China's Food Security: Challenges and Opportunities for Israel

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Food security is one of the top strategic priorities for the Chinese government, with President Xi Jinping setting a goal of self-reliance in food production through the use of advanced and sustainable technologies. However, significant challenges stand between this vision and reality, including shrinking agricultural land, supply chain disruptions, labor shortages, and outdated technologies. These challenges present an opportunity for Israel to expand cooperation with China in the fields of agriculture, water resources, and environmental sustainability. Given the current low levels of trust between the two nations, Israel—as a global leader in agriculture and water technologies—should focus on deepening collaborations in a sector that is considered non-sensitive in terms of security concerns. Strengthening agricultural cooperation with China could benefit Israel's economy and potentially serve as a lever for improving diplomatic relations between the two countries.

At the beginning of this year, the Chinese government released two key documents addressing agriculture and food security. In January, it introduced the "Comprehensive Plan for Rural Revitalization (2024-2027)," and in February, the government presented "Central Document No. 1," which outlines policies and forecasts related to the "Three Rural Issues"—agriculture, rural areas, and farmers. Both documents reflect China's strategic focus on formulating and advancing policies to strengthen food security.

Since the 1950s, the Chinese Communist Party has prioritized ensuring that every citizen has adequate food supply. This commitment continues under President Xi Jinping, who underscores the importance of food security for China's 1.4 billion people. Xi has set two additional key goals:

1. Achieving full agricultural self-sufficiency while eliminating reliance on food and agricultural imports. As he stated in his first year in office: "The rice bowls of the Chinese people must be in our own hands, and they must be filled primarily with Chinese-grown crops."

2. Producing food in an environmentally sustainable manner, utilizing green technologies to minimize ecological damage.

While China successfully meets its goal of providing food for its population, its other two objectives—agricultural self-sufficiency and sustainability—remain challenging. China's agriculture industry is largely outdated and environmentally harmful, and its dependence on food and agricultural imports is increasing. Currently, China produces only about 65% of the food it consumes. The gap between reality and the government's long-term goals stems from a range of challenges. As part of its response, China is investing heavily in the adoption of advanced agricultural technologies. This presents a strategic opportunity for Israel, a global

leader in agricultural innovation, to expand cooperation with China—an opportunity that could boost Israel's economy and strengthen its national resilience.

Challenges and Threats to Food Security

Reduction of Agricultural Land - The rapid economic development that has taken place in China has led to a continuous decline in agricultural land. Between 2009 and 2021, China's farmland area shrank by approximately 10%, with the proportion of agricultural land relative to China's total area decreasing from 13% to 11.6%. In absolute terms, this represents a loss of approximately 130,000 square kilometres. This process is primarily driven by urbanization, industrial expansion, and infrastructure development, which consume increasing amounts of rural land each year.

Water and soil pollution are also contributing to the decline of agricultural land in China. The widespread use of chemical fertilizers and pesticides, along with industrial activities, has led to contamination of both soil and water sources. Additionally, global warming exacerbates the problem by increasing the frequency of droughts, floods, and desertification, further threatening agricultural productivity. While China has declared its goal of achieving net-zero greenhouse gas emissions by 2060, it remains the world's largest contributor to global warming and continues to suffer from its consequences.

Another factor contributing to the reduction of agricultural land is deforestation. Between 2001 and 2023, the area of tropical and subtropical rainforests in China decreased by 4.7%. The loss of forested areas has significant negative environmental impacts, including: Increased greenhouse gas emissions due to reduced carbon absorption; disruption of the ecological balance, leading to biodiversity loss; soil erosion, which depletes land fertility; and acceleration of desertification, further reducing arable land.

Economic and Political Challenges - Many farmers in China suffer from poverty and rely on outdated agricultural infrastructure and equipment. Although China is at the forefront of technological advancements in environmental and agricultural innovation, there remains a significant gap between urban and rural areas, as well as between the wealthy central regions and the poorer peripheral provinces.

