CPEC 2.0 as a Corridor of Innovation: Revolutionizing Agriculture Through China's 5C Vision

Moaaz Manzoor

INTRODUCTION

The China-Pakistan Economic Corridor (CPEC) has been a cornerstone of Pakistan's economic strategy since its launch in 2015. What began as a beacon of infrastructure and energy project development has now entered the pivotal phase of CPEC 2.0. Pakistan again stands at the cusp of an opportunity to convert CPEC into a corridor of innovation, with sustainability, new collaboration, and economic diversification as its main tenants. Among the sectors poised to benefit the most via this corridor of innovation is the agriculture sector, which holds untapped potential. By aligning CPEC 2.0 vision of the 5Es framework that is exports, e-Pakistan, environment and climate change, energy and infrastructure, and equity and empowerment with China's "5C Corridor" for growth, better life, innovation, green development, and openness (The Express Tribune, 2024)—Pakistan can transform its agriculture and many other sectors, unlocking new growth opportunities.

Agriculture is the backbone of Pakistan's economy, and in the previous Fiscal year of 2024, it was the main contributor to growth as it grew by 6.25% and saw a 16.82% increase in key crops like wheat, rice, and cotton production (Government of Pakistan, Ministry of Finance, 2024). Nonetheless, the sector is under the malaise of low productivity, outdated practices, and inefficiencies. Now, as a new era in CPEC begins, Pakistan must innovatively untap its potential to modernize its stagnating agriculture sector, making it more productive, sustainable, and globally competitive. This article explores how CPEC 2.0, in tandem with China's 5C Corridor, can revolutionize and address many challenges to Pakistan's agriculture sector to make the vision of a prosperous and food secure Pakistan into reality.

AGRICULTURE IN CPEC 2.0: A SECTOR READY FOR TRANSFORMATION

Looking at Pakistan's agricultural sector, one can say that it is an enigma. Like, it has undoubtedly been an

important engine of economic growth, ensured food security, and helped garner important export earnings up to $8bn in FY24, which is 37pc higher than last year[1].

Similarly, it remains the backbone of Pakistan's economy, contributing 24% to GDP and employing 37.4% of the labor force (Urban Unit, 2024). Conversely, it is also true that this sector is ridden with the plague of inefficiencies, water scarcity, outdated farming techniques, and post-harvest losses of up to 40% annually (Amin, 2024). In its latest monetary policy Statement, the State Bank of Pakistan (SBP) has raised concerns about the weakening outlook for the agriculture sector in the FY-25 (State Bank of Pakistan, 2025). Farmers in Pakistan still rely on traditional indigenous methods in this gilded age of artificial general intelligence, satellite imaging, Internet of Things (IoT) sensors, and big data. Thus resulting in low yields and high post-harvest losses. In this context, CPEC 2.0 can be a beacon in addressing these challenges. With China being the world's largest agriculture consumer market and possessing cutting-edge expertise, technology, satellite imaging, drones, AI-based monitoring, high-yield seeds, and solar-powered irrigation—Pakistan can increase crop yields by 20-30%(McCabe, n.d). Pakistan's wheat productivity currently stands at 2.8 tons per hectare, compared to China's 5.3 tons (Rose, 2024). With China's expertise and linking its **Smart Agriculture Action Plan 2024-2028 with** CPEC 2.0, a strategic foundation can be established to modernize Pakistan's dilapidated agriculture sector. Similarly, the focus should not be only on increasing yield but also on optimizing storage systems and halting the conversion of agricultural land into housing schemes. The writing is on the wall for Pakistan as this strategic shift is crucial for Pakistan to move from being a raw commodity exporter to a value-added agricultural powerhouse in South Asia.

DRIVING AGRICULTURAL GROWTH THROUGH INNOVATION AND TRADE

The Growth and Openness pillars of China's 5C framework align with Pakistan's Export and Economy goals. Pakistan's agricultural exports, currently valued at $5 billion annually, have the potential to double to $20 billion through value addition and market expansion (Nazir & Shuhua, 2023). By developing cold storage chains, modern silos, and high-tech processing plants, Pakistan can move beyond exporting raw agricultural products to processed foods, frozen fruits, dairy products, and halal meat, capturing a larger share of the $3 trillion global food trade.

China presents a golden opportunity for Pakistan with its $250 billion food import market. By providing better logistics, reduced customs barriers, and improved certification processes under the China-Pakistan Agricultural Cooperation, Pakistan can establish agro-industrial parks, similar to China's successful Yangling Agricultural High-tech Zone. Initiatives like these will create food processing and agribusiness innovation hubs across Pakistan (AQin & Li, 2024). Likewise, digital agriculture, as evidenced by China's Rural Taobao initiative, which substantially increased rural incomes, can be replicated in Pakistan through e-commerce platforms connecting farmers directly to urban and international markets, reducing middlemen, increasing farm profitability, and improving consumer access to fresh produce. Agreements like China's Litong Foods and Pakistan's Guard Agricultural Research & Services in 2023 offer collaboration potential investment opportunities in chili export. Likewise, numerous protocols like Dairy Products, Hides of Donkey, and Heated beef protocols have been formulated under the B2B framework. Also, Pakistan must leverage from China's agriculture growth strategy (2015-2030) and strengthen its interest in gaining scientific and technological support for an agricultural revolution that primarily ensures food security for both nations.

