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THE CHALLENGE OF CLIMATE CHANGE: PAKISTAN'S RISING FOOD INSECURITY

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Abstract

The paper has been purposely written to highlight the relationship between climate change and growing food insecurity. This article has analysed the current condition of the food crisis in Pakistan. The economic and humanitarian harms due to these extreme events are examined in the study. An overview of the change in productivity of wheat, rice, and cotton due to floods and high temperatures is given. Pakistan can be sketched primarily to the limited economic access of the poorest and exposure to food chain disruptions. The current condition of the food crisis has been examined from an international perspective, and the efforts of the current government to resolve the issue are considered. The miserable condition of the agriculture sector in Pakistan is precisely inspected in relation to the problems the farming community faces. The discussion focused on the author's views about the changes in climate patterns leading to food insecurity. The recommendation portion offers the guidelines which could thwart the drastic effects of climate change and prevent a food crisis. If implemented in its full spirit in either the short term or long term, the climate change policies and food security strategies could be proved as a silver line. The research objectives have been attained using a qualitative research methodology. Content analysis of the material already available on the topic in the form of books, official reports, and research articles is one of the tools used for data collection. A valid conclusion has been reached after an objective analysis of the appropriate literature.

Keywords: Climate Change, Crops, Food insecurity, Production.

Introduction

Climatic change is a long-term and major change in the Earth's climatic patterns, including temperature, precipitation, wind patterns, and other weather-related phenomena (United Nations). It is caused by human actions such as using fossil fuels and deforestation, which emit significant amounts of greenhouse gases into the atmosphere, raising the Earth's average temperature. Climate change has intense effects on the environment, economy, and society, and it is considered one of the foremost global concerns of current times.

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Long-term alterations in the Earth's climatic patterns brought by human activity, such as the use of fossil fuels, deforestation, and industrial activities, are called climate change (Concern Worldwide, 2022). These activities release massive amounts of greenhouse gases, such as carbon dioxide, into the atmosphere, trapping heat and triggering the world to warm (European Commission, 2022).

The increase in global temperature is one indicator of climate change. According to a NASA report, the global temperature has escalated by around 1.8 degrees Fahrenheit (1 degree Celsius) since the late 1800s, and a frequent climb has been recorded in the last few decades. This has resulted in more regular and intense heat waves, with major consequences for human health, agriculture, and natural ecosystems (EPA, 2022). A heatwave in Pakistan, for instance, killed over 2,000 persons and affected millions more, causing power outages, water shortages, and crop failures (Al-Jazeera,2022). The rise in sea levels is another aspect of climate change. Glaciers and ice sheets melt as the Earth's temperature rises, causing sea levels to rise. This can result in coastal floods, erosion, and habitat loss for plants and animals. Rising sea levels, for example, are threatening the Maldives' existence as the island country is only a few feet above sea level (ISAS,2021). Overall, climate change is a complex and diverse issue that needs rapid action to prevent greenhouse gas emissions and help vulnerable people adapt to the effects of climate change.

Due to various complicated variables, climate change has become a big concern for Pakistan. For starters, due to its geographical position and social and economic situation, Pakistan is extremely sensitive to the effects of climate change (USIP, 2022). This susceptibility is worsened by the country's high population density, which strains natural resources and makes basic services like water and sanitation difficult to deliver. Second, Pakistan's economy primarily relies on agriculture, which is particularly vulnerable to climate change (World Bank, 2022). The country's water supplies are also under stress due to glacier melting, and the increased frequency of droughts and floods has made efficient water management challenging (NPR, 2022). Finally, Pakistan is a poor country with limited resources and expertise to handle climate change concerns. Despite these hurdles, Pakistan is taking initiatives to reduce and adapt to climate change, but overcoming this problem will require strong political will, international backing, and innovative solutions.

Everything will be a struggle, but my concentration will be on Pakistan. Climate change in Pakistan manifests itself in rising temperatures, melting glaciers, and high rainfall, resulting in floods that harm food production.

