



CENTRE OF EXCELLENCE
China-Pakistan Economic Corridor

**THE IMPACT OF CPEC & RELATED
ROAD INFRASTRUCTURE PROJECTS
ON EMPLOYMENT**

Muhammad Muzammil Zia
*Acting Policy Head Job Growth & HRD
Centre of Excellence CPEC*

Shuja Waqar
*Research Assistant, Job Growth & HRD
Centre of Excellence CPEC*



**Ministry of Planning
Development & Reform**

Editorial Committee

Dr. Shahid Rasheed	<i>Head</i>
Dr. Talat Anwar	<i>Member</i>
Syed Adnan Shah	<i>Secretary</i>

Statements, facts and opinions mentioned in CoE CPEC Working Paper are solely of the author and do not imply the official policy of the Institution, Editors and Publisher.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means—electronic, mechanical, photocopying, recording or otherwise—without prior permission of Centre of Excellence for CPEC

Centre of Excellence for CPEC

Email: info@cpec-centre.pk

Website: <https://cpec-centre.pk/>

The Impact of CPEC and Related Road Infrastructure Projects on Employment

Abstract

The role of infrastructure in economic development is of immense importance. Initial Infrastructure investment under China Pakistan Economic Corridor is US \$ 13.58 billion out of US \$ 46 billion. Our study has estimated the number of direct employment generated through CPEC and related infrastructure projects. The study also calculates the number of Chinese and Pakistani human resource hired on these projects. The primary data was gathered from six road projects through questionnaires which were filled by the project implementers. These projects are not only providing employment to locals but also enhancing the capacity of local human resource. The results show that approximately 40,000 direct jobs have been created through six CPEC and related road infrastructure projects. The average ratio of employment of Chinese to Pakistani is 1:18. Furthermore the outcome of this study negates the impression that all the Chinese are getting the employment in CPEC projects.

JEL Classification: H54, O18, E24, J21

Key Words: *Employment, FDI, Infrastructure, Investment*

Introduction:

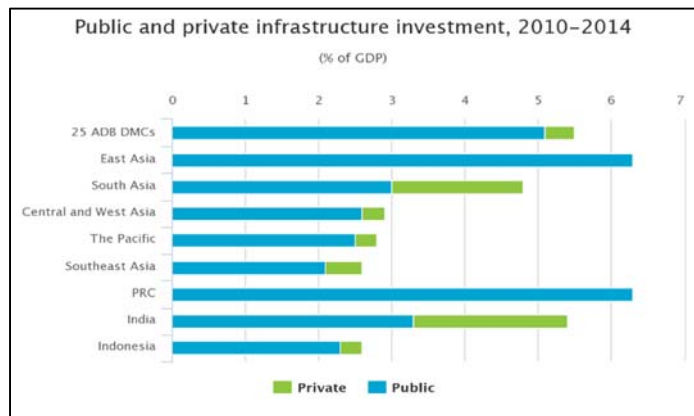
The fruits of globalization are innumerable. It squeezes long distances between countries, breaks down the borders of nations, consequently, transforms this big world into a small village. A substantial and considerable trend observed in the twenty-first century economies is an increasing interlinkages 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 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 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 favorable in attracting a decent amount of investment in the countries. Consequently, infrastructure is not the result and end conclusion of economic activity rather it is a framework which makes economic activities possible.

In other words, infrastructure effects the society from 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 a broad concept of infrastructure, road connectivity holds great importance, as economic growth in modern times is simply by “getting people connected”. The worth and significance of virtual connectivity with the new communication avenues cannot be overemphasized but still a good and reliable road network remains vital, as it is considered as the only mean to physically receive the desired product. The evidences suggest that road network helps in providing employment, facilitates the intercommunity migration and trade, improves physical and human productivity and hence, alleviates poverty. An important appealing structural

change of building road connectivity is the installation and construction of industrial units in small towns and many new towns has come into existence.

