

Special Section 1: CPEC and Potential Opportunities for Industrial Transformation in Pakistan

1. Introduction:

China Pakistan Economic Corridor (CPEC) provides the industrial sector of Pakistan with an opportunity to modernize and become more efficient and competitive. The various energy projects, coupled with improvements in infrastructure and road networks, would help address some of the key constraints to growth. More importantly, the development of Special Economic Zones (SEZs) would enable industries to smoothen supply chains, enhance collaboration and innovation capabilities, and help reap significant economies of scale.

However, this process will take time to materialize, and the nature of its trajectory would depend, at least in the short to medium term, on two main factors: (1) how the industrial transformation currently underway in China creates potential opportunities for Pakistan; and (2) how prepared Pakistan's economy is to take advantage of this opportunity.

2. Industrial transformation in China and Opportunities for Pakistan:

After experiencing rapid economic growth over the last three decades, China has been moving towards a new phase of development. The overall policy direction for this transformation stems from the 13th five-year plan (2016-2020),¹ which was adopted by the Chinese government in March 2016. The plan acts as a guiding principle to all ministries, industries and local governments in formulating their policy goals and development initiatives to complement this new growth paradigm.

The path for industrial modernization, meanwhile, draws its inspiration from "Made in China 2025" – a master plan adopted in May 2015 to turn China into one of the most competitive manufacturing powerhouses. The objectives are multi-fold, with a focus on emerging and existing industries as well as on quality improvement and brand development. To summarize:

- i. It aims to accelerate the development of new manufacturing and information technologies. Increased focus on provision of services, meanwhile, highlights another departure from the traditional industrial structure, and would require concentrated research and innovation efforts.

¹ The Five Year plans in China are policy initiatives that set targets for future direction and growth orientation, while highlighting obstacles and opportunities faced by various sectors of the economy in that regard. The 13th five-year plan was announced for the period 2016-2020.

- ii. On parallel terms, there is a comprehensive roadmap designed to transform and upgrade existing Chinese industries with a clear objective of moving away from mass production of low-end products towards narrow-based, specialized commodities.
- iii. By narrowing production and focusing on luxury and specialized commodities, the industries would be trading economies of scale for higher marginal returns.² Moreover, concentrating on value addition would give a boost to the process of brand development that China is striving for in order to break into the high-end market. Lastly, this change of strategy would aid in addressing the overcapacity problems that some industries (such as steel and coal) are experiencing at the moment.
- iv. Furthermore, the plan highlights the importance of a reduction in the level of dependence on foreign industries for raw materials, services and other products.³ The plan sets targets to overcome such dependencies. For instance, it advises to increase the share of domestically produced core components and materials to 40 percent in 2020 and to 75 percent beyond that.

All this would result in a concentrated, specialized and vertically integrated industrial sector that would prioritize application of technology and brand development in order to achieve competitive advantage in high-end and smart manufacturing. Mergers and acquisitions would be encouraged where certain inefficient firms still show potential; meanwhile, segments of the sector deemed either technologically out-of-date or incompatible with the new growth model would face liquidations, technology transfers and relocations in order to achieve “better asset utilization”.

On the economic front, these advancements are being supported by three major changes that have started to affect the Chinese economy: a shift from investment-fueled growth towards consumption-orientation; increased focus on technological

² The government intends to decrease state-enforced transaction costs, taxes, and other credit related hindrances to facilitate businesses in this regard.

³ J. Kang and W. Liao (2016). *Chinese Imports: What's Behind the Slowdown?*, IMF Working Paper No. 06. Washington DC: IMF. This paper empirically shows that slower growth, a shift from investment and export led model to consumption and services driven economy, and “onshoring” (substituting imported intermediate products with domestically produced items) have already started containing the imports of the Chinese economy.

enhancement; and a struggle to bring forth the “Green Revolution”. **Table S1.1** below illustrates how the 13th 5-year plan focuses on these areas.

