

THE IMPACT OF CPEC ON PAKISTAN'S INDUSTRIAL DEVELOPMENT

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Abstract

Using a qualitative approach, this descriptive research evaluates CPEC's influence on energy stability, foreign investment, economic development through special economic zones (SEZs), technology acquisition, and labor skill development in Pakistan's industrial sector. This study deep dives into the CPEC dynamics from the perspective of industrial restructuring and upgrading, the unit of analysis being the CPEC economic zones Rashakai SEZ, Dhabaji, and Allama Iqbal Industrial City. The research uses primary data from a document and literature review, and diverse datasets. The research outcome reveals that CPEC has substantially improved the investment climate in new industries through Chinese investment, establishment of energy supply infrastructure, and reduction of logistics costs. While the SEZs offer considerable potential for industrial clustering, development has been stagnated or slowed in the absence of policy clearances, complex land acquisition, and weak federal and provincial institutional collaboration. Integration of local firms into the global value chain and policy idle capacity for technical skills training remain highly disaggregated, and consequently technology acquisition becomes revoked. This research argues that the CPEC has set a primary platform for industrial development and modernization, but significant additional policies must offset the limitations of CPEC alone. This research offers an industrial focus analysis on the CPEC, thus contributing to the literature, and suggesting the need for further research on the value chain and performance of the SEZs.

Keywords:

CPEC, Industrial Development, Special Economic Zones (SEZs), Technology Transfer, Structural Transformation.

1. Introduction

Certain structural weaknesses have burdened Pakistan's industrial sector for centuries and in turn, hampers its ability to sustain economic growth. These include the high costs of production and outdated technology and policies, as well as low production value and insufficient energy supply all industrialized nations have faced for decades. Manufacturing has stagnated in comparison to the population growth and regional competitors, which traps Pakistan in a cycle of low productivity and limited export diversification (McCartney, 2020). Several persistent supply-side constraints such as low developed countries Pakistan's needed infrastructure, inefficient logistics, and under-skilled labor has hindered the industrial revolution. From the perspective of development economists, Pakistan requires this revolution in order to thrive. Government reports acknowledge the absence of industrial agglomeration and technological depth needed to support export oriented production base, which diminishes Pakistan's ability to compete globally (Planning Commission of Pakistan 2017).

In the pursuit of these goals, the Belt and Road Initiative (BRI) Intensive development of Southwest China and the China-Pakistan Economic Corridor (CPEC) have been closely connected. Economic reconstitution has been regarded as a critical foundation and the primary goal of CPEC. Multifaceted as it is, CPEC encompasses development of infrastructure, construction of power plants and other energy facilities, industrial collaboration, and integration of trade. Like BRI, CPEC is a focal project that stretches the geo-economic narrative to the control of geo-strategic assets, and, like the BRI, it is bold and unflinching. CPEC is the flagship project of the Belt and Road Initiative (BRI) and, just as the BRI, CPEC widens the geo-economic narrative to the control of geo-strategic assets (World Bank 2020). The geo-economics of Pakistan, to begin with, would of necessity pertain to its vital streams of energy. Block 2 of CPEC shifts this focus to the integration and modernization of the

peripheral industrial core and internal region. The goal of these interventions is to construct Special Economic Zones (SEZs) and joint venture platforms (CPEC Authority, 2017; Board of Investment, 2020). The overarching aim of these interventions is to lead the industrial core of Pakistan to extend its integration with other regions of the country.

CPEC's promise hinges on adding energy supply, reducing logistics costs, and attracting foreign direct investment to unlock more industrial growth. There is evidence proving that growth in the manufacturing sector can be stimulated by developing competitive corridors, port expansion, and reformed systems in power supply (ISSI, 2019; PIDE, 2021). Special economic zones (SEZs) like Rashakai, Dhabeji, and Allama Iqbal Industrial City aim to offer investors in textiles, engineering, chemicals, automobiles, and food processing a unified investment ecosystem. Analysts believe that these SEZs could, with enough policy and institutional support, form industrial clusters that generate spillovers, support SMEs, and integrate Pakistan into regional value chains (SEZMC, 2024; NUST, 2021).

These advancements may, however, be accompanied by an economic and policy literature gap which is still to be filled. Most of the writings around CPEC focus on the macroeconomic implications, geopolitical angle, and the energy security dimension (McCartney, 2020; Critical Pakistan Studies, 2024). Far fewer studies have focused on the direct corridor-link impacts on upgrading Pakistan's industries, especially how the associated SEZs and other frameworks of industrial cooperation improve productivity, technology, and structural change. Even fewer works attempt to connect these advancements with industrial policy, FDI spillover, and the disintegration of the global value chains. As a result, there is almost no analysis at all on the economic implications of CPEC in Pakistan and whether it assisted local industries to upgrade to more sophisticated production processes, reinforce inter-firm linkages, or adopt new technologies. The sheer absence of such analysis is disturbing, especially in light of the prolonged SEZs' critical industrial regulatory frameworks and the primary distribution of industrial activities (PIDE, 2021; Dawn, 2024).

Evaluating the impacts of the CPEC initiative currently tends to rely more heavily on the discriminated accounts or volumes of the CPEC+ initiative from CPEC. This flaw is the root cause of the only shortfall for CPEC+ being researched. To date multiple outcomes being associable with CPEC, including domestic FDI, productivity, employment, technological spill overs, the formation of industrial clusters, and FDI as well as employment aggregators, remain less documented or would benefit from CPEC based correlations.

The primary research questions are as follows:

In regard to industrial productivity and capacity, productivity, and the overall manufacturing domain of Pakistan, what are the impacts brought about by CPEC?