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 percent of the region's investment. Figure 1 illustrates the percentage share of public and private sector in the investment of infrastructure. However, the private sector of India is well aware of the advantages inherent in improving infrastructure, therefore a substantial amount of investment is managed by its private sector.

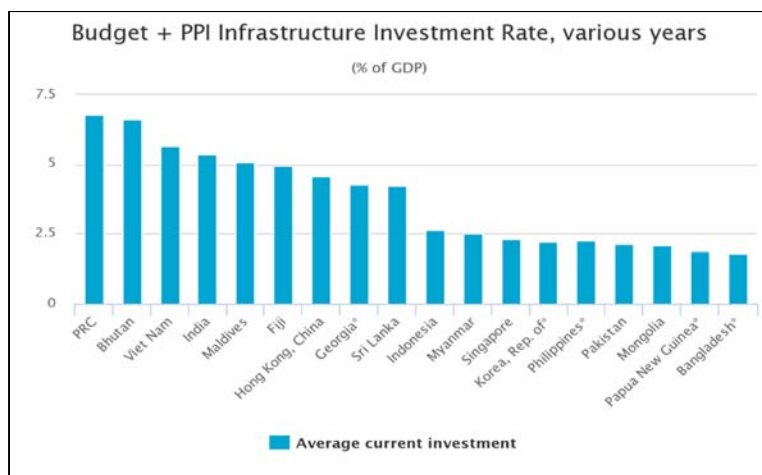
Figure 1 Public and Private Investment



Source: Asian Development Bank

The People's Republic of China (PRC) is well-known in large infrastructure investment which averaged 6.8 percent of GDP from 2010 till 2014. Bhutan, on the other hand, which is considered as a small nation is the second top country investing 6.62 percent on average on infrastructure. While Pakistan has still took little notice upon it and invested only 2.4 percent to GDP on average, for enhancing its infrastructure which is even less than Myanmar and Indonesia. Whereas Bangladesh occupies the last position against its counterpart countries investing only 1.79 percent of GDP into its infrastructure which certainly is alarming for the prosperity of the region, especially when a noteworthy revolutionary transition of Bangladesh is under process, as the whole nation economy is seeking to transform itself into EPZ, consequently, the relevance of EPZ in Bangladesh will gradually diminish. But its investment in infrastructure on the other hand, is negligible, which is a core reason in achieving the maximum benefit of EPZs. Figure 2 captures this picture in a precise manner.

Figure 2 Infrastructure Investment rate to GDP



Source: Asian Development Bank

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 were US\$ 480 billion generating the investment gap of US\$ 124 billion. This discussion is summarized in figure 3 explaining the required investment and the actual investment as well as the gap vacant.

As discussed earlier, infrastructure effects the society in two main dimensions, economically and socially. The present study strives to specifically focus upon that dimension which positively effects the employment and the job market. In this association, the strongest effect observed which transmits the benefits of infrastructure into the economy through the channel of economical aspect is the inflow of FDI resulting in construction of SEZs which are intended to create an

immense number of jobs in the market. Increased employment improves the conditions for economic growth which is the only way through to reduce poverty from the economy. Therefore, we can broadly state that if the infrastructure projects are handled eminently, the productivity will not only raise the GDP growth of the economy but will also escalate the overall welfare/happiness of the society for relatively a long period of time.

