Worsening Food Crisis
Further Hinders Global Productivity

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Abstract

More than 10 percent of the world population constantly live in hunger. The COVID-19 pandemic, climate change, and the war in Ukraine all contribute to the deepening of the already broken supply-chain problem. Not only is the world currently suffering from immediate food-security issues, but we should also expect harsh times ahead in securing global food supply.

China is continuing to improve its food security strategy to feed its 1.4 billion population, not an easy shoe to fill but not impossible to achieve with the cooperation of its people, introduction and execution of relevant policies, and implementation of agricultural innovation.

Feeding the current and future global population can only be possible through cooperation and collaboration from countries around the world.

The United Nations estimates that the world population will reach 9.8 billion in 2050, and 11.2 billion in 2100.[1]

The current world population is at 7.5 billion but 11.6 percent of it is undernourished, as indicated in the World Food Programme's live HungerMap (June 27, 2022).[2]

While countries and policymakers were trying to find ways to feed the existing and the growing world population and were yet to succeed, more problems surfaced, including the COVID-19 pandemic, climate-change induced natural disasters, and the war in Ukraine.

I. Broken Supply Chain

The COVID-19 pandemic in 2020 further intensified the global food-shortage issue when the global supply-chain was disrupted - countries preserving their own food sources limit their food exports.

Fires, floods, landslides, and droughts in different parts of the world, as a result of climate change, negatively impacted food supplies and the people's ability to pay for food.

The war in Ukraine started by Russia on February 24, 2022, made the world's uphill battle against hunger even more severe. Both Russia and Ukraine are big food suppliers to the global market - accounting for about one-third of the world's wheat exports, and being among the top five suppliers of barley, sunflowers, and maize[3] . These two countries' halting their food exports not only created shortage of food but further drove up food prices.

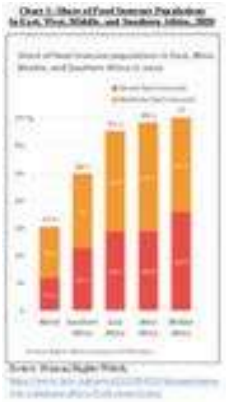
This broken supply chain reduced productivity, poorer countries fell deeper into food insecurity, elevated food prices pushed more people into an undernourished state, higher inflation in almost all the economies in the world might risk a worldwide recession, but for sure further hastened inequality, hurting lower income households in particular.

II.Immediate Negative Impacts in World Food Security

Many countries in Africa were already in a food crisis - as a result of natural disasters, COVID-19, and rising food prices (as indicated in Chart 1) - even before the war in Ukraine.

After the war started in February 2022, supply-chain disruption in many countries in East, West, Middle, and Southern Africa - which rely on Russia and Ukraine for a significant percentage of their wheat, fertilizer, or vegetable oils imports - are experiencing further increase in the already high food prices in the region.[3]

Asian countries, through geographically farther away, cannot escape the negative impact of the war because of their international-trade activities. New study lists published by CNBC in early April listed countries that are most vulnerable to rising prices (imports from Russia/Ukraine as a percentage of 2020 world imports)[4]:



- Fertilizer: Indonesia (more than 15%), Vietnam (more than 10%), Thailand (more than 10%), Malaysia (about 10%), India (more than 6%), Bangladesh (nearly 5%), Myanmar (about 3%), Sri Lanka (about 2%).

- Cereals from Russia: Pakistan (about 40%), Sri Lanka (more than 30%), Bangladesh (more than 20%), Vietnam (nearly 10%), Thailand (about 5%), Philippines (about 5%), Indonesia (less than 5%), Myanmar (less than 5%), Malaysia (less than 5%).

- Cereals from Ukraine: Pakistan (nearly 40%), Indonesia (more than 20%), Bangladesh (nearly 20%), Thailand (more than 10%), Myanmar (more than 10%), Sri Lanka (nearly 10%), Vietnam (less than 5%), Philippines (about 5%), Malaysia (about 5%).

These are only immediate and direct short-term negative impacts to certain countries. Countries around the world are already dealing with fertilizer shortage, among others, which will have a lingering effect on future food supply.