Table S1.1: Industrial Transformation in China under the 13th 5-year plan and its impact on Pakistan

Pillars of Industrial Transformation in China under the 13th 5-year Plan			
	1. Consumption-orientation	2. Technological advancement	3. Green Revolution
New Technologies to complement this transformation	Luxury textile items	Focus on 5G, advanced sensors and artificial intelligence	Environmental monitoring machineries, equipment and software
	High-end food processing and production	Genomics and bio-tech industry	Low-carbon public transportation systems
	Hybrid/electric/driverless automobiles	R&D related to next generation power generation (biomass, smart grids, etc)	Battery energy density innovations
	Medical advancement	Positioning and global communications infrastructure	Shift from fossil-fuel power generation
	Premium Smartphone manufacturing	Shape-memory alloys, self-healing materials, semi-conductors and biosynthetic materials	From synthetic to organic fertilizers
	Advanced hospitality services	Disaster prevention technologies	
Possible spillovers and transfers to be experienced by Pakistan	Low-end textile manufacturing	Steel industry inflows	Coal industry inflows
	Mobile and laptop assembly and fixing	Auto business transfers	High-carbon vehicles crossing borders
	Basic food processing	Kitchen/appliances machinery imports	Inflow of synthetic fertilizer manufacturers
	Catering for increased consumer demand in China	Plastics industry (toys, sanitation, PVCs) inflows Chemical industry technology transfers	

With such advancements in China (and a clear focus on climate change), many existing practices, equipment, and infrastructure would become obsolete in the near future. Shutting down or disposing off these industries would not be feasible, while transferring the machineries to developing economies could act as an attractive alternative. With CPEC in its implementation stages, technology transfers and spillovers from China into Pakistan may be expected. A few such possibilities might be:

- In the energy sector, coal plants and related machinery would be transferred, as the majority of CPEC-related energy investments include power generation from coal-based plants. Complementing this fact is the alarming level of air pollution in big industrial regions of China, forcing the nation to look for alternative energy sources.⁴

⁴ In January 2017, China’s National Energy Commission issued a directive that advised cancellation of 103 coal powered energy projects that were planned or were under construction, eliminating 120

- Low-end smart manufacturing business like assembling and fixing may cross borders as China increases its focus on the high-end avenues of semi-conductor manufacturing, lens and self-healing modern displays, etc. Post-design development operations such as smart-phone and laptop assembling fall under the categories that may relocate to Pakistan.
- For the infrastructure related projects, Chinese steel firms may find an entry into the Pakistani market to better utilize their excess produce by working on the extensive infrastructure investments under the CPEC.⁵
- In the auto sector, an inflow of conventional vehicles and associated spare part businesses may be expected in Pakistan. Crossover sedans, SUVs and pick-up trucks, together with complementary products and services, like spare part businesses, could find their way into the market. Interior designing firms and passenger rides would likely stay in China, while commercial vehicles might find their way into Pakistan.⁶

Furthermore, with growing domestic demand in the country, some sectors of the economy would provide opportunities of expansion and diversification that domestic players might be able to capitalize upon. For instance:

- The chemical industry may welcome new players,^{7,8} as investments in technology upgradation under CPEC gradually allows for increased efficiency and high R&D spending. Firms may take benefit of this roadmap by focusing on producing basic petrochemical building blocks such as Naphtha cracker (via gasification of coal for example); marketing and exporting the surplus

GW of future electricity capacity. This move was taken primarily to limit China's coal based power generation to 1100 GW by 2020. This means the government would focus on alternate energy sources to meet future power demand.

⁵ "Ghost-town" phenomenon (excess supply of housing and related infrastructure remaining unused for a long time) experienced by China further highlights the probability of such businesses to look for returns elsewhere.

⁶ Recently, Gandhara Nissan has signed a joint venture agreement with JAC Motors – one of the top 10 auto manufacturers in China – for the import, assembly, and distribution of X200 light trucks in Pakistan.

⁷ There is also a chance that chemical imports from China increase following the development of better road-connection between the two neighbors under CPEC. The local industry requested the budgetary authority to increase custom duties to about 20 percent from the existing rate of 12 percent. The federal budget explanatory document published by the Ministry of Finance projects an 18 percent increase in receipts collected from some of the chemical products.

⁸ Recently, the Pakistan Chemical Manufacturers Associations (PCMA) has expressed desire to form joint ventures with Chinese firms to achieve economies of scale and reduce dependence on imported raw materials.

caustic soda of Pakistan;⁹ or using technological advancement to expand the usage of chlorine (a by-product in the production of caustic soda) in the manufacturing of PVC pipes;¹⁰ etc.

- Furthermore, with stricter regulation on the use of vaccines, pesticides and synthetic fertilizers in China and promotion of organic fertilizers in their stead, the scale of such operations would reduce in the mainland. The relocation of such firms to Pakistan becomes a possibility and CPEC envisions joint ventures in fertilizer and pesticide manufacturing between the domestic and Chinese enterprises.
- The plastic industry can see a boom in terms of investment and technology transfer under CPEC. With growing demand for automobiles, rising need for water management infrastructure and potential low end smart manufacturing entering Pakistan, technology aided investments in this sector would help in better construction and manufacturing of pipes, smart phone exteriors, automobile interiors, and packaging materials. In addition, improved and updated variants of crucial machinery like injection molding, extrusion, blow molding and rotational molding units, etc may be imported either by the local firms or by incoming Chinese counterparts.
- With China moving up the global supply chain in food processing, lower-end machineries could be transferred to Pakistan, which would aid in catering to the growing demand of hospitality industries under CPEC and for improving food quality and ensuring hygienic processing in general.