- a. What role do Special Economic Zones (SEZs), energy, and logistics enhancement projects play with regard to the facilitation of industrial upgrading?
- b. What CPEC associated issues are there and what strategies can be used to mitigate such issues?
- c. In what manner does CPEC fit within the major themes of structural transformation and value-chain development?
- d. The above questions are not only indicative of the CPEC-driven industrialization opportunities in Pakistan, but also the constraints such research would face.

This prioritization will maintain its significance across the numerous accessible pieces of academic as well as across diverse politics. The policymakers determine the CPEC industrial effects as the core of the CPEC impacts evaluations as well as the economic corridor policy prescriptions. The changes in the SEZ governance, energy pricing, labor skills formation, and

the alignment of regulations can promote industrial development. For them, the CPEC provides a within horizon case study of how a country's industrial comp functioning structure can be diversified and made competitive. We focus on the country's development in the context of other studies on CPEC. The country will clamp down CPEC industrial promises with CPEC's stellar capitalization, country-wide development constraints, and development collaboration costs, which is a step missed by other CPEC studies.

2. Background and Evolution of CPEC

Since 2013, China's Belt and Road Initiative has focused on strengthening trade and economic ties to facilitate growth and connection across Asia, Africa, and Europe. Within this wider scheme, CPEC has been envisioned as one of the first and most essential corridors linking the land-locked western regions of China to the Arabian Sea through Pakistan. Alongside other policy documents, CPEC is envisioned as a partnership focused on infrastructure, energy, and logistics. CPEC, in the context of the broader picture, is intended to assist in changing Pakistan's economy from a largely low productivity and consumption driven to a largely industrial and export-led economy (Small, 2015; Hussain, 2017).

CPEC's roots go far beyond the formal announcement of the initiative. Integrated energy cooperation, road connections and the development of the Gwadar Port had been on the table for discussion in Pakistan and China since the early 2000s. These plans, as described by Wolf, have multi divergent pathways. This lack of continuity is where the role of the BRI enters. It integrated the strategic frameworks of the two countries as a backbone for the BRI's long term goals, and also provided the missing piece of the BRI's matrix. China views CPEC as a means to secure trade routes, develop her restive provinces, and forge ties with an important regional partner (Zhang & Li, 2018). CPEC in the case of Pakistan would boost the economy as well as transform the economy of integrated geographical regions which were ignored. CPEC would also resolve the energy crises as well as develop modernized transport networks (Rafiq, 2020). Rather Changes to CPEC are generally termed as phases. The First Phase 2015-2020 focused on energy and transport as 'early harvest projects.' Throughout this period, under the leadership of Khan, the addition of thousands of megawatts to the grid, improvements on key highways, and the emergence of the Gwadar Port as a regional logistics hub fueled development (Khan and Shabir 2018, Javaid 2016). Critics of this stage in menu energization and infrastructure development argue that this stage in development focused too heavily on construction (Zubair, 2020). To expect any expansion in the manufacturing sector of the Pakistan economy, it is not only a disadvantage, but unrealistic to expect expansion without the construction of modern roads and available sources of electric power.

This Phase Two, which began in 2020, pertains to advancements in technology, industrial development, and modernized agriculture. Zhang and Chen (2021) highlight that it is this phase that is colloquially referred to as the 'industrialization phase' as both governments to lift policies on joint venture and export oriented clusters, the relocation of Chinese industries, the training of the skilled workforce, and the erection of integrated structures.

The central Phase II of the project containing nine Special Economic Zones (SEZs) like Rashakai, Dhabeji, Allama Iqbal, and Bostan, plans to provide adequate and operational barebones infrastructure, consistent provision of utilities, tax incentives, and promotion of factories as well as customs facilities and the regulatory "red tape" that is standard to the investment environment of Pakistan (BOI, 2021). The second phase of CPEC is has a multinational governing structure and within that superstructure holds the Joint Cooperation Committee (JCC) at the very top, which is cochaired by the ministers of both countries. The ministers share the JCC with the responsibility of setting development targets, allocating strategic divisions, and monitoring the progress on the interlinkage of several projects (Naseem, 2018). Of these, three ministers lead a cluster of Joint Working Groups (JWG) on

the interdependent layers of energy, transport, industry, and Gwadar development. The JWG layer's central pillar is the domestic component, which is the Pakistan Board of Investment (PBoI), which streamlines the SEZs and orchestrates the domestic investment promotion policies and the approvals from the provincial federations. Scholars have pointed out the success of this multiparty institutional framework in easing the bureaucratic "choke points," but highlighted the ongoing disarray in relations between the national and provincial governments as an area of concern (Haque & Nayab, 2020).

Industrial collaboration has been placed as a key component in the wider corridor structure of CPEC. Instead of a straight line, the corridor wishes to align ports with capitalist economic networks to reduce logistical expenditures, along with the overlap of transport networks. Energy projects provide stable power, and then there are the SEZ's supporting new industries that connect with regional and domestic markets (Wolf, 2019). In this context, "industrialization" is the strategic "heart" of the project instead of being a mere afterthought. Scholars argue that capture and successful leverage of Phase II integration deep global value chains and facilitates productivity shifts to higher value added sectors, broadening the economic base from textiles to chemicals, machinery, food processing, and even consumer electronics (Rafiq & Akhtar, 2021). Chinese firms view Pakistan as a production base with low operational costs along with a consumer market for intermediate products. With the evolution of CPEC, the focus of the investment project has changed from infrastructure to a more complex and developed approach. It is Pakistan's ability to apply structure to long-term policy, weave together technology, and intersperse rational skill investments, which will determine whether the opportunities for real industrial enhancement are taken, and the next step is achieved.

