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Assessment of Global Warming on Food Production in Afghanistan

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Abstract

Global Warming is taking its toll on Afghanistan. Over the past fifty years, rising temperatures and dropping precipitation levels have resulted in a variety of meteorological anomalies that have caused droughts, floods, unseasonal precipitation, falling ground water tables, desertification, and a decline in biodiversity. Additionally, the impact of Global Warming on food security is significant. The climatic changes brought on by Global Warming have a profound impact on food supply chains, food habitats, and food systems in general. These modifications have effect on food production, storage, processing, marketing, availability, promotion, affordability, and quality along the food value chain. More than simply agricultural productivity will need to be taken into consideration in order to adapt food systems for the improvement of food security for the poor and vulnerable and to avert future negative effects of Global Warming. It is projected that further change in climatic conditions will take place over the coming decades, and its effects on Afghans' quality of life and ability to support their families have already been considered as detrimental. Due to their heavy reliance on agriculture for survival, rural residents in Afghanistan are among the most susceptible to the effects of Global Warming among all population groups.

Keywords: Global Warming, Food production, Droughts Afghanistan

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INTRODUCTION

Increasing the necessary studies and measures to minimize the emissions of carbon emissions should be taken all over the world and measures that will minimize the greenhouse gas effect will play an important role in reducing the effects of global warming (Bağdatlı and Arıkan, 2020).

Global Warming involves variations in temperature and precipitation across the globe. The food supply chains, food environments, and food systems in general are significantly impacted by the environmental changes brought on by Global Warming. Along the food value chain, these changes have an impact on food production, storage, processing, marketing, availability, promotion, affordability, and quality (Sarwary et al., 2020).

World effects of global warming caused by changes in the climate system of the highest peaks, ocean depths, is felt throughout much of the world from the equator to the poles. The polar ice caps are melting, sea level is rising and soil losses are experienced in coastal areas. Sea level due to melting of glaciers Increasing the temperature rose from 10 to 20 centimeters (Bağdatlı and Bellitürk, 2016a).

Through direct and indirect effects on crop growth, Global Warming will affect food production. Modifications to precipitation, temperatures, and carbon dioxide availability are examples of direct effects. The advent of invasive species, changes in pest and disease profiles, soil erosion, effects on the availability and seasonality of water resources, and declines in arable land owing to desertification and land degradation are only a few examples of indirect consequences. Even on lower emission pathways, these effects are predicted to harm major agricultural production on a global scale. (Tebaldi et al., 2018). Increasing world population, changing climate conditions and economic activities are growing with each passing day makes it more important than water (Bağdatlı and Bellitürk, 2016b).

As a result, Global Warming or climate change has an impact on food security globally and on people's income, particularly in developing nations where rain-fell on agriculture predominates and makes food systems extremely vulnerable to changes in temperature and rainfall (Sarwary et al., 2020). Food security is significantly hampered by Global Warming or climate change. More than simply agricultural productivity will need to be taken into consideration when adapting food systems to improve food security for the poor and vulnerable and to avert future adverse effects from Global Warming or climate change. (Ziervogel, 2010). Afghanistan is mountainous and semi-arid country that experienced three decades of conflict. Due to its extremely limited ability to deal with the effects of Global Warming, it is one of the most vulnerable nations in the world. In recent years, it has been evident that climate change is a universal phenomenon that will affect many aspects of society, including agricultural and food systems, notably in Afghanistan (Tumwesigye et al., 2019). Afghanistan is particularly susceptible to decreased food production brought on by glacier retreat, floods, droughts, unpredictable rainfall, and other effects of climate change. As a result of poor infrastructure, instability that prevents national efforts at mitigation, and a lack of resources to organize against the negative effects of Global Warming on livelihoods, these nations as well as the poorest ones like Afghanistan are likely to be most negatively affected (Parto, 2014). Climate change has become the focus of constant attention of living things and civilizations take into account the climatic parameters determined their lifestyles. Climate increasing or decreasing in changes affect living things negatively. Decrease in productivity, especially in agricultural production causes (İstanbulluoğlu et al., 2013). Global climate change affects the world negatively day by day and reveals negative results in agricultural product yield. In particular, it is inevitable to evaluate the regional temperatures and to review the product pattern in parallel with the increasing global climate change (Bağdatlı et al., 2014).

HUMAN HEALTH AND NUTRITION

Without adaptation, the danger of hunger and child malnutrition on a worldwide scale might rise by 20% by the mid-2050s, according to the World Food Program. (World Bank Group, 2015). Evaluated the likelihood of excess, climate-related mortality brought on by malnutrition (Springmann et al., 2016). The scarcity of fruits and vegetables in diets and the rising prevalence of people who are underweight are two major risk factors that the authors identified as the primary drivers. According to the forecasts, by the mid-2050s, Afghanistan might see 40.8 climate-related deaths per million people connected to a lack of food (at present day population-levels this represents approximately 1,400 people). The additional nutritional effects of climate-related disaster events, which harm food production systems and economic conditions, are not considered. Additionally, stunting is substantially more common in Afghanistan among children from families with poorer incomes and/or less diverse diets. (Kim et al, 2017).

