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China and Global Food Security Dynamics amidst the Russian Invasion of Ukraine

Alfi NUR AZIZAH and Hendra Maujana SARAGIH

Department of International Relations, Faculty of Social and Political Sciences, Universitas Nasional, Indonesia, azizahalfi25@gmail.com, ORCID: 0009-0001-7712-6862.

Dr., Department of International Relations, Faculty of Social and Political Sciences, Universitas Nasional, Indonesia, hendramaujanasaragih@civitas.unas.ac.id, ORCID: 0000-0002-0453-4806.

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Abstract

This paper aims to investigate how China is handling national security and wheat production amid international sanctions in 2022. The study employs the Food Security Theory and Supply Chain Theory, utilizing qualitative research methods for a comprehensive analysis. The research concludes that the significant diplomatic tension between Russia and Ukraine on February 24, 2022, has economic implications for both countries. China's main goal is to maintain stability and economic growth. The Ukraine-Russia relationship is marked by instability in the global market, with the Ukraine-Russia trade deficit causing tension. China's desire to diversify and increase trade with Russia will help China diversify its trade with other countries, resulting in a larger global trade surplus. Wheat is a significant food in China, with a wide range of products and inputs. The consumption of wheat in China has led to increased domestic consumption, influencing the country's economy.

Introduction

The quantity of imports and exports in China is determined by the balance of domestic grain market. Grain production in China fluctuates due to varying weather conditions, price fluctuations, and policy adjustments. Even more crucially, the circulated grains account for only about 30% of the production, thus the behavior of farmers in supplying has a significant impact on the grain market equilibrium. Since the 1980s, the grain circulation system has undergone reforms, and market prices have varied significantly over time, both of which greatly influence the expectations of farmers and their supply behavior. Fluctuations in the domestic grain market have led to considerable variations in China's imports and exports during the reform era (Talhelm et al., 2014).

Wheat is a dominant plant in moderate climate countries that is used for human food and animal feed. Its success partially relies on its adaptability and high yield potential, as well as the gluten protein fraction that imparts viscoelastic properties, allowing dough to be processed into bread, pasta, noodles, and other food products. Wheat also contributes essential amino acids, minerals, vitamins, beneficial phytochemicals, and dietary fiber components to human nutrition, especially enriched in whole grain products. Wheat is also referred to as a vital cereal crop worldwide, playing a strategic role in supporting food security and meeting human dietary needs. Wheat is the most widely produced food commodity in the world compared to corn and rice. Its production has been increasing year by year, making it a major global crop. Wheat is a raw material that can be processed into wheat flour, which is then used to make various products such as noodles, bread, pasta, pastries, cakes, biscuits, and more. Current and future concerns include maintaining wheat production and quality while reducing the use of agricultural chemicals as inputs, and developing pathways with enhanced qualities for specific end uses, especially for biofuels and human nutrition. In recent years, China's rapid commodity consumption growth has exceeded its domestic supply, leading the government to import significant amounts of food commodities. Xi Jinping acknowledges the urgent need to increase agricultural imports to meet domestic demand, but overreliance on imports makes China vulnerable in its pursuit of becoming a self-sufficient nation (Zhang et al., 2022).

The main goal of China's food security is to safeguard one of the country's key wheat supplies. In comparison to rice, the significance of wheat as a staple food is often overlooked. Globally, China stands as the world's largest wheat producer and is reported to possess the largest

global wheat reserves, accounting for over half of the world's wheat stocks in 2022. China's current wheat production contributes to over 17 percent of the global total. However, in recent years, the impacts of climate change, including extreme weather leading to disasters like severe floods, have jeopardized domestic wheat and cereal crop production, causing production deficits. Beyond being a major wheat stock producer, China is also one of the world's leading wheat importers, purchasing nearly 10 million tons of wheat in 2021 (Donnellon-May and Hongzhou, 2021).