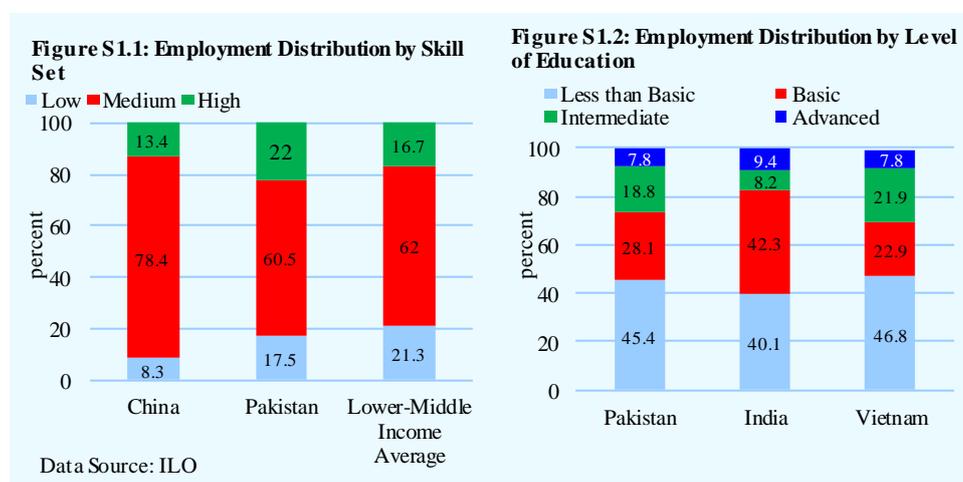
3. How to maximize returns from these opportunities?

Pakistan not only has an edge over possible competitors when it comes to attracting such technology transfers due to geographical proximity and a policy of strategic alliance, but with CPEC an actualizing step towards the One Belt One Road initiative, it also shows closer compatibility with China's new growth model. Furthermore, the ongoing construction of numerous coal-based power plants throughout Pakistan to ensure consistent electricity provision and the establishment of special task forces to protect CPEC-related ventures are reducing the major binding constraints to growth and FDI inflows. A few hindrances remain, however. For instance:

⁹ Though chemical focused industry is the third largest in China, there still exists room for imported products in the markets due to excess domestic demand.

¹⁰ Currently, only Engro is involved in the PVC production, an area which can become a major exporting avenue for Pakistan.

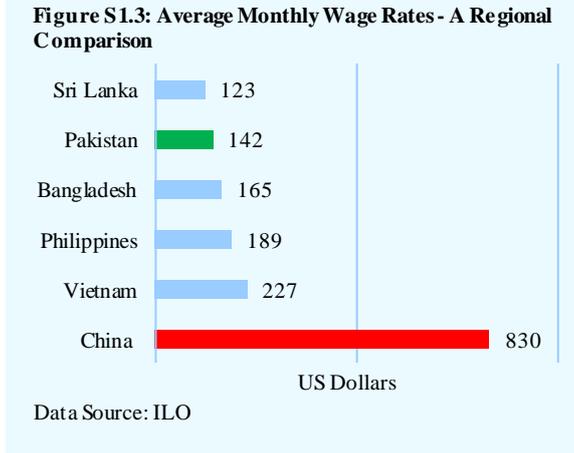
A. **Labor skills:** There exists a mismatch between the current level of domestic labor skills and the level required to handle advanced equipment, operate new machineries, and carry out adequate research and development. As **Figure S1.1** shows, the share of medium skilled workers in the total labor force is less than both the average of lower-middle income economies and China. Furthermore, **Figure S1.2** shows that the share of workers with at least a basic level of education is lower than India and only marginally better than in Vietnam (however, the latter edges out in terms of workers having intermediate and advanced degrees).



