for food production. Climate experts predict lasting impacts on the lifestyles of hundreds of millions, highlighting the urgent need for urgent action.

Food Insecurity

South Asia was regarded for millennia as the world’s “granary” of agriculture due to its climate, which is ideal for crop growth. “But the delicate balance that was necessary for crops to grow has been disturbed with the onset of climate change,” Saeed stated.

A 2021 study predicts that South Asia will experience the most severe consequences of climate change, with a 16 percent decline in wheat yields in the year 2050. Environmentalist Anjal Prakash warns that rising temperatures, shifting precipitation patterns, and increased extreme weather events pose significant challenges to agricultural systems, affecting fisheries and cattle productivity. The region, home to the world’s greatest concentration of glaciers in the Himalayas, may face serious problems with water availability due to climate change. The melting of glaciers and changes in rainfall patterns can disrupt irrigation systems, affecting crop growth and exacerbating water scarcity. The ongoing hunger issue in South Asia is worsened by a lack of water and poor crop yields. The UN Food and Agriculture Organization reported that 21% more people experienced extreme food insecurity in 2021 than in 2020, with 330 million people undernourished in the same year.

Suggestion

- For fast development countries should not depend on polluting and non-eco-friendly methods instead they can adopt long-term goals and sustainable ways of development.
- Countries should only use coal as a last resort and should slowly switch the thermal power plants to other sources of power generation.
- More than developing countries the developed countries contribute more towards pollution but the consequence could be found in developing countries to avoid such injustice in the world summit all countries should be held responsible for the amount of pollution they have caused. They should be charged as a penalty and the penalty funds should be distributed among the countries which face advanced effects. The funds distributed should be strictly monitored.
- Most of the South Asian countries have been colonized in the past and during such period deforestation was at its peak, natural resources were looted to a great extent, and polluted the rivers as a result environment suffered a great deal of damage. The colonial countries should be held responsible and should help in the environmental recovery of the colonised countries.

- Countries should clearly define agricultural land as separate from forest land. They should understand that agriculture also leads to deforestation and they both are different. To prevent deforestation, they have to make sure that no forest land is converted into agricultural land and no agricultural land is converted into commercial land.
- There is also a need to increase the number of water reservoirs and dams so that more rainwater can be stored and floods can be avoided. It also decreases the dependence on rain for agriculture and helps to maintain groundwater levels.
- The green revolution was initiated to address food shortages, but now we produce surplus food. It's time to remove hazardous substances like pesticides, herbicides, fungicides, fertilisers, and veterinary chemicals. Pesticides are toxic to humans and can cause acute and chronic health effects. Starting with 10% natural agriculture and 90% existing agriculture, the gap between natural and existing agriculture should be eradicated without affecting food availability. Alternatives for harmful chemicals should be found through research and development and by studying traditional agriculture.

Conclusion

Climate change poses a growing threat to the world, particularly South Asia, which has experienced intense droughts and floods in 2022 and 2023. To address this, South Asia must declare a climate emergency and adopt strategies for a comprehensive response, involving strong interagency cooperation and the synergistic application of national power. This requires the integration of departments under special unions and provincial disaster response organizations. International recognition is needed for the conservation and distribution of existing water resources, as most industrialized nations have adopted these methods. Developing innovative ways to use water for agriculture and recycle it for other purposes is also crucial. The recent floods in South Asia highlight the need for larger water reservoirs. This study aims to provide knowledge and help nations form countermeasures before it's too late.

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