3. Literature Review

CPEC is one of the most ambitious developing projects of bilateral development in the 21st century. Numerous books, policy documents, and reports detailing the Project's development indicate the transition of the strategic partnership and development of a complete plan for the economic transformation of the region. This review aims to highlight the most critical scholarly and institutional works focusing on the industrial, infrastructural, and trade aspects of CPEC.

The most authoritative text on the vision of the CPEC development projects and the understanding of its operational design is *The Final English Version of the China–Pakistan Economic Corridor* (Government of Pakistan, 2017). This document characterizes CPEC as a multidimensional partnership of Pakistan and China to foster industrial growth, enhance regional connectivity, and provide energy security to the region. CPEC is classified into five main components: (i) energy, (ii) infrastructure, (iii) industrial cooperation, (iv) Gwadar development, and (v) socio-economic uplift. Special Economic Zones (SEZs) were described as pivotal to industrialization and job creation, technologically progressive and diversifying exports. This development is part of the Belt and Road Initiatives (BRI) making Pakistan's economic growth development strategic and long-term to align with China's global economic integration priorities.

In addition, the *Long-Term Plan for China–Pakistan Economic Corridor (2017–2030)* is another key policy guide co-authored by China's National Development and Reform Commission and Pakistan's Planning Commission. This plan outlines the specific steps necessary to achieve the strategic goals of the CPEC. It identifies the primary sectors of industrial collaboration as manufacturing, mining, logistics, and information technology. It further emphasizes the acquisition of basic human capital through human resource development and sustainable vocational training as fundamental for continuous industrial transformation. The Long-Term Plan describes CPEC as a corridor of "shared prosperity,"

anticipating equitable geographic development throughout all of Pakistan's regions. Still, it notes, quite delicately, the absence of institutional frameworks and the presence of crossed silo constructions as delays to the clockwork of development, thus anticipating the criticism of CPEC development sidestreamed by institutional frameworks during the planning phase described by literature and policy-oriented think tanks.

The World Bank's policy note *"The China–Pakistan Economic Corridor and the Growth of Trade"* (2020) moves the discussion beyond bilateral relations and attempts to position CPEC (China-Pakistan Economic Corridor) within the global value chain (GVC) theory. The report notes that CPEC's improvements—especially in transport and energy infrastructure—will reduce trade costs by 10–15 percent and increase Pakistan's competitiveness. However, the World Bank also points out that the lack of parallel reforms in the corridor's trade customs, logistics, and industrial systems will mean that the corridor's trade potential will largely remain unexploited. The report makes an important analytical distinction between infrastructure-led growth and trade-led transformation. It concludes that CPEC will indeed spur industrial growth in Pakistan, but the longer-term advantages will depend on Pakistan's ability to secure a diversified pattern of investment and position herself within the global regional supply chains.

McCartney's *"The China–Pakistan Economic Corridor (CPEC)"* (Lahore School of Economics, 2020) represents an important piece of scholarship. He examines CPEC in the context of Pakistan's uneven industrialization and the history of its development planning. By leveraging comparative examples from other countries along the Belt and Road, McCartney claims the success of CPEC depends on the coordinated efforts of the public agency, the provincial administrations, and private actors. McCartney points out the tension between the geopolitical dimensions of the discourse China's aspirations in the region and the development objectives for Pakistan. He also observes that, despite the advancements in energy and transport infrastructures, the lack of industrial linkages and technology transfer remains a significant gap. His work thus holds a critical institutional perspective, countering the optimism of macroeconomists, in a manner similar to development economists who identify the underlying problem of a governance deficit.

F.M. Mirza's article *"Impact of China–Pakistan Economic Corridor on Future Energy Consumption"* (ScienceDirect, 2019) discusses the energy dimension of CPEC. For Mirza, the effect of CPEC on the demand structure of the economy is explained by the energy demand econometric models in his research. Considering energy reliability, the research identifies possible direct positive impacts on industrial output and productivity, bottlenecking the manufacturing base for exports. Nonetheless, Mirza is concerned that if local capacity building is not developed, there will be high dependence on imported energy technology. While CPEC will lessen the chronic power crisis in Pakistan, there will be new problems for CPEC to address in sustaining power and reforms in the energy price structure. This is the paradox described in his research.

The Pakistan Institute of Development Economics (PIDE) has taken an institutional approach in articulating the more policy-focused viewpoint on CPEC's industries. In its analytical report *"Can Pakistan Pick up Its Industrialization with CPEC?"* (PIDE, 2021), the institute claims that the corridor provides an opportunity for Pakistan to rehabilitate its ailing industrial base. It still maintains, however, that SEZs in themselves are not transformative, as sequential structural reforms in the areas of taxation, land acquisition, and investment incentives must first take place. In PIDE's *"Can CPEC Boost Pakistan's Manufacturing and Trade?"* (2022) this argument is taken one step further, documenting the importance of small and medium enterprises (SMEs) in the integration of CPEC supply chains. In the absence of SME integration and the diffusion of supporting technologies, the report warns that enclave industrialization will emerge, with large scale benefits going to a limited number of large

players. Collectively, CPEC in these analyses is a development opportunity and a demonstration of the first institutional capability.

In the research study entitled "Special Economic Zones under CPEC: A Critical Study" (Khyber Pakhtunkhwa Higher Education Research Journal, 2021) the author examines the case of Rashakai, Dhabeji and Faisalabad zones and investigates SEZ models empirically. It finds very significant gaps between the intended goals and the actual developments. As much as the SEZs were intended to act as enclaves for the export-oriented manufacturing, industrial take off has been impeded by the slow development of land, power access, and investor support. The study goes on to state that the regulatory setting continues to discourage the domestic respondents and make the foreign investors skittish. Creditably, this study also notes that the SEZs, where functional, have begun creating jobs, forming inter-industry linkages, and pro-activity, which validates the potential of the SEZs in the long-run.