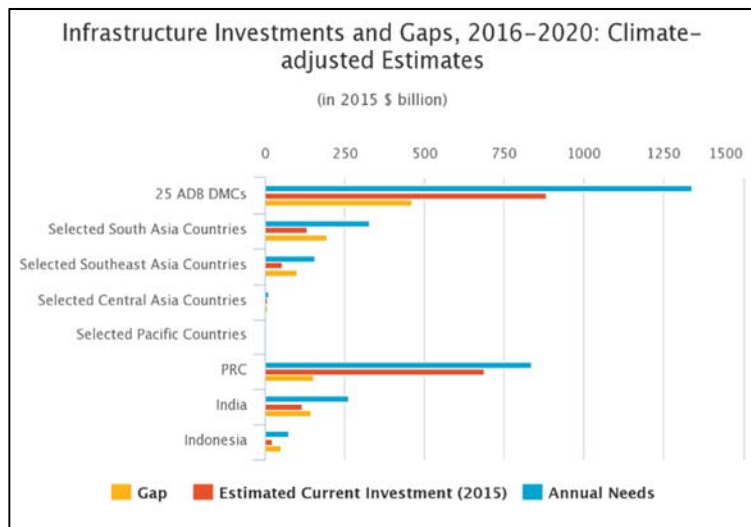
In case of Pakistan, the China Pakistan Economic Corridor (CPEC) is the best presentable example which connects China to Central Asia, West Asia and parts of South Asia. Apart from construction of infrastructure in terms of transportation, the major part of this scheme comprises a number of projects related to energy as well as industrial sectors. The total investment put forward to make the projects functioning under CPEC is more than US\$ 45 billion, from which 30 percent (US\$ 13.58 billion) of the investment is attributed towards the construction of infrastructure.

Currently 6 road infrastructure projects are under construction in throughout different regions of Pakistan. These include the KKH Phase II (Thakot-Havelian Section) located in Gilgit Baltistan and KPK, 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 between Peshawar and Baluchistan, the remaining portion of KKH Thakot-Raikot N35 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 labors with respect to nationality.

Literature Review

The economic impact of infrastructure has been crucially analyzed in a bulk of studies since last two decades on academic and on parliamentarian level. Infrastructure provides grounds in order to upsurge the development of a country by creating positive externalities especially for the

Figure 3 Infrastructure Investments and Gaps



Source: Asian Development Bank

industrial sector which helps them in enhancing its productivity and therefore contributing in the well-being of households. Keeping this in view domestic or foreign investors are more focused towards the development strategies of a country which essentially includes the percentage share of investment in infrastructure. In this manner the failure in achieving adequate growth and development inherent in the lack of favorable infrastructure for which many examples exists.

The OECD countries along with its massive oil production, during 1970s and 1980s experienced deteriorating growth in GDP due to the negligence of the policy makers towards the development of infrastructure. While on the other hand, less developed European Union countries including

Figure 4 Peshawar-Karachi Motorway (Lahore-AbdulHakeem Section)



Source: <https://www.mansoor.com.pk/projects/project/33>

Spain, Greece, Portugal and Ireland, in the same time period persuaded strategies and policies on projects regarding public infrastructure investment at large which consequently helped the European countries to raise their GDP growth. However, in case of Africa, the whole continent has pushed itself into the swamp of poverty because of the absence of infrastructure.

In this regard the report of World Bank FY2012-2015 concentrating on the infrastructure has signified the

impact of infrastructure and provided evidences of transformation of countries through this phenomenon. For instance, the electrification program launched in the rural area of South Africa have increased the employment rate of women by nearly 10 percent within 5 years without effecting the jobs of male. Same is the case of Indonesia where the common individuals were deprived from access due to inadequate infrastructure. Only the access to electricity has significantly increased the employment of domestic labors shifting their standards of living upwards. Currently the region is more focused towards the provision and access of water and sanitation, energy, and transportation. The action plan of the Bank is giving huge considerations towards a broader phenomenon “infrastructure”, to tackle down the global issues and concerns like employment, poverty, human resource development, health, education etc.

Estache and Garsous (2012), discussed the argument of International Labour Organization (ILO) that the provision of infrastructure in poor countries can offer numerous incentives to the destitute in form of employment and standard of living. Studies regarding the provision of employment from the renewable energy aspect of infrastructure illustrates satisfactory potentials of job creation. Wei et al. (2010), is observed as a pioneer study in this respect. They argue that the total number of jobs-years per GWh range from as high as 1.4 for solar PV (0.87 on average) to as little as 0.11 for gas or coal.

