Food Security in East and Southeast Asia, as well as Climate Change Challenges

Shalu Pandey*

Department of Biomedical Sciences, University of Delhi, India

Corresponding Author*

Shalu Pandey
Department of Biomedical Sciences,
University of Delhi, India
E-mail: shalu.pandey.71997@gmail.com

Received: 05-April-2022, Manuscript No. JCWF-22-16557; **Editor assigned:** 06-April-2022, PreQC No. JCWF-22-16557 (PQ); **Reviewed:** 19-April-2022, QC No. JCWF-22-16557 (Q); **Revised:** 21-April-2022, Manuscript No. JCWF-22-16557 (R); **Published:** 27-April-2022, DOI: 10.35248/2332-2594.22.10(4).343

Abstract

This analysis examines the situation in East and Southeast Asia with reference to food security. The four pillars of food security-food availability, access to food, food supply stability, and food utilization-as well as the characteristics of food security at the sub-regional level are monitored in accordance with the World Food Summit definition and 2009 Declaration of the World Summit on Food Security. The sub-agricultural region's economy and food trade trends, such as food imports and exports, production and consumption, and the food price index, are reported and statistically analyzed. Furthermore, because the agricultural business in this region is subject to climate change, topics such as how climate change affects food security in food production systems, agricultural livelihoods, nutrition, and food policy are important to consider Making is also explored, which can be linked to the four pillars in various ways

Keywords: Climate change • Food security • Agriculture • Food policy • East and Southeast Asia

Introduction

The widely accepted definition of food security is "all people, at all times, have social, economic, and physical access to sufficient, safe, and nutritious food that fits their dietary needs and food preferences for an active and healthy life," as defined by the World Food Summit in 1996. Similarly, one of the United Nations' Sustainable Development Goals (SDGs) underlined the necessity of accomplishing the aim of "End hunger, achieve food security and enhanced nutrition, and promote sustainable agriculture." Ending hunger and malnutrition, enhancing small-scale farmers' income and productivity, preserving genetic variety, and establishing sustainable and resilient agricultural production practices are all targets under this objective. More than half of the world's population lives in Asia. At the same time, East and Southeast Asia's population accounts for 49.7% of Asia's overall population [1]. Given the region's significant demographic and geographic variety, a complete and integrated strategy in policymaking is required to realize the objective of a food secure Asia. As a result, the current situation in the region will be examined and analyzed within the context of the food security framework, which is comprised of four pillars: food availability, access to food, food supply stability, and food usage. Furthermore, climate change has created a substantial danger to food security, particularly in the most susceptible regions, and as a result four countries have declared themselves food insecure in intricate patterns, all of the framework's dimensions can be disrupted. A brief overview of how climate change affects food security in food production systems, agricultural livelihoods, nutrition, and food policymaking, all of which can be linked to the four pillars in various ways, as well as the appropriate solutions to these impacts, will be provided. Given the importance of rice cultivation in East and Southeast Asia's food security, we examine the relationships between rice output and some climatic indicators, such as temperature and precipitation, using historical data to determine the potential implications of climate change [2]. The availability of food takes precedence over other criteria of food security. Other objectives cannot be met unless sufficient food is available. Food availability, in general, denotes the availability of sufficient quantities of essential and appropriate types of food on a regular basis. Food supply can be measured in two ways: food production and food trade.