The outbreak of the war between Russia and Ukraine on February 24, 2022, has posed a significant diplomatic challenge for China and has had a significant impact on various aspects of the country's economy and development. China's primary concern at present is the war's impact on its food security and stability. In recent years, despite the central government's emphasis on the importance of domestic food production, food imports into China have increased and are likely to continue to rise. However, the Russia-Ukraine war is likely to impede these efforts. Amid the ongoing war in Ukraine with broad global repercussions, Ukraine's wheat exports have largely come to a halt since the Russian invasion. The connection between the Russia-Ukraine War and the instability of food supply is indeed a tangible issue. The ongoing war and the difficulty in exporting agricultural products, especially wheat, have triggered a number of restrictions on agricultural exports in other countries.

The demand in China for high-quality wheat continues to grow as the high and middle-income consumers in first-tier cities increasingly shift to greater consumption of convenient and healthy foods. The rupture caused by the Russia-Ukraine war, disrupting supplies from Ukraine and the ban on wheat exports to Russia, will undoubtedly impact China's efforts to diversify its wheat sources. China's push to secure more wheat supplies during the war, despite the international sanctions imposed by many countries against Russia, could introduce more uncertainty into the global wheat market. For instance, the emergence of food protectionism leading to fewer exporting nations for wheat, combined with sanctions against Russia and the Ukraine conflict (Russia and Ukraine jointly supply around 26 percent of global wheat exports), as well as China hoarding its own wheat stocks, could potentially pit wheat-importing countries against each other in competition for reduced global wheat supplies. This could also contribute to the already rising global food prices.

The conflicting situation and ongoing Ukraine-Russia conflict hold many implications for the global order. China's self-reliant stance on food security and its focus on increasing food production have mitigated the severity of the war's effects, yet Ukraine has also played a vital role in China's food security. In such a scenario, any barriers to importing activities from Ukraine are likely to elevate inflation in China. Wheat imports are likely to be disrupted, creating inflationary pressures in China. Furthermore, China's agricultural industry is also likely to be impacted significantly as Russian fertilizers become difficult to import due to international sanctions (Ali et al., 2019).

1. Theoretical Framework

1.1. Food Security Theory

Food Security was theorised in 1974, or precisely at the World Food Conference. According to Malett, the concept of food resilience actually falls within the discussion of human security, where the focus on security issues then shifts to problems that often affect individuals. The term "food security" at the 1974 World Food Conference primarily referred to the global issue of food shortages or deficiencies on a global scale. Food security is defined as a form of adequate food supply availability to meet the world's food needs. At the national level, all countries must ensure that their food supply is well met. Thus, there are four main pillars in achieving food security: food availability, physical and economic access to food, the biological benefits of food for the human body, and stability in terms of food availability, access, and benefits. The concept of food resilience can be applied to describe food situations at various levels, including global, national, regional, household, and individual levels. The concept of food resilience was further refined in the World Food Summit's 1996 Action Plan, which states that "when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active life" (Petra Hellegers, 2022).

The concept of food security is broader compared to the concept of food self-sufficiency, which is solely focused on the physical aspect of food production adequacy. Food security encompasses at least two essential elements: food itself and the community's access and stability regarding that food. If either of these elements is not fulfilled, a country cannot be considered to have good food resilience. Food resilience is still considered fragile if individuals access to meet their food needs is uneven, even if an ample supply of food is available at the national and regional levels.

The development of food distribution subsystem aims to ensure food stability and maintain strategic food prices. The distribution subsystem encompasses both the physical and economic accessibility aspects of evenly distributing food. The distribution system goes beyond just the physical aspect of having food available in all needed locations; it also pertains to the economic affordability reflected in prices and purchasing power of the society. Regional food surplus does not necessarily guarantee sufficient food for individuals in the community. The distribution system needs to be optimally managed and not conflict with the global market mechanisms to achieve efficiency in the process of equalizing food access for the entire population. The development of the consumption subsystem aims to ensure that every citizen consumes an adequate, safe, and diverse amount of food. This subsystem involves efforts to increase the knowledge and capabilities of the community to understand the importance of food, nutrition, and good health in order to manage consumption optimally. Within the consumption subsystem, another important aspect is diversification. Food diversification is a way to obtain a variety of nutrient consumption and reduce dependency on a particular staple food, such as wheat. The development of these three subsystems is carried out simultaneously and harmoniously using a participatory community empowerment approach, a competitive and sustainable agribusiness system approach, which is people-centered and decentralized, and an economic approach. The expected output of food security development is the fulfillment of human rights to food, increased human resources, and improved economic resilience.