Food insecurity has become a multi-dimensional national, regional, and global phenomenon due to changes in world order. However, here, the major focus is on climate change. The effects of climate change globally and domestically are obvious. Pakistan has a struggling economy and is passing through severe inflation. The economic challenges created in the wake of COVID-19 have made dealing with food security issues more problematic. Being an agricultural country, the climate changes in the form of extreme weather events like drought, flood, and heat waves are shattering its economy.

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Background of Research

In Pakistan, agriculture is the second largest economic sector in the country, contributing 25% to the national Gross Domestic Product (GDP) (World Bank, 2017) and gripping roughly 42% of the labour force, mainly composed of women (Gop,2016). The agriculture sector is not only the chief employer in the country but produces over 75% of export income through agro-based textiles (cotton) and agro-food products (TDAP, 2016). Pakistan is among the World's largest textile and rice exporters and imports a major palm oil used in cooking. Climate change is considered a significant factor in crop production. An increase in the frequency and intensity of extreme events like drought and flood is also anticipated (IPCC, 2001; Tyson et al., 2002). Developing countries' economies are more likely to be affected by climate change because they depend on agriculture for food and export materials. Pakistan's climate suits crops like wheat, rice and cotton (Dharmasiri, 2012).

Climate change has become a worrying challenge for Pakistan because of the severity of these weather events and their drastic effect on the national economy. In the Global Climate Risk Index, Pakistan is fifth (Irshad, 2022). Pakistan often experiences events like severe droughts, followed by shattering floods. As a result of the 2010 floods, 1/5 of Pakistan's land area was flooded, damaging the economic and infrastructural set-up. Besides, people's livelihoods were very disturbed, leaving 90 million people in a food crisis (World Bank, 2017). It has lost 91,089 lives and about $81 billion in economic loss (Irshad, 2022). About 2 million houses and 12,700 km of road have been damaged. About 7.6 million people have suffered. The overall loss projected is $30 billion. It is predicted that these extreme climate events, dreadful environmental conditions and air contamination can reduce the national GDP by 18%-20% by 2050 (Irshad, 2022).

Pakistan is facing a high mortality rate because of malnutrition and, ironically, not because of food unavailability but also because of a lack of nutrients due to the degraded quality of crops. A nutritious diet is unavailable to about 70% of the population, and about 18% is undernourished (Khetran & Khan, 2022).

Scope of Research

The paper aims to focus on the alarming dangers of climate change globally, specifically in Pakistan. Its impact on crop productivity is highlighted. The study shows the vulnerability of food security in different provinces of Pakistan.

Rationale of Research

The research is based on recent emerging global phenomena of Climatic changes and their adverse effects. Developing countries like Pakistan have little contribution to recent climatic changes but are the biggest receivers of them. There is an immense need to focus on this emerging challenge and adopt precautionary measures.

Research Questions

1. What specific climate patterns and trends have been seen in Pakistan over the past few decades, and how have they affected food security and agricultural productivity?

2. How has climate change affected Pakistan's access to and supply of staple foods like wheat and rice and industrial materials like cotton?

3. How can government institutions and policies be enhanced or improved to address the effects of climate change?

Theoretical Framework

Climate change theory is a framework that includes scientific ideas and principles that explain climate change, particularly the current trend of global warming and its effects. Several important theories serve as the foundation of this knowledge:

Greenhouse Gas Theory

Understanding climate change requires understanding this theory. According to this theory, the earth's atmosphere contains chemicals known as greenhouse gases, such as carbon dioxide, methane and water vapours, which store solar heat and prevent it from escaping back into space. This natural greenhouse effect maintains the earth's average temperature within a range favourable for life.

According to enhanced greenhouse theory, the concentration of greenhouse gases in the atmosphere has greatly increased due to human activity, particularly the burning of fossil fuels, deforestation and industrial operations, as a result of this additional accumulation, the greenhouse effect intensifies, causing global warming and climate change.