Children in rural parts of Afghanistan are probably more at risk of stunted growth and the severe long-term health repercussions that go along with it since the expected increase in drought probability and average temperatures may limit agricultural productivity (World Bank Group 2015).

GLOBAL WARMING AND FOOD SECURITY

"Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that fits their dietary needs and food preferences for an active and healthy life," says the Food and Agriculture Organization. (Schmidhuber et al., 2007; Stamoulis et al., 2003). This concept includes four essential aspects of food supplies: accessibility, stability, usability, and availability. Food sufficiency, or the system's overall capacity to meet demand for food, is referred to as availability. Stability refers to people who face a significant risk of losing their access to the resources required to obtain enough sustenance, either temporarily or permanently. The third aspect of food security is access by individuals to enough money to buy appropriate food for a nourishing diet. Utilization, the last dimension, includes all of nutrition's sub dimensions as well as the issues of food safety and quality. Three of the aforementioned factors affecting food security availability, access, and utilization are well-recognized in the literature (Burke et al., 2010).

Maintaining the factors that determine the possible impacts of Global Warming on food security requires an awareness of the factors that determine availability, access, and consumption of food as well as how each factor may be impacted by climate change. While these authors investigate the effects of Global Warming on these three pillars. (Schmidhuber et al., 2007). Include stability in their study of impacts as well. Agribusiness output is closely related to food supply, which makes it vulnerable to the effects of climate change. Increased atmospheric carbon dioxide concentrations, which will improve crop-growing conditions in some areas, the likelihood of intensified pest and disease issues leading to crop losses, drier conditions and increased water stress affecting crop yields are some of the common mechanisms through which global warming can affect agriculture (Fischer et al., 2002).

Agricultural production and potential planted areas could be significantly impacted by climate change. Global food trade will operate as a potential buffer when nations trade and when Global Warming shocks are not evenly distributed across space, thereby lessening the negative effects (Burke et al., 2010). Depending on the scenarios projected, the increase in temperature in temperate latitudes is anticipated to primarily benefit agriculture by expanding the areas that may be suitable for farming and lengthening the growing season, which will increase crop production. (Schmidhuber et al., 2007). In some humid and temperate grasslands, this may also boost pasture yield and lessen the requirement for housing and compound feeding. However, it is expected that decreased livestock productivity and increased animal mortality will occur in semi-arid and arid regions (Adger, 2007). Additionally, higher evapotranspiration and decreased soil moisture in drier regions are predicted by climate models, which may make certain cultivated areas unfit for cropping and some tropical grasslands more arid. Additionally, warmer temperatures are probably going to widen the range of many agricultural pests and improve their capacity to survive the winter and damage spring crops (Adger, 2007). As the soil temperature decreases, plants that are not suitable for climatic conditions and resistant to cold will be affected by root and cause drying. As a result, a constantly increasing soil temperature will adversely affect plant life. It will decrease the efficiency (Bağdatlı and Ballı, 2020).

The decrease over time of the changes in the surface of the water is noticeable. This also shows itself as the effect of disorder in the vaporization and current precipitation regime in the water sources dependent on climate change (Albut at al., 2018).

Gradually decreasing rainfalls due to climate changes endanger the living habitat. As a precaution, precise solutions are needed to reduce carbon dioxide in the air and slow down global warming and eventually end it. In this way, greenhouse effect and global warming can be prevented (Bağdatlı and Can, 2019).

The frequency and severity of extreme occurrences like cyclones, floods, hailstorms, and droughts are predicted to rise, making global and regional weather conditions more unpredictable than they are now. This can have a negative impact on the stability of food supplies because it can lead to greater swings in crop yields and local food supply as well as a higher danger of landslides and erosion damages (Schmidhuber, 2007).

Many of the regions where these effects are anticipated to be seen are in sub-Saharan Africa and parts of South Asia, According to Thomson (2003). This suggests that the areas with the greatest levels of chronic undernourishment will also experience the greatest levels of food production instability (Burke, 2010). Argue that "assessing the role of Global Warming in relation to four basic questions: how households earn their income, the nature of their exposure to food prices, how well integrated their local food markets with global markets, and their broader longer-run prospects for livelihood improvement" will help determine the effects of Global Warming on a given household's access to food. Global Warming could have a variety of effects on a household's ability to get food, depending on its income source. In emerging countries, agriculture provides a sizable portion of the income for rural households. The degree of this dependency increases with family wealth. A decrease in agricultural output raises the possibility of negative consequences on family finances and standard of living (Carletto et al., 2007).

