China-Pakistan Economic Corridor

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Prime Minister of Pakistan
Mr. Shahid Khaqan Abbasi

“Pak-China bilateral ties are time tested; our relationship has attained new heights after the China-Pakistan Economic Corridor that is a game changer for the region and beyond.”

President of China
Mr. XI Jinping

“To build a China-Pakistan community of shared destiny is a strategic decision made by our two governments and peoples. Let us work together to create and even brighter future for China and Pakistan.”

SPRING
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Pema Chodron says, "start where you are". Spring does that for us. Spring urges us to start over without the resentment of the past season. Spring inspires us to lean into the future with a sense of optimism. CPEC is such a Spring of Hope that will feed our longing for warmth during harsh winters of pessimistic economic conditions. Just like spring inspires flowers to bloom, we as a nation would be able to rebuild and stabilize our economic growth and development.

Volume: 02

CENTRE OF EXCELLENCE
China-Pakistan Economic Corridor

Prof. Ahsan Iqbal

Minister of Interior & Minister of Planning, Development & Reform, Pakistan

The Pak-China friendship is all weather time-tested. Both the countries have enjoyed the steady development of bilateral ties ever since they have formally established diplomatic relations. In recent years, the economic and social development of the two countries has entered into a new historical period by the initiation of China-Pakistan Economic Corridor (CPEC) which is widely known as the flagship of Belt and Road Initiative (BRI) of China.

CPEC is an inclusive initiative to develop all provinces and regions across different sectors of Pakistan. Five years of CPEC, through the early harvest phase opened up plethora of opportunities which have been well realised to reap the low hanging fruit. The Long-Term Plan (LTP) of CPEC was approved in November 2017 which provides a conceptual framework for CPEC. This plan is national plan approved by both Chinese and Pakistani governments. This plan is effective untill 2030 and will provide macro guidance for implementation of CPEC. It includes a variety of key areas of cooperation between China and Pakistan namely: connectivity, energy, trade and industrial parks, tourism, agricultural development and poverty alleviation, people's livelihood and financial cooperation.

The establishment of Centre of Excellence for CPEC is carried out to support the different facets of CPEC through evidence based policy research. CPEC Quarterly is serving well to harness evidence based information across the board. Although, more input is required from the intellectual community on the CPEC areas of LTP especially in the context as to how make CPEC more sustainable while highlighting those areas where both Pakistan and China can club together and keep the momentum going for the prosperity of both nations.

H.E. Yao Jing

Ambassador of People Republic of China to Pakistan

The China-Pakistan Economic Corridor (CPEC) is a pilot project under the Belt and Road Initiative (BRI) and a new platform for China-Pakistan cooperation. By collaboration on the Gwadar Port, infrastructure, energy and industrial cooperation, the CPEC will tap the potential of Socio-economic development and regional connectivity, and benefit the people of our two countries and the region eventually.

Today, out of the 43 CPEC early harvest projects, 20 are completed or under construction. People-to-people exchanges and livelihood projects are also moving in a smooth way, which will bring hearts of our people much closer. The progress of CPEC has received regional and even broader attention, with an increasing number of countries expressing their interests in joining CPEC.

Currently, our relations are facing new important opportunities. The most prominent and important concept at the core of China's diplomacy is to foster a new type of international relations and build a community with a shared future for mankind. Featuring win-win cooperation and mutual benefit, CPEC has accumulated best practices and set a very good example for it.

Based on the principle of extensive consultation, joint contribution and shared benefits, a Long-Term Plan (LTP) of CPEC was adopted in November 2017. It clearly outlines what CPEC will become and bring in 2030. To help realize this blueprint, intellectual support from scholars should be encouraged. Some of the most important issues to be addressed include: how can we make CPEC more successful and sustainable? How can we better transform the economic benefits into social development? How can we better engage the business community and private sectors? And how to bring in third-party participation and make regional countries also benefit from CPEC? We look forward to valuable inputs from academics in this regard.

Upon the publication of CPEC Quarterly, I would like to appreciate the devotion of the Centre of Excellence for China-Pakistan Economic Corridor (CoE-CPEC). I sincerely wish that this magazine can work as a bridge between scholars from China, Pakistan and elsewhere to study more on CPEC and the Belt and Road Initiative (BRI), and make recommendations for decision-makers.

Chief Editor's Note:

Dr. Shahid Rashid
Executive Director

The friendship of Pakistan and China is an all-weather-time-tested and the China Pakistan Economic Corridor (CPEC) has played a vibrant role in taking up the economy of both the friendly nations. Under the ambit of CPEC projects, this can be said with certainty that inclusivity of CPEC will prove to be a world over success and other nations will learn and emulate China-Pakistan friendship for cooperative growth and prosperity.

The Centre of Excellence for China-Pakistan Economic Corridor (CoE-CPEC) is an official think-tank on CPEC, jointly developed by Pakistan Institute of Development Economics (PIDE) and Ministry of Planning, Development and Reform (MoPDR), Islamabad. In order to disseminate the fact-based research and information the centre has taken up six thematic areas which are: Urban Development in Pakistan Under CPEC, Socio-Economic Impacts of CPEC, Trade and Industry Cooperation Under CPEC, Regional Connectivity Under CPEC, Financing and Financial Sector Integration Under CPEP, and Job Growth and Human Resource Development Under CPEC.

It has been a matter of immense pleasures for CoE-CPEC, to witness the success of the first Edition of CPEC Quarterly magazine on 4th January 2018, at the MoPDR Planning Development and Reform. The launching ceremony was chaired by Honorable Minister Ahsan Iqbal and His Excellency, Mr. Yao Jing. It is pertinent to mention here that COE-CPEC has achieved this milestone especially at the time when other important tasks were being aimed, explored, and accomplished. In less than a year time, the birth of this publication was made possible by the team of the centre with great dedication and my profound appreciation goes to the Editorial team for crafting the baseline and the overall concept of CPEC Quarterly.

We have received loads of complementation and valuable feedback from different stakeholders about CPEC Quarterly. I am confident that this edition will serve the readers with more evidence-based information in all sections that include: Reader's Corner, CPEC Updates, CPEC Opportunities and CoE Activities. CoE-CPEC encourages and opens to receive the articles from relevant stakeholders, academicians, researchers, scholars and journalists from Pakistan and abroad in compliance with the Editorial policy which is available on our website i.e. www.cpec-centre.pk

I and the team of CoE CPEC are looking forward to recieve suggestions from our valuable researchers to further improve the quality of CPEC Quarterly in future.

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Yasir Masood
Deputy Director
Media & Publications

Editor:
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Deputy Director
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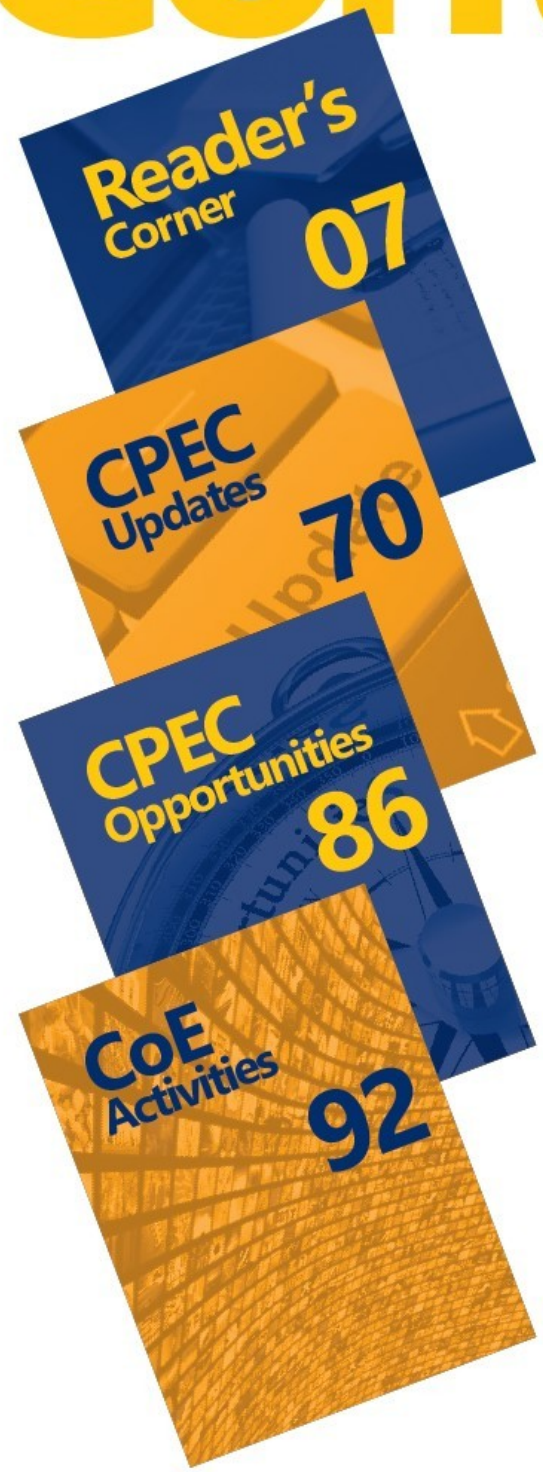

Reader's Corner

Reader's Corner

This section will serve the most to the intellectuals & diplomatic community, academicians, researchers, entrepreneurs, and students to enhance their horizon about CPEC with all its manifestation including contemporary and discernible trends.

07

Belt and Road Initiative (BRI): Opportunities & Challenges

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Disclaimer: The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of FPCCI

	2014		2030		2050	
PPP Rank	Country	GDP at PPP (2014 US$bn)	Country	Projected GDP at PPP (2014 US$bn)	Country	Projected GDP at PPP (2014 US$bn)
1.	China	17,632	China	36,112	China	61,079
2.	United States	17,416	United States	25,451	India	42,205
3.	India	7,277	India	17,138	United States	41,384
4.	Japan	4,788	Japan	6,006	Indonesia	12,210
5.	Germany	3,621	Indonesia	5,486	Brazil	9,164
6.	Russia	3,559	Brazil	4,996	Mexico	8,014
7.	Brazil	3,073	Russia	4,854	Japan	7,914
8.	France	2,587	Germany	4,590	Russia	7,575
9.	Indonesia	2,554	Mexico	3,985	Nigeria	7,345
10.	United Kingdom	2,435	United Kingdom	3,586	Germany	6,338

Figure 1. Global GDP Forecasts
Sources: IMF WEO database (October 2014) for 2014 estimates, PwC projections for 2030 and 2050

World economic growth having interesting dynamics and recovery patterns is linked with China and emerging economies — an upsurge in major macroeconomic indicators is potential for overall global progress. According to the IMF, the economic recovery is imminent; world economy is expected to grow by 3.9 percent in 2018, following 3.7 percent in 2017 and 3.2 percent in 2016. China is the major contributor to World's economic growth — in the 1980's China opened the doors to outside world and entered the era of globalization. China's progress in a short span on the economic front is astonishing — economists who questioned this framework of sustainable development got their critical answers. Following are the highlights of China's dominance:

- During 2008-14, contributed 30% to world economic growth
- World's largest economy (PPP) for past three years
- GDP 2006 $2.752 trillion; GDP 2016 $11.2 trillion

Figure-1 highlights the projections of economic growth in 2030 & 2050 — China and India may lead the way. Although, China has overshadowed World's developed nations, yet the US is still the global dominant force and far ahead in terms of social indicators, institutional quality and standard of living.

Within developing nations, lack of sustainable-urbanization, poor-industrialization, weak infrastructure, low skilled human capital and technological backwardness are primary obstacle in progress. Whereas, developed nations having their own impediments — such as high cost of labour and capital along-with less margin for growth.

CPEC is the central organ of Belt and Road Initiative (BRI). The accomplishment of CPEC is the litmus of BRI to change global trade dynamics.

China being a locomotive of developing countries, channelized its strengths of massive production and trade to lead the economic growth — the trade-based economic model to harmonize global integration and promote sharing of market resources. The access to skilled and low-cost human capital with technological advancement has increased trade of China many times and the addition of 3 Trillion USD reserves — is the confidence of economic sustainability. Massive supplies of China have integrated the global economies on the horizon of cost-effective production.

China's proposal of "One Belt One Road" is the next level trade initiative and entirely different to conventional free--

trade zoning framework. In 2016, the scope of OBOR was further extended and it is now titled as "Belt and Road Initiatives" (BRI). The BRI is a great game with significant impact to forecast the future of global-trade and furnish new solutions of societal development. The full scope of BRI dealing with the connectivity of 68 economies of more than 3 billion people and 40 per cent of global GDP – the largest economic intervention to address the issues of humanity, aimed to reduce global poverty and contribute to sustainable development of a common man. The trade-based development of China in last few years has strengthened the living standard of common Chinese through a rise in income. Around 600 million Chinese came out from the bracket of low income to middle class and it is the largest economic shift and a sign of progressive economic development.

Although the BRI is an economic sunrise, it needs to address the following policy level challenges:

Strategic International Influence

Currently, Chinese growth is having a pressure of economic downsizings and BRI is the only framework to increase the trading volume – especially exports economy. The 68 economies of BRI under the umbrella of Chinese leadership might have a strategic challenge to globally prove the metal of BRI. The formation of "one-trade-policy" of BRI with the economic and political requirement is the ultimate challenge and litmus test of sustainability. The regional economic behavior(s) are changing from traditional to diversified progress model – causing pressure to rebuild the trade policy and reshape the determinate of regional economic connectivity – is the foremost challenge of BRI to harmonize the fair distribution of financial and social profit. The potential of natural resources (reserved and consumption) within BRI economies having the primary attraction of absolute and rapid economic growth. The BRI may need to address the framework of resource distribution in the framework of upcoming economic needs potential growth projections of a member country. The political differences and diversified interests of partnering countries are a threat and opportunity to manage the BRI and move forward pragmatically.

Resolving Infrastructure Inadequacies

The primary function of BRI network which comprises of sea terminals, high-speed rail corridors, mass trade transits, highways, bridges, and networks of commercial cargo connecting Asia, Africa and Europe. The inter-continental connectivity is subject to large-scale infrastructural development within 68 economies is the prodigious challenge and primary factor to upraise the objective of BRI.

Within BRI framework, the majority of countries having deprived of economic infrastructure and facing issues of terrorism such as Pakistan, Iraq, Yemen, Kenya, Egypt, Libya, Uganda, and Ukraine. The political unrest, policy changes, security risks and economic fragility are the key primary issues linked with the objectives of BRI. Within all this, development of large-scale infrastructure is a primary challenge. The dynamics of infrastructural development are multidisciplinary and diversified which are subject to countries and degree of governance. Therefore, China may need to ensure the smooth effectiveness of infrastructural development using professional and pragmatic approaches.

Technological Transfers and New Economies

The economy of BRI is designed to produce excess production and sharing the market resources to meet the trade-based progress. Therefore, technology is the primary indicator to produce more and demand-driven consumer societies are the future of the global market. Input from one member country to another of BRI and export to the western economy have several issues. It is understood that challenges from local manufacturing to global exports are directly linked with contemporary practices and stable technological implementation. China being the leader of BRI may need to strengthen the technology of all member states as it is the only way to progress the scope of BRI and attract multi-fold economic profit.

The efficiency of this business model is subject to financial-support and availability of long-term credit and investment outcomes. Manageability of risk and defaults is the most relevant question in this regard. There are several businesses in this direction having an unpredictable business environment. The urgent need of BRI is to startup smooth functionality of trade cycle. Unfortunately, China has less capacity to address this issue due to many reasons and it is the challenge of massive arrangement and effective controls. Therefore, Chinese Investment Corporation, China Development Bank, the Export-Import Bank of China and the State Administration of Foreign Exchange, Asian Infrastructure Investment Bank (AIIB) plan to invest 1 trillion USD to address the stated issues and strengthen the infrastructure especially the transfer of technology.

China Pakistan Economic Corridor (CPEC)

CPEC is the central organ of Belt and Road Initiative (BRI). The accomplishment of CPEC is the litmus of BRI to change global trade dynamics.

The 3,218-kilometer long-route from Kashgar to Gwadar of 65 billion USD is the aggregate of infrastructure and technology transfer. Following are the key questions of CPEC:

1. Repayment associated with the 65 billion USD – the stated investment is subject to the projection of profit repatriation and loans repayment. The weak business infrastructure of Pakistan's economy is a challenge to the state of Pakistan. Chinese investment is economic blessing whereas it is adding debt to the economy and single nation dependency – the trade diversification is the primary element of the modern economy. It is a fundamental of sustainability and policy level question. The exports of Pakistan and remittances can reduce the burden of debt in a professional way. And, the infrastructural progress of CPEC would enhance the trade competence to lead the economic expansion.
2. Since 2007, China-Pakistan Free Trade Agreement (FTA) has disproportionate trading and China is a one-sided beneficiary. From 2007 to 2016, Pakistan's exports to China went up 159 per cent to 1.59 billion USD. Whereas the imports from China increased by 229 per cent to 13.68 billion USD. There is an urgent need to review the terms of FTA and link trade with exports enhancement of Pakistan. China may need to enhance the production capacity of Pakistan and provide the share of its imports to capitalize the exports efficiency. The SMEs of Pakistan are having an unpleasant effect with FTA with China and expansion of small industry for the last ten years having undesirable numbers may need to be addressed to expand the technological and financial assistance to upgrade the SME sector of Pakistan.
3. Environment Issues – there are several issues of sustainable development of CPEC; especially, linked with coal-based energy projects have environmental side effects and a threat to ecology. The environmental degradation and global warming are linked with a negative impact on agriculture, water shortage, food insecurity, health issues, the risk to human-growth, and wild-life. The CPEC projects may need to address the issues pertaining to climate-sustainability and reduce the non-monetary debt and harmonize the inclusive trickle-down effect.
4. Security Measures – although the security issues are resolved and induction of CPEC is a sign of emergence and prosperity. The follow-up of smart security measures is a primary requirement of CPEC. Pakistan may need to safeguard the economy, society, culture, environment, borders including law and order. The definition of security is not limited to law-and-order; it is universal in each sector of society.

It is concluded that the CPEC and BRI have massive potential and economic opportunity to progress while taking certain precautionary measures into consideration. We may need to ensure the sustainable development of economy and CPEC as an important element. Pakistan must lead the CPEC - not CPEC leading Pakistan.

Importance of Xinjiang in CPEC

Dr. Arshad Zaman (Former Chief Economist of Pakistan)

The long term plan (LTP) of China-Pakistan Economic Corridor (CPEC), can serve as a starting point for dispassionate analyses at least of the economic – leaving aside the more significant strategic and diplomatic – opportunities and risks created by CPEC (especially for Pakistan).

CPEC may benefit Pakistan in two ways: one, from capital inflows (which need no physical corridor); the other, through creation of production clusters (through government intervention) and expansion of trade between them (which does require roads, railways, and trade-related logistics). On capital inflows, the simple-minded notion that growth "trickles down" to create development has been long debunked. Yet, old habits die hard: Both government and business leaders are looking at CPEC almost exclusively as a potential portfolio of investment projects, albeit with a new source of finance: China. This has distorted our investment priorities, which should have been determined by national objectives, not available financing. Nor is it possible – since not enough is known, even by government – to estimate whether the benefits of these projects will exceed their cost, so we turn to the second source of gains.

China-Pakistan relations are much larger than CPEC. About CPEC, however, two things are clear. First, despite its name, CPEC is really the Xinjiang-Pakistan Corridor (LTP: "CPEC covers China's Xinjiang Uygur Autonomous Region [XUAR] and the whole territory of Pakistan"); it is not a corridor to China's prosperous east coast, which China quite rationally seeks to link, not to far-away Pakistan but by sea and land to next-door Southeast Asia. Second, whether CPEC becomes an 'economic' corridor (that creates synergies from connecting two or more vibrant economic clusters) or remains a 'transit' corridor (through which goods of foreign origin and destination pass) will depend on the government's ability to realise the opportunity CPEC presents to plan and implement social and economic reforms in the national interest, rather than leaving it all to the market (and China).

In identifying complementarities from which mutual gains from trade and regional integration are expected, therefore, we must focus mainly on Xinjiang – in fact, on the three lesser-developed administrative units in south-western Xinjiang identified as CPEC's "core zone" in the LTP – and not on "China" (which in most accounts refers to China's southeast coastal provinces). It is important to realise that CPEC links Gwadar to Kashgar, not to Urumqi, the capital of XUAR, 1,500 km north of Kashgar. Curiously, the LTP doesn't even mention Urumqi, from where the 'Belt' in China's Belt and Road Initiative passes and is the only major access east or west from Kashgar. (Pakistan should seek to extend the terminal node of CPEC to Urumqi by mutual agreement, as the LTP Agreement provides.)

We must learn to look after our national interests ourselves without imposingunsustainable burdens on our friendship with China.

Xinjiang (xin, new; jiang, borderland) is by far the largest 'province' of China (with an area about one-sixth of China or twice that of Pakistan – of which albeit 90 percent is uninhabitable, a population of under 25 million, and a GDP about half of Pakistan), sharing a 5,000-km land border with eight countries (including Kazakhstan, Kyrgyzstan and Tajikistan, all potential economic partners through CPEC). Chinese military presence in Xinjiang is extensive, and the Xinjiang Production and Construction Corps (XPCC, or Bingtuan) is an empire unto itself, managing production by state-owned enterprises (eleven, publicly traded) and exercising quasi-judicial functions, in addition

to its military and paramilitary duties. XPCC has the equivalent of provincial status in Chinese economic planning and is not under the control of the XUAR authorities. XPCC-administered Tumshuq (330 km east of Kashgar), the headquarters of XPCC Third Division, is a "key node" of CPEC. Realising gains from CPEC, therefore, would also require widening our contacts beyond the central government to include both XPCC and XUAR authorities, and sub-regional administrative units.

Traditionally, Xinjiang's economy has been based on agriculture (cotton), livestock (sheep farming and wool production) and mining (oil, natural gas and coal), although manufacturing and services have become significant in recent years. Xinjiang's exports (about $18 billion) consist of textiles, garments, shoes and electromechanical products, primarily to Kazakhstan, Kyrgyzstan, Tajikistan and the U.S., while its imports (about $2 billion) consist of agricultural products, ore, crude oil, and medical instruments, from Kazakhstan, Uzbekistan, the U.S. and Russia. Foreign direct investment in Xinjiang is thought to be around $500 million annually, mainly in manufacturing. With this economic structure (LTP: "Southern Xinjiang of China suffers from a weak industrial base and limited economic scale."), seeking complementarities – in pursuit, for example, of the LTP's aims for our textile and garment industry – would be a challenge.

For China, among other gains, CPEC would create a far more cost-effective and secure transit corridor between Xinjiang and the Middle East and Africa than at present. To transform this transit corridor into an economic corridor, however, besides vision and leadership four more things would be required: (1) existence of cities, areas and regions with genuine economic potential; (2) innovative research to identify business opportunities and infrastructure needs; (3) plans, policies and regulations to attract genuine investment in internationally competitive clusters (without protection, and guarantees against normal commercial risk, secured through corruption); and above all, (4) sustained commitment by governments, private investors, and other stakeholders over the decades it takes (well beyond 2030) for infrastructure projects to yield returns.

These conditions will not be met in Pakistan without radical reform of leadership and management. We cannot hope to emulate China's unity of command and control of national – and now, cross-national-economic management. But our ability to create vibrant economic clusters would call for a reassertion of the government's economic role, reminiscent of the 1950s and 1960s, in sharp reversal from the neo-liberal economic policies and practices being pursued (to excess) since the 1990s. Our success in resolving this central "contradiction" in economic ideology and practice will determine whether CPEC achieves its full potential.

What is needed is a more centralised vision of economic planning and industrial policy, despite the devolution envisaged under the 18th amendment to the constitution and the seventh National Finance Commission award. This isn't reflected in the "Pakistan Vision 2025" document (in which, the Ministry of Planning, Development and Reforms is merely to "play the role of facilitator and integrator in the areas of economic policy and reforms in the post-devolution scenario"). A stronger federation and a more sovereign approach to national management is needed.

"China," we learn from the LTP, "is responsible for projects ... within its territory," but "for those in Pakistan, China and Pakistan will jointly prepare plans, ..." While admirable as an expression of trust, we must learn to look after our national interests ourselves without imposing unsustainable burdens on our friendship with China.

In the words of Russian analyst Andrew Korybko: "If, it is taken for granted that the Chinese will do everything for Pakistan and that foreign investors will all of a sudden flock to Pakistan, then this mistaken belief will lead to nothing, but false hopes and failure. On the other hand, if Pakistan takes the initiative and uses CPEC as a springboard for robust engagement, then this project will turn into one of the best blessings that Pakistan has ever received."

GWADAR - The Heart of CPEC

Dr. Fahd Amjad, Mr. Husnain Saeed, Mr. Yasir Arrfat and Mr. Talha Mustafa
Policy Head, Regional Connectivity & Research Team, CoE-CPEC

Pakistan's economic condition has improved manifold in past two years, GDP growth is expected to reach 5.6% in 2018 as GDP growth in fiscal year 2017 accelerated to 5.3% from a year earlier, which shows better growth than numerous developed and developing economies alike. and there is a revival in the world trade volumes due to improvement in the security and business environment of Pakistan. Pakistan has also been aware of the expansion of its transport infrastructure and its energy infrastructure, in order to alleviate the bottle necks in its national growth. With the inclusion of coal fired power plants, the energy mix available to Pakistan will be more economical then that, which was available previously.

China Pakistan Economic Corridor (CPEC) is a flagship project of China's one belt one road (OBOR) initiative. It has the potential to bridge the regional connectivity of China, Middle East, Central Asia. Presently CPEC portfolio is valued at a dollar value of $62 Billion. Gwadar Port is the centerpiece of Pakistan China Strategic partnership with its strategic location and potential for becoming the future economic and energy hub.