By and large, these works build a multi-dimensional framework of CPEC. The official narrative, as reflected in the CPEC Framework and Long-Term Plan, is one of ambition in terms of prosperity and connectivity. This is complemented by the World Bank and PIDE analyses. In contrast to the official narrative, these works bring some analytical clarity by focusing on trade efficiency, value-chain integration, and institutional reform. The works of academic scholars such as McCartney and Mirza, on the other hand, serve to anchor the discourse surrounding CPEC to pertinent global debates on structural transformation and the economics of energy, thus providing the necessary theoretical framework. Policy papers from ISSI and empirical evaluations of SEZs link the discourse on governance to the realities of projection and practice, thereby closing the circle.

The literature is balanced with both positive and negative perspectives. CPEC represents a unique opportunity for Pakistan to tackle the structural obstacles to industrialization. Conversely, it highlights the persistent issues of governance, institutional coordination, and inclusive growth. Collectively, these sources imply that the transformative prospects of CPEC hinge not purely on the physical infrastructure, but on Pakistan's capacity to capitalize on connectivity and transform it into competitiveness. The scholarship, therefore, continues to advance—from providing descriptive narratives of progress to more profound analytical perspectives on impact and sustainability.

4. Theoretical Framework

A more profound analysis of CPEC's impact on industry development can be illuminated through specific theories related to productivity enhancement and global technology development. These perspectives account for the strength of the evidence, guide the analysis, and focus the rationale on, therefore, the industrial aspect of CPEC SLIPPER is the foremost focus of Pakistan's growth strategy.

One indicative aspect of the vast array of economic theorizations on international productivity growth and technology acquisition, which can be called the 'first pillar' of transformative development, is structural transformation. What is novel about this theory is its capacity to capture and explain productivity advancement which almost all theorists regard as the devil's double, ranging from the deployment of the workforce, capital, and skills currently being used to carry out lower tier tasks of subsistence level agriculture being vaulted into leading edge productive endeavors of manufacturing and elite class services.

The testimony of the learned development economists, Lewis (1954) and Syrquin (2017), underscores the canonical assertion, predicated on Pakistan's view of the world, that it is and always has been the productivity enhancing and economically advancing pivot for the manufacturing sector that fulfills this multifunctional productivity. Thus, the CPEC industrial cooperation program is rationally descriptive, prescriptive, and predictive rational for Pakistanised economic industrial policy. Structural transformational productivity and

employment distribution would be transformational if CPEC industrial cooperation is skillfully architected and these elements are in place – infrastructure, reliable energy, industrial zones. The second line of theory comes from models of Global Value Chain (GVC) upgrading that outline how firms and countries ascend from rudimentary production to more intricate stages of value creation.

Joint ventures, geolocation training, and having a dependable production ecosystem in the SEZs can greatly benefit the local firms. It is GVC theory that describes the most important type of industrial results and examines the most important ways that Pakistan can move from simple assembly to production of more advanced components refined from developed countries.

The third component of Foreign Direct Investment (FDI) theory is the FDI spillover theory which looks at foreign investment and its ability to enhance the industrial development of the area. Under this theory, multinational companies are able to extend the advantages of their activities beyond the borders of the corporation through techniques such as technology diffusion, training and development, raising the standard of products, and creating a market for local suppliers (Blomström & Kokko, 1998). The degree of spillover is determined by the local firm's ability to absorb, the prevailing legal framework, and the investment climate. This theory is important for the understanding of the potential of CPEC, especially Phase 2 which focuses on investments by Chinese manufacturers and their subsequent investments on the SEZs. These investments, if treated as closed enclaves, would provide minimal returns. However, if Pakistan is able to foster linkages between foreign firms and local enterprises, the foreign direct investment (FDI) spillover benefits isolated industries productivity enhancement.

The intersection of these viewpoints and dependency theory is still worth considering because externally driven large-scale economically motivated ventures reinforce unequal power relations, limit policy autonomy, and lock developing states in low-value traps. Critics of CPEC, in particular, argue that Pakistan is poised to either over depend on Chinese investment or plummet into resource- or construction-driven growth. To me, this viewpoint, I think, points to genuine risks, but underestimates how countries are able to develop competitive industries in light of global realities.

This is why I intend to place this viewpoint in the background of my analysis, while not making it the central focus. The proposed hypotheses address the concept of the non-automatic character of any industrial development. Infrastructure creates the possibilities. However, continuous industrial growth requires the diffusion of technologies, firm level learning, export learning, and institutional infrastructure. The theory of structural transformation provides the rationale for the shift to more productive activities. GVC models describe the development of industries in international divisions of labor. And FDI spillover theory explains how foreign direct investment can enhance local capabilities. The case of CPEC allows us to illustrate how, from the newly built infrastructure and SEZs, Pakistan can achieve what we term 'industrial take-off' and the 'glass ceiling' on that potential which is the need for the constancy of policy and institutional support.

5. Methodology

The qualitative research, with CPEC case study components, focuses on the industrial development impact of the China–Pakistan Economic Corridor (CPEC) on Pakistan. The case study approach to CPEC industrialization is justified by the complexity of the CPEC industrialization blueprint and the nascent stage of the available CPEC literature. The qualitative research on CPEC industrialization is aimed at the richness of contextual policy framed and implemented industrial growth and structural industrial changes.