Changing climate conditions will be an important factor in the current situation and the problems that may arise in the coming years. For this reason, solutions are needed for global warming and reduction of greenhouse gases that cause climate change (Bağdatlı and Arslan, 2020). The increase in the impact of global climate change will cause global water crises between countries. Necessary measures and measures should be taken in advance to reduce the impact of global climate change (Bağdatlı and Arslan, 2019).

In the coming decades, how these societies live is likely to be significantly influenced by climate change. Although the primary function of food is to provide dietary energy, and commonly used indicators of undernourishment, like those of the FAO, heavily relied on estimation of calories for consumptions in order to estimate food security trends, food also provides protein and other nutrients that are essential for bodily functions. (Burke et al., 2010). It is becoming increasingly clear that inadequate consumption of these nutrients contributes significantly to infectious disease-related morbidity and death worldwide (Black, 2003).

There are three main ways that Global Warming may have an impact on the consumption of micronutrients: "by altering the yields of significant crop sources of micronutrients, by changing the nutritional content of a particular crop, or by influencing decisions to grow crops of different nutritional value" (Burke et al., 2010).

In reaction to the effects of Global Warming, farmers can also change their crop choices, which might alter the availability of micronutrients. (Rosenzweig, 1992; Mihran, 2011). Afghanistan's largest and most significant industry is agriculture, which is owned or managed by more than half of all households. Permanent pastures make up 46% of the total land area, which is 652 thousand square kilo meters, whereas only about 12% of that area is thought to be arable (Hassanzoy, 2009). The poorest populations in Afghanistan, such as small farmers and livestock keepers, will be the most exposed to the effects of Global Warming since they are the least equipped to adaptation strategies, according to (Savage et al., 2009). Other groups, such sedentary farmers and nomads, are less susceptible because they may relocate to find new pastures.

Casual workers and government employees are also impacted, though less severely because their means of support do not (directly) depend on it. Pressure on small holding farmers in rural areas is projected to increase due to the Kuchi populations' increased process of settlement as a result of extended and frequent droughts, as well as the possibility of rising temperatures and lower-than-normal rainfall. In Afghanistan, most women do not engage in paid economic activities. They heavily rely on the male family members for financial support or on their own labor on their meagre allotments of land to grow food. Women and children from low-income families are therefore among those who are most exposed to the effects of Global Warming that threaten traditional ways of life. Nearly 11 million Afghans, or 36% of the country's population, live below the poverty line. (Kumar, 2013) unable to satisfy dietary needs and necessities. Malnutrition and food insecurity are both problems in cities. Due to its extreme poverty, Afghanistan was more severely impacted by the 2007–2008 food price crisis than other nations. Overall, about 27.7% of people experience a crisis regarding their ability to access food (Frankenberger, 2011). With an average yearly per capita consumption of over 200 kg, wheat is the primary food crop that provides roughly 60% of the caloric intake for an ordinary Afghan (440 pounds) (Persaud, 2012). The primary basic grain grown in Afghanistan is wheat. Wheat accounts for 94 percent of all crops grown on rain-fed land and 77 percent of all crops grown on irrigated land (Mihran, 2011). The ability to produce food has an impact on its accessibility in rural regions and is the foundation for local farmers' ability to make a living. Afghanistan has never been self-sufficient in wheat, despite producing 96.6 percent of the wheat used in 2009 due to extraordinarily unfavorable weather, and its wheat production levels have fluctuated greatly throughout the years (Sharma et al., 2015). Rice, barley, maize, and pulses are examples of other grains. Other fruits and vegetables grown by farmers include potatoes, onions, tomatoes, okra, cauliflower, melons, watermelons, apricots, almonds, pomegranates, apples, and grapes. (Mihran, 2011).

CONCLUSION

The global warming or climate change have a profound impact on food supply chains, food habitats, and food systems in general. These modifications have effect on food production, storage, processing, marketing, availability, promotion, affordability, and quality along the food value chain. On the other hand, Global Warming have started showing its impact on agricultural yield and food worldwide. Food securities are threatened, especially in arid and semi-arid areas will further decline. The present situation in most of the arid and semiarid countries is not satisfactory. These countries are not able to fulfil the required demand of food for people. Afghanistan is one of mountainous and semi-arid country. Due to its extremely limited ability to deal with the effects of Global Warming, it is one of the most vulnerable nations in the world.

Afghanistan is particularly susceptible to decreased food production brought on by glacier retreat, floods, droughts, unpredictable rainfall, and other effects of Global Warming. Therefore, more than simply agricultural productivity will need to be taken into consideration in order to adapt food systems in order to improve food security for the poor and vulnerable and to avert future negative effects of Global Warming.

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