Figure 1: Gwadar Port

Functioning of any international port is broadly divided into three main functions, namely; Port Authority, Port Operations, Logistics Functions. Port Authority primarily looks at governing of overall port, that includes the security of port, policies of the port and its ownership. Port operations and logistics services on the other hand take care of operational aspect of the port including handling of cargo, storage and warehousing and pilotage and towing of called in vessels. Ports internationally governed in four modes[1].

- Public Service Port
- Tool Port
- Private Service Port and
- Landlord Port

Public Service Ports are wholly owned and operated by a public-sector body. Both Authority and Operations are controlled by the public authority. These ports are normally well governed due to centralized control and managed operations, but lack a few important factors like competition, less market-oriented approach and lack of innovation due to limited role of private sector. This was a dominated model until 1980's. Tool Ports are the ones in which operational equipment is owned by a public authority but is operated by labor from the private sector. Main issue

Gwadar Port is the centerpiece of Pakistan-China strategic partnership because of its strategic location and potential for becoming the future economic and energy hub.

in this model is a consistent conflict between port authority (owning equipment) and the labor (operating it). This model also offers an overall low innovation and efficiency. This used to be a common model but is now diminishing. Private Service Port are wholly owned (governed) and operated by a private sector authority, these ports enjoy more flexibility and innovation/efficiency is also greater than other models. There is a risk of monopoly creation by the authority, in addition to the poor governance and accountability due to minimal involvement of government sector. Landlord Port Model is the most dominant model prevailing internationally due to its higher efficiency, innovation and operational excellence. This model operates on a clearly segregated role basis, Public Port Authority taking care of all governing functions and acting as a bridge between Government bodies / line ministries, and the private sector port operator handling all operations on the port, the landlord port model is being followed in the case of Gwadar port.

Gwadar ports operational control was handed over to China Overseas Port Holding Company (COPHC) through Assignment and Transfer Agreement in May 2013[2].

Following are some of the key points of this concessional agreement;

1. COPHC to carry out all development work related to operationalization of the port.
2. COPHC to develop and operate the free zone, for which 2282 acre of land given on 43-year lease.
3. Exemption from corporate income tax for the period of 23 years.
4. Exemption on import duties and sales tax offered to COPHC on all import of equipment and material required for construction, expansion and operation of Gwadar Port for 40 years.

Gwadar is a deep-sea port centrally in the Arabian Sea on the mouth of Strait of Hormuz and proximity with the Persian Gulf which holds 60 percent of world oil reserves. Gwadar port is a warm water deep sea port with a huge potential of becoming a logistics, transshipment and transit axis not only for China but the rest of the region as well. Gwadar port development under CPEC would not only attract foreign direct investment (FDI) but would also help Pakistan in monitoring of Sea Lines of Communications (SLOC's). Gwadar port is also expected to act as a Hub port, a Hub port entails "Hub and Spoke System", with a central port termed as a Hub connected simultaneously to several spokes i.e. smaller ports. The currently the Gwadar port can accommodate daily two Panamax Vessels (5000 TEU) and can load and unload them simultaneously, along with this loading and unloading capability it also has the capability to store and transforms inventories (i.e. packing and unpacking etc.). This make the Gwadar port ideal for the transshipment port for the feeder max (3000 TEU), feeder (2000 TEU), and small feeder (1000 TEU) ships. This transshipment capability just at the mouth of Strait of Hormuz will greatly improve the transportation efficiency of the regional sea traffic. Besides the capability of the Gwadar port to handle containerized cargo, it can also handle bulk cargo, as well as port has the facilities to break-bulk i.e. break the bulk of the cargo in smaller packing and for further shipment. See exhibit below.

The new Gwadar International Airport can usher in a new era of regional connectivity and tourist activity, according to the Gwadar master plan 4300 acres of land is assigned to the new airport. The new airport connects seamlessly with the regional airports and can act as a key resource in attaching the international travels to the warm waters and virgin beaches of Gwadar. With an

international airport, the hospitality services need to be developed, and the local community culture and their local heritage needs to be preserved and projected to the international traveler. This will help in distinguishing Gwadar from the rest of the gulf state resorts and their generic hospitality services.

Gwadar development authority plans to transform Gwadar city into a smart port city, and is planning for the city infrastructure accordingly, few of the salient features of the smart city is that it strives for the operational efficiency in its mobility management, energy management, governance, health, just to name a few key areas of interest. To this claim some of the evidence of the current infrastructure projects untaken in Gwadar are presented. Gwadar has a present population of approximately 140,000, This population growth demands sufficient health activities and in this regards a state of the art 50 bed hospital has been established in Gwadar under the umbrella of Gwadar Development Authority. Hospital enjoys state of the art facilities including Medical OPD, Surgical OPD, Gynae, emergency, and will be extended to 300 beds progressively with the local demand requirements.

Figure 2: The Relative Position of Gwadar with the Regional Ports

Figure 3: Gwadar Development Authority Hospital

Current water demand of Gwadar city is around 6.3 Million Gallons per day (MGD), whereas it is only getting 2.70 MGD through Ankara dam. Future projections indicate that Gwadar may be needing 12 MGD by 2020. This has prompted authorities to not only seek traditional solutions i.e. exploiting the local water reservoirs such as Swad dam and Shadi kaur dam, but also exploring sea water resources through desalination, these desalination projects are at various stages of their completion and can increase the water capacity by 7 MGD. It should be pointed out that countries like Saudi Arabia are using large scale reverse osmosis desalination plants to economically satisfy their fresh water's needs, Saudi Arabia is not only utilizing the exhaust from its thermal power plant cooling systems as a source of water but also utilizing its solar endowments to powers its desalination plants. It should be pointe that the Baluchistan region is particularly rich in solar endowments and this model of solar power for desalination of sea water can be utilized for Gwadar as well[3].

Figure 4: SWAD Dam Pipeline Dredging and Laying

Numerous other early harvest projects are also in advanced stage of implementation; namely 300 MW Coal Power Plant with an approximate cost of 552 Million USD, Water supply and treatment plant with an approximate cost of 120 Million USD, establishment of an LNG terminal, Technical and Vocational Training Institute with an approximate cost of 9.54 Million USD and East Bay expressway with an approximate cost of 133.72 Million USD to name a few. Prime Minister Package of 1000 Million Rupees is also approved and numerous projects in execution are moving at a very rapid pace. These projects are aimed at the uplifting of town towards a modern port city.

Gwadar Free Zone is also being established at an approximate land of 2200 Acre. Design and development of this mega project is being undertaken by China Overseas Port Holding Company Pakistan (COPHC). COPHC has established an independent entity by the name of Gwadar Free Zone Limited (GFZL). A state of the art business center has already been built in the zone within a record time of 6 months.

Normal operation of Gwadar Port will further promote different industrial development at Gwadar city such as petrochemical plant, Textile industry, food processing factories, cement plant, logistics hubs, transit trade, packaging, labeling,export-orientedmanufacturing, value added exports, chemical fertilizer plant, steel works, export processing unit, export-oriented manufacturing etc. There are lot of undiscovered agricultural resources along the coastline as well as sufficient mineral resources in the hinterland of Gwadar, which can become the catalyst for economic development. It will also open the doors of immense opportunities for many services Businesses like tourism, fishing, hotels, restaurant, entertainment and cultural exhibitions.

Development of Gwadar port will ease pressure on other domestic ports of the country and with normalization of relations with neighboring countries can be improved which will enhance trade and foreign exchange could be earn through transit fee. These Industrial developments will benefit Pakistan to reduce dependence on imports and even reverse trade deficits through exports and will create jobs. The industrial and commercial development of the Gwadar will also open opportunities for the exploitation of the westerns transport corridor of Pakistan and will relief pressure on the existing eastern transport corridor.

The Afghanistan-Pakistan Transit Trade Agreement also known as APTTA is a bilateral trade agreement signed in 2010 between Pakistan and Afghanistan Government. Agreement ensures smooth logistics of goods between Pakistan and Afghanistan. APTTA signed in 2010 granted access to both countries to use each other's airports, dry ports, designated road infrastructure, sea ports and railways. Gwadar port connectivity through M-8 (Gwadar-Turbat-Hoshab) 193 km and N-85 (Surab-Nag-Panjgur-Hoshab) 448 km made this route shortest possible route between two countries through the development of a deep-sea port. APTTA through Pakistan has reached a value of 1.4 Billion USD in first six months of fiscal year 2017-18. This indicates that the figure could raise up to 3 Billion USD by end of 2017-18. Following table shows the value of this trade through past years and its ups and downs due to political instability and formation of conflicting international ties over time.

Fiscal Year	Assessed Value in Million dollars
2010-11	3,128.01
2011-12	1,702.27
2012-13	1,466.46
2013-14	2,184.15
2014-15	3,052.96
2015-16	3,460.04
2016-17	2,879.97
2017-18 (July-December)	1,467.02

Source: DG Transit Trade Karachi

Gwadar port is almost ready to embrace this challenge as facilities for calling ships and subsequent offloading and clearing of Cargo is underway. Custom clearing facilities for transshipments and that of APTTA are being established. Web Based Ono Customs (WEBOC) application of Pakistan Customs is operational and its modules are ready to handle APTTA goods through Gwadar. Customs office in Gwadar is actively working with China Overseas Port Holding Company (COPHC) which is responsible for operations of Gwadar port to implement WEBOC on priority. Some of the requirements highlighted by relevant departments at port for effective implementation of WEBOC and commencement of APTTA through Gwadar are as follows;

- Availability of all Customs modules including Afghan Transit Trade module on site ate Gwadar Port and Gwadar Free Zone.
- Operationalization and up gradation of Servers for WeBOC working at Gwadar Port, both at operators and Government's end.
- Ensuring smooth exchange Electronic Data Interfacing (EDI) messaged between all relevant departments and stake holders.
- Ensuring high speed Internet connectivity among all stake holders.
- Custom's WEBOC connectivity with weighbridges installed on site (fixed) and the stationary ones.
- Custom's WEBOC connectivity with scanners installed by M/s. Gwadar International Terminals Limited (GITL).

Implementation of these infrastructural projects will accelerate economic development of Gwadar and in the long run Baluchistan, particularly people benefiting projects, such as hospitals, schools, water desalination plants and power stations. For the local community of Gwadar, the main trade is artisanal fishing, and with weekly route of COSCO container ship service, the local fish business has access to the international market. Gwadar has huge potential for the companies dealing with fishing and fish processing activities. The Gwadar Development Authority is actively engaged in exploiting this natural endowment of Gwadar District. There is no denying the fact that the provincial, the federal governments and the national agencies are actively engaged in the development of CPEC and Gwadar port.

1. http://www.traceca-org.org/uploads/media/04_Module_C_PPP_Francois_Marc_Turpin_new.pdf
2. http://www.na.gov.pk/cpec/sites/default/files/presentations/Parliamentary%20Committee%20on%20CPECNew.pdf
3. https://cpec-centre.pk/location-decision-for-solar-farm-development-using-gis-and-clustering-approach-a-case-of-pakistan/

CPEC and the Road to Regional Integration

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Ever since the formal establishment of diplomatic relations between the People's Republic of China and the Islamic Republic of Pakistan, both countries have consolidated their relationship over the decades despite the ever-changing global socio-political environment. Both sides have been working hard to enrich this friendship based on shared interest and vision of a prosperous socio-economic future of our respective countries, Asia and the greater world. It is this historical relationship that has transformed into a strong economic partnership in the shape of China Pakistan Economic Corridor (CPEC) a project which represents the mutual interest and shared vision both countries have for a developed, sustainable and economically prosperous region. It is the cornerstone of Belt and Road Initiative (BRI), which is China's global vision of economic prosperity through connectivity. The transformation of Asia which is underway thanks to the futuristic vision of BRI, places Pakistan right in the centre of this historic change. The Pakistan of 2018 is an assertive country, open for business, trade and investment. Chinese wisdom suggests that journey of thousand miles begins with a single step.

CPEC provides Pakistan enormous opportunities as it gives an integrating platform for over three billion people in Central, West and South Asia, the Middle East and Africa.

Pakistan highly admires the rich economic history of China which has made China into one of the world's leading economies. The example set out by our Chinese brothers proves to be an inspiration for all developing countries such as Pakistan. China's economic prowess is a testament to the dedication, hard work, integrity, innovation and consistency – fundamentals that we ought to live by. China is the only nation in human history which has taken such a large population out of poverty in so little time and Pakistan surely wants to emulate the same model in the shortest possible time. There exists total consensus between the leaders of China and Pakistan to jointly promote the BRI. The two countries hope to work together to form synergy, enhance policy coordination and deepen mutually beneficial cooperation, especially to jointly promote the construction of CPEC in a steady manner to attain peaceful development and common prosperity of the two countries and promote China-South Asia cooperation.

In accordance with the vision of cooperation, development and win-win progress under the BRI, the two countries will make full use of existing bilateral cooperation mechanisms, multilateral mechanisms such as CPEC, to form synergy, give each other support and learn from each other so as to complement and fully display each other's strengths. China and Pakistan are working together to promote mutual people-to-people connectivity through enhanced education and cultural linkages to improve mutual understanding. There are eight Chinese universities working to promote Pakistan's official Urdu language while 12 Pakistan-study centers are working to promote mutual

understanding between the two countries. There are 22,000 Pakistanis seeking education in China. About 25,000 students are learning the Chinese language in 19 universities and four Confucius Institutes affiliated with the Chinese Ministry of Education.

Thanks to the futuristic vision, and hard work of teams working on CPEC, both in China and Pakistan, the economic blueprint of CPEC serves as an attractive magnet for all parties not just within Pakistan but also outside of it, who are interested in benefitting from its infrastructure connectivity aspect in facilitating their own trade ambitions, such as the Central Asian Republics, European Union, Middle East and the African States.

The potential for economic benefits and lasting prosperity can be realised if we look at some of the factual figures regarding BRI and CPEC. The BRI involves countries hosting 68 per cent of the world's population and 40 per cent of global GDP. Its final investment cost is expected to stand at between $4trillion and $8trillion and if Pakistan can just be a hub for 5% of China's total trade, a total of 205 billion dollars' worth of goods would be passing through Pakistan.

CPEC provides Pakistan enormous opportunities as it gives an integrating platform for over three billion people in Central, West and South Asia, the Middle East and Africa.

The increase in trade, investment and financial flows would bring not just peace and prosperity to the region through enhancement in the competitiveness of the economies of the countries, but also better living standards seeking to reduce regional disparities and social inequality and improve life expectancy and quality of life in the country and in the adjoining region. Through CPEC Pakistan is harnessing its Geo Strategic location into the Geo-Economic advantage. Moreover, with CPEC the region will be integrated into an economic hub promising a great future for its populace. Enhanced connectivity is extremely influential in shaping regional integration in not just Asia, but other regions as well. Clearly, the contribution of "hard", or physical, infrastructure networks to economic and social development has depended on "soft" infrastructure, including the policy, legal, regulatory and institutional frameworks in which they are located. Regional connectivity is thus regarded as the level and effectiveness of regional networks to facilitate flows of goods, services, people and knowledge. This extends the traditional focus of public policies beyond either physical or non-physical parameters to encompass both dimensions.

Similarly, Industry cooperation between China and Pakistan compounded with the collaboration of experts on both sides will provide an excellent opportunity for Pakistan to strengthen industrial capability and national domestic economy. To achieve the vision of economic, structural transformation and sustainable poverty alleviation, it is being endeavoured to work on the Industrial Cooperation under CPEC by developing Special Economic Zones by attracting local and foreign investors.

Regional integration is a dominion scheme between countries to promote steady growth, macroeconomic cooperation, connectivity and peace through common institutions and rules. The concept of regional integration is multidimensional. CPEC, being an integral part of BRI, has great potential to promote greater regional connectivity. The Gwadar Port becoming operational in 2016 is a clear example of what CPEC can offer to Pakistan as well as the region. While several factors will dictate its outcome, it is fair to say that CPEC and its various dimensions could prove to be a game changer in South and West Asia as part of the BRI. Greater exchange of trade, ideas, and populations are all possibilities under CPEC.

The Pakistan of 2018 is an assertive country, open for business, trade and investment. We strongly believe that shared prosperity is the real prosperity. Today, Pakistan is a lucrative investment destination ready to embrace change through the visionary CPEC. The Government of Pakistan is cognizant of all the challenges and will ensure security, both financial and physical. As the Great Deng Xiaoping once said, "cross the river by feeling for the stones." The path to economic prosperity is being crossed through the vision of CPEC.

Thar Block II Project: Community Development at Par

Shamsuddin Ahmed Shaikh (CEO, Sindh Engro Coal Mining Company & Thar Foundation)

The year 2018 will mark history as the first electron will be transmitted from the fabled Thar Coal Block II, mined by Sindh Engro Coal Mining Company (SECMC), produced by Engro Powergen Thar Limited (EPTL) in a 2x330MW units of the presently under-construction power plant. The electric transmission will be injected into the national grid early 2019 and all the nightmarish life of power outage will be a thing of the past.

In the year 2018, SECMC will touch the coal and, at the beginning of the year 2019, coal-produced electricity will be injected into the national grid, whereas only one per cent of the reserves have the potential to produce 4000 to 5000MW by 2024. SECMC has secured an allocation of about 96sq.kms which has 1.57 billion tons of coal reserves. The mining and power projects, as of January 2018, are far ahead of its schedule with both the projects witnessing 70% completion.

The Thar Block II projects successfully entered in the 23rd month of operations and, with steady progress on all fronts – overburden removal, power plant progress, infrastructure,

Aerial view of Open-pit Coal Mine at Thar Block II

community development initiatives, land acquisition, engineering, and construction – have achieved a total of phenomenal 22 million safe man-hours without Lost Workday Injury (LWI). The mining team also touched second Aquifer at a depth of 125m in the month of January 2018 as it continues the safe dewatering activity, with cumulative of 30 Million m^3. Mine depth crossed 125m the same month.

Deeply rooted in the land where we operate, SECMC and EPTL are spending unprecedented resources on the socio-economic well-being of the local community – from the platform of the Thar Foundation, a nonprofit organisation established to take care of the real stakeholders, i.e. the people of Tharparkar – with the commitment to improve life standard of the local community by intervening on sustainable basis in the Health, Safe Drinking Water, Education, Women Empowerment, and Livelihood sectors.

The Marvi Mother and Child Clinic is the center for providing free medical healthcare facilities to the area and garners more than 2000 visits a month especially by the women of surrounding villages. The clinic staff comprises a lady doctor, two male medical officers, a nutritionist, a phlebotomist, two lady health workers, a pediatrician, and a dispenser who are serving the otherwise underprivileged communities of Islamkot, Nangarparkar and other tehsils of the district. Technically looked after by The Indus Hospital, the clinic also organises frequent free medical camps for tuberculosis, eye diseases, hepatitis, and other diseases.

A 250-bedded state-of-the-art hospital is also planned to be at Islamkot with a cost of more than 03 billion rupees, in partnership with the Shahid Afridi Foundation and other donors including Government of Sindh. And when it will start functioning in the year 2020, it is expected that people from other districts will also come to

quality healthcare facilities in the hospital.

In the education sector as well, the Foundation has spent 63 crore rupees during the past 22 months, i.e. commencement of the Thar Block II project. The Thar Foundation Primary Schools have been established in, each, Tharyo Halepoto, Mansingh Bheel, and Bitra villages of Block II with the technical support of the Charter for Compassion Pakistan. In partnership with The Citizens Foundation, one school in Islamkot is already operational since 2017, while two more schools are under-construction in New Senhri Dars, the resettlement village, ready to impart quality education. The schools have all the necessary facilities for the students as well as for the staff. Also, six new primary schools are being constructed and, by August 2018, about 4500-5000 kids are expected to be enrolled in the TF schools.

As part of the commitment to bring about a positive socio-economic change in the area, more than 71% of the total 3,465 workforces including engineers, skills and unskilled labour, and office workers have been hired from district Tharparkar. More than 1000 local youth have been trained in different trades to increase their employability in the current and future coal-centered projects.

The massive campaign to hire local human resource has resulted in heightened income generation for the local communities. Every month, about Rs. 39.75 million is disbursed into locals of the area and such a huge monetary contribution has evidently improved the socio-economic condition of the district and the local businessmen and traders could be heard of speaking about how their business has had a boost after the interventions in Block II. Under skills development program, the Thari youth is being trained in refrigeration and air-conditioning, and Android Apps development programs.

Different well - strategized women empowerment interventions have also been launched in different fields under the banner of the Khushaal Naari project. Under the Women Dump Truck Driving Program, a first in the country, 26 women are undergoing dump truck driving training to empower them financially to help them have a say in the family as well as community affairs. Those skills in stitching and embroidery have been given the training to utilize their skills to sew school uniforms for the Thar Foundation Primary Schools to earn living for their families.

Broadening the horizon of livelihood opportunities for the locals, SECMC has also trained local vendors in company registration laws, processes, and finally in how to place bids. This handholding has been quite successful as a set of local vendors have been established who now provide different material to the companies in Block II. From April 2016 to January 2018, contracts of Rs. 942,465,636 have been awarded to these local vendors, out of which contracts of Rs. 124,257,518 were given to Block II vendors and of Rs. 818,208,118 to the vendors from the rest of the district.

Being a socially responsible company, SECMC and EPTL have ensured compliance with all the applicable national as well as global bindings for protection of the environment. All possible measures have been undertaken to reduce the negative impact of the coal-fired power plant on the environment. So far, more than 40,000 trees have been planted in Block II and 100,000 Neem trees have also been planted in the area to ensure a healthy environment for humans as well as birds and animals. A plan has also been adapted to plant one million trees under the Thar Million Tree program.

Revolutionary among the SECMC initiatives is also the bio-saline agriculture in Tharparkar, in which the saline groundwater is used for growing local crops. The pilot project has been successful, and we have partnered with Karachi University, Sindh Agriculture University, and China's Xinjiang Institute of Ecology and Geography. The

step, we expect, will bring about a revolutionary change in the agriculture sector of the entire region, not just Thar.

As the national narrative for the China-Pakistan Economic Corridor (CPEC) establishes, the people of Tharparkar have already started to reap the benefits of the Thar Coal project, and their living standard has started to improve. With the success of SECMC - initiated schemes like bio-saline agriculture and fish farming in the region. In the same vein Tharparkar will thrive on socio-economic front, attracting people from other areas to come for the large-scale potential livelihood opportunities offered by the area.

Mining Activity in Progress at Block II

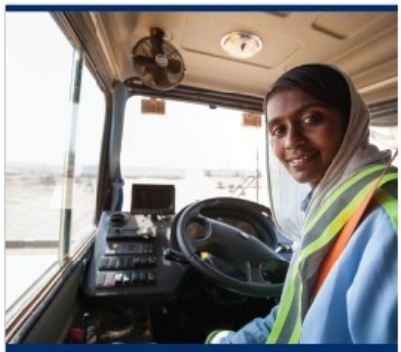
Courtesy the Thar Coal

Trained Locals at Work

Sona Devi, Local Midwife, Trained with the Support of SECMC, now Serves her Community at Marvi Clinic

Thari Children inside Classroom at a Thar FoundatioPrimary School

Biosaline Agriculture



Lata Bai, a Trainee Dump Truck Driver

Community Members Taking Water from RO Plant

EPTL Power Plant

CPEC Contribution in Greenhouse Gas (GHG) Inventory of Pakistan

Dr. Saleem Janjua , Adnan Khan and Numra Asif
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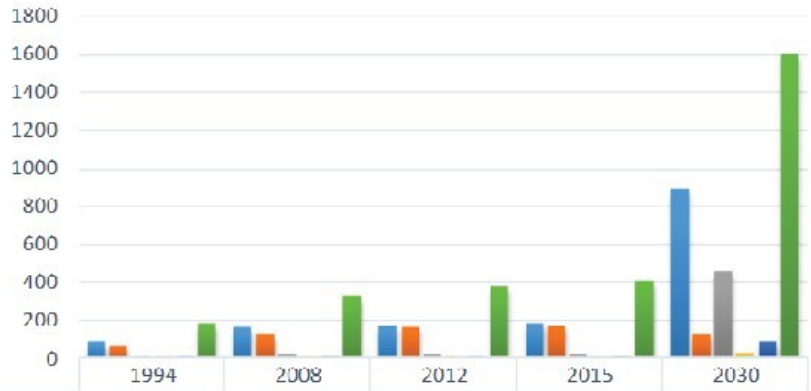
China-Pakistan Economic Corridor (CPEC) is an on-going mega development project which aims to connect Gwadar port of Pakistan to China's north-western region of Xinjiang via a network of highways, railways and pipelines. The economic corridor is considered central to China-Pakistan relations and is stretched over 2700 km from Gwadar to Kashgar. Overall, the entire project is expected to be completed in 15 years through three different phases, i.e. from 2015-2020, 2020-2025 and 2025-2030, respectively.