1.2. Supply Chain Theory

The definition of supply chain proposed by Langley in 2008 is that a supply chain carries a broad and comprehensive meaning, encompassing demand and highly relevant value. Therefore, it can be stated that supply chain, demand chain, value network, and value chain are synonymous. There is a broader usage of the concept of supply chain management and a comprehensive perspective on supply chain management. Supply Chain Management is directly related to the complete cycle of raw materials from suppliers to production, warehouses, distribution, and finally reaching consumers. As companies enhance their competitive capabilities through product adaptation, high quality, cost reduction, and speed to market, there is an additional emphasis on the supply chain (Langley et al., 2008).

Supply chain management pertains to the management of the flow of goods and information through the value chain, from raw material acquisition to final consumption. Supply

chain management is about obtaining the right product, in the right quantity, with the right quality, at the right place, and at the right time for the right customers, in the right location. Supply chain management encompasses various business functions such as forecasting, inventory management, procurement management, warehouse management, information technology, and transportation management.

According to Heizer & Render, supply chain management involves the coordination of activities aimed at transforming raw materials into work-in-progress or finished goods and subsequently delivering these products to consumers through a distribution system. This activity includes traditional purchasing functions as well as other critical activities that connect suppliers with distributors. The supply chain also constitutes a network of companies working collaboratively to produce and deliver a product to end consumers. Managing the appropriate product flow is one of the objectives of the supply chain. Supply chain theory is a concept used to manage inventory issues. Evolving customer demands and the increasing number of retailers necessitate effective coordination between sellers and buyers (Bhagwat and Raut, 2012).

Food resources are often linked to a vast global food chain with little to no positive impact on the communities where the chain originates. Using international wheat trade data to reconstruct the global trade network and identify the most influential countries, it was found that the most central countries in global grain trade account for more than a significant portion of global wheat exports in terms of volume. This makes the wheat value chain vulnerable, as disruptions in one of these countries are likely to propagate worldwide. To rectify the imbalanced trade network structure, researchers advocate for a greater emphasis on regional and local food systems, as well-functioning local food systems are more effective at addressing shortages and disruptions in the larger global food system.

The supply chain theory is a network system within a company that is interconnected, interdependent, and mutually beneficial within an organization that collaborates to control, manage, and develop the flow of materials, products, services, and information from suppliers, companies, distributors, stores or retailers, and supporting companies such as logistics service providers, all the way to customers.

2. Methodology

2.1. Research Approach

In this study, a qualitative descriptive approach was utilized as the primary method for data processing. This method involves portraying or revealing the researched object based on facts and other actions holistically, describing them in words and language within a specific context, and utilizing various natural methods. This method is expected to elucidate how the author perceives the issue and endeavors to depict it in a straightforward and systematic manner, establishing connections between the observed phenomena and theories or concepts.

2.2. Data Collection Techniques

In any research, the collection of necessary data is essential to present evidence or findings from the field in order to address the research questions. The data collection technique employed in this study involves the use of secondary data. Secondary data refers to data sources obtained indirectly through intermediaries. Secondary data generally consist of evidence, records, or historical reports that are organized in documented data, both published and unpublished. In this research, secondary data was acquired through literature review.