III.Harsh Times Ahead to Secure Global Food Supply

The United Nations has warned that the war in Ukraine has helped to stoke a global food crisis that could last years if it goes unchecked. UN Secretary General António Guterres said shortages of grain and fertilizer caused by the war, warming temperatures and pandemic-driven supply problems threaten to "tip tens of millions of people over the edge into food insecurity."[5]

Apart from the crumpling food-supply chain, the Russian-Ukrainian war brought fertilizer shortage to the centerstage. Fertilizer shortage was an already acute issue before the war, and the war in Ukraine pushed the situation to an even more severe level. Fertilizer shortage, William White noted in his March 3, 2022 InvestorPlace article , "affects just about everyone as investors, consumers, and farmers deal with rising prices."

According to Morgan Stanley , Russia and Belarus provide some 40 percent of the world's exports of potash; Russia exports 11 percent of the world's urea and 48 percent of the ammonium nitrate. Russia and Ukraine together export 28 percent of fertilizers made from nitrogen, phosphorous, and potassium. Russia is strangling Ukrainian ports and so vessel shipments. Disruptions of shipments from Russia (although fertilizers are not subject to the Western sanctions, sales have been disrupted by measures taken against the Russian financial system, and that Moscow has also restricted exports5) and Ukraine has sent fertilizer prices skyrocketing. On top of disrupted supplies from these two countries, existing product stocks in the region are not getting out to the market because the Black Sea is closed. Adding to the burden, production costs of fertilizers - new stocks - went up due to soaring energy prices[5].

With the price of fertilizers shot up sharply, some farmers choose to rotate crops or use less nutrients, which means crops may not get as much nourishment and, in turn, yields could be compromised.

And in Ukraine, though with the proper agricultural material inputs, including fertilizers, many of the country's farmers are not tending to their fields because of the on-going war. In March, the United Nations warned that Ukraine may not be able to harvest crops, plant new ones or sustain livestock production . Ukraine alone exported more than US$27 billion in agricultural products to the world in 2021; any disruption in its food supply to the world, which is looking quite apparent at this point, is devastating.

Unless the war ends soon and Ukraine and Russia go back to their respective normal production and global-trade activities, the ripple effects in many spheres, particularly in global food supply, can be painful and long-lasting.

IV. How a Country can Better its Food Security - China as a Case Study

There is an ancient Chinese saying, "People are the most important to an emperor, and food is the most important to the people."

"In a turbulent post-coronavirus world," South China Morning Post pointed out, "ensuring food security has become an increasingly more crucial political priority for Beijing's new development strategy, which relies more on the domestic market and its consumers to resist external uncertainties."

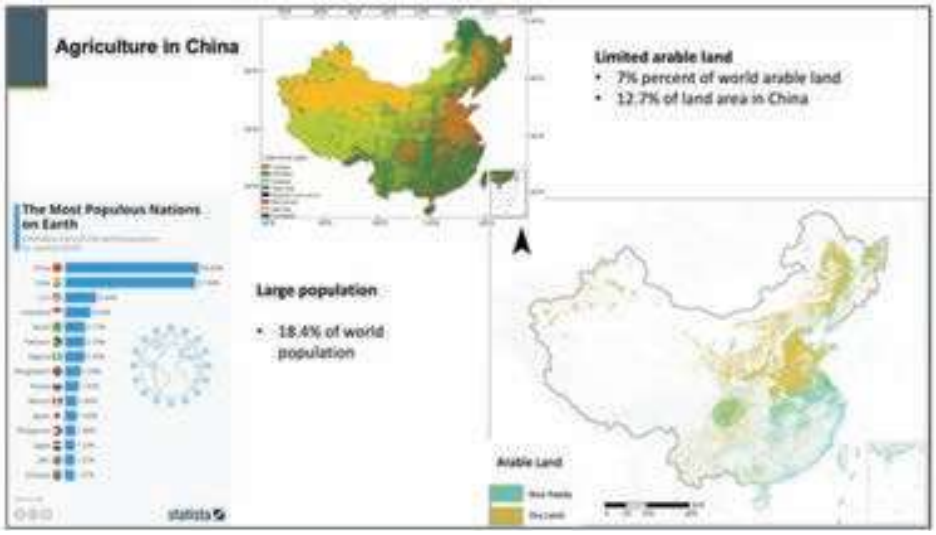
President Xi Jinping has said that the rice bowl of China must be firmly kept in Chinese hands, meaning China must ensure absolute safety in the supply of grains. And that "moderate imports" is a part of China's official strategy on food security.[9]

Official data does not show an immediate danger of food shortages in China, but risks lie in structural imbalances.9 China continues to take measures to ensure its food security strategy:

Protecting Arable Land

In 2019, China's total arable land amounted to 13 percent of the country's total area,

Diagram 1: Population and Arable Land in China



Source: Seeedstudio, https://www.seeedstudio.com/blog/2021/05/05/a-glance-of-agricultural-innovation-in-china

which translates into only 7 percent of the world's arable land. The amount of land dedicated to agriculture has fallen by more than 75,000 sq. km. from a decade ago due to the country's rapid urbanization[10].