Milankovitch Cycles

According to the Milankovitch cycles theory, alterations in the earth's orbit, axial tilt, and precession (wobble) cause long-term oscillation in the planet's temperature. These cycles affect how solar energy is disturbed on the globe's surface, causing long-term warming and cooling cycles. While the Milankovitch cycle has a role in natural climate variability, it cannot account for recent decades' sudden and extreme warming. Human-induced variables like greenhouse gas emissions more significantly influence modern climate change.

Positive Feedback Loops

The hypothesis of a positive feedback loop identifies mechanisms that magnify the consequences of climate change. For instance, polar ice melts as temperatures rise, lowering the Earth's reflectance (albedo) and accelerating warming. The release of methane, a potent greenhouse, into the atmosphere due to permafrost thawing also intensifies warming.

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Ocean-Atmosphere Interaction:

Examples of climate theories that describe natural climate variability brought on by interactions between the ocean and atmosphere include the EI Nio-Southern Oscillation (ENSO) and the North Atlantic Oscillation (NAO). These events may cause changes in regional climate that impact temperature, precipitation and weather patterns.

Climate Models and Simulations:

Climate models theory involves developing and implementing models that combine numerous physical, chemical, and biological processes to estimate future climate scenarios under various emission scenarios.

Attribution Theory

Using attribution theory, the human contribution to climate change can be pinpointed. To assess how human activities have contributed to the observed global warming and its effects, scientists must compare observed climate changes to model simulations.

Impacts and Adaptation Theory:

This theory investigates how climate change affects ecosystems, society, economics and people's welfare. It underlines the necessity of adaptation techniques and policies to lessen sensitivity to dangers associated with the climate. The causes, mechanisms, and effects of climate change are all explained by various scientific concepts and models, collectively called climate change theory. It offers the framework for comprehending and tackling one of our day's most important global issues.

Research Objectives

This article’s main research goal is to thoroughly investigate and assess the complex impact of climate change on Pakistan’s food insecurity, emphasising its implications, vulnerabilities and potential adaption options. The goals are specifically what this research attempts to accomplish:

- To highlight the adverse impacts of Climate change on Pakistan, specifically agriculture.
- To examine how climate changes affect food availability and affordability for different classes of society and affected regions.
- To emphasise the urgency of climate change in the context of food shortages in Pakistan’s affected regions and how policymakers, govt officers and stakeholders should adopt proactive measures at national and international levels.

Research Hypothesis

Climate change significantly harms food security and agricultural productivity in Pakistan. There are considerable regional and socioeconomic differences in food. The current adaptation plans and practices cannot effectively mitigate the problems posed by climate change to food security in Pakistan. In Pakistan, both government institutions and policies have a substantial impact on addressing the effects of climate change on food insecurity.

Limitation of Research

The study precisely covers the change in productivity of Pakistan's main crops, like wheat, rice and cotton, due to climate change. This is also related to the country's food security as wheat is a staple food, and cotton runs the country's industries. The paper explores the farmers' pitiful conditions that contribute to low productivity.

Literature Review

Climate change is the most alarming environmental issue faced by the world at present. Munonye and Eze (2022), in their paper 'The Concept of Sustainable Agriculture', examined that Climate Change increases precipitation and makes surface water volatile; it also reduces snow cover, affecting plant water demand. Agriculture also contributes to climate change by emitting Greenhouse gases. Still, only 2% comes from the emission of fertilisers, herbicides, pesticides, etc., but agriculture's direct effect from climate disasters is far higher. Food production and accessibility to poor communities around the globe have become challenging. Till 2019, there were more than 820 million people hungry worldwide. Specific regions like Africa, the Caribbean and Asia have malnutrition of about 20%, 7% and 12%, respectively.