INDUSTRIALIZATION AND ENERGY: A CATALYST FOR GROWTH

The agro-industrial growth can give impetus to various connected manufacturing, logistics, and energy sectors. Establishing food processing zones along the CPEC route could add $ billion annually to Pakistan's economy while creating millions of jobs. Pakistan's agri-based industries—such as textile (which contributes 60% of exports), dairy, and leather—can benefit from modernized supply chains and Chinese investment in automation and quality control.

Similarly, in a dilapidated state, the energy sector costs the nation around 5.1% of its GDP each year (Kiani, 2024). To address this challenge, renewable energy solutions must be incorporated into both the agricultural and industrial sectors, which will address energy needs and pave the way for sustainable economic advancement. By leveraging solar-powered irrigation, wind-driven irrigation systems, and biogas plants, Pakistan can cut massive energy costs while ensuring continuous power supply to agro-industrial zones (Hussain et al., 2023). Pakistan must utilize China's expertise and its leadership in solar panel manufacturing and hydroelectric projects and establish eco-industrial parks with incentives for green innovation supply chains, augmented with robust research and development initiatives and access to easy credit, hence paving the way for an imminent green transition.

[1] https://finance.gov.pk/survey/chapter_24/2_agriculture.pdf

BETTER LIFE AND EQUITY: EMPOWERING FARMERS AND RURAL COMMUNITIES

The Better Life and Equity pillars of China's 5C align perfectly with Pakistan's rural development needs. The majority of Pakistan's farmers—80% of whom are smallholders—struggle with limited access to credit, markets, and technology. China's rural development model, which lifted 800 million people out of poverty, offers valuable lessons for Pakistan. A focused investment in rural infrastructure, microfinance for farmers, women-led agribusinesses, and vocational training in modern farming techniques can uplift millions out of poverty. Initiatives like Uraan Pakistan, aimed at training youth in agritech, digital marketing, and food processing, can create new employment streams while reducing reliance on traditional low-paying jobs. Meanwhile, access to high-yielding certified and climate-resilient seeds can unlock immense potential in the short term.

Additionally, Pakistan must adopt Chinese cooperative farming models, where small farmers pool resources and share modern equipment. This would usher in a new era in which integrating tech-driven farming solutions and cooperative farming will reduce input costs, increase efficiency, and improve bargaining power for small farmers.

GREEN DEVELOPMENT: ENSURING SUSTAINABLE GROWTH

Agriculture and industry cannot grow without sustainability. Pakistan is among the top 10 countries most vulnerable to climate change, with rising temperatures, erratic monsoons, and water shortages threatening food security. The Green Development pillar of China's 5C aligns with Pakistan's environmental focus, advocating climate-smart agriculture, reforestation, and water conservation. President Xi Jinping outlined the water-saving policy, which "prioritizes water saving, spatial balance, systematic governance, and giving full play to the role of government and market." By adopting Chinese water-saving irrigation techniques, such as drip irrigation and rainwater harvesting, and designating national water-saving irrigation areas, Pakistan can reduce agricultural water usage by 50% (Ashraff & Yasin, 2012). Introducing biodegradable fertilizers and eco-friendly pest control methods will substantially lead to reduction in soil degradation and will boost organic farming. Moreover, under China's Green Investment and Finance Partnership (GIFP) and Green Development Guidelines for Overseas Investment and Cooperation 2020, Pakistan can accelerate the adoption of renewable energy technologies and untapped new green financing mechanisms in green industrial zones, focusing on low-carbon manufacturing and renewable energy projects under CPEC. This will transform Pakistan's power sector into a catalyst for sustainable economic growth. It offers and will help both Iron brothers fulfill their respective environmental pledges and drive economic growth, job creation, and reduction of greenhouse gas emissions by prioritizing renewable energy projects within the BRI framework.

THE ROAD AHEAD: FROM VISION TO REALITY

The integration of China's 5C framework and Pakistan's 5E priorities under CPEC 2.0 presents a cross sectional transformative roadmap for agriculture, industry, energy, and rural development. As it is not limited to trade and infrastructure but is about reshaping Pakistan's economic landscape, creating millions of jobs, boosting exports, and making Pakistan a transit hub for agribusiness and industry. With strategic investment, technology transfer, and policy alignment, Pakistan can emerge as a competitive player in the global economy. However, the proof of the pudding lies in Islamabad's ability to provide an enabling environment. The once stagnant agriculture sector, which is currently underutilized, can become a manufacturing hub of innovation and exports that provides millions of Pakistanis, particularly in rural areas, with a tangible improvement in their quality of life.

This is not just a vision—it is an achievable reality, provided that Pakistan capitalizes on the opportunities presented by CPEC 2.0 and its partnership with China. The next decade is crucial, and the choices made today will determine whether Pakistan merely survives or thrives in the new global economic order.

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Mr. Moaaz Manzoor is a M.Phil. student at the National Defence University, Islamabad and also working as an Economic Writer at the INP-WealthPk