Data Sources: There are various secondary data types in the analysis, which shows the reliability and triangulation of the data. The primary quantitative data unit of analysis consists of the Pakistan Bureau of Statistics (PBS), the Board of Investment (BOI), and the Planning

Commission of Pakistan. Official reports from the CPEC Authority gives data concerning CPEC projects and Special Economic Zones (SEZs). The World Bank and the International Monetary Fund (IMF) provide data for the international dimensions and relevance concerning macroeconomic phenomena.

Case Study Logic: To give a concrete description of CPEC and its effect on the industrialization of Pakistan, three SEZs have been chosen: Rashakai (Khyber Pakhtunkhwa), Dhabaji (Sindh), and Faisalabad (Punjab). The selection criteria were geographic diversity, specialization in a given sector, and level of development. Based on these case studies, the research poses questions on industrial enhancement, development of the infrastructures and the linkages which CPEC investment enables to global value chains.

Analytical Approach: The dissertation advances a blended analysis of documents and trends. To extract traces of industrial progress and assess the results of the SEZ, the policy papers, project reports, and government documents are scanned and scrutinized. To depict the periods before and after the implementation of CPEC, the analysis employs a range of trend data, including FDI inflows, employment, and industrial output figures, to characterize industrial output.

Limitations: Just like any other secondary data research, this study has possible limitations. There also seems to be a time lag problem, in CPEC and SEZ along with other related documents, which are incomplete and may be biased. In the same way, the lack of publicly available data on the quasi- and micro-level industrial performance and other comprehensive data has led to an inability to thoroughly gauge the impacts on particular industries and quite difficult to provide precise estimates. The adopted approach of the study, which relies on a mosaic of data supplemented by other means of verification concerning data credibility, supports the dominant conclusions and affirms the high confidence in the results.

6. Components of Industry within CPEC

For Pakistan, the Industrial component of the China-Pakistan Economic Corridor (CPEC) shifts the country's development agenda after infrastructure integration towards targeted industrial promoted the development of targeted industrial infrastructures. Industrial Cooperation Agreements (ICAs) are the foundation of these initiatives. Structured as guided contracts, these contracts delineate the terms of joint ventures, technology transfer, and cooperation agreement within particular economic spheres between Chinese and Pakistani business persons. The central focus of the contracts is on manufacturing, textiles, chemicals, and automobile assembly with a particular emphasis on export-oriented production. The JCC and other CPEC institutional frameworks enable dialogue, monitoring of industrial projects for CPEC and JCC, and conflict governance facilitating controlled industrial partnership oversight.

Pakistan was chosen for the setting up of the Special Economic Zones of the China-Pakistan Economic Corridor in because of the inefficiency of the local economy in attracting foreign business investment. Specialized economic zones aim at developing light industry and consumer goods in the region like the Rashakai SEZ and textiles and agro-processing in the Dhabaji SEZ and textiles and apparel in the Faisalabad SEZ. Advanced industrial infrastructure, lower taxation, and a podof solicitor and regulatory restraints as well as better logistic industry cluster for tax exemption and easy legal m. The investors in FDI in the CPEC region expect a rapid economic growth that engagement of the investors offer to integrate the region economy to the world. Support for the economy concentrates on providing the much overdue energy that will boost productivity to a new level in Pakistan. The Georgian CPEC targets energy generation projects such as coal, hydropower, and renewables that will relieve the chronic power shortages. The SEZs and Pakistan as a whole will be at a great advantage

in productivity and lower operational costs. The energy projects that relieve the chronic power shortages that constrain the industrial sector's output will be strategically located.

Along with CPEC-led industrialization, CPEC is predicted to facilitate technology transfer whereby Pakistani industries are expected to acquire advanced manufacturing skills, quality control techniques, and digital production technologies through joint ventures, skill development programs, and collaborative research initiatives. Besides these, new industrial operations are complemented by skill development initiatives such as technical training centers and vocational certification programs. These programs are developed in partnership with Chinese companies and local training institutes to ensure the continuous availability of trained personnel.

As a result of changes to the CPEC policy, Pakistan's industrial extension is also motivated by CPEC policy changes. The Pakistani government seeks to enhance investment in Special Economic Zones (SEZs) and industrial clusters by using a new regulatory framework focused on easing restrictions, providing tax incentives, and tailored investment advice for designated industries. Changes to labor and investment in the polity during the period are accompanied by changes to the regulatory framework for intellectual property, the environment, and other social restrictions to predictably advance industrial change within CPEC. These components elucidate CPEC's approach to modernizing Pakistan's industry by integrating infrastructure, policy, and people.

7. Impact of CPEC on Industrial Development

Economic Impact of CPEC on Pakistan CPEC provides investment projection above 25 bln\$ which impacts nearly all sectors of the economy. In this integration pattern of economic activities I first track the output, value of investment, volume of employment and the improvement in layer of these people's qualification and skills.

7.1 Industrial Output and Productivity

The role of CPEC in improving the reliability and supply of energy has depended on the carbon, hydro and renewable energy projects under it. CPEC has removed the energy constraints to economic growth of Pakistan and has been able to add energy to the economy in the volume which the deficit reports of many decades have. Economic agents in Pakistan have, for decades, lamented the negative impacts of energy deficits on the growth of the economy. In spite of the fact, the economy has been stagnant, the costs of doing business have escalated and the plant underutilization have become chronic. Deficits of energy, Provision of energy, development of hydro, carbon and renewable energy, along with the economy, explain the paradox of economic growth.

The construction and operation of fuel and energy plants under the China-Pakistan Economic Corridor (CPEC) were reported by Hussain et al (2021) to have increased the operational competitiveness in energy-dependent manufacturing activities as well as in the activities of manufacturing units. These plants, along with the hydrailec and renewable energy plants, were all developed with CPEC interconnections. The interconnections also support energy provision for manufacturing activities along the supply chains.