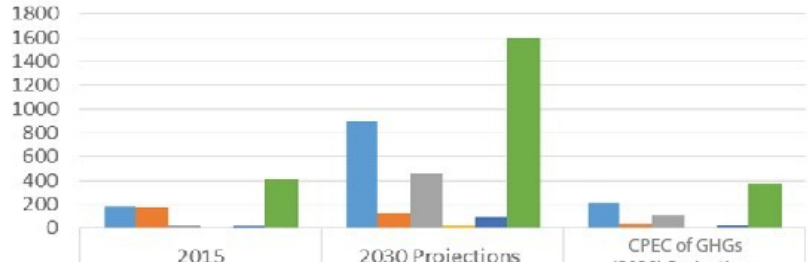
CPEC and its connectivity with Central Asia, Middle East and Africa are expected to reshape the entire region. The Corridor is an extension of China's proposed 21st century Silk Road Initiative or Belt and Road Initiative (BRI). The corridor is expected to be a strategic game-changer for the region that aims to make Pakistan an economically viable and business-friendly country. Investments under CPEC in the power generation and distribution sectors will provide a momentous boost to the economy. Several large-scale investments in infrastructure, energy and industrial growth projects are currently in-progress, which are expected to further fasten the targeted economic growth of the country. CPEC portfolio is expected to trigger GDP growth of Pakistan by 1.5 % from 2016 to 2020 and a further increase of 1 % for the period 2020 to 2030 (Planning Commission of Pakistan, 2015) One of the key priorities of the government of Pakistan is to exterminate energy crisis by 2018 and to harness economic dividends from the potential CPEC opportunities. However, a consequent effect of the expected increase in economic growth is that the share of Green House Gas (GHG) emissions from the energy and industrial sectors are expected to grow exponentially. Similarly, with the rapid increase in urbanization, the share of GHGs from the waste sector is also expected to increase in the coming years. An analysis of the past trend of GHG emissions for the last 21 years (1994-2015) shows that all sectors of the economy have exhibited an increasing trend of GHG emissions. Overall, the increase in emissions over this time-period (1994-2015) was approximately 123 %. The average annual increase in GHGs works out to be 10 MT CO2-equivalent in Pakistan, which represents an annual growth rate of 3.9 %, with periods of high and low-growth emissions commensurate with economic performance (Ministry of Climate Change, 2016). The historical trend of increase in GHG emissions in Pakistan has so far been fairly consistent with the average GDP growth rate of around 4 % per year during the same period. The below-mentioned Figure-1 shows the inventory of GHG emissions (MT CO2-equivalent) for all sectors (energy, agriculture, industrial processes, land use change & forestry, and waste) for 1994, 2008, 2012, and 2015. Considering the historical trend of inventory of GHG emissions and a GDP growth rate of 4%, projections of inventory of GHG emissions for 2030 (1603 MT CO2-equivalent) have been plotted, which are also shown in Fig-1:



	1994	2008	2012	2015	2030
Energy	85.8	168.47	171.44	185.97	898
Agriculture	71.63	125.97	162.86	174.56	130
Industrial Processes	13.29	18.54	19.59	21.85	457
Land Use Change &Forestry	6.52	9.29	9.67	10.39	29
Waste	4.45	7.24	10.55	12.29	89
Total	181.7	329.51	374.1	405.07	1603

Figure-01: Inventory of GHG Emissions (in MT CO2-equivalent)

In case of Pakistan, CPEC projects are expected to accelerate the GDP growth by 1.5 % from 2016 to 2020 and a further increase of 1 % is expected for the period 2020 to 2030 in the overall expected growth rate of 7 % for the economy (Planning Commission of Pakistan, 2015). Therefore, keeping in view this anticipated GDP growth for the next 15 years under CPEC portfolio, the CPEC contribution to the projected GHG emissions for the year 2030 are calculated to be as 370.72 MT CO2-equivalent which are equal to 23.12 % of the whole projected GHG emissions inventory of 1603 MT CO2-equivalent for 2030. The contribution of CPEC portfolio to the 2030 projections of GHGs has been demonstrated in the below-mentioned Figure-02.



	2015	2030 Projections	CPEC of GHGs (2030) Projections
Energy	185.97	898	207.68
Agriculture	174.56	130	30.06
Industrial Processes	21.85	457	105.69
Land Use Change &Forestry	10.39	29	6.71
Waste	12.29	89	20.58
Total	405.07	1603	370.72

Figure-02: CPEC Projections of GHGs (2030)

The GHGs projections in Figures 1 and 2 have been made for 2030 by keeping in consideration the consistent trend and strong correlation between the average GDP growth and GHG emissions growth rate per year in Pakistan. Thus, it can be inferred that the total inventory of GHG emissions of Pakistan for 2030 will be 1603 MT CO2-equivalent; out of this total, around 370.72 MT CO2-equivalent will be the contribution of CPEC portfolio.

To find out the percentage contribution shares of different sectors in the projected GHGs inventory of Pakistan for 2030, the World Resources Institute's Climate Analysis Indicator Tool (WRI CAIT) and Pak-INDC Report-2016 have been used as mentioned in the USAID User Guide (2016), which indicate that the energy sector will contribute around 56% of Pakistan's total annual GHG emissions in 2030. Industrial processes (IPs) will account for 28.1% of the total GHG emissions. Moreover, the agriculture and waste generation will contribute 8.1% and 5.5%, respectively. Lastly, the land use change and forestry (LUCF) sector will contribute 1.8 %.

The essential and central ingredients of development in Pakistan, such as energy needs, food and water consumption levels, infrastructure, transportation and communication channels are expected to nurture manifold in the coming years. Consequently, GHG emissions are likely to witness exponential growth in the country. Hence, the government of Pakistan, along with the provincial governments, are required to determinedly aware of the potential growth of GHG emissions and start devising suitable developmental strategies aiming to minimize possible carbon footprint by 20 % till 2030 in order to play their meaningful role in global efforts of achieving the targets of United Nations Framework Convention on Climate change (UNFCCC) under the Paris Agreement. As per Pakistan's Intended Nationally Determined Contribution (PAK-INDC) Report-2016, several mitigations and adaptation measures are needed to be taken on priority basis. These measures and actions can be augmented in coming years with the potential availability of national and international climate financing, technological advancements, and capacity building of relevant stakeholders.

Policy Recommendations

To make the CPEC portfolio climate-resilient, and climate-compatible, the following policy recommendations are made based on the GHGs projections described in the upper section of the policy research paper:

- As per PAK-INDC Report-2016, Pakistan has committed 20 % reduction in the projected GHG inventory for 2030, which is possible by utilizing domestic resources, as well as on receipt of some international financial assistance. Accordingly, Pakistan would require reducing its GHG inventory to 320 MT CO2-equivalent by 2030. For this purpose, comprehensive 'climate change mitigation' and 'climate change adaptation' plans need to be developed and implemented at federal & provincial levels to achieve the above target. Keeping in view the current developments made under CPEC portfolio, the federal and provincial policymakers should consider CPEC interventions in the mitigation and adaptation plans of their respective jurisdictions.
- Pakistan faces serious energy challenges. To combat this, the government of Pakistan is implementing a comprehensive plan under CPEC to meet the future energy requirements through establishing the coal-based power generation facilities, which may further add to the environmental degradation of the country. However, GHGs emissions from these coal-based power plants can significantly be reduced by the implementation of suitable environmental mitigation measures, like carbon capture, storage and the application of

advanced combustion and related technologies. Employing state-of-the-art and highly efficient and low-carbon advanced technologies, deployed in the developed world and China, may also be helpful in this regard (World Coal Association, 2016). China has established power plants that are based on ultra-supercritical technology in their country. Pakistan may also commission such technologies for power generation through future agreements under CPEC. The usage of coal as a source of power generation is the need of time. However, the usage of latest technologies such as ultra-supercritical technology can further significantly reduce emissions from the power plants being commissioned under CPEC.

- Pakistani transport sector, as one of the key sub-sectors of Industrial Processes in GHG emission inventory of Pakistan has strong potential to play in tackling climate change. Huge investments are being made in infrastructure sector under CPEC, which will ultimately increase the number of vehicles in Pakistan; hence, mobility based policy actions need to be analysed by using new and emerging transportation modelling tools for better results in the environment sector. As a first step, more strategic importance should be given to use Railway as means of cost-effective, environmentally friendly, and sustainable freight transport in the country. National Transport Policy-2018 of Pakistan, currently in the process of finalization, should be harmonized with climate change, environmental protection, and sustainable development. Moreover, relevant strategies should also be formulated to reduce transport emissions and to improve the living conditions in the country.
- Strategic Environmental Assessment (SEA) is an analytical and participatory approach that is used to integrate environmental considerations into policies and plans and to evaluate the inter-linkages between economic and social considerations. A good SEA preparation and implementation can help identify better opportunities for environmental protection, climate mitigation and adaptation, prevent costly mistakes, build stakeholders' commitment, reduce poverty more effectively, and prevent conflicts. As a tool, SEA is more effective than environmental impact assessment (EIA) while considering larger programmes. Hence, the SEA for all special economic zones (SEZs) being set up under CPEC may be planned and carried out as an analytical, participatory and integrated approach to mainstream environmental considerations in CPEC industrial cooperation activities. This will help evaluate the inter-linkages of environment, economic and social considerations.
- Financial mechanisms such as Green Climate Fund (GCF), and others, may also be explored for CPEC projects. In order to tap GCF opportunities for CPEC projects, there is a need for an understanding of GCF modalities that include GCF basic concept orientation, project identification, development and project implementation.
- Clean Development Mechanism (CDM) is one of the tools defined in the Kyoto Protocol under the United Nations Framework Convention on Climate Change (UNFCCC) that helps countries (such as China in Pakistani context under CPEC) with stringent emission reduction targets in attaining partial acquiescence with their country targets by executing projects intended to reduce emissions in the developing countries (like Pakistan) that yet do not have such stringent compulsions. Through CPEC new projects, Pakistan can take advantage of bringing cost-effective and climate-compatible investments in the country. Therefore, Ministry of Climate Change in Pakistan, along with the federal and provincial Environmental Protection Agencies (EPAs), should prepare plans to seek support from China for Pakistan-focus carbon trading that may finance several new climate-compatible and climate-resilient projects in the country under the overall umbrella of CPEC in the future.

Pak-China FTA: Current Scenario, Analysis and Way Forward

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1.1. China's Free Trade Agreements (FTAs)

Among the South Asian Association for Regional Cooperation (SAARC) countries, China has signed FTA with Pakistan only. However, negotiation of China with Maldives and Sri Lanka is in the process while with Bangladesh the agreement is under consideration. If the agreement is reached with Bangladesh, then tough competition is likely between Pakistan and Bangladesh as the two countries rely heavily on the textile sector for their exports.

1.2. China Pakistan FTA: A Brief Description

China currently has signed 14 FTAs with 22 countries (at the individual level and in group e.g. Association of Southeast Asian Nations (ASEAN) etc. Additional eight FTAs and five bilateral FTAs are in progress. China-Pakistan Free Trade Agreement (CPFTA) was signed in 2006 and implemented in 2007 to give friendship a chance to grow stronger and aimed to achieve an increase in the trade volume. Moreover, China signed the trade agreement for services in 2009 with Pakistan. The second phase of negotiation between China and Pakistan is in process.

1.3. Pre and Post FTA Analysis

Pakistan has requested the market access for about 280 priority items in the second phase of FTA. In the second phase of negotiation, FTA with China covers more than 7000 tariff lines at the eight-digit level of the HS code with zero per cent tariffs. Pakistan's prime import from China is electrical machinery while on export side Cotton is the major export to China (see Figure 1). Trade balance with China is negative and getting widened over the years. The current trade balance is more than the double of the trade balance in 2012. In 2016 18% increase has been witnessed in imports of Machinery and related products from China.

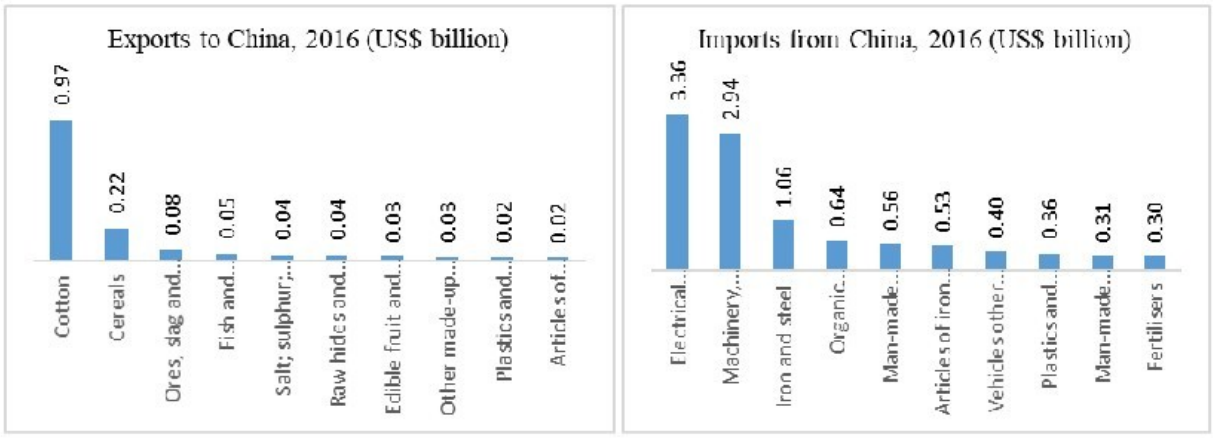

Figure 1: Pakistan's Major Exports and Imports from China

(Source: WTO)

The vertical line in Figure 2 is dividing the trend into two parts and showing Pakistan's trade with China prior to and after signing of CPFTA.

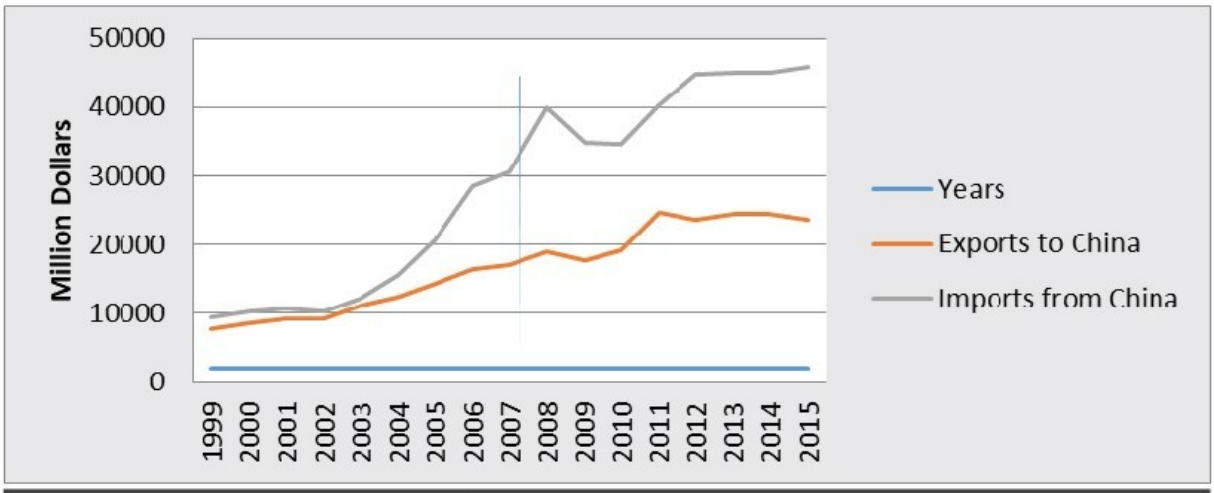

Figure 2: Pak-China Trade Trend

Source: Handbook of Statistics SBP

From the Figure 2, it is evident that the trade between the two countries has increased but in China's favour. In the Pre FTA, the trade deficit was narrow as shown in Figure 2. Post FTA Pakistan's exports are almost stagnant showing a slight increase from 2010 to 2014. With few fluctuations, imports are steeply rising causing trade deficit to increase further. However, China's overall trade balance with other FTA partners (under study) is more favourable as compared to Pakistan as presented in Table 1.

	Pre-FTA Trade (billion $)					Post-FTA Trade (billion $)			
	ASEAN	Pakistan	New Zealand	Chile		ASEAN	Pakistan	New Zealand	Chile
Chinese export 2004	30.35	2.47	2.13	2.35	**Chinese export 2016**	190.48	17.2	5.54	13.1
Chinese import 2004	42.75	0.595	1.24	3.46	**Chinese import 2016**	146.39	1.71	6.67	17.4

Table 1: China's Pre and Post- FTA Trade with FTA Partners

Source: Harvard ATLAS

Unlike Pakistan, ASEAN, Chile and New Zealand capture a larger share of the Chinese imports in post-FTA scenario (see Table 1). Though Pakistan's trade has increased after FTA but imports increase substantially than exports to China.

1.4. Comparison of Chinese Tariffs for Pakistan and Other FTA Partners

The second Phase started in July 2013 as part of original FTA aiming at removing 90% tariffs on all products. By the end of the year 2015, trade between two countries reached US$ 12,953 million as compared to US$ 3421 million in 2006 before FTA[1].

However overall tariff concessions offered to Pakistan remained quite higher as compared to the tariffs offered to other FTA partners of China. Table 2 shows the comparison among tariff rates for GTAP aggregated sectors[2]. (Pakistan five leading export items) under FTA of China with Pakistan, ASEAN, Chile and New Zealand

	Products	ASEAN	PAKISTAN	NEW ZEALAND	CHILE
Chinese Tariff Rates for FTA Partners	Textiles	0	2.94	0.1	5.8
	Apparel	0	10.2	2.57	0.135
	Cereals	0	0.2	0	1
	Vegetables, Fruits	0	5.17	10.5	2.74
	Petroleum Products	0	4.51	1.03	0

Table 2: Comparison of Chinese Tariffs for Pakistan and Other FTA Partners

(Source: GTAP 9a Data Set, Base year 2011)

China offered different tariff concessions to Pakistan, ASEAN, Chile and New Zealand against the same commodities. Higher tariff rates are being offered to Pakistan as compared to other China FTA partners. Due to which, Pakistan lost preference on 79% exports to China after signing FTA[3]. with other countries especially with ASEAN countries. China's imports from ASEAN countries have been increased from US$ 10 billion in 2009 to US$ 19.6 billion in 2016.

1.5. Prospects for Pakistan's Trade with China Under CPEC

China's second largest trading sector is agriculture which constitutes 9% of its total imports. To support the trade in agriculture products, collaboration between Pakistan Agriculture Research Council (PARC) and China's Hybrid Rice Seeds research organization has initiated a campaign to promote hybrid seed cultivation across the crop growing areas of the country. Farmers are encouraged to cultivate canola crop as it is highly profitable and will help to satisfy the local demand and will lower import bills[4]. Other related industries in which Pakistan has potential to export to China are listed below with the countries from which China import:

- **Dairy** and related products from New Zeeland and Australia
- **Edible fruits and nuts, peel of citrus fruits** mainly from Chile, Thailand, Vietnam and USA
- **Beverages** from France and Australia
- **Copper** from Chile and Japan
- **Wheat and Maslin** from Australia and Canada
- **Rice,** from Vietnam, Thailand and Pakistan
- **Cotton** from Vietnam, India and Pakistan
- **Bread, pastry, cakes, biscuits and other bakers' wares** from Indonesia.

Pakistan has huge potential in dairy for being 5th largest milk producer, also in copper, rice, fruits and cotton where it can increase our export base through value addition and innovation. Other consumer goods like beverages, bread and bakery needed to be streamlined for export to China.

1.6. China-Pakistan Economic Corridor (CPEC) - A Way Forward

Though the bilateral trade between China and Pakistan seems to be in favour of China but with CPEC projects, it is expected to be tilted towards Pakistan's favour. CPEC aims to highlight and bring untapped trade potential between the two countries. Special Economic Zones (SEZs) under CPEC are expected to expedite industrialization process in Pakistan. By establishing backward linkages with the domestic industry, it is possible to facilitate the spillover from the industry in SEZs to the domestic industry. Many more benefits can be realized via CPEC as discussed briefly in the following lines:

- Many more benefits can be realized via CPEC. For instance, since many businesses are facing low production due to energy shortage in Pakistan. CPEC energy projects are aimed to solve this crisis with its huge energy generation projects based on coal, wind, solar and hydel energy. The increase in energy supply will help the industry to meet local demand and produce a more exportable surplus.
- Moreover, with a vast network of roads, railways and ports under CPEC infrastructure projects, regional connectivity will be enhanced leading to promote trade among regional partners.
- In addition, infrastructure development will further reduce transportation and logistics costs thereby easing exports and enhance market access.
- China lacks agricultural land and freshwater resources especially in western China bordering Pakistan. Therefore,

the country has a huge demand for land-extensive crops such as wheat and rice. Pakistan being abundant in land-extensive crops can capture this huge Chinese market. In this regard following agriculture projects have been pioneered in the umbrella of CPEC:[5].

- Establishing fruit processing industry in Gilgit-Baltistan
- Establishing 'Sino-Pakistan Hybrid Rice Research Center' at Karachi University
- Establishing meat production and processing facilities in KP.
- KP-China Sustainable Donkey Development Program

1.6. Conclusion and Recommendations

China is the largest trading country in the world bordering Pakistan on the western side. Pakistan and China signed FTA in 2006 to increase the trade. After signing FTA, the trade increased but in China's favour as the trade deficit has increased but the major part consists of imports leading to widening of current account deficit. The analysis carried in for Pakistan. This study analyzed a few of the reasons for the trade deficit. One prominent reason is the relatively high tariff rates on Pakistan top five exports offered by China as compared to its other FTA partners. Though Pakistan has a comparative advantage in these commodities but due to high tariff, they become relatively less competitive. The tariff concession differential by China to Pakistan and other FTA partner countries is clearly showing the uneven level playing among free trade partners where the effective negotiations are seriously required.

A few of the recommendations to reduce the trade deficit is as follows:

1) More focus should be on services liberalization (as of 2009 Services Agreement). In this regard, the potential of information technology (IT) and banking sector should be effectively exploited.

2) Import of intermediate commodities or low-value chain from China and export of high-value chain/final commodities to China.

3) Products in which Pakistan has a comparative advantage and competitive edge like should be exported to China.

4) Identify and export those products which are facing relatively less competition in the Chinese market.

5) Strongly negotiations on FTA to put Pakistan major exports to China on zero tariff list (Pakistan Business Council Third Review, 2016)

6) Effective Negotiation with China on the right of Most Favored Nation (MFN) status to provide same concessions as provided to some other FTA partners such as ASEAN.

Moreover, CPEC in this situation can also be used as a major breakthrough to fill the export-import gap through its various agreements in trade, connectivity and energy sector.

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The Impact of CPEC and Related Road Infrastructure Projects on Employment[1]

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Introduction

The fruits of globalization are innumerable. It squeezes long distances between countries, breaks down the borders of nations, consequently, transforms this big world into a small village. A substantial and considerable trend observed in the twenty-first-century economies is the increasing interlinkages between countries and existence of an ongoing shift in global economic activity from developed to developing countries. A secure and reliable approach to link global production network is to build "economic corridors", which certainly is one of the important means to facilitate economic activity. The idea of infrastructure was first popularized by Singer (1950) who emphasized the significance of financing in infrastructure with the venture in certain facilities which are accounted crucial for immense improvements of a nation. This is because, appropriate infrastructure in terms of capacity and value, constitute an environment favourable in attracting a decent amount of investment in the countries. Consequently, infrastructure is not the end goal of an economic activity, rather it is a framework which makes economic activities possible.

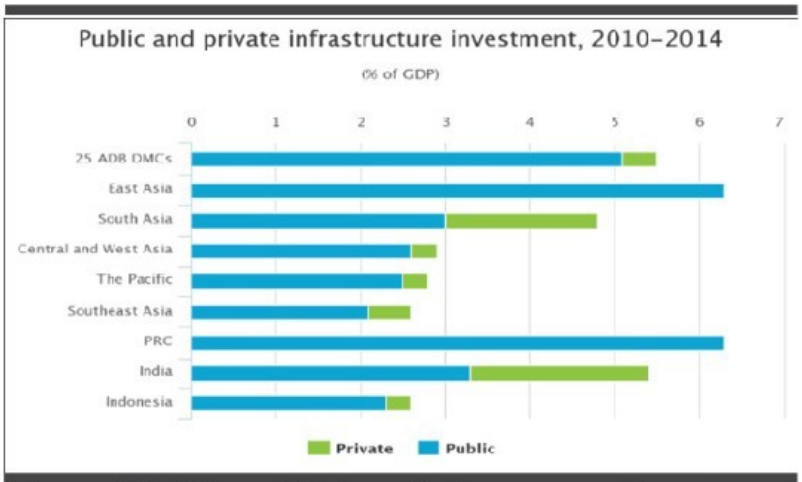


Figure 1: Public and Private Infrastructure Investment
Source: ADB Bank

Infrastructure affects the society in two main dimensions-from economical aspect and from the social aspect. The latter can be considered as the result of former as economic infrastructure is meant to oversee and arrange a structure for modern industrial activities, while the social infrastructure focuses in providing opportunities to the society in enhancing and improving their social and human capital. Across the broad concept of infrastructure and road connectivity holds great importance, as economic growth in modern times is carried out simply by "getting people connected". Pieces of evidence suggest that road network helps in providing employment, facilitates the intercommunity migration and trade, improves physical and human productivity and hence, alleviates poverty.

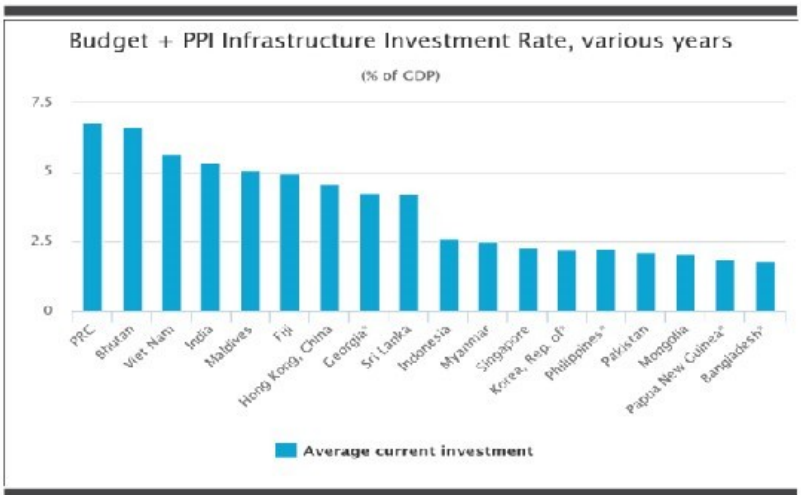


Figure 2: Infrastructure Investment Breakdown

Source: ADB Bank

Through acknowledging the significance and importance of infrastructure, nations are intensified in adopting policies to invest in infrastructure and considered it their liability. In developing Asian countries, the investment is primarily executed by the public sector providing overall 90 per cent of the region's investment. Figure 1 illustrates the percentage share of public and private sector in the investment of infrastructure.