“The increasing use of arable land for nonfarming purposes will affect national food security and must be taken into serious consideration," said Xia Zhuzhi, Associate Professor at the Rural Governance Research Center at Wuhan University. Cheng Guoqiang, Professor at the School of Agricultural Economics and Rural Development at Renmin University, said local governments should optimize the structure of rural land use and protect arable land, especially permanent basic farmland, and regulate the use of land for nonagricultural and nonfarming purposes.

On June 25, 2022, the Ministry of Natural Resources made an announcement that "it will take measures as hard as teeth to tackle the encroachment on arable land and uphold the central government's line of retaining at least 120 million hectares arable land.[11]

Devoting to its Climate Commitment

Climate change is one of the major factors threatening China's food security. Just in 2021 alone, heavy rainfall and flooding, extreme weather, and rising sea levels adversely affected crop productions in Henan, Hebei, China's northeastern provinces, and regions along the country's coastline[13].

Back in 2020, flooding in 27 southern provinces had damaged nearly three million hectares of crops as of July 10, according to the Ministry of Emergency Management. Research released by Chinese securities firm Shenwan Hongyuan estimated that the floods in China would reduce grain output by about 11.2 million tons in 2020, accounting for 1.69 percent of the country's total crop output in 2019.[14]

On October 28, 2021, China released a new national climate commitment. It aims to peak CO2 emissions before 2030 and achieve carbon neutrality before 2060 . Many Chinese provinces and localities have committed to climate goals as well. At least 23 provinces and cities have committed to peaking CO2 emissions before 2030 as part of China's Alliance of Pioneer Peaking Cities[16].

Promoting Agricultural Innovation

Agricultural innovation plays an important role in a society's sustainable development. Value-added methods in agriculture such as information technology, automation, and biotechnology all helping in improving agricultural management, achieving better yields, and creating bigger margin in agriculture. Be it data-based decision-making, or e-commerce to better manage the value chain and supply chain, the learning curve can be greatly shortened and optimized by combining traditional knowledge, creative solutions, and innovation.

The most recent innovation in Chinese agriculture is a push into organic agriculture. This rapid embrace of organic farming simultaneously serves multiple purposes, including food safety, health benefits, export opportunities, and, by providing price premiums for the produce of rural communities, the adoption of organic agriculture can help reduce the migration of rural workers to the cities.[18]

The successful implementation of seawater rice production, pioneered by the late agricultural scientist Yuan Longping (the father of hybrid rice), is making an impact. Yuan's crossbreed of high-yield rice and a form of wild rice which is more resistant to salt, produces a higher yield than standard varieties. His work is thought to have saved millions from hunger.[13]

Campaigns Against Food Waste

In 2018, the report on a study conducted by the Chinese Academy of Sciences and the World Wildlife Fund in 2015 of four Chinese cities (Beijing, Shanghai, Chengdu, and Lhasa) was released; it estimated that 17-18 million tons of food was being discarded annually by Chinese consumers, an amount that could feed 30 to 50 million people for a year.[19]

In July 2019, the city of Shanghai introduced strict regulations obliging individuals and companies to correctly recycle their food waste. Citizens faced fines as punishment for not complying, or their social credit-rating scores were lowered.

The Shanghai model has since been rolled out to other cities.[20]

In August 2020, President Xi Jinping highlighted that COVID-19 had "sounded the alarm" on food waste, adding that China had to "maintain a sense of crisis about food security." The nationwide "Clean Plate Campaign" was born. Not only could the campaign help reduce unnecessary wastage of food, but it might also help reduce the number of obese people in the country (in 2016, China overtook the U.S. to have the greatest number of obese people in the world).[20]

V. Conclusion

Different countries and regions have their own unique issues when facing food security. Whether involving natural resources, geography, climate, or financial resources, no one country has the same problems or solutions.

Every minute, 15 people in various parts of Asia and Africa die from starvation, but at the same time millions in developed Western countries die from unhealthy conditions caused by obesity.[21]

Global cooperation, knowledge and resource sharing can be powerful tools to help reduce food insecurity, or to better feed the current and the future world population.

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