7.2 SEZ Development and Industrial Clustering

As per the CPEC, SEZs are meant to focus the construction of industrial hubs to maximize the benefits of clustering and stimulate innovation. Rashakai SEZ is focused on consumer goods and light manufacturing, Dhabeji is agro-processing and textiles oriented, and Faisalabad is building on its legacy in apparel manufacturing (CPEC Authority, 2022). Preliminary assessments have indicated that in some zones, the availability of joint ventures and local businesses is substantial, however, for some zones, stalling is prevalent due to unresolved land acquisition, regulatory approval, and financing bottleneck disputes (Ali et al., 2021). However,

the clustering model is developing industrial linkages, integrated supply chains, technology local diffusion, and linkages.

7.3 FDI Inflows, Joint Ventures, and Technology Transfer

Chinese investments in CPEC are in joint ventures in specific industries. Joint ventures permit direct issues of technology and management systems. The partnership capitalizes in many other aspects in addition to investments particularly in multi-tiered management systems, production, and in specialized training and skill development. Amongst more traditional and non-industrial business is local supplier networks which have seen some spillover effect of value addition though the districted and value of the wanes, and in most cases the impact is again very wide the ready and contingent issue is the exclusion of local firms to some, capacity ceasing and continuous technological to perform ongoing, engagement are which, in their they dominated to and local take.

7.4 Trade Facilitation and Logistics

Gwadar Port, newly constructed roads, and improving connective the logistics corridors has significantly reduced in time to and from the country transit in raw materials and finished products (Shah & Raza, 2021). The disbursed fell has trade and reliable supply gun OGRE control to inside the dominate the world of Heavy able, more integrates region of products in and industry. It has trade. Cost more supply. It greater to the other environmental world inefficiency between systems and their reduced systems in Cluster once inter of systems. For SEZ businesses, the enhanced logistics infrastructure helps them to reach Pakistan's export markets and participate in the country's trade integration into global and regional value chains.

7.5 Employment and Skill Formation

The projects under the CPEC initiative offer employment opportunities both directly and indirectly. The employment that is deemed 'direct' is in the construction and operational phases of an industry; indirect employment is in support services and the supply chain. The Technical Training Centers and the vocational exchange programs with China find themselves favored while nurturing a workforce capable of operating sophisticated industrial technology (Khan et al. 2022). The vocational training program interest as captured in the preliminary reports from the SEZs is promising, especially since the fragmented policy frameworks still constrain proactively in the placement opportunities that SEZs ought to offer.

7.6 Challenges

Although the issues the CPEC plans to tackle appear to be improving, the full potential development of the CPEC SEZs is still being held back by a peculiar collection of issues. Deficient SEZ implementation and regulatory delays, complex systems of land acquisition, and missing financing on a number of regions are principal causative issues (CPEC Authority 2023). Investment sentiment in certain provinces is still heavily conditioned by security concerns. The supply chains that are still open and unregulated are also a serious impediment to the growth of the SEZs. Not having easy access to markets, market condition quality domes, and the laws regulating the supply chain will restrict the capability of the new foreign investment to enhance the industrial abilities of the Cathartic state. The issues highlighted above will continue to impede CPEC from reaping the intended industrial benefits.

8. Case Studies

In order to explore the impacts of CPEC on the industrial development of Pakistan this section analyzes three Special Economic Zones Rashakai, Dhabeji, and Allama Iqbal Industrial City in Faisalabad. These case studies focus on the strengths and weaknesses the CPEC policy to appreciate the intricacies of industrialization in Pakistan.

8.1 Rashakai SEZ.

Rashakai SEZ of Khyber Pakhtun khwah has been developed as alight manufacturing and small industrial units (CPEC Authority, 2022) focal point. The region targets domestic and Chinese investors due to its advantageous nearness on the M-1 motorway and to the rising labour. The first investors include joint-venture investors in technology and food who have only recently commenced operations of their test facilities. Despite the addition of service energy and core facilities the regulatory morass and land disputes have slowed the pace of industrialization. Industrial production is meant to address the domestic cluster. These republication documents indicate the aim to address the added export potential capability growing around.

8.2 Dhabeji SEZ

In Dhabeji SEZ which is located close to Karachi in Sindh province, the dominant activities within the Special Economic Zone are in textiles and agro-processing. Their location close to Gwadar Port and the Karachi Logistics Network enhances the attraction for Dhabeji SEZ for export-oriented activities. Thus far, Dhabeji SEZ has received investments from some textile machinery suppliers, some packaging firms, and agro-processing companies that have joint venture linkages with China. Although some economic activity is visible, the Dhabeji enclave is constrained by the land clearing for the enclave, the lack of clearance for the industrial infrastructure and the infrastructure themselves, and the slow pace of policy changes that have directly constrained economic activities. Economic activities are projected to be more balanced in the short run with diversification projected in the textile and agro-processing export industries, and in the agriculture productivity that is expected to grow downstream from these activities.

8.3 Allama Iqbal Industrial City (Faisalabad)

Building on the city's longstanding advantage in textiles and apparel, Allama Iqbal Industrial City in Faisalabad focuses on modernizing the established industries and anticipating new ones in sophisticated manufacturing (Khan et al. 2022). These include advanced textiles, textiles machinery, and pharmaceutical manufacturing. Even in these early stages of investment, local industrialists and their Chinese partners have established investment relationships, particularly in the technology transfer arena.

In the absence of competition on value chains and the assimilation of small local suppliers, the SEZ is infrastructure-wise unmatched, however, it does have challenges in the upskilling of its labor force. The local industry is expected to enhance the export readiness of the regional textile and apparel manufacturing by introducing advanced production techniques and improving high-end production systems.