The People's Republic of China (PRC) is well-known in large infrastructure investment which averaged 6.8 per cent of GDP from 2010 till 2014. Bhutan, on the other hand, is considered as a small nation is the second top country investing 6.62 per cent on average on infrastructure. While Pakistan has still taken little notice of it and invested only 2.4 per cent to GDP on average, which is even less than the infrastructure investment of Myanmar and Indonesia. The discussed figures of various countries are still not appealing. Because the developing member countries of Asian Development Bank have altogether invested only US$ 881 billion in 2015, which is far more less than the estimated and required annual investment of US$ 1.34 trillion for over five-year period from 2016 till 2020 after adjusting the climate estimates, creating a gap of almost US$ 460 billion..

China is known as one of the leading investor in infrastructure, it has invested over US$ 686 billion in this sector, while the required need of the economy was more than US$ 830 billion creating a gap of almost US$ 151 billion. Whereas in case of India, the actual investment documented is US$ 118 billion against the requirement of US$ 261 billion per annum. While in case of Pakistan the investment done in infrastructure was US$ 355 billion, while the required was

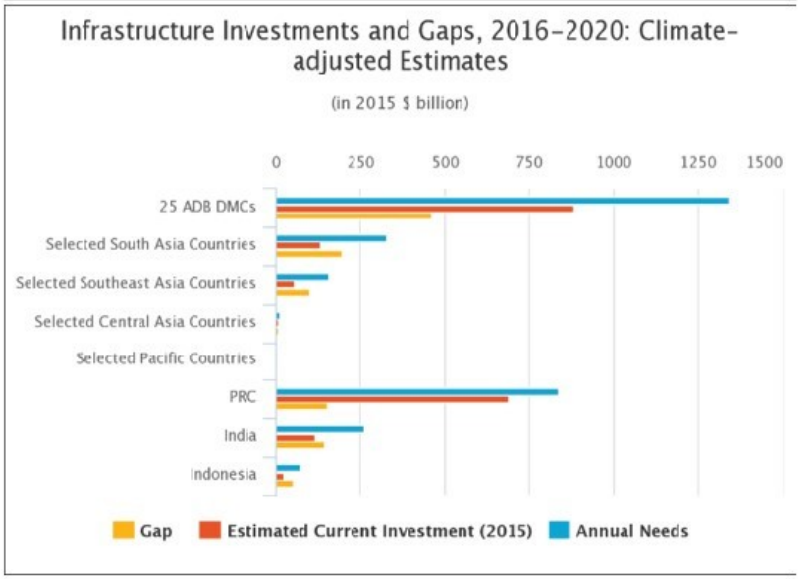


Figure 3: Infrastructure Investment and Gaps

Source: ADB Bank

US$ 480 billion generating the investment gap of US$ 124 billion. This discussion is summarized in figure 3 explaining the required investment.

In case of Pakistan, the China Pakistan Economic Corridor (CPEC) is the best presentable example which connects China to Pakistan and beyond. Apart from the construction of infrastructure in terms of transportation, the major part of this scheme comprises a number of projects related to energy. The total investment put forward to make the projects functioning under CPEC is more than US$ 45 billion, of which 30 per cent (US$ 13.58 billion) of the investment is attributed towards the construction of infrastructure. Currently, six road infrastructure projects are under construction throughout different regions of Pakistan. These include the Karakoram Highway Phase II (Thakot-Havelian Section) located in Gilgit Baltistan and Khyber Pakhtunkhwa, Peshawar-Karachi Motorway, the Multan-Sukkur and Lahore-Multan section, in the Punjab and Sindh, up gradation of the D.I Khan (Yarik) – Zhob, N-50 Phase –I to V between Peshawar and Baluchistan, the remaining portion of E-35 Expressway and finally the M-4 between Faisalabad and Multan in Punjab. Apart from the innumerable benefits and fruits enjoyed by the individuals within these regions, this study focuses on the effect of early harvest CPEC infrastructure projects on the employment of Pakistan, keeping in view the composition of labours with respect to nationality.

KKH Phase II (Thakot -Havelian Section)

The project KKH Phase II inaugurated on 28th of April, 2016, expected to complete in March, 2020, joins the Gilgit Baltistan to the Capital of Pakistan. 90 per cent of the project has been funded from the China Exim bank while the rest 10 per cent will be funded by Pakistan. It comprises three interchanges within 39km between Havelian, Abbottabad and Mansehra, five tunnels within the region of Abbottabad, Karmong, Battal and Mansehra. Currently, the US$ 1,366 million worth project, after consuming only 30 per cent (US$ 409 million) of the total estimated investment has created almost 7800 direct jobs in totality. From which a huge portion is attributed towards the Pakistani nationals, of almost 6000 (76 per cent) while a few amounts of labours are hired from China of around 1800 (24 per cent). The first section covering 39km of the total project will open in May 2018. The figure (4) illustrates the composition of labours.

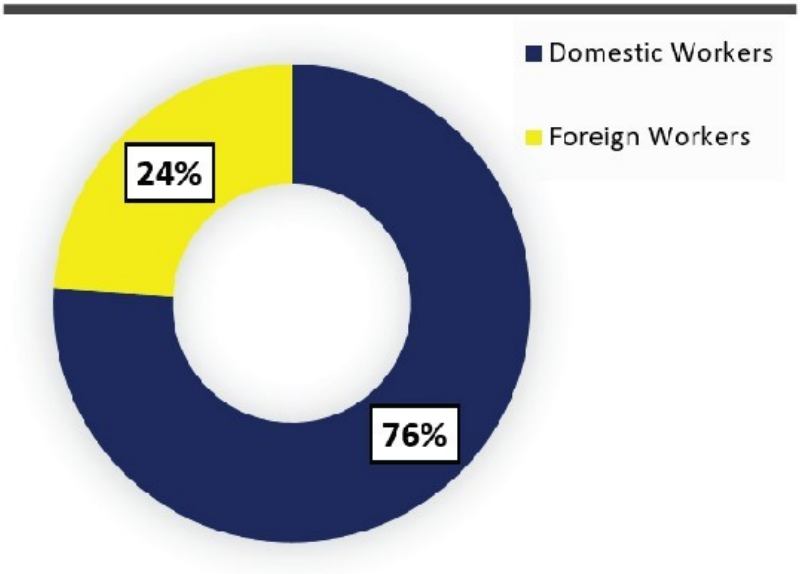


Figure 4: KKH Phase II Labour Composition

Source: Author's own findings

Peshawar-Karachi Motorway (Multan-Sukkur Section)

The Multan-Sukkur Section of Peshawar-Karachi Motorway is considered as the largest transportation infrastructure project under CPEC. This will connect the southern port city of Karachi with the northwestern Peshawar through a dense area of Sindh and Punjab, cutting down a large distance of 463km to 392km and therefore, saving four hours of travelling without hassles. The project would consist of 10 flyovers, 11 interchanges, 426 underpasses and 54 bridges, which is expected to be completed by 2019. The total number of jobs created under this project up till now is 15,174. From which only 8.5% (1,293) of the labours are hired from China while 91.5% (13,881) of the workers are hired from Pakistan. The estimated investment specified for this project is US$ 2.94 billion from which the released funds are almost US$ 6,250 million with the help of which 15,174 labours have been employed till present. This certainly indicates the significance and importance of investing in the infrastructure sector of Pakistan that a huge number of employees can be generated directly as well as indirectly. Figure (5) represents the composition of the total labour employed from both the Pakistani and Chinese nationalities.

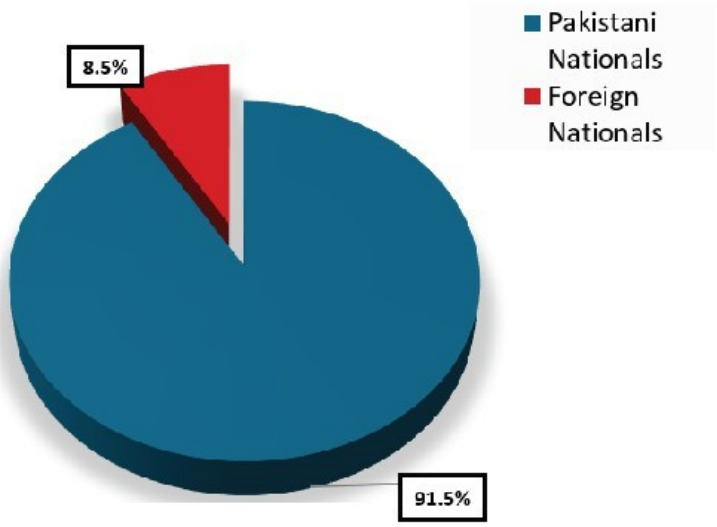


Figure 5: Multan-Sukkur Section Labour Composition

Source: Author's Own Findings

Peshawar-Karachi Motorway (Lahore-Multan Section)

This section of the motorway is also known as M-3 Lahore-Abdul Hakeem Motorway, which connects Lahore M-2 to Abdul Hakeem. The significance of this road project can be observed by the link it establishes between the southern and northern areas of Pakistan. 230km long motorway is considered as the part of Karachi-Lahore motorway as well. To make the project functional on full potential, the total investment estimated is almost US$ 1,506 million which will comprise eight interchanges, 35 bridges over the canal and eight bridges over other major roads, while six underpasses and almost more than 300 culverts.

17,246 jobs have been created under this project from which more than 96 per cent (16,676) of the workers possess the nationality of Pakistan, in

contrast to a sum of only 570 workers, which only constitutes 3.3 per cent of workers belonging from China. The project is expected to be completed by April 2018. Currently, the project has consumed 57.4 per cent (US$ 865 million) of the total investment creating 17,246 numbers of jobs appreciating the standard of living of the region, while the rest of the investment is promising to create a thousand more. Figure (6) represents the total labour employed from both the Pakistani and Chinese nationalities in this project.

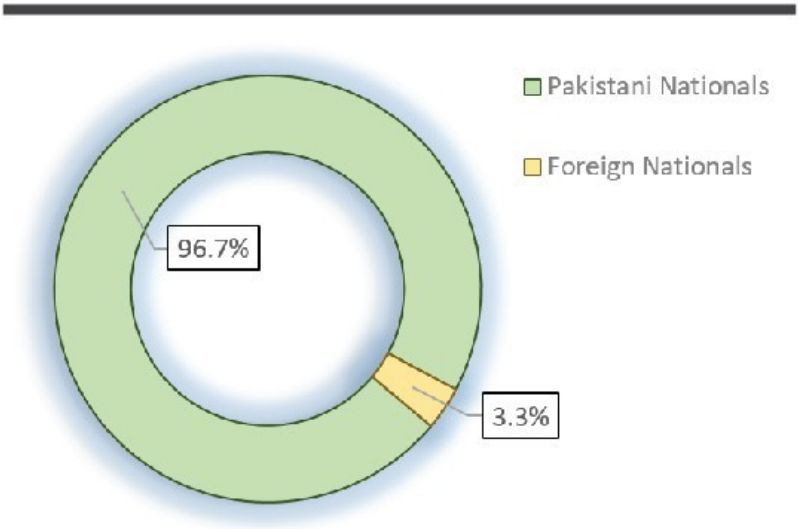


Figure 6: Lahore-Multan Section Labour Composition

Source: Author's Own Findings

Up gradation of D.I Khan (Yarik-Hakla), Phase I to V

In the southern end of the new Hakla-Yarik Expressway, the existing N-50 will also be upgraded between Zhob (Baluchistan) and Dera Ismail Khan (KPK). The first section of this up gradation of 81km between Zhob and Mughal Kot has begun in January, 2016 which is expected to finalize by 2018 utilizing US$86 million (44 per cent) of the total investment of US$ 195 million. This indicates the potential of the project to allocate and adjust more labours then existing till the finalization of overall project. This infrastructure project acquires a lot of significance because a massive number of jobs have been created, generating a thousand more indirectly. This project is divided into five phases. The first phase from Yarik to Rehmani covering an area of 55km, around 450 jobs has been created. In the next phase from Rehmani to Kot Balian (70km), 2500 Pakistani individuals have been recruited. Similarly, 500 in phase III from Kot Balian till Tarap (52.5km), 1,300 in phase IV from Tarap to Pindigheb (50km) and finally 1,950 from Pindigheb to Hakla (63km) altogether generating employment at large scale. It is pertinent to note here that total employment generated (6,700) under these projects has entirely been hired from Pakistan, increasing the employment rate and the living standards of domestic labours.

Figure 7: up gradation of D.I Khan Labour Composition

Source: Author's Own Findings

Faisalabad-Multan Motorway (M4) (Package II and III)

Faisalabad-Multan M-4, comprises five sections, all of which are of great importance linking M-2 with M-5. This is considered to be the backbone for the development of northern and southern regions of Pakistan and will eventually be the part of the massive motorway network. The total distance covered within this project is 286km. More precisely, the first sections connects Gojra to Jamani (31km), then Jamani to Shorkot (30km), Shorkot to Dinpur (31km), Shorkot to Khanewaal (64km), and finally from Din pur to Khanewal (34km).

The total employment generated under this project is 3,640. From these total jobs 599 of them are employed in the 2A section from Gojra to Jamani 574 as domestic labour and 25 only from abroad. Section 2B Jamani to Shorkot, has employed a total of 1,330, employing 1,312 domestically and 18 from China. Similarly 1066 from Shorkot to Dinpur. 1042 from which are employed from Pakistan while 24 from China. Finally a total number of 645 workers have been hired for the section 3B Din pur to Khanewal employing 30 from China and 615 from Pakistan.

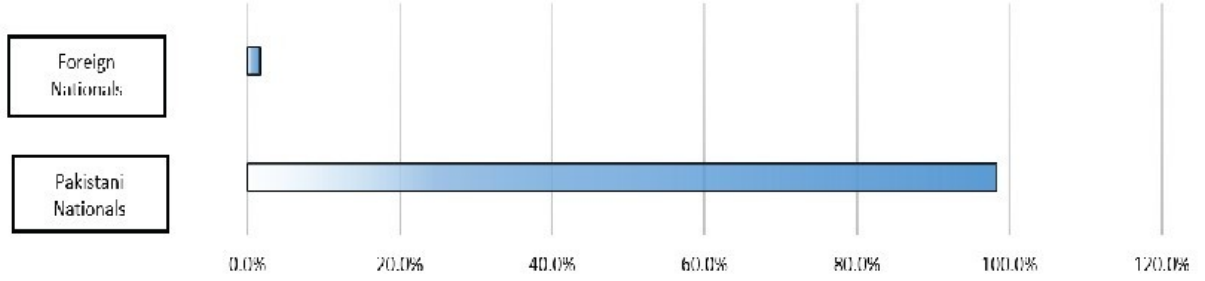


Figure 8: Faisalabad-Multan Labour Composition

Source: Author's own findings

The work progress on this project is swiftly underway which is expected to be completed in March 2018 consisting around 200 junctions and interchanges. After completion more than 200km from Pindi Bhattian till Multan will be saved, cutting down the travelling distance from about two and a half hours. The total employment generated under this project is 3,640. Employing 3,543 labours from Pakistan and only 97 labours from China. The figure shows the composition of labours with respect to the Pakistani and Chinese nationalities.

E-35 (Expressway)

E-35 Expressway is also known as Hazara Expressway covering a total distance of 180km starting from Burhan to Hassan Abdal linking the province of Punjab with KPK connecting Hassan Abdal with Haripur, Havelian, Mansehra, Abbottabad, and eventually Battagram and Thakot. This project is being financed by the Asian Development Bank and the United Kingdom. It will reduce the total time of travel from Havelian to Islamabad to just 30 minutes. This project was designed as four-lane road, but, now it is being planned to extend to six-lane. The total people employed in this project were 1,020. From which 1,000 (98 per cent) of the people have been employed from Pakistan while only 20 (2 per cent) have been hired from China.

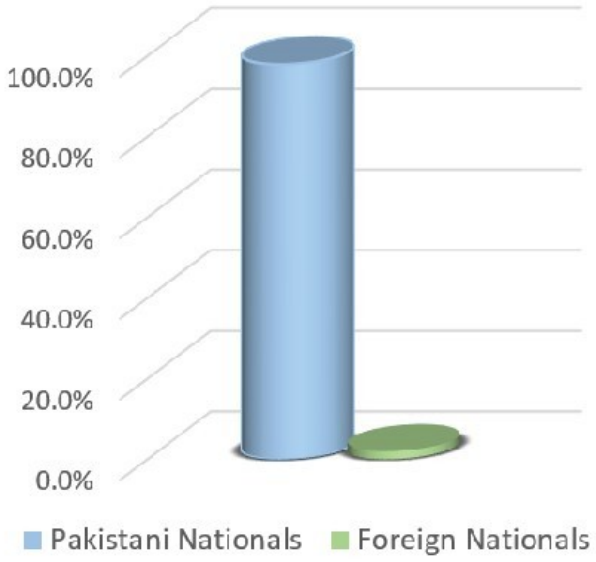


Figure 9: E-35 Labour Composition

Source: Author's Own Findings

Job Creation Under Infrastructure Projects

According to the above mentioned empirical findings the sampled projects under consideration are discussed briefly. They emphasize the role of overall infrastructure development in Pakistan and its impact on the job market. Furthermore, apart from the positive outlook, we also experience criticism regarding the job market of Pakistan, yet most of the figures quoted are fabricated and are under influence, while the real picture is consistently camouflaged. It is argued that the job market will be hijacked by foreigners while leaving the domestic labour as destitute. Figure (10) illustrates the real picture of these projects highlighting the effect of only road construction from a very broad concept of infrastructure on the job market of Pakistan.

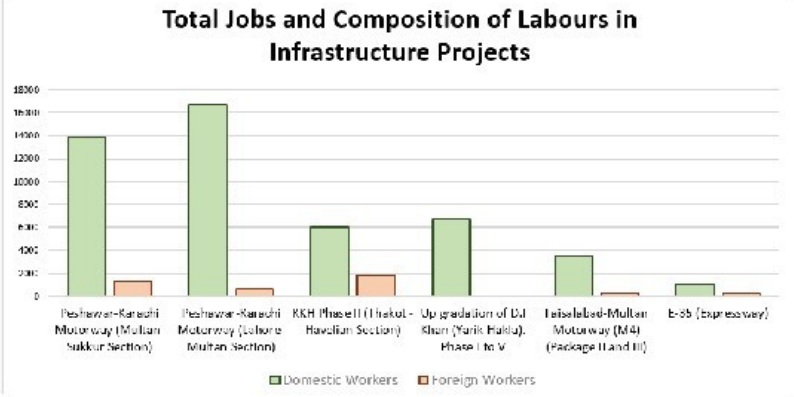
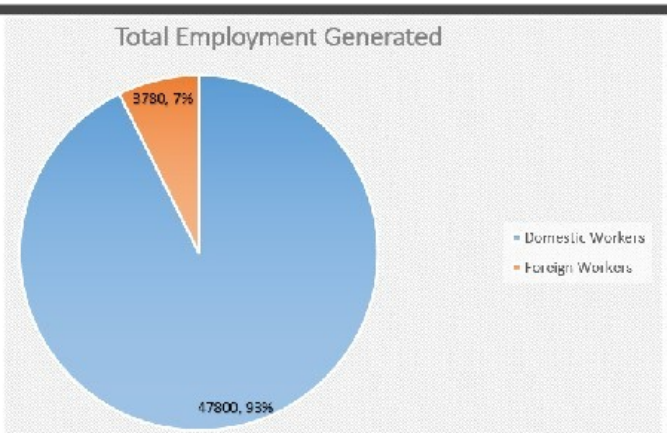


Figure 10: Total Job Created Under Infrastructure Projects

Source: Author's Own Findings

E-35 Expressway is also known as Hazara Expressway covering a total distance of 180km starting from Burhan to Hassan Abdal linking the province of Punjab with KPK connecting Hassan Abdal with Haripur, Havelian, Mansehra, Abbottabad, and eventually Battagram and Thakot. This project is being financed by the Asian Development Bank and the United Kingdom. It will reduce the total time of travel from Havelian to Islamabad to just 30 minutes. This project was designed as four-lane road, but, now it is being planned to extend to six-lane. The total people employed in this project were 1,020. From which 1,000 (98 per cent) of the people have been employed from Pakistan while only 20 (2 per cent) have been hired from China.



Conclusion

The concept of infrastructure encompasses all the main segment and components of development. The growth in GDP per capita is not only focused upon, rather, a wider picture of overall development of the society preliminary from the very scratch till transformation towards industrialized and civilized society, enjoying every deserved fruit of life is the only prime purpose. In this modern time, it is only possible by adopting the policies of globalization after the interaction of nations between them, stimulating the transfer of knowledge, technologies and essential goods in which the nations have comparative advantage. To make this practical, a prerequisite requirement to accomplish this goal is by giving serious attentions towards the development of infrastructure. A substantial and considerable trend observed in the twenty-first century economies is an increasing interlinkages between countries and existence of an ongoing shift in global economic activity from developed to developing countries. A secure and reliable approach to link global production network is to build "economic corridors", which certainly is one of the most important mean to facilitate economic activity.

In this association, Pakistan has signed a contract with China to overcome this issue under CPEC which connects China to Central Asia, West Asia and parts of South Asia. This project aims to focus on both of the aspects of development namely, infrastructure and establishment of industrial sector, investing US$ 13.58 billion in the infrastructure and almost US$ 32 billion in the industrial sector of Pakistan. As the objective of the study is to empirically evaluate the total number of jobs created under six infrastructure road projects and the composition of labours with respect to Pakistani and Chinese nationality holders. The data collected provides that only 7 per cent (3,780) of the total jobs created is attributed to Chinese nationals while 93 per cent (47,800) of the workers are form Pakistan. Therefore, the criticisms of hijacking job market by Chinese nationals and acquisition of lands which are usually based on perception and political statements should be overlooked and should be converted and focused towards the long-term and sustainable development, growth and prosperity of Pakistan.

References:

1. The Author, Muhammad Muzammil Zia has collected the primary data from the officials of the projects.

Cultural Tourism Under CPEC: A Case of Peshawar Valley, KPK

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The People's Republic of China and the Islamic Republic of Pakistan has seen their relations ever consolidating and progressing throughout different historical periods since independence. Both nations are working hard to enrich the friendship and develop a model of bilateral ties through China-Pakistan Economic Corridor (CPEC) flagship project initiated by the president of China's Xi Jinping in 2013 for building a common destiny. Tourism is one of the important pillars of CPEC long-term project.

The focus of this paper is on the development of tourism with special reference to Peshawar valley which is of great interest to the archaeological, geographical, geological, religious, and historical point of view. The main objective of this study is to identify the potential for the development of cultural tourism in Pakistan in general and in the Peshawar valley of Khyber Pakhtunkhwa in particular for improving the socio-economic condition of the people by creating jobs and business opportunities. Data for this research is collected through field visits to archaeological sites and through discussion with local stakeholders including tourism department and historical records.

Pakistan occupies the eastern-most basins of three rivers of the old world: the Nile, the Tigris-Euphrates and the Indus. These basins were the cradles of early civilization. The Indus valley civilization was distinctive in South Asia. (Johnson, B.L.C 1979)1, dating from 2500-1700 BC (Bronze Age) characterized by a pair of large city sites at Mohenjo-Daro and Harappa. Peshawar at that time known as Purusapure and Pushkalavati, the then seat of Gandhara civilization, covering part of present Afghanistan, Pakistan, Central Asian states and northern India. It was the capital of this Kushan Empire from where important trade routes pass through, connecting the old world major civilizations located in the west, east and south. At that time the entire region was thriving of Gandhara civilization spread with the Buddhist culture as shown on Map1.

Tourism which is an important industry will also see an immense boost as a result of CPEC in Pakistan.

In terms of physiographic diversity, Pakistan is highly rich in landscape with all type of landforms, from sea level up to the second highest peak Karakoram 2 (K2) of the world. In

Tourism which is an important industry will also see an immense boost as a result of CPEC in Pakistan.

Pakistan three famous mountains system of the world namely, Hindu Kush, Karakoram and Himalayas meet. It has four seasons, variation in temperatures, rainfall, rivers, glaciers, lakes, forest, biodiversity, and beautiful valleys. There are more than 44 peaks with an altitude of over 7,000m, including five of the world's highest 8,000m peaks including K2, Nanga Parbat, Broad Peak, Gasherbrum I and II, and Hidden Peak which attract a lot of tourists. Mountaineers from around the globe will assemble to Pakistan as soon as CPEC infrastructure is complete and in operational. Increased Chinese investment in the tourism sector of Pakistan via CPEC, after building the road, railways, air and sea routes to connect the two countries will further generate new investment opportunities. According to an estimate, 2.5 million tourists both domestic and international travelled to northern areas of Pakistan last year. The tourism destinations

could be extended to Xinjiang and other destinations both in China and Pakistan via CPEC and the neighbouring countries as shown in image 2. The 700-kilometre long coastal areas of Arabian Sea can be made accessible to the tourists via Kashgar-Gwadar road. A bus service is working from the Chinese border to Gilgit-Baltistan. Later on, transportation would be available for other cities of China like Kashgar and Urumqi, while both cities are already connected via air route. Urumqi is considered to be the first stop for goods coming from Central Asia to China, as a large number of people from Pakistan, especially businessmen visit Xinjiang daily. Being a tourism paradise CPEC is expected to boost the tourism industry in Pakistan, especially in Gilgit-Baltistan. (Ahtsham et.al, 2017)[2].