Similar figures have been drawn from the road connectivity aspect of infrastructure as argued by ILO (2011) if labor intensive road construction is promoted. This ensures creation of twice the numbers of jobs in contrary with the capital-intensive road construction. In a recent report of World Bank (2012), focusing on the employment generated under MENA infrastructure projects including the construction and services has documented one fifth of the regional workforce equivalent to 18.2 million people, from which 7.5 million are involved into the infrastructure projects. The study presents that every one billion of US\$ if specifically invested into the infrastructure generates the potential to create 110,000 infrastructure associated jobs in oil importing countries, 26,000 jobs in Gulf Cooperation Council (GCC) and 49,000 jobs in oil exporting countries. In this manner, the direct jobs under this investment can constitute 2.0 million jobs and 2.5 million infrastructure related jobs.

The overall sketch of the literature on capturing the effect of infrastructure on the employment summarizes some effective discussion.

Figure 5 KKH Phase-II (Thakot-Havelian Section)



<https://www.mansoor.com.pk/projects/project/39>

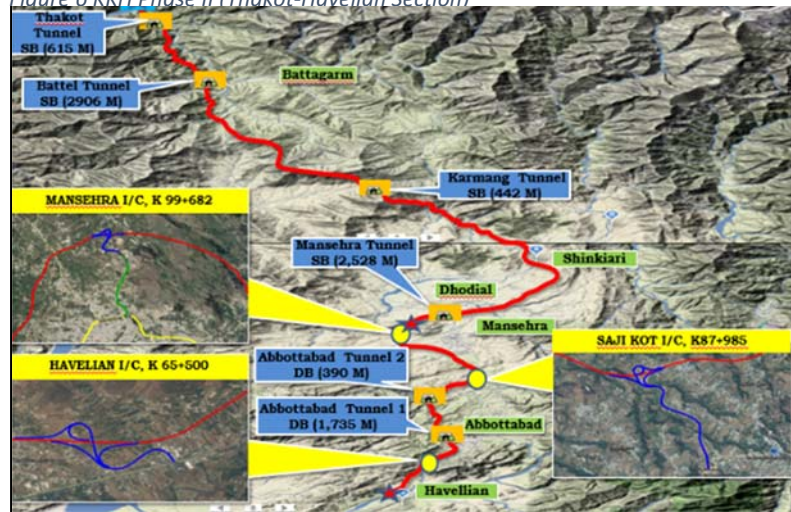
- Investment in infrastructure undeniably increases and creates jobs
- The nature of job creation under such projects comprises direct or within the project as well as indirect jobs by generating jobs in other sectors which can potentially facilitate new investors to initiate their businesses. In this manner the jobs can increase in exponential rate
- A pertinent point to note here is that the investment in infrastructure alone is not sufficient to provide permanent jobs or cannot be considered as the root cause to eliminate unemployment from the economy.
- The generation of employment is subject to the intensity of the effect of infrastructure on the GDP growth of the economy. Therefore, if an infrastructure project fails to improve and enhance the GDP of a country will necessarily not generate employment.
- To maximize the volume of employment the undertaken projects should be biased towards labor-intensive techniques to engage more and more workforce.

The Six Early Harvest CPEC Infrastructure Projects

KKH Phase II (Thakot -Havelian Section)

Covering the length of around 440km, with the documented total investment US\$1,366 million, the KKH Phase II links the regions of Gilgit Baltistan and KPK with the capital of Pakistan. This includes the construction of bridges, culverts and other allied facilities under the responsibility of proposing ministry (ministry of communication), the implementing ministry (National Highway Authority NHA), Supervising Agency (Ministry of Communication and Government of Pakistan) and finally the Contractors (CRBC and CCCC). It is a 4 year project initiated during September, 2016 and will be finalized till March 2020, while the areas and cities in dire need of this project will be entertained after May, 2018. These regions include Havelian, Abbottabad and Mansehra covering a distance of almost 40km.