In addition, political corruption often leads to falsified agricultural production data being reported by regional authorities to the central government in an effort to meet government-imposed targets. Furthermore, funds allocated for agricultural development frequently fail to reach their intended recipients.

Demographic and Social Challenges - Although China has a strong agricultural tradition, there has been a steady decline in the agricultural workforce due to ongoing rural-to-urban migration. In 2014, approximately 44% of China's population lived in rural areas. By 2024, the rural population had shrunk to just 33%. Additionally, there is a shortage of around 4 million truck drivers, resulting in delays in transporting agricultural products to markets. These labor shortages are expected to worsen due to China's aging and shrinking population.

Another challenge is the shift in dietary habits. As urbanization, rising incomes, and exposure to global cultures increase, Chinese citizens are becoming more interested in healthier diets,

vegetarianism, veganism, and international cuisines. This has led to a growing demand for diverse and high-quality foods, some of which were previously uncommon in China. Additionally, urban migration has exacerbated food waste issues. Research shows that in recent years, China's food loss rate has reached approximately 26%. The largest contributor to food waste is the restaurant industry.

Geopolitical Challenges - The Russia-Ukraine war, disruptions in goods transit through the Bab el-Mandeb Strait and the Gulf of Aden due to Houthi attacks, the trade war with the Trump administration, and tensions in the South China Sea—all of these threaten to disrupt China's import of food and agricultural equipment.

Food Security Policy

China is taking various measures to tackle its food security challenges, including improving food supply chains. One of the key strategies implemented over the years is diversifying supply sources. A major initiative in this effort is the "Belt and Road Initiative" (BRI), which aims, among other objectives, to secure and expand China's food supply chains. In the food sector, China is also working to increase the number of countries from which it imports food products, particularly meat. In 2024, China announced plans to diversify its beef supply market, which has traditionally relied on Brazil, Argentina, Uruguay, the United States, and Australia. The country aims to expand imports from additional suppliers, such as Russia, Germany, and Bolivia.

Another strategy China employs to increase its food supply is the purchase of agricultural land outside its borders. China decided as early as 2007 to acquire farmland abroad, but began implementing this policy on a larger scale in 2016. By 2021, China controlled approximately 65,000 square kilometres of farmland across multiple countries, including African nations, Australia, the United States, Argentina, Indonesia, and Cambodia.

Another key measure China is taking to enhance food production is the adoption of advanced agricultural technologies and collaborations with other countries. Since 2016, the Chinese government has been funding, providing loans, and investing in research and development of cutting-edge agricultural technologies to improve food production and address labour shortages. Key areas of technological advancement include:

- Biotechnology for improved crop yields and resilience.
- Autonomous tractors and drone-based pesticide spraying.
- AI-driven monitoring and precision agriculture equipment.
- Crop breeding and genetic improvement to adapt to climate change.
- Advanced irrigation systems and drone-assisted farming for increased efficiency.

In addition, China collaborates with numerous countries on research related to developing new crops, advancing agricultural technologies, and building large-scale agricultural projects and infrastructure.

Beyond these measures, China is also investing in initiatives to encourage domestic food production and allocating funds to support and protect farmers. In June 2024, China passed a new law expanding farmers' land rights, allowing private farmers to sell their land—a significant shift in agricultural policy. Additionally, the Chinese government provides financial incentives to agricultural workers, including tax reductions or exemptions for farmers; grants and subsidies for upgrading outdated agricultural equipment; and wage increases to make agricultural work more attractive. In recent years, rural wages have steadily risen, with an average salary increase of 6.3% in 2024.

China is also protecting farmland through legislation restricting construction and pollution. The government has set a minimum threshold of 1.243 million square kilometre's of land designated exclusively for agricultural use. To further expand agricultural capacity, China is converting wildlands into farmland, particularly in desert regions of southwestern China. Additionally, China is heavily investing in upgrading agricultural infrastructure, including paving and repairing rural roads to improve connectivity between farms and markets, enhancing water supply and quality for irrigation, and expanding access to energy sources for farmers, with a focus on green energy solutions.