8.4 Insights from the Case Studies

All the SEZs studied offer evidence for the promise of CPEC to stimulate industrial development while also providing pointers to the issues that still need to be addressed. The maintenance of certain industrial activities is subsidized, within the boundaries of some infrastructure, by the provision of electricity; the associated venture with the Chinese capital providers has been instrumental in the "gate" technology transfer. The triad of industrial licensing, land conflict, and zone development rate disparity indicates the need to industrial CPEC for the completion of its vision, along with the trifecta of regulatory reforms, funding, and human capital.

9. Discussion

The findings from the examination of the industrial components of the CPEC framework and the case studies on the components of SEZs are pertinent to the theory of structural transformation and the GVC (global value chain) upgrading models. Transformation structures deal with the shift from low productivity and low paying jobs to higher productivity jobs in the manufacturing and service sector (Herrendorf et al, 2014). In the case of Rashakai, Dhabeji and Allama Iqbal Industrial City, CPEC in this case serves to facilitate this transformation by

starting the industrial clusters, improving the dependability of the power supply and encouraging the technological change through joint ventures. In the GVC (global value chain) context, however, infrastructure and investment related to CPEC coming into Pakistan is intended to promote the inclusion of Pakistani firms into the regional and global production networks, while improving the domestic capability to manage and upgrade production (Gereffi, 2018).

A region's anticipated economic zones and the differences with reality highlight the absence of large new investments and the output of new large-scale industries. The hurdles to grabbing land and supporting the poor investor confidence and the process of sanctioning delays, along with scant resources, are some of the reason for the implementation lags. Attached to this is the stagnant incompleteness of the technology transfer capture local supplier networks, and, also, the upland industrial advancement in the country. The absence of these contradictions signifies the gaps in the policy implementation and the intersectional barriers of some policies, along with the industrial policies in regard to the available and the needed labor force.

This paper outlines opportunities that have been sidestepped by the country, such as how even with advertised modern infrastructure and supportive policies, there remains a persistent lack of export competitiveness due to obsolete and deficient production methods, quality, and limited engagement with international markets. Although there is a desire to improve the skills of the workforce, such plans are poorly targeted and designed to the nature of the industry, thus the negative repercussions of the engineering practices are largely felt.

Pakistani, as one of the hosts of the CPEC initiative, certainly stands to benefit immensely. However, the depth of these benefits would only be accrued if the restrictive policies and enduring institutional constraints are addressed. Though there are several crystalline pathways through which local firms can be integrated into the networks of regional and international value chains, the missing links of the local value chains to the global systems would greatly determine the depth of benefits accrued. It can thus be observed that the levers of the economy including skills, technology, and infrastructure, provide the targeted engineering that the economy needs to optimally benefit.

10. Recommended Policies...

There is a number of priorities framed within the policies regarding CPEC industrialization that, in the opinion of the author, are crucial to achieve the long term transformation of Pakistan.

1. Improve Governance At The SEZs And One-Window Systems: Investors' retention along with seamless project execution requires efficient governance within the SEZs. There is an interest in governance reform that creates one window governance for the approvals, permits, and regulatory compliance needed for investment and project execution within, and CPEC, SEZs (CPEC Authority, 2023).

2. Support SME Involvement In CPEC Supply Chains: A substantial portion of Pakistan's industrial structure is made of small and medium enterprises (SMEs). The policies designed to support and embed SMEs within CPEC supply chains must be integrated with industrial policy frameworks that offer financing, technology, and export markets (Ali et al., 2021). The presence of local SMEs in partnership with large Chinese corporations will result in the formation of industrial clusters and the promotion of inclusive industrial development.

3. Expand Human Capital With Additional Vocational Training: As the industrial clusters are built, the gap in the supply of the right quantity and quality of skilled workers will be needed for industrialization. Technical Training Institutions (TTIs) and the needed industry-driven skills development, together with exchange of Chinese vocational trainees, will compete to close the instruction gap in the industrial sector (Khan et al, 2022).

4. The price of energy should be controlled in both price and tariff structuring. Every productive business needs energy that is dependable, cheap, and easily accessible. The operational costs of industries in Special Economic Zones (SEZs) benefit from the tariff structures, supply reliability, and improved operational costs of SEZ industries. There is a positive and direct correlation between operational costs and competitiveness.

5. Trust building and collaborative regulatory approaches continues to be critical in dealing with cross border investment challenges. All possible risks and reinforced treaties in terms of border connectivity security, whether for provincial federals, states, or collaboration between security frameworks and local actors, should be streamlined. Governance that is predictable strengthens the security and investment nexus and therefore needs to be improved.

6. The logistics of the China-Pakistan Economic Corridor (CPEC) are expected to improve and therefore export-driven industrial promoters should base their projections on that. There are new international benchmarks that need to be accessed which are possible through placement policy emphasis on the core industrial outputs. The country is also expected to improve its regional and international value supply and value chain with industries that are willing to enhance their products.

The immediate benefits expected from the investments in CPEC which are sustained industrial transformation and continued structural transformation. The changes proposed in this forum will expedite this shift.

Conclusion

This research focused on the specific impacts of the CPEC on the economic development of Pakistan, especially the empirical impacts on Special Economic Zone (SEZs), industrial output, foreign direct investment (FDI), technology and skill development, and the Labor Force. Research indicates that the CPEC has positive impacts on industrial clustering and structural transformation, albeit marginal, especially in the reliability of energy, quality of the infrastructure, and the amount of investment inflow. The CPEC corridor along the SEZs Rashakai, Dhabeji and Allama Iqbal Industrial City demonstrate the fundamental aspects of corridor-led industrialization as well as the challenges. The primary weaknesses that inhibit the progress of industrialization within these zones are the regulatory bottlenecks of conflicting land use, equitable within-zone technology transfer and diffusion, and slow development of in-region supportive infrastructure.