Figure 6 KKH Phase II (Thakot-Havelian Section)



Source: National Highway Authority

Peshawar-Karachi Motorway (Multan-Sukkur and Lahore-Multan Section)

This section of the motorway links the Punjab to Sindh covering 392km with estimated budget of US\$ 2,980 million. It envisages the construction of a 6-lane access of road connectivity on a total length of 1,100Km. This will also be utilized as a source of income by implying toll tax. This motorway is originating from the motorway of Karachi through M-9 up to Hyderabad (136Km). From Hyderabad this road extends towards Sukkur completing the length of 345Km. The Multan-Sukkur section follows alongside the left bank of River Indus., which then connects Multan to Khanewal and eventually Lahore at M-4.

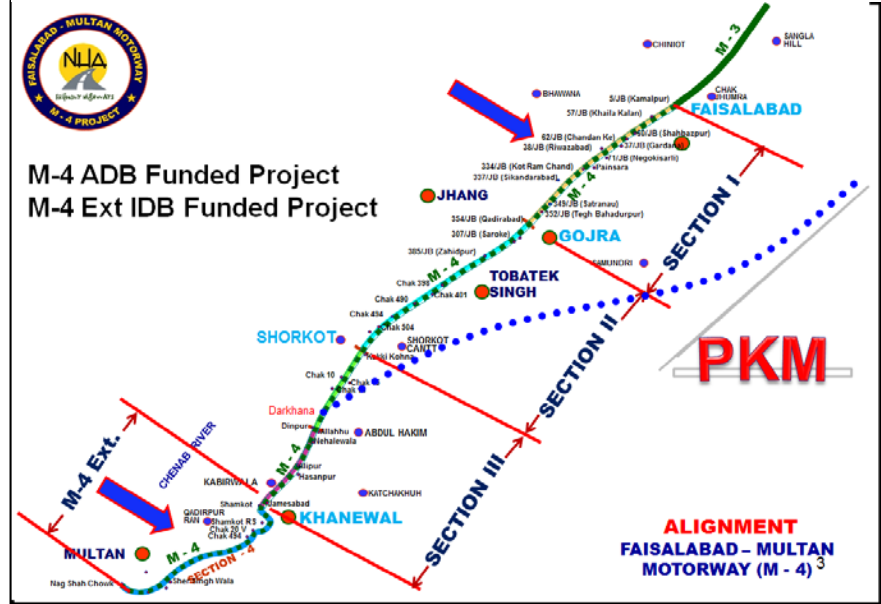
Up gradation of D.I Khan (Yarik)-Zhob, N-50 Phase I

The up gradation of D.I Khan N-50 focuses on the western alignment portion of the economic corridor. This routes the transportation of Peshawar and Baluchistan through Hakla (near Fatah Jang). The estimated cost to complete this project is around US\$ 195 million covering a total length of 210Km, which initially connects the transports to the Peshawar-Karachi Motorway. Currently, Executive Committee of the National Economic Council (ECNEC) has approved the PC-1 and the framework agreement has been forwarded to the Ministry of Commerce (MOC), consequently land acquisition is under process but still many jobs have been created under this project.

Faisalabad-Multan Motorway (M4), Package II (Gojra-Shorkot)

The motorway constructed under this project is funded by the ADB Bank, and is divided into two sections altogether from Gojra to Shorkot. The first section covers the distance of 32km while the other only 30km. The project is under construction and is expected to finish until March, 2018 with the help of two contractors Xinjian Beixin and China Railway Group. Figure 4 specifies the area covered under this project.