Literature Review

Cultural tourism not simply about consuming places but also a dynamic force creating them and seeing how these places evolve historically. A country with rich cultural heritage help in the dissemination of culture from one place to another. The cultural assimilation and dissemination occur when two cultures coverage and come in contact. Poudel. J (2014)[3], studies the socio-cultural impact found that Local people have changed their lifestyle, their traditional values, and cultural aspects, borrowed values and aspects in the name of modernization. Over the past decade, Asia has perceived remarkable social, cultural, political and technological changes. The rapid growth of tourism on large scale in some countries in the region has been a significant agent of changes. Like in most developing countries of the world, tourism in many Asian countries is also conceived as a powerful means of attracting the desired foreign exchange and an easy means of boosting the national economy. It fetches investment, creates jobs, and promotes sales of crafts and local artefacts, etc. Accordingly, the cultural heritage sites, performing arts, crafts and natural resources have all been exploited in attracting the tourists.

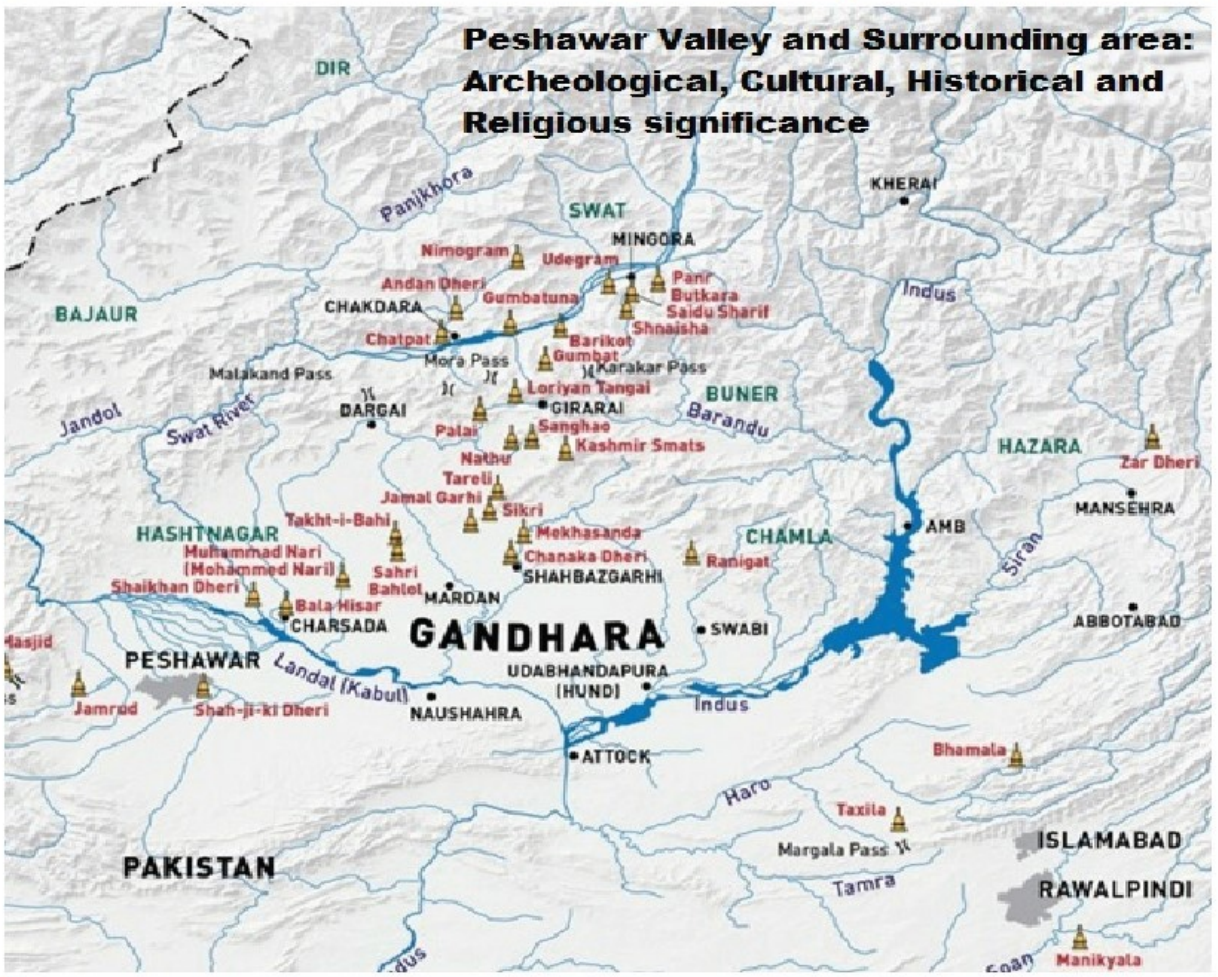
Viewed from another perspective, tourism is also a factor of acculturation (the adoption of the behaviour patterns of the surrounding culture) which affects attitudes, changes popular beliefs, mentalities, and spreads new concepts relating to work, money, and human relationship. Sometimes, it also destroys the ties that bind people to their faith, religion and aesthetics. On the other hand tourism, by bringing people of different cultures together, provides a direct contact between them and thus serves as a powerful means of diffusion of world cultures. It provides an opportunity for friendly and peaceful dialogue leading to better understanding between people and nations. It can build bridges and create friendship between nations leading to the establishment of peace. (A.G. Krishna Menon, 1993)[4].

A case study conducted in Thailand to see the effects of Tourism on Culture and the Environment under the project jointly formulated by Indonesia and Thailand in 1992 found that the impact of trekking tourism varies from locale to locale. Tourism is invariably an encounter between two different cultures. But this does not always provide the opportunity to the hosts and the visitors to learn from each other.

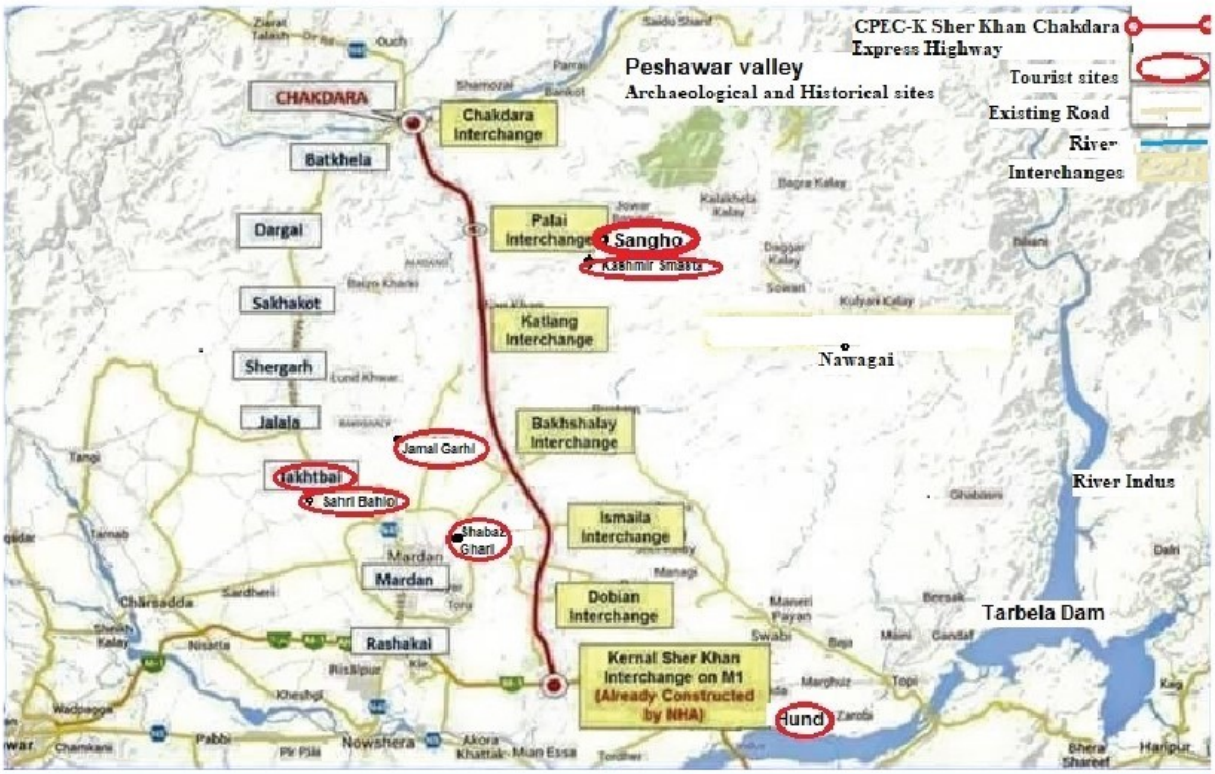
From the above discussion, it can be concluded that tourism can affect the culture in both positive and negative ways. Nowadays, it is a common debate that whether the negative impacts of tourism on culture offsets its positive benefits. Some people say it is really hard to measure that how much culture is being damaged by the tourism or how much culture is being protected due to the involvement of many socio-cultural and socio-economic variables together in tourism. From the extensive literature survey, it is found that the tourists, tourism enterprises, and hosts are jointly responsible not solely for damaging or keeping a culture alive (Spanou, 2007)[5].

Map1. Peshawar as Capital of Ghandhara Civilization

Image 2. CPEC Routes to Peshawar Valley and Neighbouring Countries



Map3. Buddhist/Gandhara Sites in Peshawar Valley-Pakistan



Map4. Karnel Sher Khan - Chakdara Express Highway and Location of Nearby Buddhist Sites

Image 2. Showing Ranigot Location

Plate 1. Ranigot Single Stone Room

Plate 2. Takhtbai Remains

Plate 3. Climbing up to Ranigot and a Spectacular View Toward South Showing Swabi

Plate 4. Ranigot Main Stupa

Plate 5. Ranigot remains

Plate 6. Ranigot Remains

Plate 7. Shabaz Ghari Remains

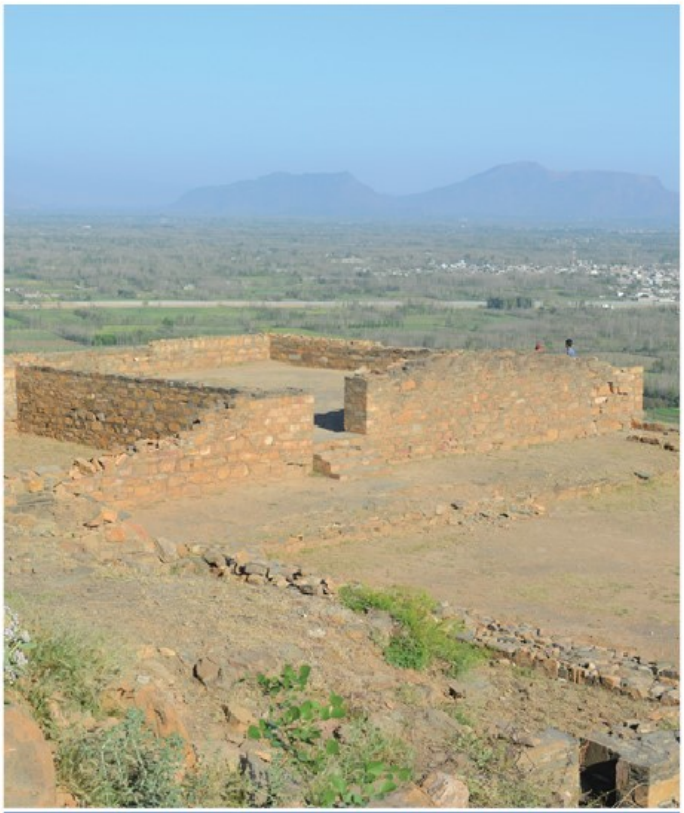


Plate 8. Jamal Ghari Remains (The Background the Karnal Sher Khan - Chakdara Express Highway)

The link between Pakistan and western China (Kashgar) according to an estimate more than 3000 archaeological sites mainly of Buddhist period are located in Peshawar valley (Map 3). These sites are of great interest for the people from China, Japan, Korea, Thailand, and other countries of BRI. For those who believe in Buddhism, these sites are as holy sites as for Muslim are the holy places of Makka and Medina in Saudi Arabia. Cultural tourism will further promote the public interest and would encourage people to people contact which can be beneficial for the socio-- economic development of not only for Pakistan but for the BRI countries. Also, this will bring them socially closer (Richard, 1996; Borowiecki, K.J. and C. Castiglione, 2014)[6]. By developing and streamlining the cultural tourism a lot of jobs will be created in transport, hotel, food, entertainment, handicrafts, and other services industries.

With the opening of the alternate CPEC routs from northern Pakistan through Gilgit-Chitral-Dir, Chakdera – Karnal Sher Khan in Peshawar valley the cultural tourism will be developed further. Majority of these sites are located within the distance of 10 to 20 kilometer along the Chakdara to Karnel Sher Khan Interchange of the CPEC highway connecting M1 as shown in Map4. Some countries of the world such as France, Italy, Spain, UK, Egypt, and others highly dependent on tourism. In order to collect primary data, few sites namely Ranigot in Buner, Shabaz Garhi, Jamal Garhi and Takhtbai in Mardan district (figure 1 to 8) were visited in March, 2018 to see the problem faced by these sites and discussed with the local stakeholders for future policy recommendation which is given at the end of the paper.

Tourism and Cultural Diffusion in Context of CPEC

If we talk about tourism and cultural diffusion in context of CPEC it can be seen that opportunities offered by the CPEC projects are irrefutable and obvious but can we ignore its socio-cultural impact? The influence of Eurocentric concepts on our society is evident today, which is a result of an era of colonization. Globalization has already resulted in the diffusion of cultures to some extent. Similarly, cultural dissemination and diffusion might occur as a result of the CPEC interventions. We see that day by day the Chinese people are seen more often in malls, restaurants and other places. This is just the beginning of a grand cultural exchange and can be positive for both nations. The Chinese language will spread and more people would like to learn chines language. Secondly, Chinese and Pakistani cultures are completely different when it comes to religion. China has the biggest irreligious population; while Pakistani culture has strict religious values, norms and morals. The CPEC routes will not only provide a means for the carrying of goods and other materials but also for the transfer of social customs, languages and beliefs among other things. People to people contact would rise further. The Silk Road in the ancient world led to the transmission of Buddhism, Christianity, Manichaeism, and Islam. Buddhism itself reached China through the Silk Road. The travellers experienced different religions and then carried them back to their own native lands. Diverse societies were formed throughout Eurasia.

At the same time, the positive aspect of the collaborations could be the transmission of knowledge and new innovations which is undoubtedly a source of progress and growth. Inter-cultural communication results in an increased commerce, technological growth and cooperation. However, there is no harm in adopting valuable ethics. For instance, Chinese work ethics are much more desirable than ours. They strongly believe in the importance of hard work, dedication and commitment and this is one of the reasons for China's fast economic growth.

Conclusion and Recommendation

The study reveals that there is a great potential for the development of cultural tourism in Peshawar valley because of beautiful and scenic spots, unique topographical and geomorphological features, important historical and Buddhist sites, rich in archaeological resources. According to an estimate, more than 3000 sites both excavated and unexcavated of pristine beauty and archaeological importance exist in the valley of Peshawar. From the above discussion and field observations following recommendations are made to boost the cultural tourism in Peshawar valley.

- There is a dire need to invest in maintaining and renovating the tourist's sites in the Peshawar valley having great potential of attraction.
- The sites highlighted in the study have strong religious history that should be promoted in each cultural and traditional event in and across the countries.
- Peace and security concerns of foreign visitors should be dealt with.
- Documentaries focusing on the significance of these sites in term of religion, history and tradition should be made and distribute among the Pakistan Embassies with the instruction to display in local media of different countries for awareness creation and attraction of tourist to Pakistan.
- To boost investment in hospitality and hotel industries, investors should be encouraged through incentives and other services including one window operation for facilitation of other procedures.
- Placing of signboards starting from airport, railway stations, main bus terminals, and other places for awareness creation and guidance.
- Improvement in access to these archaeological sites as due to population growth the streets/roads are very narrow to reach the places.
- Making arrangement to deal with vandalism.
- Provision of proper staff for caretaking cleaning and security.
- Provision of parking and other services on sites.

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Insights of Sahiwal Coal Power Plant

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A perilous dilemma accentuated by the industrial sector of Pakistan is the shortfall of energy which hampers the firms to manufacture at full capacity which has also been accounted as the utmost economic bottleneck of Pakistan. Around 144 million Pakistanis are deprived of the adequate supply of energy, from which 69 million constitute those individuals who are not connected from the national grid. While, 75 million are those who have access of electricity but they cannot optimally benefit from it because of frequent shortfalls. After having a connection of only 12 hours on average, 22 million households end up spending around US$ 23 billion in alternative sources to fulfil their needs. Still inadequate and deficient lightning products restrict their productivity.

On the other hand, 70 per cent of the workforce of Pakistan is employed in the agricultural sector which only contributes 19 per cent in the GDP of Pakistan. While, employing only one-third of the total employment, the service sector contributes 54 per cent in the GDP. To engulf the energy crisis along with the employment issues, the government of Pakistan has adopted plentiful strategies but failed to meet the desired limits. Under these intense circumstances, the projects under China-Pakistan Economic Corridor (CPEC) were nothing more than a bliss which restored our faith in the prosperity of Pakistan. CPEC, if only considered as 'development of infrastructure', acutely narrow downs and abrogates the bona fide agreement. As a large proportion of investment comprises construction of energy sector and Ports. Moreover, nine SEZs have already signed the contract which is promising to increase the GDP of Pakistan through attracting FDI, export-oriented production and eventually generating employment. An early harvest energy project resulting from the CPEC project has already initiated its operational phase in Sahiwal since the end of last year 2017.

Sahiwal Coal Power Plant is expected to fill the one-quarter deficit of the power energy crises in Pakistan.

Sahiwal Coal Power Plant

Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited is considered as one of the early harvest projects under CPEC. The project is launched by Huaneng Shandong and Shandong Ruyi Technology Group Co. LTD., with the share of 50% each. However, the Shandong Huaneng company is responsible for the operation of Power Plant. This project is located within the radius of 12 miles from the city of Sahiwal.

The project started with an investment of 1.44 billion rupees. The groundbreaking ceremony of this project took place at 31st of July 2015 and was completed in a period of 22 months and 6 days. It was 22 days ahead of internal target and 200 days before the actual expiration of the construction contract.

It is a 2x660 MW project, which utilizes one of the first supercritical technologies for energy generation in Pakistan under CPEC. The plant is somehow providing enough energy to the national grid to enhance the country's efforts to overcome the energy shortage. While using the most advanced technology, it has the capacity to generate over nine billion KHW of electricity annually, which is enough to meet the demand of over 10 million houses.

Sahiwal Coal Power Plant is expected to fill the one-quarter deficit of the power energy crises in Pakistan.

Constructional Phase

A questionnaire was developed to critically analyze the job structure and the facilities provided to the workers. The total direct jobs created under the "constructional phase" of this project were almost 6,500, employing 2730 (42 percent) domestic workers and 3770 (58 percent) from abroad. By major occupational group, the total workers hired from Pakistan on Professional and Managerial posts (having relevant experience of 5 years) were 45 (31 percent) while the rest 100 (69 percent) workers were hired from China. 30 percent (350), of total technical/skilled labours, were hired from Pakistan, in contrast to, 70 percent (800) from abroad. Similarly, 300 (17.64 percent) semiskilled, 1,845 (60 percent) unskilled and 150 (43 percent) administration staff has been hired from Pakistan in the construction phase of the project. These figures give a clear picture that the total foreigners employed were far more than the jobs offered to domestic labours.

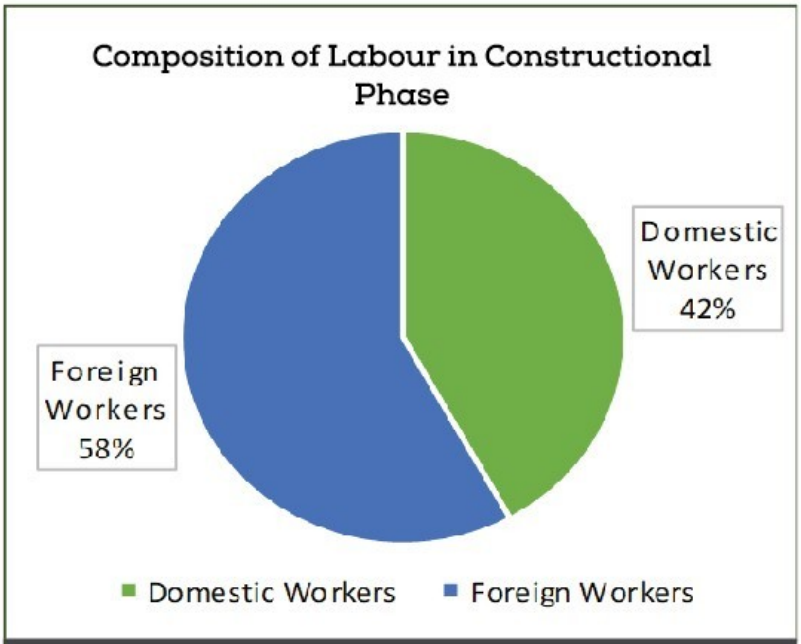

Figure 1. Labour Composition in Construction Phase

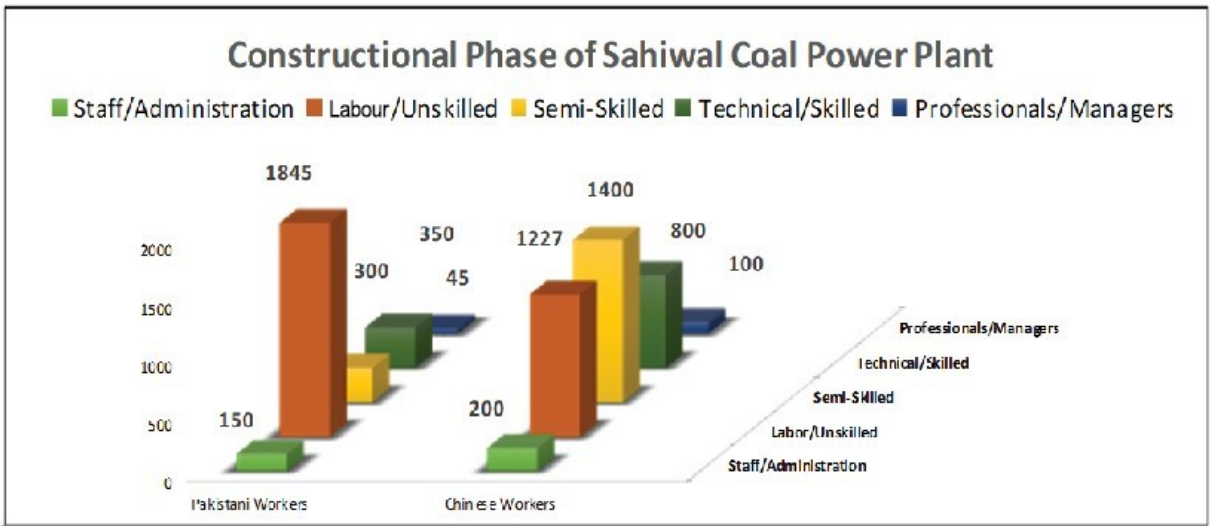

Figure 3. Labour Breakdown in Constructional Phase

After analyzing and conducting meetings with the officials the observed reason for this composition was the unavailability of required skills in the domestic labour. Hence, the officials were forced to hire labours from China which certainly cost them more in terms of wage, security, insurance and other travelling costs.

Operational Phase

Moving on towards the "Operational Phase", the total direct jobs created under this phase are 1,778 from which 1,107 (63 per cent) are the domestic labours while 671 (37 percent) are foreigners. As the plant is super-critical, utilizing various advanced technologies, the prevailing engineering skills were insufficient to meet the requirement. Therefore, the Chinese adopted an advantageous approach for hiring labours in this phase. They focused to employ fresh qualified engineers from numerous engineering universities within Pakistan. The first batch was fully hired from University of Engineering and Technology Lahore (UET) and National University of Sciences and Technology (NUST) Islamabad. The graduates hired from UET were 80 to 90 out of 124 engineers, while the rest were the graduates of NUST. However, the next recruitment in 2016 was selected from almost all the major universities of Pakistan. The employees, soon after the recruitment were sent to China for six months of technical training. Later, they were sent to University of Engineering and Technology Lahore to complete a 12 module program specifically designed for the engineers which strive to give an overview of both mechanical and electrical engineering. All of these candidates have returned back until August 2017 for operating the plant. Currently, foreign workers are mostly working in the maintenance department which shall also leave within the time span of three years. In this regard, around 100 domestic workers have been hired in the previous year (2017) in the maintenance department. Whereas, the plant will hire 100 domestic workers more this year (2018) as well, for the same department.

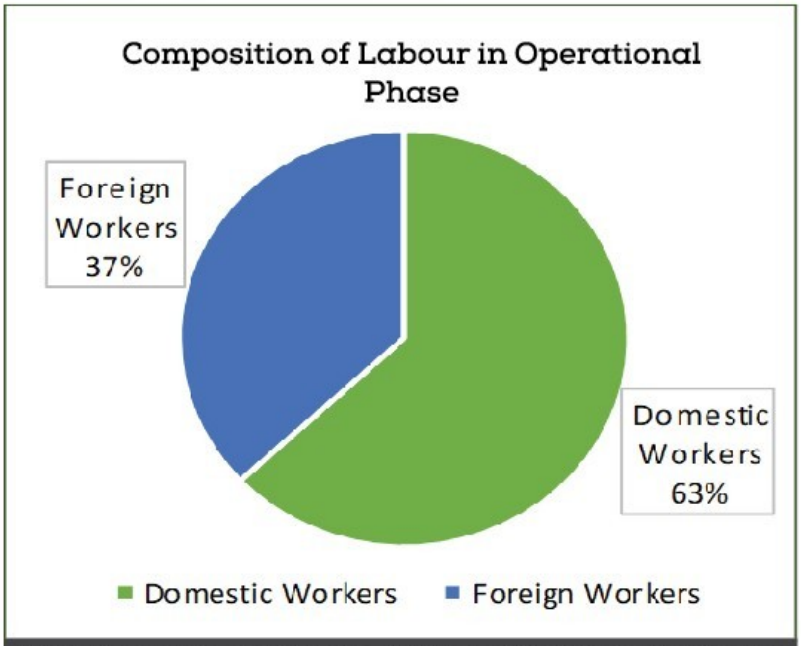

Figure 4. Labour Composition in Operational Phase

After taking into account the five major occupational group, 29 (40 per cent) Individuals have been hired on professional and managerial posts, domestically, while the left 42 (60 per cent) from abroad, summing up a total of 71 executive managers. While the technical labours hired domestically are 219 (44 per cent) in contrast to 272 (66 per cent) as foreigners. Similarly, 457 (59 per cent) semiskilled, 172 (100 per cent) unskilled and 231 (86 percent) administrations staff have been hired from Pakistan, in the operational phase of the plant. This information has been presented in the following figure which clarifies the whole picture.