Pakistan lies in a region that is diverse geographically and climatically; all four seasons can be seen and enjoyed regularly. However, the region's temperature has steadily increased since the turn of the century. Shahzad and Amjad published a paper titled 'Climate Change and Food Security in Pakistan' in 2022, which explores that since the last decade, Pakistan has been intensely prone to climate change effects like Avalanche, storm surges, landslides, floods, drought, cyclones, and heat waves are the hazards which made the socioeconomic condition of the country worsen. According to the 4th IPCC report, the increase in the earth's temperature leads to decreased crop yield, climate-induced disease, glacier recession, and marine life destruction.

Khan and Shah revealed this in the paper "Food Insecurity in Pakistan: Causes and Policy Response" (2011). The threat posed to Pakistan due to climate change regarding food security has several aspects like production, distribution and accessibility. A significant portion of the economy is linked to agriculture. The rural population is high; most people are poor and linked to agriculture; thus, climate change hazards have widely affected their lives. The high global temperature will increase poverty among the farming community due to dry, arid land. When a country's crop production is combined with

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rapid population growth, the risk of hunger and food crises increases. The number of undernourished people in Pakistan is approximately 27 million.

Ullah (2017), in his paper "Climate Change Impact on Agriculture of Paksitan-A Leading Agent to Food Security", highlights that Wheat and rice are consumed as staple foods. Both have specified times and zones for growing and harvesting. Precipitation and temperature play a significant role in the vegetation and reproduction phase. The crop yield drastically falls if you cannot get the optimum weather patterns. Research conducted shows that the availability of wheat per capita in Punjab may fall shortly due to overpopulation and the negative effects of climate change.

Research Methodology

This research aims to examine the connection between climate change and food insecurity in Pakistan by integrating both qualitative and quantitative data. Semi-structured in-depth interviews were conducted with farmers, agricultural experts, government officials and NGO officials in climate-vulnerable states, providing useful information about the existing problems and corresponding measures taken by farmers, experts and Government officials. Moreover, focus group discussions with farmers and other related communities helped to obtain multiple viewpoints regarding the consequences of climate change effects on the food security of concerned communities. Secondary data comprised of agricultural production and food consumption data of the PAK agricultural sector obtained from the Pakistan Bureau of Statistics. At the same time, outside research and literature by academicians as well as NGOs also offered a broader perspective. Data analysis included content analysis for qualitative data, which enables the researcher to identify themes and analytics for quantitative data, which helps to establish patterns and relationships. Specific examples of regional impacts on food insecurity due to climate change were demonstrated through case studies and meta-analysis; as a part of methodological and ethical concerns, user consent and blinding of the participants were observed. However, some of the existing limitations include limited access to accurate research information and the ability to generalise some of the results across the world regions. Qualitative variables were adopted to highlight climate change impacts on Pakistan's food security. Inductive techniques are adopted with a focus on discourse analysis and participant observations. Secondary data based on research articles and reports is mostly used in this research. Overall, this research seeks to contribute to the understanding of the impacts of climate change on food security in Pakistan in order to support policy formulation for resilience.

Productivity of the Chief Crops of Pakistan:

Below, examine how much these extreme events are affecting the growth of the chief crops:

Wheat:

Wheat is a staple food and a Rabi crop. A cold temperature and suitable rainfall are required for its high yield (Tariq et al., 2014). The recent climate change, mainly

increased temperature and unexpected rise in rainfall, damaged wheat production, leading to food insecurity in Pakistan (Janjua et al., 2010). Besides, other factors like rising population, land degradation, and poor water availability have made it difficult for the poor class to meet their needs (Gregory et al., 2005). The largest part of wheat comes from Punjab, about 80%, followed by Sindh. Small firms dominate over 90% of the total (GOP, 2010).

With an increase in temperature by 3 degrees centigrade by 2050, wheat availability would decrease from 198kg per annum to 84kg per annum (Tariq et al., 2014). The crop's maturity can decline by 8%, and yield may decrease by 6% due to an increase in temperature (Saseendran et al., 2000). One-degree centigrade rise in temperature may cause a 7.5% reduction in wheat production (Saseendran et al., 2000). In high-altitude areas, the increase in temperature positively affects crop yield (Xiao et al., 2008). In Swat and Chitral, the rising temperature up to 1.5 degrees centigrade would enhance wheat production by 14% in Chitral and decrease the yield in Swat by 7% (Hussain & Mudassar, 2007).