2.3. Data Processing and Analysis Techniques

The analysis technique employed by the author to analyze the data is descriptive content analysis. This type of content analysis is utilized to provide a detailed depiction of a message or text without the necessity of testing a specific hypothesis. The objective is to comprehend the content of the acquired data. In this study, the data pertains to China's Food Security Efforts in Wheat Production Amidst International Sanctions. The author then proceeds to descriptively map out the contents of each aspect containing international economic elements (Eriyanto, 2011).

3. Approach and Strategy of China's Food Security

Chinese agriculture has undergone significant changes since the late 1970s. Agriculture has grown at an average rate of 4.6% per year for over three decades. Despite per capita water availability being only a quarter of the global average and arable land contributing only 8% of the world's total, China provided around 95% of the total food supply for approximately 20% of the global population in 2015. This growth has been accompanied by significant shifts in food production and consumption. The growth of both agricultural and non-agricultural employment

has increased farmers' incomes and drastically reduced rural poverty. China was the first developing country to achieve the Millennium Development Goals of halving its poverty rate by 2015. While past achievements are remarkable, China has entered a phase of agricultural development where previous challenges have intensified and new challenges have emerged. The increase in food production has come at the expense of the environment and sustainable development. Additionally, recent wage hikes have substantially raised the costs of food production and lowered agricultural competitiveness in the global market, thereby amplifying concerns about food security in China. Moreover, despite stable growth in farmers' incomes, their average earnings remain low, and the rural-urban income gap remains significant. Ensuring national food security, achieving higher farmers' income growth, and promoting sustainable agricultural development are the primary goals of China's recent agricultural and food policies (Sun et al., 2008).

In terms of food security within China itself, the 13th Five-Year Plan for Economic and Social Development, which integrates the Sustainable Development Goals (SDGs) with China's policies, sets two crucial goals for agriculture in achieving food security. The first goal is to achieve self-sufficiency in key food commodities that are essential for the Chinese population, such as rice, corn, and wheat, which serve as calorie sources to meet human dietary needs. The second goal is to achieve absolute food security. However, attaining the desired outcomes in terms of food commodities is not an easy task for China.

Food security is always linked with price stability, particularly for staple foods like rice. Indeed, food security is often synonymous with price stability, and this perspective employs a food stability approach for food security. This necessitates the modernization of agriculture, including maximizing the potential of small-scale farming operations in China to increase economic scale. Farmers also need education in the form of additional training in modern farming practices to optimize agricultural yields and meet demands. The forthcoming challenges related to food encompass multidimensional factors spanning across various sectors, commodities, regions, and populations. The cross-sectoral interconnectedness in addressing food-related issues is so strong that both its national and international political implications are significant. Given these realities, to support national food security, future strategies for enhancing food security need to anticipate various conditions. Approaches to developing future food security should prioritize household or individual food security with a decentralized management pattern, which would be a

consequence of implementing policies supporting regional autonomy (Food and Agriculture Organization of the United Nations, 2014).

Food, as the primary determinant of national prosperity and human well-being, holds the key to national security. Its security is a fundamental prerequisite for overall national security. In recent years, food security has gained attention across both developing and developed countries. However, the situation is particularly concerning in Asia and Africa, where the number of individuals experiencing hunger reached 418 million and 282 million, respectively, in the year 2020. China, home to a fifth of the global population, faces unique pressures on its food production. To maintain food security and meet the demands of its substantial population, a larger quantity of grains needs to be produced on 9% of the world's arable land and utilizing 6% of its water resources. This underscores that future challenges relating to environmental sustainability and resource availability will intensify. Further complicating this situation are climate change, urbanization, and a shift in dietary habits from grains to more meat-based products. These factors have caused, or will cause, significant shifts in China's food security landscape. Therefore, adopting a multidimensional assessment of China's food security situation will facilitate a more comprehensive and objective understanding. A quantitative and qualitative evaluation of the barriers affecting China's food security status plays a pivotal role in defining the primary objectives of China's own food security strategy and agricultural policies (Huang and Yang, 2017).