Food production

When it comes to grain production in Asia, rice is frequently the first consideration. Rice production in Asia contributes for over 90% of global rice supply, with the majority of the rice being grown in tropical locations with plenty of rain. Rice is the primary food source for more than half of the world's population, which is primarily concentrated in Asia [3]. As a result, rice production is critical not only for Asia, but also for the rest of the world. In 2019, East and Southeast Asia's rice production was predicted to be around 418.56 million tons, accounting for 47.6% of the region's total grain production and 55.4% of global rice production. Other key staple crops grown in East and Southeast Asia are maize and wheat. Maize production in the region reached 315.58 million tons in 2019, accounting for 35.9% of the region's total grain production. In this region, China and Indonesia produce 92.4% of the maize. China is also the region's leading wheat producer. China produced 133.60 million tons of wheat in 2019, accounting for 98.8% of wheat production in the region. Meat, fish, eggs, and dairy products are the most common sources of protein in the diet. In terms of animal-based protein production, East and Southeast Asia generate a substantial amount of animal and fishery goods [4]. Total animal-based protein output was predicted to be 352.04 million tons in 2018, comprising aquaculture, capture fishing, milk, meat, and eggs. China accounted for 70.9% of the region's total meat production. According to some estimates, meat and seafood consumption would be roughly 30% greater in 2030 than it was in 2017, with the increase driven primarily by demand in China as a result of the country's expanding affluence and population. According to this forecast, present production in this region will not rise at its current rate able to keep up with a 2.31% annual demand growth Furthermore, in a business-as-usual scenario, animal-based protein production will result in a 35% rise in water usage to fulfill the needs of a boom in demand for meat and fish [5].

Discussion

Climate change will almost certainly have a significant influence on food security. Because agriculture is so weather-dependent, an increase in the frequency of extreme events like drought, floods, wildfires, and storms can pose a serious threat to crops, animals, farming infrastructure, and even the lives of farmers. The core of the food security framework is food availability, and food production is critical to ensuring food availability. Climate change, for example, is expected to cause changes in suitable crop varieties, seasonal conditions, extreme weather (such as high temperatures, heavy rainfall, and so on), and atmospheric conditions (such as carbon dioxide concentrations), all of which could have a significant impact on food crop production. Climate fluctuation, in addition to having an impact on crop output, can also be a risk cattle and fisheries output are in jeopardy. Heat stress, water scarcity, and increased carbon dioxide levels, to mention a few, all lead to the growth of diseases, decreased survival rates, and a shift in animal species distribution, posing a threat to production systems [6]. Increased expenses for consumers to buy food are incurred as a result of the decline in food supply induced by climate change, further limiting customers' access to food. Farmers and households whose livelihoods rely on agricultural production, on the other hand, may see a drop in income due to low productivity and high production costs. This outcome is also linked to decreased food supply stability, as low economic conditions suggest that people do not have enough resources to gain access to markets or to consistently acquire stable and sufficient food for their households.

In terms of food use, climate variability resulting from recent extreme events has been identified as a factor contributing to variations in food quality and safety [7]. These alterations result in a shift in eating habits, which eventually leads to low nutritional status. In recent years, for example, a significant body of study has focused on how rising CO2 levels and temperatures affect agricultural yields and nutritional value. Malnutrition can be caused by a lack of some essential micronutrients as zinc, iron, and vitamin A. Environmental variables, such as humidity, temperature, biotic components, and water availability; can affect livestock health, which is linked to meat quality. Climate change will not only limit the number of calories consumed, but it will also make it more difficult to develop healthy local eating habits

[8]. As a result, it is critical to understand the context of these changes and identify the challenges in order to develop effective policy and programs to improve food security at the national and regional levels. This review comes to a close with a brief discussion of how climate change affects food security in food production systems, agricultural livelihoods, nutrition, and food policy formulation. Farming households who rely on agricultural production may incur financial losses as a direct result of the climate catastrophe [9]. Loss of agriculture jobs will result in a high unemployment rate in rural areas, pushing people to migrate to urban areas in search of chances for the least developed countries, whose agricultural sector accounts for a substantial amount of their economies. According to one study, a 3°C increase in temperature might reduce agricultural labour capacity by 30%-50% in Sub-Saharan Africa and Southeast Asia. According to the Internal Displacement Monitoring Centre, climate-related calamities forced 54.5 million people to flee Southeast Asia between 2008 and 2018. Furthermore, by 2050, approximately 79 million people in Southeast Asia are expected to lose their homes due to flood inundation, forcing citizens to evacuate their homes or countries. Regional political instability will worsen if there isn't enough capability to adapt or evolve, which could lead to conflict.