Rice:

Rice is Pakistan's second staple food and a main export crop. Its value in the national GDP is 0.6% and 3% in agriculture (Economic Survey of Pakistan, 2017). Rice also provides raw materials for manufacturing paper, mattresses and starch. Punjab and Sindh produced about 90% of the rice. Punjab's climate is moderate, and due to fertile land, it has 100% Basmati rice (Ghulam et al., 2012).

The rise in temperature and decrease in precipitation decreases rice production. An increase in temperature by 1 degree centigrade and a 10 per cent decrease in precipitation can reduce its yield by 7.34% in the short term and 13.33% in the long term (Daily Times, 2022). The rise in temperature in the form of CO2 emission decreases productivity by 3.72%. (Rauf et al.,2021). Water availability improves rice yield, but the dryness of land due to high temperature declines its yield. An increase in water availability by 1% can raise its yield by more than 1% (Hussain, 2012; Chandio et al., 2018). The recent summer flood adversely affected rice production: the estimate is a 6 million tons decrease in yield, affecting domestic supply, and 2022/23 rice exports have lowered to 3.6 million tons (Attache Report, 2022).

Cotton:

Pakistan is among the top cotton-producing countries and the fourth largest country in Asia (Mukhtar, 2002). Cotton is a chief cash crop crucial in the industrial economy. The economy of Pakistan provides the raw material for textiles; in return, the textile industry employs 40% of labourers. Cotton is estimated to be 0.6% of the national GDP and 2.4% in agriculture (Finance Division, 2022). Cotton accounts for two-thirds of Pakistan's exports (Siyal et al., 2021).

Extreme events are causing 50% of yield globally. Domestically, the Kharif crops in Pakistan are the target of floods in June and July. Heavy rain and high

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temperatures reduce cotton productivity (Mukhtar, 2002). During intense heat, the quantity and quality of cotton are both affected. According to farmers, productivity and farm prices are too low. So, they prefer other crops over cotton. Since the last decade, cotton productivity has fallen from 13.6 million to 7 million bales (Mukhtar, 2002). The major reasons behind the declining quality of cotton are the low resistance of cotton seeds and high temperature (Siyal et al., 2021).

Food insecurity in Pakistan:

Climate change is not the whole but a major and prominent cause of food insecurity globally and domestically. Pakistan ranked 92 out of 116 countries in the Global Hunger Index, scoring 26.1, which outlined that serious hunger means food sufficient but food insecure country (Khetran & Khan, 2022). Even with a high population, India has 101 positions (DAWN, 2022). Even though Pakistan is an agricultural country and self-sufficient in producing food crops, it is positioned 8th in wheat, 10th in rice and 5th in sugar cane production.

Table 01: Global Hunger Index Scale, 2022	
<_ 9.9	Low
10.0 – 19.9	Moderate
20.0- 34.9	Serious
35.0- 49.9	Alarming
_> 50.0	Extreme Alarming

The World Bank has already cautioned Pakistan's “yield decreases in numerous essential food and cash crops, including cotton, wheat, sugar cane maise and rice are expected in Pakistan in coming ten years”. The vice president of the World Bank for South Asia said, “The current flooding and humanitarian crisis is a wake-up call for urgent action to avoid further destruction to the people of Pakistan and its economy due to climate change” (The World Bank, 2022).

Climate change has emerged as an awful challenge, disturbing the agriculture sector. Since COVID-19, Pakistan has been facing an inflated economy, but recent floods and heat waves have worsened the national economy. The poverty rate went up by 4.7%, and due to high inflation, 9 million people were added to the poverty line (Niazi, 2022). According to a survey, about 36.9% of households suffer food insecurity, of which 18.3% are severely food insecure (National et al., 2018).