Along with the job creation, certain steps have been taken to intensify the job standards within the premises, with the help of which, both domestic and foreign labours are entertained. This includes eating area with the free eating facility, medical facilities, appropriate ventilation and climate control, safety training, in-house training, paid leave and the list goes on. National and international training as well as workshop seminars are organized, job promotion is fairly awarded without nationality based biases or discrimination. In a nutshell, the leaders are developed from within the plant.

One important aspect which is pertinent to note here is that the above analysis focuses on the direct jobs created under this project. While the plant has further sub-contractors which are required to accomplish other tasks of the firm creating indirect jobs. This consists security, coal intake from the railways to the coal mill etc. These sub-contractors include PANDA, PANDA HR, SEPCO, TEPC, HENAN, LAUNCH, GREEN JIN CHINA and BEJING CHINA.

In order to produce 1320MW electricity, almost 11 thousand tons of coal is consumed by the plant on daily basis. This coal is delivered by five trains, each caring around 40 wagons, and each wagon has a capacity to contain 60 tons of coal. The rent paid to the Pakistani railway for one wagon varies from 70 to 90 thousand rupees, generating extensive revenues for the government. The coal yard of the plant is designed to store 376 thousand tons of coal which is enough to operate the plant for more than a month. The plant possesses another coal yard which is located in Karachi and has the capacity to store 250 thousand tons of coal. Sahiwal Coal Power Plant and Environment

Picture 2. Turbine Hall

These technically-advanced plants operate above the critical condition, (the state of a substance beyond which there is no distinction between liquid and gaseous phase) offer greater efficiency than older sub-critical designs and, most importantly, lower emissions. The efficiency of typical sub-critical power plant is 38%, whereas today's super-critical technology increase this to around 45-47%.

In three defined stages the coal is transformed into the electricity. The first conversion of energy takes place in the boiler. Coal is burnt in the boiler furnace to produce heat. Carbon in the coal and Oxygen in the air combine to produce Carbon Dioxide and heat. The second stage is the thermodynamic process. The heat from combustion of the coal boils water in the boiler to produce steam. In modern power plant, boilers produce steam at a high pressure and temperature. The steam is then piped to a turbine. The high pressure steam impinges and expands across a number of sets of blades in the turbine. The impulse and the thrust created rotate the turbine. The steam is then condensed and pumped back into the boiler to repeat the cycle. To condense the steam each unit is provided with giant natural draft cooling tower used to cool down the cooling water. Sahiwal power plant uses two natural draft hyperbolic type cooling towers to cool the circulating water used for condenser cooling. Since water resources are limited, power plants have no other option but to adopt the

Picture 3. DM Water Treatment Plant

closed cooling system with cooling towers. Hot water from the condenser pours down from the top and the air moves up from the bottom to top removing the heat in the form of water vapors disappearing in the sky. In the third stage, rotation of the turbine rotates the generator rotor to produce electricity based of Faraday's Principle of electromagnetic induction.

Conclusion

Huaneng Shandong Ruyi (Pakistan) Energy (Private) Limited is considered as one of the early harvest projects under CPEC, the project is launched by Huaneng Shandong and Shandong Ruyi Technology Group Co. LTD., with the share of 50% each. However, the Shandong Huaneng company is responsible for the operation of Power Plant. It is a 2x660 MW project, which is one of the first supercritical technology utilized for energy generation plants in Pakistan under CPEC which is providing the required energy to the national grid in order to enhance the countries efforts to overcome the energy shortage. While using the most advanced technology, it has the capacity of generating over 9 billion KHW of electricity annually, which is enough to meet the demand of over 10 million households. Moreover, the total direct jobs created under the 'constructional phase' of this project were almost 6,500, employing 2730 (42 percent) from within Pakistan and 3770 (58 percent) possessing foreign nationality. Similarly, the total direct jobs created under the 'operational phase' are 1,778 from which 1,107 (62 percent) are the domestic labours while 671 (38 percent) are foreigners. It is evident from the survey that the foreign workers employed in this phase will return back to their country within 3 years. Keeping this is in view, an advantageous approach adopted for hiring labours in this phase was that all new domestic labours are fresh qualified engineers from numerous engineering universities within Pakistan. In addition, new advanced technical training institutes are planned to open within the premises which is programmed to provide technical training free of cost for the domestic workers. This certainly is an indication that such projects can enhance the pace of economic growth and the overall productivity of total factor productivity in Pakistan.

Picture 4. Boiler Structure

1. Muhammad Muzammil Zia, Policy Head Job Growth and HRD and Co-author: Shujaa Waqar, Research Assistant Job Growth and HRD visited the Sahiwal Coal Power Plant and collected all the data used in this article.

CPEC: Impetus to Digital Landscape

Talha Mustafa (Research Assistant, Regional Connectivity, CoE-CPEC)

In a contemporary world, it is impossible to imagine the country to successfully develop hard infrastructure projects without constructing solid digital bedrock. The digital connectivity is fast becoming the essential infrastructure of the 21st century. About 2.5 billion people are linked through the internet today and are expected to reach four billion users by 2020, which is more than half the world's population[1].

Countries with greater broadband penetration will have a potential impact on economic growth as every 10% rise in internet penetration enhances economic growth by 1.38% in underdeveloped countries and 1.12% in developed countries[2].

CPEC is not only a connectivity network of roads, railways, ports, oil and gas pipelines but it also has cross-border fiber optic cable connectivity between China and Pakistan.

The 820-kilometre-long fiber optic cable project at a cost of $44 million stretches from China's Western Xinjiang region and enters to Pakistan through Khunjerab border and then travels through Gilgit-Baltistan (G-B) to Mansehra, KPK to connect to Muzaffarabad, AJK and onwards to Islamabad and Rawalpindi, where its link with existing optical connectivity network of Pakistan[3]. The cable is also connected to the first ever local Internet Exchange Point (IXP) in Islamabad to exchange and control internet traffic. The potential advantage of IXP is

CPEC is not only a connectivity network of roads, railways, ports, oil and gas pipelines but it also has cross-border fiber optic cable connectivity between China and Pakistan.

that different Internet Service providers (ISPs) can connect at a single point, which provides a secure interconnection point to exchange the local information within the country by avoiding international network links. Moreover, it also significantly reduces internet cost with overall improved internet performance. On the other hand, fiber optics cable will not only digitally connect Pakistan with China but also will link up with several countries of Belt and Road Initiative (BRI), spreading across landlocked Central Asia countries and Europe. This digital connectivity with rest of the world through China will provide a more secure path for internet traffic as in existing fiber optic network some of the internet traffic is routed through India which may cause a security risk for Pakistan. An alternative landing station for submarine cable is also planned to be set up at Gwadar Port, as Pakistan has only one landing station located at Karachi to handle all the country's internet traffic, any fault in this landing station will interrupt the internet throughout the country. The proposed landing under CPEC will eradicate this problem which will help to reduce dependence on existing submarine cable routes and provide more secure international communication network.

The new fiber optics cable will provide secure and fast speed internet to digitally undeveloped regions of Pakistan, where broadband connectivity has ranged from poor to nonexistent. Recently, Special Communication Organization (SCO) has upgraded the existing network and launched the 3G/4G services in G-B and Azad Kashmir which will further strengthen broadband connectivity of the country. Additionally, in Annual Development Plan (2017-18) of G-B, 19.2% of their total budget has been allocated for infrastructural sector development, to improve overall communication network in GB[4]. The arrival of 3G/4G services in such remote areas would not only provide easy access to the internet but it will generate employment opportunities for local youth, especially women and boost tourism as transportation in the northern areas is very difficult without broadband technology. Currently, in Pakistan, subscribers of 3G/4G have reached to 44.4 million which is around 19.2 per cent of the total population with an average usage of 1.56 GB mobile data per subscriber per month[5]. With the inception of CPEC fiber cable will greatly enhance these broadband internet users and will also

contribute to improve overall internet penetration of the country. In order to optimize the existing and future supply chain within Pakistan and with the Chinese information flow, financial flows, physical flows of goods and services would excel through digital connectivity between China and Pakistan. It will also promote regional economic cooperation and will enable many ICT integration services between both countries. This connectivity is spread from many soft to hard infrastructural projects such as paperless trade facilitation, e-commerce, e-government, risk management, and plays a supporting role in the construction and management of industrial parks, roads, rails and ports. On the other hand, this cable connectivity will provide many opportunities to enhance people to people contacts between the people of China and Pakistan. The adaptation of China's Digital Terrestrial Multimedia Broadcasting (DTMB) technology is an indispensable component of socio-cultural collaboration. The arrival of DTMB standard in Pakistan enables high definition (HD) broadcasting for digital television (TV) which will provide many opportunities for the Pakistani media industry for revenue generation and promote many cultural exchange programs at a higher resolution between China and Pakistan. It will also portray soft image of Pakistan in China and around the globe.

The internet has created entirely new fields of commerce as more people and businesses come online which will boost e-commerce activities in the country. The inception of optical fiber connectivity under CPEC will further expand e-commerce market of Pakistan which is anticipated to reach US$1 billion by 2020[6]. Recently, one of the world's largest e-commerce company, Alibaba has signed an MoU with the Pakistani Trade Development Authority to promote digital entrepreneur culture for Small and Medium Enterprises (SMEs) in Pakistan [7]. It will also provide a platform for different training programs for SMEs in the field of e-commerce. As a result, it will enhance foreign investment by exporting Pakistani products to international markets. Advanced connectivity will also enhance B2C (business to customer) connectivity making it easy for service provider and service consumer to interact, the second spillover of advanced data connectivity has more opportunities in distance learning. Furthermore, this fast and secure connectivity plays a pivotal role to revolutionize the payment method by introducing the concept of digital banks for e-transactions. Currently, in Pakistan, around 95% of the e-business payments are being paid by cash on a delivery system which is one of the major hurdles facing by existing e-commerce companies – their customers and young entrepreneurs for online startup businesses in Pakistan. The availability of reliable network infrastructure also has a potential to modernize government administration processes which will enhance the delivery of public services and provision of information through Internet. It will also enable various e-government facilitates such as the construction of national data centers, safe cities, intelligent transport systems and various single windows operations for better security and easiness of public.

Enhanced regional and national digital connectivity would provide a strong foundation for ICT infrastructure in Pakistan which is also a key enabler for the development of smart cities. It, therefore, acts as a catalyst for the sustainable development of different CPEC infrastructural projects. Moreover, it will provide reliable and affordable connectivity network, to contribute to successful implementation of the CPEC projects throughout Pakistan.

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Economy Wide Impact

of Energy Component of China Pakistan Economic Corridor (CPEC)

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Introduction

China has gradually emerged as Pakistan's major trading partner both in terms of exports and imports for the last 15 years. Due to CPEC, the trade between the two neighboring countries will further be increased as better connectivity and hence low logistics cost will raise the prospect of trade. Besides, the CPEC projects not only focus on connectivity and logistics but include projects covering sectors such as energy, agriculture, education and tourism. Industrial cooperation by developing special economic zones in the country will pave the way for industrialization in the country and will increase the prospects of trade with the world.

Major projects in the short-term plan includes infrastructure and energy projects as both provide supportive structure for economic growth and so increase trade potential of the country. Benefits of the projects in terms of economic growth are often communicated but not thoroughly and systematically analyzed. For instance, the brokerage firm named "TOPLINE" has assumed exports to grow by 4.5% a year till 2025 due to the expectation of CPEC led higher GDP growth in the medium and long term[1].

To thoroughly estimate the benefits of CPEC projects, benefit projections should be carried out rigorously. To this end, this study focuses on the energy projects under CPEC to investigate its impact on the economy particularly on the export and GDP of Pakistan. The study relies on Global Commutable General Equilibrium model for benefits projects using latest GTAP Power Data set and latest comprehensive Social Accounting Matrix (SAM) 2010-11 of Pakistan. However, before going to investigate the impact, let's talk briefly of the current energy scenario in the country.

Pakistan Energy Profile

Sufficient and affordable energy has major role in the human development of any economy (World Bank, 2008) because energy is a vital input for economic growth and powers wheels of industry, provides for the transportation of men and materials, and build a better quality of life. Lack of energy or (frequent) disruption in the energy supply not only curtails economic growth but also affect negatively social cohesion in the society.

To support the social and economic progress, different sources of energy are being used globally. Figure 2 shows the energy mix produced globally where coal followed by natural gas is the dominant source of energy. As for power generation in Pakistan is concerned, it relies on three technologies: thermal, nuclear & hydel. Pakistan's 65% energy is produced from thermal power (oil, natural gas & coal). The remaining 30 % and 5% of power generation comes from hydro and nuclear respectively (see Figure 3). However, considerable potential exists in Pakistan for power generation via renewable sources such as hydel, solar, biomass etc[2].

Figure 1: World Gross Electricity Production by source 2014

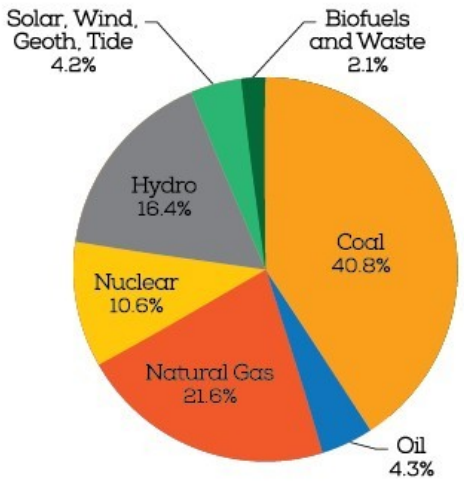
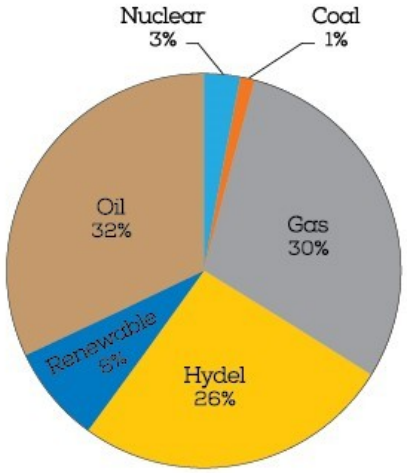


Figure 2: Power Generation Mix in Pakistan (2015-16) (Pakistan Energy Year Book, 2015)



Source: IEA Electricity Statistics 2016 Report

Despite potential Pakistan has for power generation from different sources, the country is facing a huge electricity deficit from a past decade. According to PEPCO[3], The current energy demand for Pakistan is 16,814MW. However, the supply of electricity is 10,800 MW with a total installed capacity of power generation of 21,375MW (WAPDA, 2014, Power Generation Statistics). Due to this massive electricity shortfall, people in both urban and rural areas are facing frequent blackout, especially in summer. The industrial sector is adversely affected and so the economy. Due to these power deficits and other structural issues in the sector, the whole nation is receiving high electricity bills due to the insufficient power supply, increase rate of electricity theft and inefficient power technologies.

Sector Wise Power Consumption

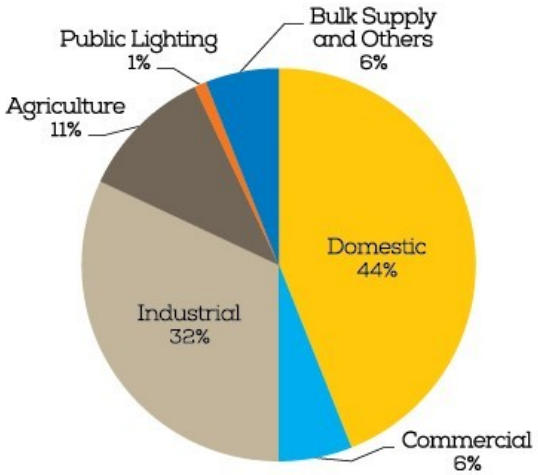


Figure 3: Sources Federal Bureau of Statistics

Furthermore, the demand for electricity is increasing at a rate of 10% annually while the generation for power capacity is growing only 7%. The main contributors of power generation in Pakistan are IPPs who use thermal technologies for power production. However, thermal power generation sources are not only costly but relatively non- environment friendly sources of energy. Dependence on thermal power generation using furnace oil coupled with volatile international oil prices has adverse implications for cost structure of electricity production and further undermine energy availability in Pakistan (references) and has resulted in a massive negative impact both on societal as well as economic wellbeing. This impact is reflected by an estimated 4-7% loss to the country's GDP[4].

To overcome the energy shortage in the country and boost the economy, major chunk of CPEC projects are energy relevant. At present, about 10,000 MW of power is planned to be added in the national grid via CPEC energy projects[5]. A few projects that is, Sahiwal and Port Qasim Karachi coal-fired power plants (each 1320 MW capacity), Quaid-e-Azam solar farm in Bahawalpur (100 MW) has been completed. Others are in the either execution or in the planning phases.

For the current study, we have taken 5000 MW of electricity that has been added to the national grid and the article investigate the impact of the injected energy on the economy particularly on the export of the country.

Methodology

The methodological framework used in this paper for examining the economy wide impact of Energy component of CPEC is based on neo-classical theory. The paper uses an extended version of the energy focused global CGE model that explain the interlinkages within the economy and the behavioral equations describe the effect of a price change on the interlinkages[6]. This new model allows more flexibility in the treatment of government savings and spending by removing the regional household of the standard GTAP model and replacing it with a separate government and multiple private households. The model also includes transfers between government and households and among household groups, remittances and foreign capital incomes, thus allowing assessment of policy impacts on different household groups and production factors within an economy of interest.

Database

To study the energy component of CPEC, two types of datasets are used in the study: the latest GTAP Power Database 9[7]. and the latest available Pakistan SAM 2010-11[8]. developed by International Food Policy Research Institute (IFPRI) under Pakistan Strategy Support Program. The newly available comprehensive GTAP Power database 9.0, which is the predominant database for global CGE analysis disaggregates the electricity sector into the following new sectors: transmission and distribution (T&D), nuclear, coal, gas, oil, hydroelectric, wind, solar, and other power technologies. Gas, oil, and hydroelectric power are further differentiated by load type: base and peak (henceforth designated by "BL" and "P" suffixes, respectively). The levelized input costs for each technology are estimated to be as close as possible to the original data, but consistent with the original GTAP 9 Data Base[9].

Results and Discussion

The simulation result based on energy focused commutable general equilibrium used in this study shows a positive change in real GDP (Changes in output measured at base prices) of Pakistan due to increase in energy generation. This increase in Real GDP is mainly due to increase in sectoral output and exports. In Monetary terms this percentage change in economy is equivalent to 1.1 Billion US dollar as presented in Table 1.

Table 1: Percent changes in Pakistan key macroeconomic variables (Constant 2011 Prices)

Variables	Monetary Change (Million US $)	
	5000 MW	10,400 MW (Extrapolated linearly)
Real GDP	1,161	2,414
Pakistan Exports	415	864

Source: Authors' Simulations

It is pertinent to mention here that improvement in energy supply via CPEC will boost Pakistan's waning indigenous industries such as textiles, agriculture and manufacturing and will increase the sectoral output. This increase output will have an overall positive impact on Pakistan Exports by US $ 415 Million (for 5000 MW) and if we extrapolate it linearly for 10,400 MW, then US $854 is expected. The increase in export can be manifold if other factors of production alongside energy are improved simultaneously. That is, the combined effect of factors of production and energy can be more than their simple summation.

Future study will focus on considering other factors such as connectivity improvement, measures under WTO Trade Facilitation Agreement (TFA)[10]. coupled with energy improvement to examine their impact on the country's economy especially on GDP and export.

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The BRI: A New Model of Prosperity

Dr. Shahid Rashid (Executive Director, CoE-CPEC)

The Belt and Road Initiative (BRI) is a major breakthrough for the entire world and especially to the under developing nations for achieving prosperity through connectivity, inclusivity and win-win for all. This new and inclusive concept of development and globalization has been reviewed by incumbent President Xi Jinping to attain holistic globalization – A win-win initiative which aims to connect Asia with Africa and Europe for the attainment of inclusive development of the regions and realization of the common destiny of the BRI countries and World at large.

The BRI has taken more than half of the world in its fold and many other countries are ready to be part of it for their respective progress.

In this article, my intention is to bring awareness about BRI through which President Xi-Jinping became the most popular leader after the great Mao Zedong.

Below are the major areas of BRI in the first tenure of President Xi Jinping:

- Enhancing the rule of law in China across the board and throughout the nation by standardizing the rules and regulations for implementation.
- Significant reduction in poverty from 7% in 2012 to around 2% in 2017.
- Deepening the reforms in various sectors especially in State Owned Enterprises (SOEs) to make them more profitable and to push forward sustained and healthy economic and social development through supply-side structural reforms.
- Modernization of National Defense has been well focused and a Chinese "force for peace" has played a vital role in terms of peacekeeping, exchanges and cooperation, and Joint training.
- Transforming China from economic power to a global emerging power by using an open-minded, respectful, and 'win-win' neighbourhood diplomacy and shifting from a contained and quiet response to global issues to progressive and proactive response.
- Structured and active promotion of BRI by President Xi to different countries including Pakistan to discuss and agree on different initiatives of BRI. The China Pakistan Economic Corridor (CPEC) is one of the example for which President Xi has honoured a historical visit to Pakistan in April 2015 and announced a $46 Billion for development of different growth sectors and is taking keen interest in CPEC which has helped it to transform from a pilot project into a flagship project of BRI.
- Continuous improvement strategy to enhance socialism with Chinese characteristics remained the focus for better destiny.
- Regular enhancement initiatives for the governance of the party including strict actions to attain the National Goals.
- Took strong action against corruption across the board and across the country.
- President Xi coined the term "Chinese Dream" as his contribution to the guiding ideology of the Communist Party of China. The emphasis on improving the livelihood of people of China by providing them better education, stable jobs, enhanced medical services and healthy environment supported the idea of a stronger China.
- Conduction of first BRI summit in May 2017 in which significant participation from the global leaders and representatives have well unfolded the initiative from dream to

The BRI has taken more than half of the world in its fold and many other countries are ready to be part of it for their respective progress.

reality.

Furthermore, China's neighbourhood diplomacy under the leadership of President Xi Jinping took a lot of international attention and appreciation because it was featuring exclusive relationship with the neighbouring countries. President Xi vividly elaborated the four-point feature of the proposal; amity, sincerity, mutual benefit, and inclusiveness. These four features impart a win-win and respectful impression which left no room to restraint for being apart. It is imperative to mention about China's development path since the implementation of "opening up" in 1979 because of the following reasons; (1) people-centric development was focused and such policy reforms have been taken to attract investment in the labour-intensive light engineering sectors in five special economic zones so that the local labourer could be employed and their livelihood could be improved; (2) continuous investment in the development of new growth sectors and Human skills set enhancement to carry forward the sustained growth in the then existing light engineering sectors but also in new and enhanced technology-oriented sectors; (3) reinvestment in environment enhancement initiatives so that besides development better living environment could be provided to the society; (4) becoming a signatory to World Trade Organization so that free trade could be carried out and global trades could be promoted; (5) development and compliance with the internationally accepted standards to meet and exceed the requirements of global markets and customers and ; (5) keen focus on the sustained development of human resource to leverage productivity and reduce the cost of production/services.

It is pertinent to mention that the development of China, since 1979 was like a miracle because it transformed the Chinese Society and Economy in such a way that around 800 million people were pulled out from poverty and per capita income has been increased from as low as $156/capita to a current high level of above $8000/capita on average. This has happened due to the adoption of right policies and proactive policy reforms regularly adopted based on the geo-economics and geopolitical dynamics. The high target and centenary goal of pulling out the whole Chinese population from poverty by 2019 are almost achieved. However, to make China a modernized socialist country by the centenary of Peoples Republic of China by 2049 is a challenge. To meet this challenge China has to play an active part in global governance and lead the World as global power so that the "hard work and mutual benefit" based approach could prevail and become the norm of a modern civilized world in contrary to the colony approach previous adopted by the West.

It is predicted that this century belongs to the East and as far as Asia is concerned a lot of opportunities and prospect for growth is present because its potentials are relatively untapped in most of the sectors like agriculture, manufacturing, services, environment and society. Some of the reasons are lack of Technology, Capital, Methods and Access to markets (TCMA) to "turn the wheel" sustainably. China, the Asian tigers and some of the South East Asian countries are good at the fulfilment of TCMA. Whereas, Central Asia, South Asia and Middle East may need support on TCMA.

Recommendations & Way Forward

The way forward could be to make a lot of "win-win joint ventures" under the umbrella of BRI so that untapped potentials and endowments of Asia could be tapped by using TCMA available with China and others and in a way move along on the path of prosper-

ous destiny.