Over the past several years, China has achieved self-reliance in securing its food supply, and its citizens now not only have sufficient food but also a wider variety of choices than ever before. However, the large population, coupled with the increasing intensity of extreme environmental events such as floods, droughts, and extreme temperature and rainfall variability, undoubtedly presents significant challenges to current food security in China. Hence, determining how to ensure the supply of agricultural products and enhance agricultural development sustainability under the constraints of limited resources and the need for environmental preservation constitutes the most critical food security challenge to be addressed. Additionally, human factors such as technological innovation in agriculture, assurance through policy mechanisms, and increased investment in water conservation for agricultural land construction appear to be avenues that can mitigate various impacts. (Coates, 2013).

3.1. China in the World Wheat Market

From 1977 to 1997, China's grain imports accumulated to 248.7 million tons, and exports reached 110.3 million tons, resulting in a net import of 138.4 million tons. In the past 20 years, China has been a grain exporter for 6 years and a net importer for 14 years. During the 1990s, the average annual global grain production was about 1.7 billion tons, with international trade amounting to around 227 million tons, accounting for approximately 13% of global grain production. China's net import ratio relative to domestic production decreased from 4.5% in 1982 to a low of -1.2% in 1997. China's participation in international grain trade aims not only to bridge the gap between aggregate supply and demand but also to balance the respective types of grains. For instance, China has been the world's largest importer of wheat for several years (Zhao and Zhang, 2017).

The quantity of imports and exports in China is determined by the balance of the domestic grain market. Grain production in China experiences fluctuations due to weather variations, price fluctuations, and policy adjustments. Moreover, the circulating grains constitute only around 30% of the total production, which means that farmers' supply behavior significantly impacts the grain market balance. Since the 1980s, the grain circulation system has undergone reforms, and market prices have varied significantly over time, both of which heavily influence farmers' expectations and supply behaviors. The variations in the domestic grain market have led to substantial fluctuations in China's imports and exports during the reform era.

Grain exports are projected to grow in the near future, potentially transforming China into a net grain exporter. In recent years, due to policies aimed at increasing grain production, China has experienced a surplus of grains coupled with low domestic demand. Although the government mandates that state grain circulation enterprises purchase the amount of grains farmers intend to sell, farmers still face difficulties in selling their desired quantities due to a lack of state facilities for grain storage. As a result, domestic grain prices have declined from their peak in 1996. To address the issue of low demand, both the Chinese government and grain companies have been seeking solutions. The current study indicates that the highest import growth rates are anticipated in the meat and live animal sectors. Oilseeds, oils, and fats of vegetable origin continue to be dominant agricultural import commodities by 2030. Imports of grain products are projected to experience rapid growth in the upcoming decades. The share of vegetable and fruit exports as

well as animal products is expected to decline over the research period. Conversely, fisheries products, grain products, and fat and oil products are likely to maintain a stable market share during the 2013–2030 period.

4. Support from Social and Political Environment for National Resilience

4.1. Economic Environment

Indicators of economic status significantly relate to the perception of food security issues. Compared to individuals with only elementary education, those with higher education tend to have a greater awareness of food security problems. People with higher income levels are more likely to be concerned about food security compared to their lower-income counterparts. The results confirm the uneven distribution of vulnerability to food security risks. While food security threats affect everyone, those less fortunate tend to have less awareness of the dangers and take appropriate preventive actions. This cognitive deficit results in higher food security risks for the less fortunate.

The uneven distribution of risk implies that people adopt different strategies to address food security issues, and there exists a gap in problem perception due to varying socio-economic statuses. As a result, food security policies in China manifest as an uneven distribution of vulnerability to food security risks among individuals of differing socio-economic statuses, which is an outcome of increased inequality after state-led modernization. Individuals with higher socio-economic statuses possess greater financial and cognitive abilities to protect themselves from risks, while those with lower economic statuses are more susceptible to health hazards.