China has also taken steps to reduce food waste through legislation and public awareness campaigns. One of the most successful initiatives is the "Clean Plate Campaign," which has been implemented in two phases: The first campaign (2013) was originally launched as a grassroots environmental activist initiative but quickly gained government support and promotion. The campaign encouraged the reduction of food waste in restaurants by promoting smaller portion sizes and encouraging diners to take leftovers home, a practice that was previously uncommon in Chinese culture. The second campaign (2020) was launched directly by President Xi Jinping, reinforcing the government's commitment to reducing food waste. As part of these efforts, in 2021, China passed a law banning food waste, marking a strong legal commitment to food security and sustainability.

Potential Cooperation Between China and Israel

To implement many of these food security solutions, China requires international collaboration. Israel, a global leader in agricultural knowledge and technology, can play a key role in assisting China, serving as an agricultural model, and benefiting economically from such cooperation. Despite strained relations between China and Israel since October 7, 2023, and US pressure to limit technological cooperation with China, the agricultural sector remains a relatively "safe" area for collaboration. Strengthening agricultural ties with China could boost Israel's economy and potentially help restore diplomatic relations between the two nations. Additionally, China's recent tariffs on American agricultural products present an opportunity for Israel to expand agricultural exports to the Chinese market. However, any cooperation must be conducted while safeguarding Israel's national security and intellectual property. Sensitive dual-use technologies or technologies restricted by US regulations should not be shared as part of this collaboration.

1. Israel, through its Ministry of Agriculture, Ministry of Economy, and Ministry of Innovation, Science, and Technology, should take the lead in initiating cooperation

with China in areas such as joint agricultural farms to implement and demonstrate advanced Israeli farming techniques; research and innovation centres focused on agricultural sustainability and food security; and collaborative forums that foster partnerships between Israeli and Chinese companies, as well as researchers specializing in agriculture and food security. Such initiatives have been successfully implemented in the past, including "Water City" in Shouguang (in Shandong Province), and the Agricultural Park in Yangling (in Shaanxi).

2. Israel should actively encourage and incentivize cooperation between Israeli and Chinese companies in the fields of water management systems, agricultural monitoring using sensors, GPS, and AI, pest control solutions, smart greenhouses, seed selection and genetic crop improvement, dairy farming technologies, and autonomous agricultural machinery. Although some Israeli companies—such as Netafim—have been operating in China for years, many hesitate to enter the market or lack the necessary resources to do so. To bridge this gap, Israel should support pilot projects for Israeli companies in China. Entering the Chinese market requires companies to conduct long-term pilot programs to demonstrate that their technology is suitable for large-scale implementation in China. While funding such pilots requires significant investment, it is a strategic move that could yield long-term economic benefits for Israel.

3. The Israeli government should strive for a comprehensive and long-term cooperation agreement with China in the fields of water, food, and the environment, under which significant resources will be allocated for investments in joint agricultural projects in China and Israel, as well as for joint research.

4. Israel should consider the possibility of joint investments with China in third countries, particularly in the Middle East and Africa, which suffer from desertification and water scarcity yet hold significant agricultural potential. Joint projects that combine Israeli technology with Chinese capital could boost Israel's economy through expanded trade and investment, strengthen diplomatic relations between Israel and countries in the region, and enhance regional stability by addressing critical food and water challenge. Such collaborations could serve as a strategic tool for deepening both economic and diplomatic ties in key global regions.

5. Israel should appoint a permanent agricultural attaché in China, who will have extensive knowledge of China's agricultural needs and will be able to represent Israeli agricultural companies before the Chinese government and support them.

China has set as a top priority ensuring the continued food supply for its citizens while increasing domestic production and relying on advanced and clean technologies. However, China still faces many challenges in the field of food security, and Israel can contribute to solving them through advanced agricultural technologies. Strengthening cooperation in the agricultural sector could significantly benefit the Israeli economy and enhance diplomatic relations between the two countries.

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