The BRI summit held in May 2017 in China was a successful event towards the attainment of the goals in which the top leaders and representatives from different countries have participated. The BRI initiative is a prospective forum for global connectivity among different countries to work together to attain a common destination. However, following aspects could be considered to unfold BRI in a sustainable way. (1) China being the originator of BRI, may lead this initiative in the early harvest phase through soft branding, proactive promotion, bringing win-win solutions for the BRI countries in different sectors including agriculture, manufacturing, services, environment and social so that all the partners can gain the benefits from this and in medium to long run could own and advocate the initiative; (2) BRI Social Sector Support Fund" (BRI-SSSF) may be developed to leverage the soft image of BRI by uplifting the livelihood of the people across BRI routes and projects; (3) ease in visa policies across the regions connected through BRI where tourism can be promoted thus inviting foreigners every year. This will help promote tourism as well as cultural exchanges among different nations; (4) the workable mechanism for currency swap could be agreed between China and other countries to ease the bilateral trade and the bilateral dollar-based balance of payment issues for least developed countries of BRI; (5) BRI Forum of Think Tanks (BFTT) could be established to share the policy recommendations from each country which could help in creating policies for different sectors; (6) participation and performance-based approach to be taken so that the active performer of BRI could be given exemplary support through BRI so that others could be encouraged to participate and achieve better destiny and; (7) keeping in view the rise of China in all important sectors of the economy, military, and productive and disciplined population, China has to play a proactive role in International Arena to make the region and World at large a better and safe place to live for current and future generations. Multipolar world balance is required to be developed and Global diplomacy should be given full play in order to resolve issues at the table and restraint use of power in all of its forms across Globe.

Moreover, soft power is an important characteristic for any country to practice within and outside its territory to develop a balanced and soft image across the Globe. China could develop a comprehensive strategy and an implementation plan and resources could be committed accordingly to create and disseminate its soft image across the globe. There is a need to take more local and global Corporate Social Responsibility (CSR) initiatives to support the poor. Also, new methods for Global communication and information sharing is needed regarding Chinese neighbourhood diplomacy, Chinese inclusive developments and achievements, laws, rules and regulations, standards and compliances, promotion of sustainability, and enhancement of people livelihood.

In summation, this can be deduced that China being a rising star of the world has given a new economic model which has changed the dynamics of international economic policies. In the same vein, CPEC is a pilot project under the ambit of BRI and many countries are eagerly waiting to witness the success of this colossal economic transition that is going to change Pakistan's future through an inclusive approach. The world is a different place to live in, the more the cooperation, the more the success and progress, gone are the days of confrontation among states, this is the message of BRI and that must be truly realised for the community of shared destiny to flourish and prosper.

Proceedings of The Round Table Conference on

Cpec & Climate Change – Pakistan Towards A Climate Compatibale Paradigm

Dr. Saleem Janjua , Numra Asif and Adnan Khan
Policy Head, Urban Development & Research Team, CoE-CPEC

Conclusion

A Roundtable Conference (RTC) was hosted by Urban Development Division of Centre of Excellence - China Pakistan Economic Corridor (CoE-CPEC) with the title of "CPEC & Climate Change - Pakistan towards a Climate Compatible Paradigm", organized by Dr. Saleem Janjua, Head of Policy and his team members on Dec 20th, 2017. The RTC was a side event of the International Science - Policy Conference on Climate Change in Pakistan, which was arranged in collaboration with the Global Change Impact Studies Center (GCISC), Ministry of Climate Change, Islamabad. Researchers, climate change experts, policy makers, implementers, practitioners and scholars participated in this RTC. Some of the distinguished guests were as under:

- Dr.Tariq Banuri (Executive Director, Global Change Impact Studies Centre (GCISC)
- Dr. Shahid Rashid (Executive Director, CoE-CPEC)
- Dr. Saleem Janjua (Head of Policy, Urban Development Division, CoE-CPEC)
- Ms. Fauzia Bilqis Malik (Manager Islamabad Programme Office, International Union for Conservation of Nature (IUCN), Pakistan)
- Prof. Syed Ahmad Ali Shah (Director CESTaC, Fatima Jinnah Women University, Rawalpindi)
- Prof. Mazharul Alam (Regional Coordinator Climate Change, UNEP-Bangkok)

The key objective of the roundtable was to assess the current state of knowledge on the subject, identify data and research gaps, and provide guidance for future policy research on climate- related threats to the on-going and planned CPEC developments in Pakistan. The RTC was structured in the form of an open discussion amongst selected policy makers and experts, including international experts. The key points of the discussion are summarized as follows:

- Climate change is the defining challenge of our time. The resilience and sustainability of the modern world require that the key issues posed by the climate change are well addressed with suitable adaptation and mitigation strategies. Countries around the world are adopting measures and implementing policies to minimize the impact of climate change.
- Pakistan, despite being a low GHG emitting country, is being severely impacted by climate change for the last four decades. In Pakistan, out of the 15 recurring natural disasters, 13 were triggered by the changing climate. The impacts of recurrent floods, flash floods, glacier lake outburst floods, landslides, avalanches, drought, seawater intrusion and cyclones have resulted in significant damage to life, property, and natural eco-systems

as well as to the economy of the country.

- Some recent events that depict Pakistan's climate vulnerability include the localized cloud-bursts that caused urban flooding in Lahore (1996), Islamabad (2001) and Karachi (2009); history's worst drought in Tharparkar (1999-2002) and Cholistan (2014); heat waves during 2003, 2005, 2007 and 2010 (53.7 °C); and historically unprecedented cyclones in 1999, 2007 and 2010. Besides the loss of lives, these events also resulted in significant economic losses. The estimated damage caused by the 2010 floods alone was US$9.7 billion.
- Future climate vulnerability concerns for Pakistan include increased variability of monsoons, projected recession of HKH glaciers threatening flows, increased risks of extreme events (floods, droughts, cyclones, extreme high / low temperatures etc.), degradation of water and heat stressed conditions in arid and semi-arid regions leading to reduced agricultural productivity, increase in deforestation, loss of biodiversity, increased intrusion of saline water in the Indus delta due to sea level rise, and risk to mangroves and breeding grounds of fish etc.
- The China-Pakistan Economic Corridor, a framework of regional connectivity, is considered as a game changer both for Pakistan and China. The economic corridor is envisaged to carry massive development/ infrastructure work especially in the areas of energy, infrastructure and communications followed by the establishment of special economic zones (SEZs). The investment under CPEC is part of China's OBOR strategy, which includes the Silk Road Economic Belt and the 21st Century Maritime Silk Road. The completion of CPEC projects is expected to boost economic growth.
- However, this revival of economic growth through CPEC can be hampered by climate change, and climate vulnerability of Pakistan can also impact the development and economic activity under CPEC. Conversely, in the absence of ancillary policies or measures, CPEC projects could also contribute to the exacerbation of Pakistan's vulnerability to and impact upon climate change. As such, it is important to undertake a systematic and comprehensive review of the potential effects of climate change on planned investments and vice versa.

Recommendations

The conference concluded with an insightful discussion among speakers and delegates aimed at designing policies and recommendations to address climate change with respect to CPEC portfolio so that the development under CPEC is made climate-compatible and climate-resilient. A number of recommendations were made. Some of them are as follows.

- The usage of coal as a source of power generation is the need of time; however, the usage of latest technologies such as super-critical and ultra-super-critical technologies can significantly reduce emissions from the power plants being constructed under CPEC.
- Energy generation under CPEC is based on the usage of coal; however, a number of renewable energy projects also need to be planned and executed. The policy focus in near future should be on the planning, management and operation of renewable energy projects so that the energy mix of Pakistan includes a significant portion of clean energy.
- China has applied stringent environmental quality standards and is also implementing practical measures to protect the environment and ensure climate resilient development.

The need of the hour is that Pakistan may also follow the footprint of China and adopt guidelines from the international experience so that the climate-resilient development is ensured under CPEC.

- Under the Pakistan, Environmental Protection Act, 1997 / provincial environmental protection acts, it is mandatory to conduct EIAs of development projects. The same legislative requirement should also be followed for all CPEC projects with diligence both at federal and the provincial levels.
- Biodiversity assessments along CPEC alignments need to be initiated in coordination with the relevant Pakistani institutions.
- Consultative sessions with key stakeholders from research, academia, policymakers, civil society, the private sector and media and awareness raising through dialogues and seminars about the climate change issues along CPEC alignments should be conducted. It is imperative to support and intensify networks between civil society and other actors in the respective regions.
- National and local action plans may be developed to address CPEC specific issues related to pollution, environmental degradation, climate change and biodiversity loss.
- SEAs (Strategic Environmental Assessments) should be carried out for an analytical, participatory and integrated approach to environmental considerations into CPEC projects. This will help evaluate the inter-linkages of environment, economic and social considerations.
- There is a need for designating a central body to oversee the implementation of mitigated measures outlined in the EIAs / SEAs of CPEC projects.
- Identification of economic, environmental and social benefits of low carbon development should be carried out. Pakistan may avail carbon credits and set up a regional market for trading carbon credits.
- Baseline assessments of cross-border environmental pollution should be made on priority basis by the Climate Change Ministry and cases of compensation in terms of carbon credits may be taken up to the relevant international forums.
- CPEC energy projects may lead to an increase in Greenhouse Gas (GHG) emissions. Expected change in "GHG Inventory" over time needs to be carefully calculated, so that Pakistan may successfully comply with its international commitments.

Time to Dispel Negative Narratives of CPEC[1]

Yasir Masood (Deputy Director, Media and Publications, CoE-CPEC)

Since the idea of China-Pakistan Economic Corridor (CPEC) was first conceived till date, naysayers have directed quite a bit of criticism at this mammoth set of landmark projects. By the time Beijing hosted the 'Belt and Road Forum' in May 2017 much of that criticism began to implode, leaving behind a trail of far-fetched fears[2].

Despite the unflinching efforts on the part of the government, there is a plethora of disinformation spread out to sculpt and architect the people's opinion and narratives against CPEC. It is a matter of disgrace for few Pakistani naysayers who are joining the bandwagon of Indian-driven contrived misconceptions portraying CPEC as a fiction.

It is thoroughly admitted that criticism always paves the way for improvement in overall goodwill of society, which can always be taken into account. But unfortunately, our media instead of highlighting the miraculous achievement of CPEC's – energy galore and its innumerable benefits for Pakistan – has been finding and fabricating faults on the location of the routes and of different projects on the basis of "provincialism", a cold-blooded phenomenon, which emanates hate, rejection, and dejection amongst the related political segments. Simultaneously, some of them even without knowing the basics of economics have been ridiculing the total outlay of $63 billion of CPEC as a "debt-trap" – a carefully chosen term – coined by Indians which is repeatedly recited on their print, electronic and the social media to sabotage this colossal economic reality. It is no less than a pity when the spirit of nationalism is altogether overlooked by planting cleverly crooked and cooked arguments to maximize the hater amongst the people of Pakistan for vested political interests and cheap popularity. Surprisingly, Indian worries regarding CPEC seem bizarre as to why they are so concerned and feel panicky about CPEC, as they believe and propagate, that it is going to doom Pakistan's future. For this purpose, the Indians have already launched a massive media campaign on the international forum that the Chabahar seaport of Iran which is constructed with their technical and financial support will culminate the importance of Gwadar. More worrisome is that as revealed by the Chairman Joint Chiefs of Staff Committee (CJCSC) General Zubair Mehmood Hayat in November last year that Indian RAW has established a special cell at a cost of $500 million to sabotage the CPEC[3].

Although, it will remain a daunting task to turn people's negative perception into positives but certain facts and ground realities must constantly be highlighted, inculcated and hammered in the minds of the masses to such an extent that the purpose of propaganda campaigns are defeated and shunned there and then.

I, being an official and unofficial proponent of CPEC, feel tormented inside-out that our print and electronic media outlets are falling prey to the nefarious designs of Indo-US alliance and other international forces by following their footprints without finding the authentic sources of information and thus help a great deal in shaping and creating a negative perception in the minds of the masses.

Although, it will remain a daunting task to turn people's negative perception into positives but certain facts and ground realities must constantly be highlighted, inculcated and hammered in the minds of the masses to such an extent that the purpose of propaganda campaigns are defeated and shunned there and then.

To start with, the most suitable and pertinent response by a renowned Indian diplomat and a Congress politician, Mani Shankar Aiyar is worth mentioning – who gave a speech at Institute of Strategic Studies, Islamabad (ISSI) in February 2018[4]. He said that an Indian Ambassador told him that: "because of the CPEC Pakistan would sink in the water. He responded to the Ambassador then what is your worry if Pakistan would sink into the water". Undoubtedly, this is the most befitting response by an Indian intellectual to an Indian propagandist. Coincidently, this can also serve as a message to our home-grown critics who have an inclination to emulate Indian critics without analysing its adverse implications on the Pakistani people who have pinned high hopes from CPEC and therefore, damaging our national narrative and pride. The worst part is that the same views are then embraced by the Indian journos who then multiply and draw far-fetched sketches against CPEC and eventually disseminate these views around the world.

On our part, it must be reiterated that CPEC is going to transform Pakistan from the small economy into a bigger economy (25th largest by 2025 only seven years later and 20th by 2030)[5]. and by no means, this hard reality could be termed as a fiction or a debt trap. Only a seasoned economist can evaluate the difference between a foreign loan and investment and its impact on Pakistan's economy. Although, the fact of the matter is that out of $63 billion an estimated amount of $48 billion is in the form of investment in the commercial projects by the Chinese companies in Pakistan which has nothing to do with the latter's external debt liability. It is only around $15 billion that will come as a loan. To offset this loan liability let's take into account just two segments of CPEC benefits which is a testimony to prove that it will actually work as a debt-reliever and not a debt trap as falsely claimed.

As per estimates of the experts, Pakistan's existing transportation network is quite dilapidated and causing a huge loss of around 3.5 per cent of the country's annual GDP. Even as per conservative estimates the total GDP is now over $300 billion mark of which 3.5 per cent loss amount worked out to be around $10 billion. Improvement in the transportation network under CPEC arrangements will substantially lower down such losses, thereby reducing the burden of external payments for oil import and for procurement of spare parts to keep the existing transportation paraphernalia in running conditions. The other item will be earning an additional income of around $6 to $8 billion per annum against the toll tax recovery. The direct and indirect impact of these two additional revenue sources alone will be

much higher, when matched with the disbursement of loan and debt service liability to China and that too in a period stretched over 25-30 years and even more[6].

We must also not overlook that Gwadar Port and its allied infrastructure would also bring a "Sea change" in the Arabian Sea. CPEC is the China-led wind-fall change that would also strongly prevail on the ground from Gwadar to Kashgar and the surrounding regions and thus far the ground is being prepared to prove that it will alter the fate of this region in the near future.

Furthermore, recommendations for connecting Chabahar with Gwadar as a "Hub Port" are equally welcomed by both the Chinese and Pakistani governments. But the fact of the matter is that on completion the maximum capacity of Chabahar would be 10-12 million tons per annum as compared to Gwadar capacity of 300-400 million tons when it will attain full capacity in a few years. India has got 212 sea-ports that can hardly handle up to 500 million tons in a year[7]. The real concern behind the hostile campaign of India against Gwadar is that in near future it would outstrip many of India's operational ports because of its much greater water depth where gigantic ships would be anchored and docked. Moreover, Gwadar port will be connected with a mammoth network of roads and other infrastructures to China, and onwards to Central Asian Republics, Africa, Middle East, and Europe. Therefore, any comparison on account of economic considerations between Gwadar and Chabahar seems unrealistic.

There is no doubt that Centre of Excellence-CPEC (CoE-CPEC), CPEC Secretariat and Development and Communication (DEVCOM) project at the Ministry of Planning, Development & Reform and some other think tanks are working tirelessly in combating this false propaganda by highlighting and providing evidence-based information that how best CPEC is going to turn around Pakistan's fragile economy with quantum leaps. They deserve real acclamations for their splendid and untiring endeavours. But as disclosed in a recent survey conducted by Pakistan China Institute (PCI) in a study to "assess the perception and awareness of respondents with regards to various impacts and challenges that Pakistan will face in its association with the CPEC...the online survey to an extent reinforces the supposition that people are not at par with the reality of CPEC."[8].

Therefore, there is a dire need to seriously review and identify the shortcomings in our policies to suggest remedial measures to rectify the misperception concerning CPEC. Media is called a "two swords" agent, the negative side of its coin can have serious and drastic implications be it CPEC or otherwise. Keeping this in mind, CPEC opponents are effectively using all the media tools especially the social media to disrupt its benefits.

The prerequisite for the best use of various media forum is then, to plan and execute effective media teams that could efficiently publicise CPEC's reality at national and international fronts by formulating a "full spectrum" strategy that may consist of following recommendations: (i) to undertake evidence-based research work on CPEC; (ii) to engage all segments of media and academia to disseminate the importance of CPEC at national level to let the masses appreciate its trickle-down effects of uplifting the living standards of the common people of Pakistan; (iii) highlight the CPEC's role at the international arena to

attract more investors to invest in Pakistan; (iv) constitute a special team to professionally handle the social media which is the major source of both negative and positive information and can change the public opinion more swiftly than electronic and other print media forums; (v) select members, leading speakers, volunteers, donors, supporters, and stakeholders to help harness the targets devised by the proposed media cells/centers; (vi) making sure that the press releases regarding CPEC activities go out in time; (vii) create and train a group of writers to craft articles for the press with a given framework as to how best the CPEC cause is highlighted and the defaming campaigns are debunked and; (viii) articulate weekly newsletters, monthly, quarterly, bi-annual and annual magazines/journals with an inclusive distribution to the relevant stakeholders, academia, students, researchers, and business community etc.

To conclude, we as a nation must not forget that China has invested at a time when Pakistan was at the most critical juncture of its history because of energy shortfalls which had adversely affected the economy coupled with multifaceted challenges of extremism and terrorism. CPEC energy projects have almost ended the decade-long chronic electricity shortfall within 32 months. Many countries have achieved the progress and prosperity when they did away with the geo-strategic policies and focussed on geo-economic realities. Pakistan has remained or either compelled to remain under the fold of geo-strategic policies by the western powers one way or the other which has never paid off. Now, thankfully, the Chinese have helped us to realize the importance of geo-economic realities through the huge influx of FDI and CPEC that will define and decide the destiny of our generations[9]. Therefore, it is our moral, social and national obligation to serve and secure CPEC with all its manifestations.

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CPEC Updates

In this section readers will find many CPEC related projects update at a glance. All readers and in particular the Entrepreneurs will find it the most interesting section for investment purposes around different projects.

CPEC-Updates

The 7th JCC of CPEC, Islamabad

7th Joint Coordination Committee (JCC) meeting was held in Islamabad on 21st and 22nd November 2017. Around 150 high officials from Pakistan and China attended the meeting along with the Chief Ministers of all the provinces and regions and Prime Minister Azad Jammu & Kashmir (AJK). 7th JCC was of historical significance to finalize the Long-Term Plan (LTP) of CPEC project. The LTP will give new dimensions to bilateral cooperation between China and Pakistan. Establishment of special economic zones will also start after the 7th JCC, which is the hallmark of this project. Cooperation in industrial sector was ensured through transfer of technology, knowledge and skills to Pakistan.

Launching of CPEC Long Term Plan (LTP)

CPEC LTP has also been officially launched on 18th December 2017at the Ministry of Planning, Development and Reform in Islamabad, jointly by honourable Prof. Ahsan Iqbal Minister for Planning, Development and Reform and H.E. Mr. Yao Jing, Ambassador of People's Republic of China to Pakistan. The LTP provides a conceptual framework for CPEC. This is a national plan approved by both Chinese and Pakistani governments. It is effective untill 2030 and will provide macro guidance for implementation of CPEC. It includes a variety of key areas of cooperation between China and Pakistan namely: connectivity, energy, trade and industrial parks, tourism, agricultural development, poverty alleviation, people's livelihood, and financial cooperation.

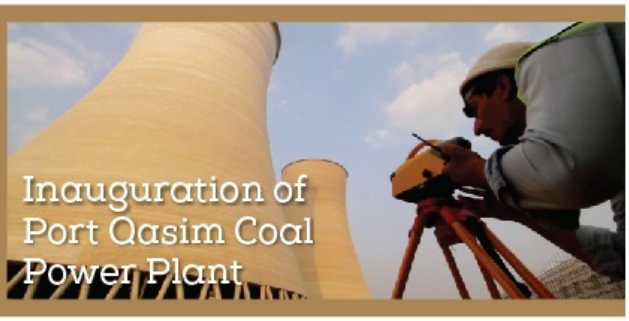
Inauguration of Gwadar Free Zone & Gwadar Expo-2018

Gwadar is a deep-sea port in the Arabian Sea on the mouth of Strait of Hormuz and its proximity with the Persian Gulf which holds 60 percent of world oil reserves. Gwadar port is a warm water deep sea port with huge potential of becoming a logistics, transshipment and transit axis not only for China but the rest of the region as well. Gwadar Port Authority (GPA) and China Overseas Ports Holding Company (COPHC) jointly organized the first ever international exhibition in Gwadar Free Zone on January 29 and 30, 2018. Gwadar Free Zone (phase-1) was also inaugurated on the occasion by Prime Minister of Pakistan, Shahid Khakan Abbasi. The expo was a mega event in Balochistan's history. it helped the exhibitors and participants to understand the real potential of Gwadar port. Moreover, more than 200 companies from both Pakistan and China in various sectors participated in the expo.

COPHC has started its commercial operations after the groundbreaking of 1st international commercial shipment from Gwadar to United Arab Emirates (UAE) by the world's 4th largest shipping company namely "China Ocean Shipping Company" (COSCO) on 7th March 2018.

The Sahiwal Coal Power Project is a supercritical coal power plant project located in the province of Punjab in Pakistan. It has an installed capacity of 1320 MW. It commenced full operations on 3rd July 2017. The plant is part of CPEC projects which was announced in April 2015. This project has been completed in a record period of 22 months.

The 1,320 megawatt Pakistan Port Qasim Power Project comprises two 660 megawatt supercritical coal power plants, one of which was inaugurated in November 2017 as part of the CPEC. The project is part of a group of 14 energy projects which fall under the fast-tracked "Early Harvest" program of CPEC.



CPEC Energy Projects

Project Name	Progress Update
2X660MW Coal-fired Power Plants at Port Qasim Karachi	• Financial Closed (FC) achieved. • Civil works on site started in May 2015. • Jetty completed. • Plant 2 months ahead of schedule. • Energization in October 2017. • Ist Unit Inagurated in November 2017. • Second Unit Commercial Operation Date April 25, 2018. • Project to be completed 67 days of schedule
Suki Kinari Hydropower Station, Naran,Khyber Pukhtunkhwa	• Financial Close achieved. • Land acquisition award announced on 17th Nov, 2016. • Construction work under way. • Commercial Operation Date (COD) 2020/2021.
Sahiwal 2x660MW Coal-fired Power Plant, Punjab	• Project Completed in 2017. • Project has been connected to National grid. • Current Status: Operational
Engro Thar Block II 2X330MW Coal fired Power Plant **TEL 1X330MW Mine Mouth Lignite Fired Power Project at Thar Block-II, Sindh, Pakistan** **ThalNova 1X330MW Mine Mouth Lignite Fired Power Project at Thar Block-II, Sindh, Pakistan**	• Financial Closed (FC) achieved in April, 2016. • Construction work in progress. • Construction of Transmission line-contract awarded. Contractor mobilized • Commercial Operation Date (COD) June, 2019.
Surface mine in block II of Thar Coal field, 3.8 million tons/year	• Financial close attained in April 2016. • IA/EA signed. • Mining work in progress • 3.8 metric tons per annum (MTPA) • 8.1 MMT overburden removed and depth of 72 /185 meters achieved. • COD expected December,2018

CPEC Energy Projects

Project Name	Progress Update
Hydro China Dawood 50MW Wind Farm(Gharo, Thatta)	• Financial Closed (FC) achieved on March 27, 2015. • Commercial Operation Date (COD) attained on 5th April, 2017. • Current Status: Operational (5th April 2017)
300MW Imported Coal Based Power Project at Gwadar, Pakistan	• PPIB issued LOI • Site finalized by CCCC • Section IV for land acquisition reprocessed by Deputy Commissioner for 200 acres • Environment report prepared by EMC consultant and submitted to EPA and GDA. GDA submitted comments on report to EPA. Need approval of Government of Balochistan.
Quaid-e-Azam 1000MW Solar Park (Bahawalpur) Quaid-e-Azam	• COD of 3 x 100 MW attained in August 2016.
UEP 100MW Wind Farm (Jhimpir, Thatta)	• Financial Closed (FC) achieved on March 30, 2015. • Commercial Operation Date (COD) attained on 16th June, 2017. • Current Status: Operational.
Sachal 50MW Wind Farm (Jhimpir, Thatta)	• Financial Closed (FC) achieved on December 18, 2015. • Commercial Operation Date (COD) attained 11 April, 2017. • Project Completed • Current Status: Operational (11 April 2017)

CPEC Energy Projects

Project Name	Progress Update
SSRL Thar Coal Block-I 6.8 mtpa & SEC Mine Mouth Power Plant (2X660MW)	• Financial Close of Plant and Mine second quarter of 2017. • Mine Commercial production is expected by 2019. • Plant Expected Commercial Operation Date (COD) 2018/2019.
Karot Hydropower Station	• Land acquisition award done. • Financial Close achieved on 22nd February 2017. • Construction of access road/bridge, concrete batching plant, diversion tunnel and spillway, etc. are in process. • Work initiated through equity – 25% civil works completed. • Commercial Operation Date (COD) 2020/2021.
Three Gorges Second Wind Power Project **Three Gorges Third Wind Power Project**	• LOS issued in August 2016. • EPA initialed on 30th Nov, 2016. • Construction activity already started from equity. • Financial Close March 2017. • COD September, 2018.
CPHGC 1,320MW Coal-fired Power Plant, Hub,Balochistan	• IA/ Power Purchase Agreement Signed on 25th January 2017 • LOS issued on 12th April 2016; 1st extension to LOS issued on 24th January 2017 • Ground breaking ceremony held on 21 March 2017 • Expected Commercial Operation Date (COD) 660 MW Dec 2018, 660 MW Aug 2019

CPEC Energy Projects

Project Name	Progress Update
Matiari to Lahore ±660kV HVDC Transmission Line Project	● Feasibility study completed. ● Tariff determined by NEPRA. ● TSA/IA initialed in December 2016. ● Land acquisition for converter stations at Lahore and Matiari completed. ● China Electric Power Equipment and Technology Company(CET) / State Grid nominated by Chinese side. ● COD expected in 2018 / 2019.
Matiari (Port Qasim) - Faisalabad Transmission Line Project	● Feasibility study completed ● Decision on tariff review petition announced by NEPRA ● COD expected in 2018 / 2019 ● TSA/IA initialed during 6th JCC ● China Electric Power Equipment and Technology Company(CET) / State Grid nominated by Chinese side
Thar Mine Mouth Oracle Power Plant (1320MW) & surface mine	● Feasibility stage tariff obtained for coal. ● Shareholding agreement on new equity partners in process. Under issuance of NTP/LOI

CPEC-Energy Actively Promoted Projects

Project Name	Progress Update
Kohala Hydel Project, AJK (1100 MW)	● Feasibility Study (stage-1) Tariff Announced by NEPRA. ● Land Acquisition process started. ● Environmental approval in process. ● Financial close planned in Dec 2017. ● Expected Commercial Operation Date (COD) 2023.
Rahimyar khan Imported Fuel Power Plant 1320 MW	● Project is listed as actively promoted project ● LOI by GoP issued

CPEC-Energy Actively Promoted Projects

Project Name	Progress Update
Cacho 50MW Wind Power Project (Sindh)	
Western Energy (Pvt.) Ltd. 50MW Wind Power Project (Sindh)	

CPEC-Potential Energy Projects

Project Name	Progress Update
Phandar Hydropower Station 80 MW Gilgit Baltistan	• Under review of experts from both sides.
Gilgit KIU Hydropower Station 100 MW Gilgit Baltistan	• Under review of experts from both sides.