In the absence of a coherent overarching skill development policy, identifying skill gaps becomes complicated. Also, unpredictability regarding the nature of arriving Chinese businesses and technology exacerbates the situation.¹¹ Thus, to reduce the resultant frictional and structural costs of employment, several vocational trainings focusing on a common set of essential skills are required. Furthermore, with domestic labor force inexperienced and its knowledge base low, the economy would have to adjust to allow a transitional period where workers from China arrive to work and train their counterparts in Pakistan. However, the contractual nature of this employment must eventually ensure the transfer of skills (and posts) to the latter. In addition, industries that are

¹¹ The type of technology transfers and business inflows that actually occur would be subject to a gradual transition of China's economy and progress made under CPEC.

being “phased out” of China may trigger a prolonged inflow of associated workers,¹² necessitating a preemptive assessment of such a development. However, the present labor cost differential between the two countries favors domestic workforce relative to China’s (Figure S1.3).



B. Coordination between federation and provinces:

Efforts are also needed to align the objectives of federal and provincial government bodies in order to ensure a consistent and comprehensive support

policy. The example at hand is the investment policy, which is now a provincial matter after the 18th Amendment, whereas the federal government is leading all industrial initiatives under the CPEC. The issue becomes more relevant for Special Economic Zones (SEZs), which are being considered as the nodes of economic progress under CPEC. Specifically, the investment policy regarding SEZs is being set by provincial government, while the overarching Special Economic Zone Authority (tasked with the overall direction of progress) falls under the purview of the federal government.

Inclusive proceedings such as the Joint Coordination Committee (JCC) meeting in Beijing (which was attended by representatives from all four provinces alongside federal officials) are encouraging, and similar efforts are required concerning the operational activities of the projects on a consistent basis. For instance, a strong coordination is needed between provinces and the federal government for the success of SEZs. It is important to provide complementary services such as legal, hospitality, consultancy, accountancy,

¹² Comparing “Industrial 4.0” (the German blueprint for industrial transformation) with “Made in China 2025”, the European Union Chamber of Commerce in China notes that over the next decade, Germany—a country with a similar ambitions but a relatively mature vocational training system—would experience the loss of about 610,000 jobs and a creation of 960,000 new ones in emerging areas. Such an expected change in the employment mix of China may result in an exodus of workers to other developing economies. Special Report “China Manufacturing 2025: Putting Industrial Policy Ahead of Market Forces” (2017), EU Chamber of Commerce in China.

and health on a large scale to support various core activities of the SEZs.¹³ However, providing ease of such credit and advisory facilities, coupled with urbanization efforts (such as education and parks) requires not only a secure and conducive environment but also a supervisory body capable of monitoring and funding such endeavors. A close understanding, hence, between provincial and federal institutions is vital to achieve this objective, as observed during the sixth JCC (see **Box S1.1**).

Box S1.1: Highlights from the 6th Joint Cooperation Committee (JCC) concerning Special Economic Zones (SEZs)

During the sixth meeting of the Joint Cooperation Committee (JCC) held in Beijing in December 2016, the federal government, the four provincial governments, AJK, GB and FATA identified nine sites as Priority Special Economic Zones (SEZs), which were referred to Joint Working Group on Industrial Cooperation for consideration. It was also decided that Pakistan would devise an incentive package for relocation/ establishment of SEZs in the country. Subsequently, the Board of Investment (BOI) devised an incentive package for the establishment/ relocation of industry from abroad in consultation with all the provinces, GB, AJK and FATA. The Cabinet approved the package in May, 2017.

Salient features of the package are:

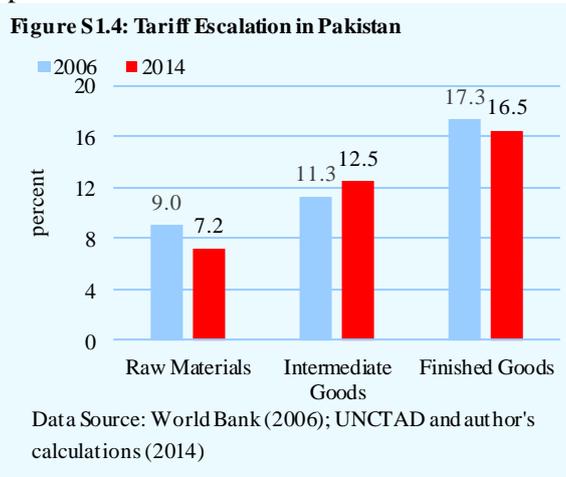
- Provision of plots on installments (50 percent down payment and remaining 50 percent in four bi-annual installments basis).
- Markup support at 50 percent of the markup to a maximum of 5 percent to be provided by respective governments on the loans taken in Pakistani currency for financing of a project.
- Freight subsidy at 50 percent on inland transportation of plant and machinery for installation in (or development of) any of the priority SEZs.