In 2021, Balochistan, Khyber Pakhtunkhwa (KP) and Sindh faced a high prevalence of food insecurity, malnutrition and poverty as the populations in the three provinces faced multiple shocks, including high food prices, drought, inadequate rainfall and livestock diseases, exacerbated by the impacts of the COVID-19 pandemic. Gilgit

Baltistan and Punjab are food-secure provinces; KP suffers partial insecurity, while Sindh and Baluchistan suffer severe insecurity. According to the survey, the most secure region is northern Punjab due to its fertile land and less prone to yearly floods (DAWN, 2009). In KP, the FATA (Federally Administered Tribal Area) is in a miserable condition where food production and resources are limited, partially due to poor infrastructure and the displacement of the population due to military operations (Khan & Shah, 2010). With the recent flood, Sindh faced the worst hit, which was already food insecurity and limited food stock. About 15 million people are affected, including farmers and peasants who used to earn from agriculture.

During the United Nations meeting on "global food insecurity", Foreign Minister Bilawal Bhutto Zardari highlighted that the country is underwater, food and energy threat; more precisely, it is not a threat but the reality of Pakistan (Siddique, 2022, page number). The foreign minister also called for the creation of a special food emergency fund under UN sponsorship (The Express Tribune, 2022). The pertinent agencies like WFP, FAO, IFAD and UNDP were requested to show interest. He underlined several factors worsening food insecurity like low productivity, water scarcity, land degradation, lack of agriculture set-up, insufficient modern technology, unfair trade practices, recent climate change events and the Russia-Ukraine war.

Climate change is a main aspect affecting all dynamics of food insecurity. In one way, extreme weather events like floods, drought, and high temperatures affect the food crops, restricting people from easy access to food items. On the other hand, the supply chain of food products gets disrupted due to floods, leading to a hike in the prices of food items. Thus, after the recent flood, an immediate ramble in the prices of vegetables and pulses has been seen, especially the prices of tomatoes and onions. The prices of essential items have risen by 44% due to climate change (PBS, 2022).

Farmer Condition in Pakistan:

Agriculture has a central role in our economy. It contributes 18.9% to the national GDP and 42.3% to the labour force. Expansion in domestic demands: As agriculture productivity increases, the income of the farmers goes up with the rise in income; there is a rapid growth in demand for both farm goods (fertiliser, tractors, tube wells, machinery) and industrial goods in the rural and urban areas (Rehman et al., 2012). There is also an increase in domestic demand for consumer things. The growing and advanced agriculture sector, thus, brings increasing levels of improvement all over the country. Still, agriculture is one of the most underdeveloped, backward and ignored sectors. The destruction of crops, livestock and infrastructure due to flooding has deteriorated the livelihood and employment of farmers.

Farmer's communities suffer from basic issues like lack of capital, non-availability of electricity and modern technology, lack of ware storehouses and no subsidies on seeds and fertiliser prices. Farmer illiteracy, superstition, etc., are also hurdles to implementing new machinery and improving agriculture conditions in Pakistan. Because of the insufficient supply of Bank loans and institutional credits, most farmers cannot purchase modern agriculture technology in time (Rehman et al., 2012). The

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subsidy, a marketing tool, is used for selling rather Rather be used for introducing new technology and machines. Besides, the most stressed problem they face is feudalism in the agriculture sector; 5% of large landlords possess 64% of farmland, while 65% of small farmers hold only 15% of the land (Tariq, 2019). Due to the absence of land reforms by the government, farmer incentives and subsidies are mostly enjoyed by the landlord, and the peasants and tenants suffer. Small or insufficient amounts are allotted to research, and the development of new variations of crops, farm machinery, and cattle health thus needs to be faster. The average crop production in Pakistan is, therefore, low.

In September 2022, thousands of farmers went out for their rights and demanded relief in electricity prices and resolution of Economic issues faced by the agriculture sector. They asked for a tube well electricity tariff of Rs.5.3 per unit, abolishing all taxes and reducing urea rates (The Express Tribune, 2022). Further, they refused to negotiate with the police and asked for ministry deals. Later, after the surety of the relief package, they called off the protest.