CPEC Infrastructure Projects

Project Name	Progress Update
KKH Phase II (Thakot -Havelian Section) 120 KM	• Work commenced in September, 2016. • Contractor mobilized. • To be completed by March 2020. • Havelian- Abbotabad-Mansehra (39 KM) section will be completed by May, 2018
Peshawar-Karachi Motorway (Multan-Sukkur Section) 392 KM	• Construction works commenced in August, 2016. • Contractor mobilized. • 129 km Multan- Tranda M. Panah (Bahawalpur) section to be completed by mid of 2018. • 125 km Sukkur- Sadiqabad section to be completed by mid of 2018. • 04 out of 07 sections to be completed by mid of 2018. • Completion planned in August 2019.

CPEC Infrastructure Projects

Project Name	Progress Update
Khuzdar-Basima Road N-30 (110 km)	• Feasibility and PC-I completed • LOI forwarded to Chinese side • Procedural formalities to be completed shortly (ECNEC approved the projects in May 2017) • Frame Work Agreement shared with Chinese Side
Upgradation of D.I.Khan (Yarik) - Zhob, N-50 Phase-I (210 km)	• PC-I Approved by ECNEC on 12th April, 2017. • Land acquisition in Progress. • Frame work Agreement Forwarded to MOC.
KKH Thakot-Raikot N35 Remaining Portion (136 Km)	• Feasibility and PC-I completed • LOI forwarded to Chinese side • Procedural formalities to be completed shortly

Rail Sector Projects

Project Name	Progress Update
Expansion and Reconstruction of Existing Line ML-1 (1,872 KM) Highest Speed upto 140 KM/H	• Feasibility completed • Project to be put on fast track • Framework agreement signed in May 2017 • Project will be completed in 2 phases • Expected COD 2022
Havelian Dry port (450 M. Twenty-Foot Equivalent Units)	• Feasibility completed • Project to be put on fast track • Framework agreement signed in May 2017
Capacity Development of Pakistan Railways	• Focus groups be established for effective training and capacity enhancement

CPEC Gwadar Projects

Project Name	Progress Update
Gwadar East-Bay Expressway 6 Lane	• Cost approved by ECNEC • Ground breaking held on 22nd Nov, 2017 • Construction work under way • Completion planned in 2018
New Gwadar International Airport	• Design and work plan agreed • Grant Agreement signed in May 2017 • Construction work to start in 2018
Construction of Breakwaters	• Draft business plan has been received from Chinese (COPHCL), under review by MoP&S and GPA
Dredging of berthing areas & channels	• Draft business plan has been received from Chinese (COPHCL), under review by MoP&S and GPA • Draft MoU for joint Technical and Commercial Feasibility has also been Prepared and being vetted by concerned Ministries
Development of Free Zone	• Tax exemptions for port and Free Zone notified in Finance Bill 2016 • Ground breaking done by the Prime Minister • 100% private Investment inside Free Zone. To be operated by COPHCL • 1st phase completed and innaugurated in Jan 2018. • Significant progress and response from investors • Gwadar Free Zone investment guide line published • First Gwadar Expo was held in Jan, 2018 • A number of industries to start construction work soon.

CPEC Gwadar Projects

Project Name	Progress Update
Necessary Facilities of Fresh Water Treatment, Water Supply and Distribution	• PC-I for 5 MGD RO plant for Gwadar cleared by CDWP • Phase-1, lying of pipelines from Swad Dam to Gwadar is near complition. • Desalination plant establishment on BOT is floated
Pak China Friendship Hospital	• Grant request sent by EAD to MOFCOM • Feasibility study completed by Chinese team to add 100 beds from existing 50, for subsequent extension to 300 beds • LOE is signed in April 2018.
Technical and Vocational Institute at Gwadar	• Technical feasibility is conducted. • LOE is signed in April 2018.
Gwadar Smart Port City Master Plan	• MoU signed in Nov 2015 • LOE signed in August 2015 • Chinese Fourth Harbour Design Institute has been nominated for Gwadar Smart City Plan • Contract Signed in May 2017 • Completion planned in August 2018
Bao Steel Park, petrochemicals, stainless steel and other industries in Gwadar	• Necessary approval process would be completed at the earliest for inclusion as new CPEC Project under Gwadar JWG
Development of Gwadar University (Social Sector Development)	• Chinese side will identify a leading Chinese university for collaboration with University of Gwadar on marine & maritime related subjects along with other disciplines
Gwadar livelihood Project	• Upgradation and development of fishing, boat making and maintenance services to protect and promote livelihoods of local population. • COPHCL would take effective measures for social sector development

CPEC Others Projects

Project Name	Progress Update
Cross Border Optical Fiber Cable	● Ground breaking cermony performed by the Prime Minister ● Work commenced October 2015 ● Work on 450km/ 820km segment completed ● Expected Completion Dec 2018
Pilot Project of Digital Terrestrial Multimedia Broadcast (DTMB)	● Project completed. ● Demonstration project with Chinese side is being processed. ● PC1 of Demonstration Project is approved by CDWP on May 02, 2018.
Early Warning System (EWS), Pakistan Meteorological Department	● PC-I for CPEC is being revised in light of CDWP observations ● Planning Division allocated EWS (unapproved project), Rs. 100.00 million for PSDP Projects 2017-18 ● EWS stands split between CPEC and World Bank ● Work is at advance stage with World Bank ● The components don't overlap ● System will be integrated to draw maximum benefit

CPEC Rail Based Mass Trasit Projects

Project Name	Progress Update
Karachi Circular Railway	● JCC agreed in principal for inclusion of Mass Transit System as part of CPEC component. ● Transport Working Group has been asked to work on the projects based further studies and consultation. ● Feasibility of Karachi Circular Railways completed in May 2017. ● Ground breaking is expected in 2018.

CPEC Rail Based Mass Trasit Projects

Project Name	Progress Update
Greater Peshawar Region Mass Transit	• JCC agreed in principal for inclusion of Mass Transit System as part of CPEC component. • Transport Working Group has been asked to work on the projects based further studies and consultation. • Feasibility of Greater Peshawar Region Mass Transit is under process.
Quetta Mass Transit	• JCC agreed in principal for inclusion of Rail Based Mass Transit Systems in Provincial headquarters as part of CPEC. • JWG on Transport Infrastructure has been asked to complete the necessary formalities. • Feasibility of Quetta Mass Transit is under process.
Orange Line - Lahore	• Constructin work is under way. • Project will be completed 2018.

CPEC New Provincial Projects

Project Name	Progress Update
Keti Bunder Sea Port Development Project (Sindh)	• Further studies and consultations to be initiated • Projects referred to concerned JWGs for consideration

CPEC New Provincial Projects

Project Name	Progress Update
Naukundi-Mashkhel-Panjgur Road Project Connecting with M-8 & N-85	• Further studies and consultations to be initiated • Projects referred to concerned JWGs for consideration
Chitral CPEC link road from Gilgit, Shandor, Chitral to Chakdara	• Further studies and consultations to be initiated • Projects referred to concerned JWGs for consideration • Planing PC1 Preparation under way
Mirpur - Muzaffarabad - Mansehra Road Construction for Connectivity with CPEC Route	• Further studies and consultations to be initiated • Projects referred to concerned JWGs for consideration • Approval of PC1 in Process
Quetta Water Supply Scheme from Pat Feeder Canal, Balochistan	• Relevant Provincial Govts. to work out proposals on implementation of projects
Iron Ore Mining, Processing & Steel Mills Complex at Chiniot, Punjab	• Relevant Provincial Govts. to work out proposals on implementation of projects

CPEC Proposed Special Economic Zones (SEZs)

Project Name	Progress Update
Rashakai Economic Zone , M-1, Nowshera	• Feasibility studies of SEZs is shared with Chinese side.
China Special Economic Zone Dhabeji	• Feasibility studies of SEZs is shared with Chinese side.
Bostan Industrial Zone	• Feasibility studies of SEZs is shared with Chinese side.

CPEC Proposed Special Economic Zones (SEZs)

Project Name	Progress Update
Allama Iqbal Industrial City (M3), Faisalabad	Feasibility studies of SEZs is shared with Chinese side.
ICT Model Industrial Zone, Islamabad	Feasibility studies of SEZs is shared with Chinese side.
Development of Industrial Park on Pakistan Steel Mills Land at Port Qasim Near Karachi	Feasibility studies of SEZs is shared with Chinese side.
Special Economic Zone at Mirpur, AJK	Feasibility studies of SEZs is shared with Chinese side.
Mohmand Marble City	Feasibility studies of SEZs is shared with Chinese side.
Moqpondass SEZ Gilgit-Baltistan	Feasibility studies of SEZs is shared with Chinese side.

CPEC Social Sector Development

Project Name	Progress Update
People to People Exchanges	Efforts for intensification of People to People contact, media and cultural exchanges (including movies, drama, theatre etc.) would be done through agreed yearly programmes. Both sides resolved to promote Chinese and Pakistani culture and heritage as a way of long term partnership

CPEC Social Sector Development

Project Name	Progress Update
Transfer of Knowledge in Different Sectors	Experts from industrial zones, rural and urban development, job creation & SMEs, water resources management & treatment and agriculture. Training workshops on industrial zone held from 11-18th October 2017.
Establishment of Pakistan Academy of Social Sciences	Efforts to being made for establishment of PASS with the Chinese Academy for Social Sciences. HEC has been made focal agency on Pakistan and consultative process has commenced.
Transfer of Knowledge in Education Sector through Consortium of Business Schools	Consortium of Top Business Schools from Chinese and Pakistan Side established. HEC is leading the Project.

CPEC Opportunities

This section elaborate the current and future opportunities associated with CPEC for Different sectors and segments of the society.

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CPEC Opportunities

SMEs and Business Entrepreneurs

The small and medium enterprise (SMEs) can be considered as the industrial and enterprising foundation of Pakistan. Around 90% of the existing enterprising can be classified as SMEs which accounts for over 3.2 million enterprises. These are contributing to over 80% of non-agriculture work force, 40% to the annual GDP and contribute 35% in the value addition. Contrary to the importance of SMEs, these are lacking in financial and other resources; scarcity of working capital, lack of educated manpower, shortfall of research and development capabilities, limited access to new technologies & practices, lack of branding, marketing and communication skills. On the other hand, the CPEC is bringing a lot of opportunities in different sectors including; energy (electricity generation and transmission, oil and gas exploration and distribution), infrastructure (road, rail, sea, aviation, pipelines, ICT parks and enterprising), real estate, Gwadar Port and Smart Port city ad Industrial Parks development and management, trade, agriculture, tourism, financing and people to people linkages. SMEs due to its aforementioned limitations are not able to strongly link with the CPEC projects and prospects. Keeping in view the mentioned scenario, there is an urgent need for business entrepreneurs to understand the CPEC needs and opportunities and fulfill these through our SMEs.

Tourism

Pakistan has been blessed with a lot of tourism opportunities across the country. Some of the prerequisites for promotion of tourism are: security, connectivity (road / rail / aviation, telecommunication/3G/4G), facilitation (boarding, lodging, services), sites development, branding and marketing. After the inception of CPEC, most of the aforementioned pre - requisites have been addressed including improvement in security situation, connectivity and energy related services. However, facilitation and sites development and promotion are the potential areas for private sector to focus upon various CPEC routes and axis. Following are some of the options:

- Eco Tourism – In GB, Northern KPK and AJK
- Cultural Tourism – In Central KPK, all across Punjab and Sind
- Desert Tourism – Balochistan and Eastern Sindh
- Agricultural Tourism – Punjab and Sindh
- Costal Tourism – Southern Balochistan and Southern Sindh.

CPEC Opportunities

HRD and Recruitment Agencies

CPEC is an inclusive initiative and its projects are carried out across all the different provinces and the regions in various sectors; energy (electricity generation and transmission, oil and gas exploration and production), infrastructure (road, rail, sea, aviation, pipelines, ICT parks and enterprising), Gwadar Port and Smart Port city, Industrial Parks development and management. Also agriculture, tourism, financing and people to people linkages are on key cooperation agenda. Recruitment agencies can scale up their capacity, identify the skills gap in Pakistan for the aforementioned sectors and fill the gap in consultation with the general constructor or vendors carrying out the projects.

Media & Film Industry

CPEC is talk of the town in Pakistan and seek wide attention in China and abroad. The CPEC routes and axis are passing through beautiful scenic regions of Pakistan and China. It includes beautiful valleys of Xinjiang Autonomous region. The world's highest Khunjerab border pass and highest peaks of Himalayas, long tunnels and blue water lakes, all the way spanning through Pakistan up to the virgin beaches at Gwadar. There exist a huge potential for development and communication of media documentaries and joint production of China Pakistan films to promote understanding of cultures of both the countries and in a way support entertainment and peaceful coexistence.

Agriculture-Based Research Collaboration

China is keen to establish collaborative research centers focussing particularly on agriculture and seed sector of Pakistan. Agriculture is the most important sector of Pakistan and accounts 19.53% of GDP and the employed bulk of the total employed up to 50% workforce. It has recorded a growth of 3.46% in the year 2017 (economic survey 2016-17). A collaborative research between China and Pakistan would help to enhance productivity and add value in the agriculture sector of Pakistan. It would open new avenues of growth in Pakistan and would positively affect the lives of people by providing better jobs to the masses. It carries more prospects for all the stakeholders working in the agriculture value chain from seed to market and boost agricultural exports.

CPEC Opportunities

Marine Aquaculture in Gwadar

Fishing is the most prominent economic activity along the coastline of Gwadar district, contributing to employment, income generation and export revenues for the locals. Almost half of the population is either directly or indirectly involved in the fishing industry and about one-fourth of the total fish caught in Pakistan is from Gwadar. Gwadar has immense potential for the development of coastal aquaculture for fish farming. Development of aquaculture could be expected to provide significant direct employment for the locals and exports of fresh fish and shrimp through Gwadar to the Middle East and frozen bulk product to China, Japan, Vietnam and Far East. It will promote further development of feed production, packaging and export processing industries in and around Gwadar. Moreover, this will attract investment for the development of canning industry in Gwadar which will ease the pressure on Karachi port as the advanced processing of fish caught from Gwadar is being done in Karachi right now. Development of these industries would not only timely meet domestic demands but boost export of fish and fish products to many countries of Europe, Middle and the Far East.

Islamic Banking and Financing

CPEC connects through 27 Muslim counties of Asia and Africa. Hence, the significance of Islamic Finance cannot be ignored. The Islamic Finance is a vehicle for long-term development with enormous potential that has not yet been fully explored in Pakistan. The global Islamic Finance industry has reached a size of over US$ 2 trillion. A critical area where Islamic banks can use Islamic Financing in adjusting the risk-sharing structure of these projects. Regulation, Taxation, Capital Markets and Awareness are the four main sub-committees of the Implementation Committee for Islamic Finance. Islamic financing could be promoted under CPEC for inclusive development of the region.

Social Entrepreneurs

CPEC is considered as an initiative of livelihood improvement of the people of Pakistan and China especially in the deprived regions. To achieve the said consideration a strong social entrepreneurial community is required across the country to support the ongoing developments across the country. Suggest ways and means to policy makers to make these sustainable, initiate small interventions to connect the fruits of projects with the societies and accordingly communicate the proceedings through different mediums to leverage true narrative of CPEC.

CPEC Opportunities

Prospects for Industrialists, and Business Community

CPEC offers great socio-economic opportunities in the form of Gwadar Free Port (Warm water deep sea port at the apex of trade intensive the Arabian Sea), Regional Connectivity (CPEC connecting China to Central Asia, South Asia and Middle East) and Investment Friendly Environment i.e. one window operation in nine priority Special Economic Zones (SEZs) across the country. Moreover, investment under CPEC is the biggest overseas investment by China so far which will help Pakistan economy grow and become stronger. The CPEC project portfolio will be a confidence booster and attract investments especially in the SEZs planned in the framework of the initiative.

The SEZs promote industrialization and economic growth through sustainable development. SEZs and Industrial Parks under CPEC provide business opportunities to Small and Medium Enterprises (SMEs) in the country. Chinese are investing in the whole world and are relocating its industry which is their "Go Global" strategy and therefore views Pakistan as a potential and strategically located country to relocate their industry for shared cooperation.

SEZs will help the country to meet global competitiveness challenges by:

- Creating industrial clusters having world class infrastructure.
- Providing investor facilitation to enhance productivity.
- Reducing cost of doing business.
- Generating employment.
- Reducing poverty.
- Enhancing exports.
- Providing investment opportunities for local and overseas Pakistanis and International Investors

Real Estate Sector Development in Gawadar and across CPEC Routs & Axis

Pakistan has a strong real estate market and has achieved a high growth rate in previous years. The high growth rate is attributed to robust demand from seasonal investors, genuine buyers, and better security situation in Pakistan. This trend has been supported by the developments under CPEC with property prices rising by nearly 70% in Gwadar. Also, Balochistan's government has introduced a new state of the art housing schemes to stir up real estate activity in the area. With the CPEC project taking shape in years to come, property prices are further expected to increase especially along the routes and its various axis. This will boost the real estate market by building investor confidence, which will result in accelerating the economic activity.

CPEC Opportunities

Commercial Banking

Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs-- transactions, payments, savings, credit, and insurance that delivered in a responsible and sustainable way" (World Bank). New International commercial banks are shifting to Pakistan. It is a good omen that the Bank of China has established its branch in Pakistan. It would bring new and modern financial products which will support and upgrade the existing financial system.

Private Stakeholders of ICMA and ACCA Educators

Services sector of Pakistan grew by 5.98% and accounted a share of 59.59% in GDP of Pakistan (economic survey, 2016-17). Financial and accounting services carry a great potential to expand and grow. We have certified organizations and certified education system in Pakistan (CA, ACCA and ICMA etc.). These services will have more potential in the near future. Accounts and Financial Associations like ICAP, ICMA, etc. need to work jointly with other countries to ease the movement of certified professionals in and out from Pakistan.

This would be another potential area which will increase the job numbers in Pakistan and ultimately the quality of life.

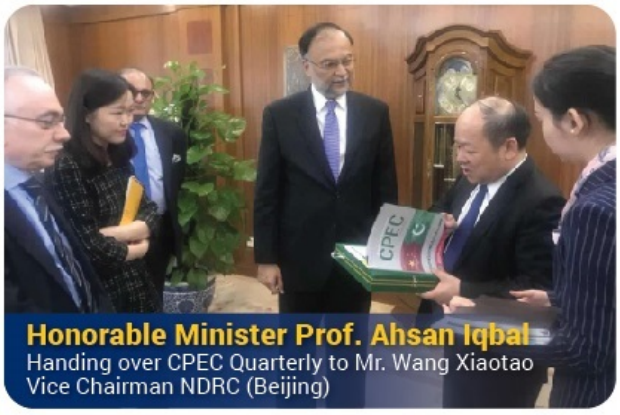
Research Think Tanks and HEIs

CPEC is a long term multi sectorial portfolio hence the role of research and support of Think Tanks and higher education institutes (HEIs) working across Pakistan and China is inevitable to make CPEC a long term sustainable initiative. Evidence based research and policy recommendations about the seven key cooperation areas mentioned in the CPEC long term plan are required by the policy makers. The centre of excellence for CPEC, PIDE, MoPDR being the official thank tank on CPEC (cpec-centre.pk) would be happy to receive the research and share it to the relevant convener of the joint working groups (JWGs) of CPEC.

CoE Activities

This section is solely dedicated to exhibit the Centre of Excellence-China-Pakistan Economic Corridor (CoE-CPEC) indoor and outdoor official visits, RTCs, MoUs, delegation visits, and presentations etc.

Launching Ceremony
of CPEC Quarterly & CoE Website



Honorable Minister Prof. Ahsan Iqbal
Handing over CPEC Quarterly to Mr. Wang Xiaotao
Vice Chairman NDRC (Beijing)

Dr. Shahid Rashid Executive Director
Presenting CPEC Quarterly to Honorable Ms. Raheela Durrani,
Speaker Balochistan Assembly (Quetta)

Gwadar Expo 2018
29th - 30th January

1st Steering Committee Meeting of CoE CPEC (MoPDR)

Workshop on Measuring Socio-Economic Impacts of CPEC (PIDE)

2nd Research Advisory Committee Meeting of CoE (PIDE)

CPEC Think & Grow Summit on March 31st, 2018 (PITAC, Lahore)

Media Delegation Visited CoE

Delegation JIANGSU University Visited CoE

Delegation From Jinan City of China Visited CoE

MoU Signing Ceremony Between CoE-CPEC and SBBWU (Peshawar)

MoU Signing Ceremony Between CoE-CPEC and Buitems (Quetta)

MoU Signing Ceremony Between CoE-CPEC and GCISC, Ministry of Climate Change

Articles Submission Guidelines

Writers who have an interest in the CPEC are invited to contribute to the **CPEC Quarterly Magazine.**

CPEC Quarterly Magazine is a publication of Centre of Excellence for China-Pakistan Economic Corridor (CoE-CPEC), Islamabad. The magazine encompasses into different sections to facilitate all the relevant quarters and stakeholders of CPEC. The Reader's Corner of the magazine in particular is aimed at dissemination of evidence-based information and policy recommendations/ projections regarding CPEC with all its manifestation. The main focus of our research-based articles is banked on six thematic areas which are available on our website. Other than that contributors are encouraged to come up with the new facets of CPEC related articles with the tangible source of information. The whole concept of 'Belt and Road Initiative' in connection to CPEC can also be accommodated in the magazine. The selection of articles will be based on topicality, originality, clarity, the extent to which they advance knowledge, understanding and application and their likely contribution towards inspiring further development, research and debate. If the write-ups are not slotted in the upcoming edition, it will be queued for the next issue. The authors will be notified, in case of acceptance or rejection of their contribution.

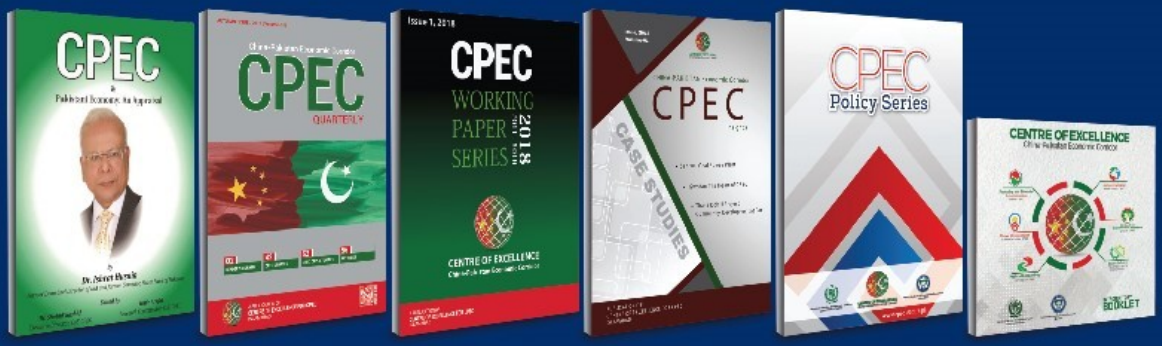
Please Note:

- Manuscripts emailed to CoE-CPEC for publication should contain between 1,000 and 2500 words including automated footnotes in Microsoft Word (in Chicago Manual format).
- Authors are requested to use English spellings and not American.
- Tables for the main text and each of its appendices should be numbered serially and separately.
- The source of the data in a table should be given in a footnote immediately below the table.
- Article footnotes should be numbered consecutively.
- Only previously unpublished works will be accepted and copyright will be assigned to CoE-CPEC.
- Permission to use copyright material submitted to us will be the responsibility of the author.

Email us your research articles in accordance with the aforementioned guidelines at:

editor@cpec-centre.pk

Other Publications of CoE-CPEC



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Government of Pakistan

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