- C. **Market structure:** There is a matter of how increased Chinese participation in the local industry would affect the current industrial structure. Government must strive to ensure that the entrants help spur a competitive environment and not instead become part of the cartelization that is being observed in varying degrees in segments such as cement and auto manufacturing. An oligarch structure would ensure the incoming businesses higher margins from the domestic economy, whereas increased competition would help invigorate the economy, improve the quality of production, and increase export revenues. Incentive based policies are needed to steer the industry's focus towards the latter.
- D. **Liberalization policies:** The tariff structure of the economy would need an overhaul to benefit fully from the opportunities provided by CPEC. Tariff

¹³ Furthermore, as Dr. Ishrat Husain in his article, "Policy Imperatives for CPEC", (Dawn; April 10, 2017) points out, competent consultancy firms and universities must carry out pre-feasibility studies in order to identify suitable projects for different SEZs.

liberalization has not only been slow in Pakistan when compared with regional countries, but has also been applied disproportionately and in a non-uniform manner (see **Figure S1.4**). Finished products are granted more protection than semi-finished and basic commodities, while major industries such as textiles and automobiles enjoy high protection rates. This has resulted in an industrial structure that promotes anti-export bias and ineffectiveness.

Pakistan would have to focus on developing a roadmap that is less intrusive (shielding) and more facilitative. Export oriented sectors would need to be liberalized so as to welcome foreign participation and encourage innovation and quality enhancement, especially with respect to the potential Special Economic Zones (SEZs).



- E. **Trade with China:** Pakistan must also reassess the implications of its Free Trade Agreement (FTA) with China in the light of developments under CPEC. Historically, it has benefitted China more than it has Pakistan, putting a strain on the already skewed trade balance between the two economies. It is therefore necessary that Pakistan gains supportive concessions in tariff from China of an equivalent magnitude as those enjoyed by the ASEAN economies in order to engage on a relatively equal footing.¹⁴ Furthermore, the small-scale segment of Pakistan economy has suffered because of cheap inflow of Chinese products. High inflows of Chinese consumer durable commodities, and non-availability of their local substitutes, present indications that local SMEs are losing ground in the domestic market.¹⁵

Along the same lines, it is crucial to ensure that Chinese involvement in the industrial sector results in benefits for local players as well (minimum local

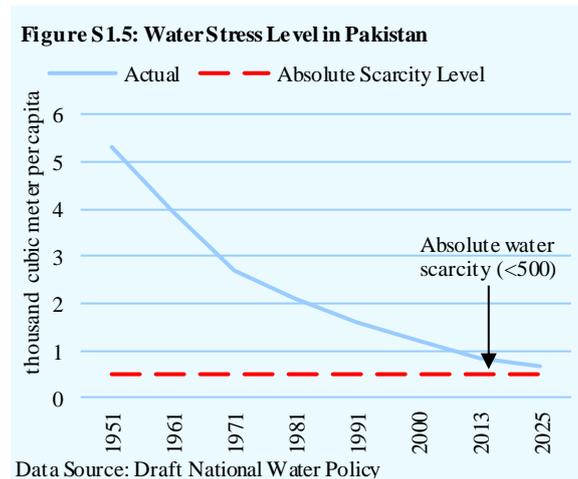
¹⁴ Also see, A. Chaudhry, T. Chaudhry, and N. Jamil (2017). "Pakistan's Experience with the Pakistan-China FTA: Lessons for CPEC," *Lahore Journal of Economics*, 22: 1-24.

¹⁵ For more information, refer to J. Kamal and M. Malik (2017). *Dynamics of Pakistan's Trade Balance with China*. SBP Staff Note SN 04/17. State Bank of Pakistan.

labor force requirements for joint ventures in SEZs, for example, can be a step forward).¹⁶

F. **Water availability:** Lastly, the issue of water availability is to be addressed head on in order to inhibit the adverse impacts of climate change. Demand-pull factors such as increased industrial activity, more coal-based power projects, coupled with a rise in population and urbanization efforts associated with CPEC, would add significant pressures on the already

vulnerable supply of water. For instance, it is feared that the water availability in Pakistan in per capita terms would pass the threshold of “absolute water scarcity” by 2025 (**Figure S1.5**).¹⁷ Avenues such as recycling and waste disposal need to be utilized in this regard.



¹⁶ Minimum domestic labor requirements and other related prerequisites have long been a part of numerous China-led SEZ investments in Africa and the Middle East.

¹⁷ For more detail, refer to Chapter 7, titled “Water Sustainability in Pakistan – Key Issues in Challenges”, State Bank of Pakistan Annual Report 2016-17.