Discussion

Pakistan is not a prominent emitter of greenhouse gases and emits less than 1% of carbon pollution-causing gasses. However, the most impacted by climate change. Besides the economic crisis, poverty, inflation and political instability, Climate change has proved to be more destructive towards Pakistan than terrorism. Since the main metropolitan cities are drowning in water. In 2015, experts informed that three cities – Karachi, Badin, and Thatta- might be the target of the rising sea level by 2060 (The Washington Post, 2022). Badin and Thatta are sinking, and Karachi, Pakistan's trade hub, is at stake. The city has also experienced the hottest waves. The weather in Islamabad (the capital city of Pakistan) was very cold, like in Murree, and people even saw snowfall. Still, dually, the greenery and the coldness in the temperature are ending. Climate change and supply chain disruption after Russia’s Ukraine war could intensify food insecurity in the coming years. Approximately 39% of Pakistan's wheat is imported from Ukraine. Pakistan's total wheat demand and food security are approximately 30.8 million tons. The hot temperature in March and April has fallen short of 2 million tons of wheat. This is a serious matter for Pakistan since 40% of the population is food insecure.

Besides, inflation reached 24.9 percent, limiting the masses' consumption power. Fuel prices have risen directly, increasing the cost of inputs, energy and transportation, which has badly affected the agriculture sector. The cost of fertilisers and locally imported machinery is a hurdle to reliable farming.

The Challenge of Climate Change on Pakistan's Rising Food insecurity:

Yearly floods, heat waves, and the rise in the overall earth's temperature have made producing many crops difficult. The recent floods have done great damage to the agricultural land. The affected districts of Sindh, KP and Punjab are highly malnourished.

Conclusion

Alterations in monsoons and the hotness of temperatures may bring significant challenges to agriculture in Pakistan, particularly in northern regions, where susceptibility to climate change is already high. From the above statistics, climate change is a long-term threat to food security in Pakistan. In the coming decades, food security may deteriorate. Being an agricultural country, ignoring this sector for our short-term benefits could drag us into a severe food crisis. The more we show sluggishness towards protective policies, the more economic and humanitarian crises we will face. In Pakistan, the growing population and undersized government strategies are persistent issues, while climate change has been the current issue for the last decade, leading to severe food insecurity. Over the past years, the level of climate-related expenses has been low. However, the country's new Pakistan Climate Change Act (PCCA) 2017 sets the Pakistan Climate Change Authority and Pakistan Climate Change Fund platform. If executed with full responsibility and spirit, either short-term or long-term, the climate change policies and food insecurity strategies could be favourable.

Recommendations

The recent flood has caused about $20 million in damage to the national economy, about 33 million people have been moved from their houses, 1/7 have become homeless, and the mortality rate was 1300 (Bukhari, 2022). According to research, $1 invested in flood resilience can save $54 in future losses.

1. Green projects like dams, dikes, canal dragons, and new pumping stations should be funded to facilitate agriculture.

2. Green climate funds should be introduced, making strategies for lessening the effects of climate change.

3. Eco-tourism projects in northern areas could have shunned the flood damage intensity.

4. A comprehensive finance strategy is needed. The public and private sectors should be involved, and significant international support will be required for green initiatives to overcome resource degradation.

5. Public and private banks should promote the system of green banking. For this purpose, low-interest green financing schemes should be introduced to reconstruct the destroyed infrastructure. Green banking is mandatory in Bangladesh, and 2% of its finances are allocated to it.

6. The Megaproject, like CPEC, should be shifted into a total eco-friendly or green project.

7. The government should allocate the budget for these unexpected disasters.

8. A campaign should be launched to inform people of the threat of climate change.

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9. Due to the overuse of chemicals and pollution, the temperature is rising, causing land degradation, thus creating climate smooth and reformative agriculture and systemic prioritising biome restoration.

10. Improving the efficiency of the agriculture sector and subsidies should be provided for technological development and modernisation.

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