China spends a significant amount on agricultural subsidies compared to other countries. Expenditure on agricultural subsidies increased in 2015. The subsidies provided by China to farmers for producing specific types of crops have driven the production of food commodities at lower production costs, making them competitive for import in other countries. Moreover, these subsidies are also implemented with consideration for their environmental impact.

The environmental conditions in China often do not align with the requirements for producing certain types of crops. As a result, Chinese farmers tend to use excessive water and fertilizers to maximize agricultural crop growth. However, this practice ultimately disrupts environmental and water security. By shifting subsidies from price support to modernization,

agricultural research and development, as well as anti-pollution programs, China is more inclined to enhance efficiency and productivity within its farming system.

Due to economic globalization, food supply and demand are interconnected across nations. The Russia-Ukraine conflict has had a profound impact on the global economy and food security. Ukraine possesses some of the world's most fertile lands, which significantly contribute to food production. The ongoing conflict has created significant uncertainty about its consequences. Despite the crisis's negative repercussions on the Russian economy, the global economy has also felt the effects of this crisis. Preliminary outcomes present challenging economic impacts resulting from the Russia-Ukraine conflict (Pereira et al., 2022).

4.2. Public Concern for Food Security and Political Trust

The issue of political food security implies that food security is not solely a societal matter but also impacts public trust in the government. Trust in the government is fundamental for the effectiveness of governance and political stability. When the performance of the administration falls short of public expectations, citizens may lose their trust in the government. Consequently, citizens can become distrustful of the government due to its failure in overseeing and regulating food security. As certain government officials become involved in food safety scandals, corruption within regulatory bodies arguably exacerbates public dissatisfaction. China's multi-level governance system ensures that both the central and local governments have separate responsibilities in food regulation. The central government can play a leadership role in the food safety regulation cycle. It enforces food safety laws and can also institute regulations to govern. Local governments perform specific oversight tasks, including monitoring food quality and imposing penalties for violations.

Researchers employ the term "fragmented authoritarianism" to elucidate the political and social characteristics of China's authoritarian system. Authoritarian central power coexists with divided power, and various implementing agencies have narrow organizational and political goals that may not always align with the central authority's objectives. This dual-layered administrative structure affects the supervision and policy implementation regarding food security. Food security issues can have effects on trust, although their impact can vary between the central and local government levels.

The Chinese government fully acknowledges the potential threats posed by food security issues in its decisions. To understand the influence of food security issues on public trust in the government, we must consider government institutions. Clearly, the government seeks to avoid mass blame for food safety issues and constructs discourse on food safety responsibility. Rhetorically, this responsibility is distributed among the state, food producers, and consumers. However, the government manipulates the primary subjects responsible for food safety risks in a sophisticated manner. To minimize the impact of food security issues on political trust, the Chinese government adopts two strategies.

Firstly, the government encourages individuals to manage risks and emphasizes individual consumer responsibility. Marketization and individualization compel ordinary people to take responsibility for food safety risks. In a risk-prone society, individualization creates a state of "disconnection", where individuals are separated from collective institutions and traditional support networks. They become the agents of action and individually must tackle the risks of daily life. This process enforces compulsive self-determination on individuals who must take responsibility for all their problems themselves. Chinese society is too fragile to confront the authoritarian state, so the government shifts responsibility onto ordinary people and asks individuals to bear the responsibility for food safety risks.

Specifically, asymmetric information about food production, distribution, and sales heightens consumers' vulnerability in facing food safety risks, while quality control and food safety lie in the hands of producers and government institutions. The government discreetly evades its responsibility by making ordinary people confront food safety risks after the individualization of society. Chinese citizens unconsciously have to accept a new personal responsibility burden placed by the state and develop various methods to select and purchase safe food.

Secondly, when scandals are exposed, the government shifts all responsibility onto immoral and greedy individuals involved in food production, processing, and transportation, framing them as self-serving wrongdoers. The government openly promotes its efforts in overseeing and regulating food safety issues and acts as an arbiter in food safety incidents. When these incidents occur, the government openly criticizes immoral food producers and processors, swiftly announcing steps to inspect relevant companies and individuals. The government never

mentions its own regulatory failures, and it portrays corrupt officials as responsible parties in specific cases to avoid undermining its own authority. Rhetorically, the Chinese government labels itself as the representative of the people's interests and the protector of the masses.

