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Climate Change and Sustainable Development

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As a beginning point for a food security policy, this article addresses national and regional consumption and purchasing power. This study analyses Pakistan's food demand using indirect expenditure and price utility functions based on the 2017-18 integrated household economic survey and a nonlinear, nearly ideal demand system. According to the study's findings, demand for most commodities is less than unit responsive to expenditure elasticity at the national and regional levels, except for fruit, meat, and sugar. According to a study on cross-price elasticity, wheat, legumes, and vegetables are complementary products in Pakistan's urban and rural areas. Fruit and milk are also complementary items. The geography analysis shows that greater gross and net substitute impacts are found in urban areas than in rural areas.

Contrary to popular belief, urban dwellers are more likely than rural ones to make do with less expensive alternatives. Improving societal well-being requires reevaluating how consumption, price, and income are interconnected. According to the findings, food costs should stay steady, and any rises should be mitigated by price subsidies or other safety net programs for individuals with limited financial means. The state should focus on rural economic activities such as farming, livestock herding, and other associated businesses.

Keywords: Line stock herding, Sustainable development, Food availability, commodities.

Introduction

There must be a constant supply of food in our daily routines to maintain a healthy and active lifestyle. Article 25 of the Universal Declaration of Human Rights states that everyone has the right to a quality of living sufficient to ensure their own health and the well-being of their family [1][2]. Inadequate nutrition and a poor diet can contribute to poor health, decreased productivity, and high medical costs. Stunting and weight loss are the results of malnutrition in young children. Along with an increased risk of chronic diseases and cognitive impairment in school-age children, stunting and wasting have also been associated with a lower lifetime income for adults[3][4].

About 785 million of the world's 805 million hungry people dwell in developing countries [5]. There are many Pakistani homes that consume fewer calories per day than is suggested for adults (71 percent). About 53.4 percent of Pakistan's undernourished and 37 percent of Pakistan's stunted children under the age of five and 36.9% of the province's families live in this province. Over half of Sindhi households consume less than the recommended daily calorie intake for each individual, and half of the Sindhi children are stunted. Children under five years old who are stunted account for 41.9% of KPK's populace; also, 48.9% of households do not meet the daily calorie requirement of 2350 calories for each member; [6][7]. Malnutrition is at a staggering 71 percent, making Balochistan Pakistan's worst province in overall well-being, education, health care, housing, and sanitary conditions [8][9].

Due to its rapidly expanding population, Pakistan relies heavily on agricultural products including wheat, rice, and pulses to meet its needs [10]. More than a third of agriculture's second-largest industry, livestock, is carried out by eight million households and families [11].

According to the findings, agricultural development and poverty reduction are vital for rural development [12][13]. Low-income people rely heavily on agriculture for their food and financial security. According to recent consumption data, wheat and oil are among the most frequently purchased goods by low-income households. both the non-poverty and the poverty levels, wheat accounted for 43 percent of total calorie consumption [14][15].

In order to gain a better understanding of national and regional household consumption and purchasing power, this study employs a nearly perfect demand system to forecast Pakistan's food demand. This report will benefit policymakers, food security professionals, and scholars because it provides comprehensive and current information on Pakistan's food demand trends. This study will generate a comprehensive demand analysis evaluation to support decentralized policy[16][17]. Communities, marginalized individuals, 41.4 million Pakistanis who are undernourished, and 39% percent of Pakistanis who are multidimensionally destitute would benefit from this decentralized research.

Methodology

Pakistan's 2017-18 Living Standard Household Integrated Income and Consumption Survey, provided all the data required for this research. The latest set of data for Punjab, Sindh, Khyber Pakhtunkhwa, and Balochistan includes consumer spending on food and non-food products Punjab accounts for 45.1% of the sample, followed by Sindh (23.1%), KP (22.1%), and Balochistan (8.1 percent).

This research relies on the Pakistan Bureau of Statistics (PBS)The data for this study came from PBS's 2017-18 Pakistan Living Standards Household Integrated Income and Consumption Survey[18]. Food and non-food expenditures in Punjab, Sindh, KPK, and Balochistan are examined in this study. Of the total, KP, Sindh, and Balochistan make up the remainder, with Punjab making up 46.3% of the sample. KP's rainfall has a wide range of seasonal patterns and fluctuations in intensity.

Findings

show that the annual average rainfall in KP will increase by 6% by 2050 in the low rainfall zone. Forecasts predict a gradual decline beginning in the decade following 2035. By the year

2050, the amount of rain that falls in the winter is expected to decline. Reduced by 16 and 32 percent by 2050 Spring and summer rainfall is expected to rise until 2035, By 2025, Charsadda is expected to experience a shift from a low- to medium-intensity rainfall zone.