Concerning the study questions, the answer is CPEC has and will continue to advance the level of industrialization, despite the gaps in industrial policy, outreach of SMEs, and the integration of the workforce. This study contributes to the existing literature on CPEC by focusing on the level of industry, integration with earlier publications that treated CPEC and Pakistan from a primarily macroeconomic and trade perspective.

Future research may assess the long term performance of SEZs and their domestic and international value chains, along with the socio-economic aspects of industrial clustering. Consequent endeavors will analyze the impact of CPEC and comparable corridor initiatives on the modernization industrialization of other developing nations, through the integration of infrastructure spending, robust policy system, and human capital investment.

Bibliography

- Amsden, A. H. (2001). *The rise of "the rest": Challenges to the West from late-industrializing economies*. Oxford University Press.
- Banerjee, A. V., & Duflo, E. (2014). *Poor economics: A radical rethinking of the way to fight global poverty*. PublicAffairs.

- Board of Investment (BOI). (2020). *Special Economic Zones under CPEC: Policy framework and investment facilitation*. Government of Pakistan.
- Board of Investment (BOI). (2021). *Special Economic Zones under CPEC: Investment framework and industrial cooperation policy*. Government of Pakistan.
- China-Pakistan Economic Corridor Authority (CPEC Authority). (2017). *Framework agreement on industrial cooperation under CPEC*. Government of Pakistan.
- Critical Pakistan Studies. (2024). *CPEC and Pakistan's industrial modernization: A policy reassessment*. University of Cambridge Press.
- Dawn. (2024, March 15). Slow pace of SEZ development under CPEC raises concerns. *Dawn News*. <https://www.dawn.com>
- Farooq, U., & Malik, R. (2020). Industrial challenges and investment behavior under CPEC: A policy analysis. *Asian Development Policy Review*, 8(2), 112–130.
- Fujita, M. (2016). Economic geography and spatial development: Revisiting the theory of industrial agglomeration. *Regional Studies*, 50(1), 57–73.
- Haque, N., & Nayab, D. (2020). *CPEC and Pakistan's institutional challenges: Governance, coordination, and provincial dynamics*. Pakistan Institute of Development Economics (PIDE).
- Hussain, M. (2017). The China-Pakistan Economic Corridor and Pakistan's industrial transformation. *South Asian Studies*, 32(2), 85–104.
- Institute of Strategic Studies Islamabad (ISSI). (2019). *CPEC and industrial cooperation: Mapping progress and prospects*. ISSI Policy Brief.
- Javaid, U. (2016). Assessing CPEC: A gateway to regional economic integration. *Journal of Political Studies*, 23(1), 233–247.
- Khan, A., & Shabir, M. (2018). Energy cooperation and infrastructural transformation under CPEC. *Pakistan Development Review*, 57(4), 321–340.
- Li, X., & Wang, Y. (2017). Industrial corridors and supply chain deepening: Lessons from China's regional development model. *Journal of Asian Economic Integration*, 4(3), 276–294.
- McCartney, M. (2020). The China–Pakistan Economic Corridor (CPEC): Infrastructure, geography, and the economy. *Contemporary South Asia*, 28(3), 341–357. <https://doi.org/10.1080/09584935.2020.1759879>
- Naseem, S. (2018). Governance structure and coordination in CPEC projects. *ISSRA Papers*, 10(1), 25–46.
- National University of Sciences and Technology (NUST). (2021). *Industrial linkages and SEZ development under CPEC: An institutional perspective*. NUST Press.
- Pakistan Institute of Development Economics (PIDE). (2021). *CPEC industrial cooperation: Opportunities and bottlenecks*. PIDE Research Report Series.
- Planning Commission of Pakistan. (2017). *Pakistan Vision 2025: Policy framework for sustainable industrial growth*. Government of Pakistan.
- Rafiq, A. (2020). The China-Pakistan Economic Corridor: Barriers, opportunities, and regional implications. *The Middle East Institute*. <https://www.mei.edu>
- Rafiq, A., & Akhtar, S. (2021). Industrial collaboration and global value chain integration under CPEC Phase II. *Contemporary Chinese Political Economy and Strategic Relations*, 7(3), 543–570.
- Rigg, J. (2018). *Unplanned development: Tracking change in South and Southeast Asia*. Zed Books.
- Small, A. (2015). *The China-Pakistan axis: Asia's new geopolitics*. Hurst Publishers.
- Special Economic Zones Management Company (SEZMC). (2024). *Progress review of SEZs under CPEC: Annual report 2023–2024*. Government of Pakistan.

- Wolf, S. O. (2019). *The China-Pakistan Economic Corridor of the Belt and Road Initiative: Concept, context and assessment*. Springer. <https://doi.org/10.1007/978-3-030-16527-5>
- World Bank. (2020). *Belt and Road economics: Opportunities and risks of transport corridors*. World Bank Publications. <https://doi.org/10.1596/978-1-4648-1392-4>
- Zhang, J., & Chen, Y. (2021). CPEC Phase II and the industrial cooperation agenda: Policy directions and regional linkages. *Journal of Contemporary China Studies*, 28(4), 401–418.
- Zhang, X., & Li, W. (2018). China's Belt and Road Initiative and CPEC: Strategic rationale and economic dimensions. *Asian Economic Review*, 60(2), 115–132.
- Zubair, M. (2020). CPEC's early harvest projects: An overemphasis on infrastructure? *Critical Pakistan Studies*, 2(1), 45–59.