Hence, the government allows certain types of food safety incidents to be reported; small, locally-focused issues not tied to broader social instability are often tolerated. Every media coverage on food safety issues is under contention between the combined interests of the state and the hegemony of corporations, and the counter-hegemony of citizen-consumers.

5. Analysis of Wheat Food Availability in China through the Supply Chain

Developments in food security in China, both in terms of food production and total per capita food availability, have followed a similar trajectory, driven in part by small-scale food imports. It is evident that in 1998-1999, China's food availability was relatively stagnant and even declined in the following two years. In 2018, production approached 660 million tons, a 30% increase from 1996 (500 million tons). Notably, the year China issued its first white paper on food security saw a 116% increase over 1978 (300 million tons), the year of China's land reform launch, showing an almost 600% increase since 1949 (110 million tons). Supply chain availability is a network of interconnected organizations working collaboratively to control, regulate, and enhance the flow of materials and information from suppliers to end-users. Supply chain management involves systematic and strategic coordination of traditional business functions within a company and cross-business functions in the supply chain to improve the long-term performance of the company and the supply chain as a whole. The activities within the chain are interdependent, such as material procurement, conversion of materials into semi-finished or finished goods, and distribution and storage as needed.

Sudden crises catalyze the digitization of food supply chains and agricultural services, contributing to the diversification of food distribution channels and the transformation of the food system. Changes have been observed throughout the food chain. Many farmers and wholesale traders who had never used online platforms before are now familiar with these innovative tools and recognize their benefits. Consumers are forming habits of ordering fresh food online and are accustomed to direct home delivery. E-commerce platforms have further developed their supply chains in agriculture, promoting strategies to collaborate closely with

agricultural production and support farmers. The central government is also developing programs that support cold chain storage and facilitate the online sale of agricultural products.

Compared to agriculture in other countries, Chinese agriculture is characterized by limited arable land and a large workforce involved in agricultural production. The scarcity of arable land generally implies that China tends to have a comparative advantage in labor-intensive crop production, such as fruits and vegetables, and a disadvantage in intensive land crop production, such as grains. However, the current product structure does not reflect its underlying comparative advantage but rather reflects production patterns dictated by government policies supporting cereal and grain production to meet demand. Moreover, since 2012, food availability in China has increased more significantly compared to other countries with similar populations like India and Russia.

Russia and Ukraine are known as the world's largest wheat suppliers, providing almost a quarter of the world's wheat supply. Experts from many countries worldwide indicate that European countries will face disruptions in the supply chain due to Russia's attack on Ukraine in 2022. This crisis has led to higher inflation, decreased household consumption due to price increases (oil, gas, wheat, minerals), supply chain disruptions, uncertainty, hindrance to economic growth, decreased investment, and global stock fluctuations, particularly in Europe. Both Russia and Ukraine are significant exporters to Europe. Much has changed in China since the two previous wheat research efforts, both in terms of national development and access to new data sources. Chinese agriculture is undergoing rapid modernization, bringing opportunities for commercialization and environmental pressures. The national system has also expanded its data collection efforts and opened its archives to researchers to an unprecedented extent. The importance of wheat to both China's food economy and the global market, its rapid shift within China, and new information sources justify a fresh perspective on wheat supply. These changes allow and demand that the analysis focus on measuring the influence of various socio-economic forces. These findings help speculate whether China's wheat producers can meet self-sufficiency targets in grain leadership or if the country will increasingly depend on the global market. Wheat Supply Chain refers to the management of material and information flow, as well as the capital that follows it, from the beginning to the end of the wheat agribusiness chain to optimize the fulfillment of needs at each entity in the wheat supply chain. Supply chain management efforts

run effectively and efficiently if the basic system and behaviors of the wheat supply chain system consider sustainability from economic, social, and environmental aspects.

