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China-US Tech War: The Impact on Global Food Security

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SYNOPSIS

Emerging technologies could potentially revolutionise agriculture. However, the China-US tech war and systemic US-China competition, already expanding into agricultural technologies (agritech), present both opportunities and challenges for global food security. This could result in unequal access to agritech globally, particularly for emerging countries, thus bringing about serious consequences for global food security.

COMMENTARY

The world is currently experiencing an unprecedented global food crisis, with 345.2 million people projected to face hunger in 2023. To alleviate this problem and feed a growing global population, more food must be produced.

However, climate change, ecological degradation, and various political factors continue to challenge global agricultural production and the supply of food to needy populations. Furthermore, the over-use and inefficient uses of chemical fertilisers and pesticides have contributed to carbon emissions and resource degradation, thus undermining the long-term sustainability of food systems.

Emerging technologies can help to address these concerns while also supporting food security efforts. But their application and extent are jeopardised by the ongoing geopolitical tensions between the big powers.

The Competition in Emerging Technologies

Artificial Intelligence (AI), Autonomous Systems (AS) and biotechnologies have the potential to revolutionise food production by enabling more efficient data analyses,

increasing yield potential, streamlining production processes, and producing novel food such as cultured meat.

The US, home to many of the world's leading tech companies and research institutions, is a leader in AI research and development. Although it was, together with Western European countries like the Netherlands and Germany, pioneers in 'smart farming' using 'Internet-of-Things' (IoT) systems, China and other Asian countries such as Japan and South Korea, have caught up. In particular, China has emerged as one of the global leaders in AI, with the central government investing heavily in the technology as part of its broader national development plan. Chinese companies and farmers are not only innovating IoT applications, but also the component technologies such as 'intelligent' drones which sense, analyse, and take intervening action.

Regarding biotechnologies, the US is a global powerhouse in developing and commercialising agribiotech. Many of the world's largest biotech companies such as Bayer (formerly Monsanto) and Corteva (formerly DuPont), have their origins in the US, with the government having been a strong supporter.

However, China is catching up fast. Aside from investments in crop biotech and 'novel future foods' (like cultured meat), Chinese state-owned enterprises are acquiring foreign agribusinesses. Chinese researchers have also made significant strides, such as in discovering how to produce an animal feed protein from carbon monoxide, which could reduce China's reliance on imported soybeans.

The China-US Tech War

The ongoing China-US tech war and related trade frictions, geostrategic rivalry, and technological contestation are threatening the development of agricultural biotech. Trade frictions and technological contests between the two countries have existed since 2017, with the US-China trade war starting in 2018 under then-US president Donald Trump.

Bilateral relations have not improved much under the administration of US President Joe Biden. Having already introduced sweeping export controls on AI and semiconductor technologies, the US is now looking to impose controls on other emerging technologies such as biotechnologies.

In response, China's Ministry of Commerce and Ministry of Science and Technology recently announced that they are seeking public comment regarding proposed changes to the catalogue of technologies restricted for export. The export ban list is a warning to other countries looking to follow the US such as Japan and the Netherlands.

Accelerating Technology Development

Amid the great tech rivalry between the US and China, both countries have increased investments in several tech fields to drive innovation in agritech to create more efficient and sustainable agricultural practices, and also potentially to improve global food security.

Washington is using a whole-of-government approach to advance biotechnology in

agriculture and supply chain resilience to boost agricultural production and create climate-smart incentives. Likewise, Beijing is elevating agribiotech development to a national priority under its seed revitalisation plan.

Furthermore, as China and the US compete to establish themselves as leaders in agritech, they may collaborate with other nations through various initiatives or share their technologies with other countries. This could result in the adoption of more advanced agricultural practices worldwide, while also improving overall food production and security.

Nevertheless, the potential risks may outweigh any positives. Persistent US efforts to choke off China's access to chips and other advanced technologies, along with China's responses, hinder global efforts to achieve sustainable agricultural development. Agritech weaponisation is undesirable for all countries.

Implications for Food Security

For China, this raises questions about the country's food security ambitions. As the country's rapid agribiotech development is partly due to strong collaboration (such as in technology transfers) with countries like the US, the agritech export restrictions threaten Beijing's food security targets. In response, Beijing aims to develop domestic agribiotechnology to boost domestic food production.

Globally, as China and the US are among the world's leading agricultural producers and traders, the tech wars will inevitably affect domestic food production, exports, and agricultural trade patterns, while simultaneously reshaping global food supply chains. Other countries may be forced to choose between the US and China to secure agritech and agricultural imports.

This situation leads to questions about the future of global food governance. In an era of great power competition, both the US and China aim to impose their standards worldwide. The increasing Chinese prowess in technologies may result in Beijing playing a greater role in global science, agriculture, and technology governance.

Lastly, the potential inclusion of agritech in the tech war could impact Asia's food security. The tech war's indirect impact on global import and export of food (such as animal products, grains, and edible oils) could make it challenging for Asian countries to secure key technologies needed to feed their hungry and growing populations. But Asian countries may also seek to extract advantages from the US and China, while committing to neither unless circumstances force them to make a choice.

Looking Ahead

The implications of the tech war extending into agritech raises questions about the ethics of the war. Given the worsening global food crisis and interlinked issues like malnutrition and hunger, shouldn't the US and China place ethical standards above geopolitics and geostrategic rivalries by continuing to export agritech and agricultural products? Not doing so may contribute to a worsening global food crisis.

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