Conclusion

Food production and trade challenges are covered in the food availability dimension. Rice is the most important grain crop grown and exported in this area. In terms of animal-based products, poultry production has increased in recent decades as the region's population has grown. In terms of food availability, the proportion of GDP spent on food varies by country and is closely linked to the level of national economic growth. Because the agricultural business in this region is vulnerable to climate change, we've looked into how it might affect food production systems, agricultural livelihoods, nutrition, and policymaking, all of which are tied to the four pillars of the food security framework. Low agricultural productivity as a result of climate change has a detrimental impact on food production, putting food availability and access at risk. As a result, people must pay more for food, thereby reducing their eating options. The price of food is determined by the supply and demand balance. As a result, the rise in food prices reflects low productivity and resource scarcity on the supply side, as well as an increasing population on the demand side. Increasing food costs frequently exacerbates poverty in rural farming areas, as agricultural revenue accounts for the majority of their earnings. Low productivity has a negative impact on their operations and earnings. Extreme weather occurrences in recent years have been proven to have an impact on food quality and safety, ultimately leading to poor nutritional status. Because of the high CO2 concentration in Southeast Asia, prominent rice cultivars have decreased protein, micronutrient, and vitamin B content. However, if the annual mean temperature rises above a particular point, it may impair rice output. While annual mean temperature has a positive link with annual rice output in high latitude nations, the positive impact grows as the annual mean temperature changes. According to some study, climate fluctuation may cause favorable geographic circumstances for agricultural production to fluctuate, which is notably evident in high latitude regions. In low-latitude nations like Indonesia and Thailand, on the other hand, both yearly rice yield and harvested area are positively connected with annual precipitation. In Thailand, where rained rice production methods predominate, precipitation change has a moderately positive connection with rice output change. This demonstrates that Rice production will be harmed by a lack of sufficient rainfall or water supplies, and the negative effects will worsen as the satiation of decreasing rainfall gets more severe.

References

1. Zhou, Z.Y., & Wan G. Food insecurity in Asia: Why institutions matter. Asian Development Bank Institute, 2017.
2. Zhongming, Z., et al. "Charting Asia's Protein Journey Asia Research and Engagement." (2021).
3. Matthews, A. Regional integration and food security in developing countries. Vol. 45. Food & Agriculture Org. 2003.
4. Bandumula, N. "Rice production in Asia: Key to global food security." *Proceed Nat Acad Scien, India Section B: Biol Scien* 88.4 (2018): 1323-1328.
5. Kim, K.S.K., & Park, C.Y. "Food Security in Asia and the Pacific amid the COVID-19 Pandemic." (2020).
6. Timmer, C.P. "Food Security in A sia and the P acific: The Rapidly Changing Role of Rice." *Asia Pacific Pol Stud* 1.1 (2014): 73-90.
7. Gobato, R., et al. "Mathematics of the Extra-Tropical Cyclone Vortex in the Southern Atlantic Ocean." *J Climatol Weather Forecast* 9.1 (2020): 268-272.
8. Dantanarayana, M., et al. "Improving Sub Daily Scale Storm Forecasting for Kelani River Basin based on Temporal Distribution of Rain Events." *J Climat & Weather Forecast* 9.1 (2021): 1-9.
9. Yate, T.A., & Hutjes, R.W. "Assessing the Potential of Using ECMWF system-4 Seasonal Rainfall Forecasts over Central-West Ethiopia." *J Climatol Weather Forecast* 9 (2021): 279.

Cite this article: Pandey S. Food Security in East and Southeast Asia, as well as Climate Change Challenges. J Climatol Weather Forecast. 2022, 10 (4), 001-002