Food sustainability using supply chain or supply chain theories cannot be achieved without cross-sector integration, including government, companies, and knowledge providers. Given the complexity of the supply chain and the vulnerability of small farmers, relying solely on the social responsibility of farmers to achieve supply chain sustainability is not feasible. Therefore, policies should focus on improving the economic resilience of the supply chain, attracting more small farmers' involvement, and further encouraging their contributions to greenhouse gas emissions mitigation and resource conservation.

Conclusion

The significant diplomatic tension between Russia and Ukraine on February 24, 2022, has substantial economic and geopolitical implications for both countries. China's main objective is to maintain stability and economic growth. The Ukraine-Russia relationship is marked by instability in the global market, with the Ukraine-Russia trade deficit causing tensions. China's desire to diversify and enhance trade with Russia will assist in diversifying its trade with other nations, resulting in a larger global trade surplus. Wheat is a popular food product in China used for both consumption and human consumption. Wheat contains amino acids, minerals, vitamins, and other nutrients for human consumption. It holds significance in China's food landscape, with a wide variety of products and uses. The consumption of wheat in China has led to increased domestic consumption, influencing the country's economy and encouraging domestic consumption.

China has actively developed its agricultural production since 2000, contributing to food security and the global food security system. This has resulted in a significant increase in China's population, with a 7% increase in agricultural numbers. China has also focused on agricultural sector reform, introducing new technology, modernizing agricultural practices, and investing in infrastructure. Quality improvement in produced food is a focus in China, with an emphasis on producing high-quality products and promoting sustainable agriculture. The Chinese government has set national food security targets for 2022, aiming for 71.75 hectares of arable land by 2025 and 80 hectares by 2030. China also imports high-quality products from countries like the United

States and Brazil, with a target of 165 hectares by 2021. China's impact on the global food security system is significant as it aims to develop a comprehensive strategy for global food security. This includes promoting global cooperation, fostering collaboration, and building a more inclusive and sustainable food system.

China's economic growth is highly influenced by the increasing number of Chinese people who are the main consumers of food products. The total production of food products in China has increased significantly, with data from China's National Bureau of Statistics and the China Rural Statistical Yearbook revealing a significant increase from 28.9% in 2001 to 9.4% in 2020. The distribution of food products in China is a significant factor influencing its economic growth. The country has significantly improved its infrastructure and transportation, resulting in a stable and growing economy. The agricultural sector has also seen significant growth, with the US exporting $1.62 billion worth of food products in 2020 and $173.91 billion in 2021. The Chinese government has worked to enhance its agricultural sector and innovate in the synthetic field. In 2021, the Ministry of Agriculture and Rural Affairs (MARA) announced that the country would implement new agricultural policies to increase national agricultural output and reduce dependence on foreign aid.

Furthermore, the role of the MARA is actively implementing Agricultural Reform in China, with a focus on enhancing the agricultural sector. MARA focuses on multi-level coordination to ensure the success of reform implementation. The key principle of reform implementation is to improve local production processes and inputs, ensuring efficient transportation of products and inputs. The government also strives to enhance the distribution and production of agricultural products, utilizing e-commerce platforms and a combination of government and private sector engagement. Innovation is also being employed to address current situations and challenges. Big data platforms, such as big data streaming, live streaming, and social media, are used to provide real-time information on agricultural production situations. Online platforms are also utilized to promote the production of agricultural products, making it an effective model to boost local production.

As primary providers, small-scale farmers play a significant role in the sustainability of the wheat supply chain in China. To produce 1,220 kg of steamed bread to meet the daily consumption needs of 10,000 people, a comparison with conventional farmer practices is made.

In this context, this demonstrates an effective approach to enhancing the overall sustainability of the entire food supply chain. Further research should focus on the mechanisms of this approach through multi-stakeholder engagement in the field.

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