The amount of rain in each district will be comparable. Precipitation patterns and intensity swings are far more common in KP.

The following sections summarise the study's conclusions on the frequency and seasons of rainfall in the low, medium, and high rainfall zones.

To summarise, KP's total participation decreases in the fall and winter and increases in the spring and summer. There must be safeguards put in place by the KP to guarantee that canal water isn't mainly drawn from rivers or groundwater. These resources will be exhausted as precipitation decreases, and temperatures rise.

Snow accounts for the majority of precipitation in high-altitude areas. According to a climate forecast, the heaviest snowfall of the year is shifting to April.

The Hindukush, Karakoram, and Himalayan areas of Pakistan. Nearly the same quantity of snow fell in KP, GB, and AJK, however, the amount varies according to the terrain's height, aspect, and orientation. Because winter storms flow from the west to the east, the western slopes of mountains receive more snow than the more exposed eastern parts. According to GB, KP, and AJK, the frequency and volume of valley snowfall have dramatically decreased over the last two decades

The lowest winter temperature will rise by 0.8°C, the highest winter temperature by 1.6°C, and the lowest spring temperature will rise by 1.5°C. The low point of the summer will rise by 1.4 degrees Celsius.

The maximum summer temperature will climb by 1.7°C, the fall minimum temperature by 1.9°C, and the maximum fall temperature will rise by 2.5°C.

Temperatures at the South's lowest and highest points are likely to climb this year. The following is a breakdown of the temperatures for each of the four seasons:

A 0.9°C increase in temperature is expected to occur over the winter. Over the course of the winter, temperatures are expected to rise by 1.6°C. In comparison to last year, spring temperatures will rise by 1.4 degrees Celsius. • This spring, we may expect an average increase in high temperatures of 2.2 degrees Celsius. • Summertime temperatures are expected to rise by 1.4 degrees Fahrenheit. • The July mean maximum temperature will rise by 2.24 degrees Celsius.

There is a ripple effect when the temperature rises and the rain temperature shifts. According to the data, temperatures are rising all year round. It takes longer for the evening temperature to rise than for daytime temperatures. The North has the greatest average temperature increase, followed by the Center and the South

Glacial lake floods have become more frequent in the valley in the last ten years due to climate change. Floods caused by glacial lake outbursts and overflow are the two main types of catastrophes that result in many deaths and the destruction of property. According to the study's findings, spring temperatures are expected to rise at a faster rate northward. Early warning of threats may necessitate the identification of the glaciers that pose the most risk. Temperatures are rising quickly in the spring and summer. Due to glacial activity and late snowfall in the northern regions, there is an increased risk of tragedy. To minimize catastrophic overflows and downpours, effective Disaster Risk Reduction approaches and water flow regulation must be given top priority in the north.

The rainfall statistics from the previous parts of the KP were analyzed to see how it affected the three regions. Fall and winter water shortages are possible in areas that receive little rainfall. Planting a new wheat crop is critical at this time of year. Wheat production will be severely hampered in rain-fed regions. These districts' financial plans should value storing water in small dams and highly effective crop irrigation systems.

Working with local farmers and developing water-efficient crop management practices is essential in this region for a number of reasons. Taking significant measures to conserve moisture during the summer may help you survive the drought in the fall. This is achievable when the wheat harvest is expected in the late spring, severe rain, hail, and thunderstorms are all possibilities.

The implication is, an acute water constraint on crops in a medium rainfall zone, may be alleviated by efforts such as summer moisture conservation.

Severe rainfall will significantly impact local agriculture throughout the blossoming and harvesting seasons.

Conclusion

Changes in KP are projected to directly impact water and agriculture, which are largely dependent on climate change. To plan for the future, it is vital to recognize and understand the changes in the climate.

Changes in this area necessitate new adaptation strategies that take this into account. In all the regions, we expect a significant impact on agriculture from the shift in rainfall. Double cropping may be made easier by the presence of more water and milder temperatures at higher elevations.

Late rain can have a number of detrimental effects, including In the spring, there is a larger risk of runoff, which damages trees, because of the increased precipitation.

In locations with minimal rainfall, there is a risk of drought, necessitating implementing drought mitigation measures

Water efficiency in agriculture, particularly in moderate or low rainfall, needs long-term and large-scale effort.

According to the results, water flow management in the north and effective disaster risk reduction measures should be the primary focus. Due to an increase in the frequency and severity of spring and summer floods and downpours in the northern hemisphere, this is the case. Small dams and capturing rainwater are among the financial objectives. In order to determine the impact on agriculture and viable treatments for these changes, it is necessary to identify and analyze how changes in rainfall and temperature can affect disaster risk.

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