Figure 7 Faisalabad-Multan Motorway (M4)



Source: National Highway Authority

KKH Thakot-Raikot N35 remaining portion

This project is also of great importance as it starts from the Gilgit Baltistan Karakoram Highway till the Thakot interchange for connecting the upper region towards the western alignment of the road. This highway covers a distance of 136km and the estimated investment to finalize the project is more than US\$ 700 million. Currently the feasibility and the PC-1 has been approved, moreover the report has been forwarded to the Chinese officials to initiate the project.

Methodology

Sampling Technique

To meet the requirement and objectives of the study, the sampling technique utilized was purposive in nature, classified under non-probability approach, therefore, specifically only those projects were visited which were under consideration and of prime importance to analyze the total jobs created under these projects as well as the composition of labors. The primary data collected comprises the existing six infrastructure projects namely, KKH Phase II (Thakot -Havelian Section), Peshawar-Karachi Motorway (Multan-Sukkur), Peshawar-Karachi Motorway (Multan-Sukkar Section), Peshawar (Lahore-Multan Section), Up gradation of D.I Khan (Yarik)-Zhob, N-50 Phase I, Faisalabad-Multan Motorway (M4), Package II (Gojra-Shorkot) and KKH Thakot-Raikot N35 remaining portion, all of which are located in different regions of Pakistan.

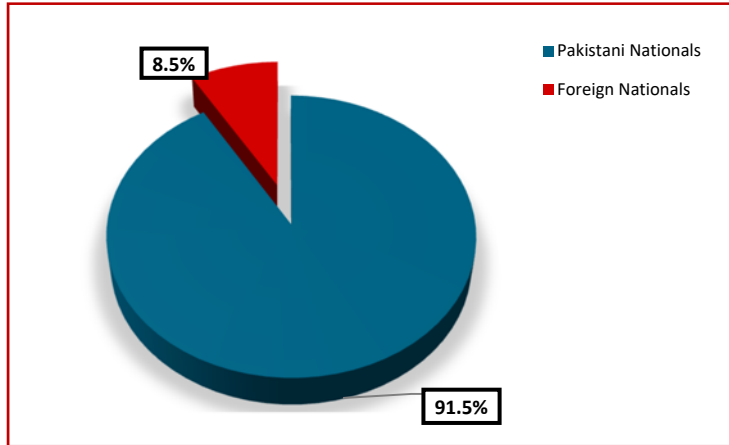
The present data captures the direct jobs created under these projects along with the composition of labors to acknowledge the total number of Pakistani nationals and Chinese national workers providing their services in the mentioned projects.

Empirical 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 2 hours of travelling without hassles. The project would consist 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 labors are hired from China while 91.5% (13,881) of the workers are hired from within Pakistan. The estimated

Figure 8 Peshawar-Karachi Motorway (Multan-Sukkur Section)



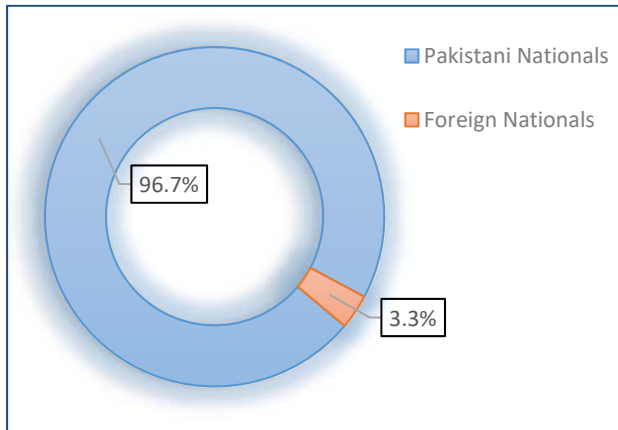
Source: Author's Own Findings

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 number of labors 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 employment can be generated directly as well as indirectly. Figure (7) represents the composition of the total labor employed from both Pakistani and Chinese nationalities.

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 8

Figure 9 Peshawar-Karachi Motorway (Lahore-Multan Section)



Source: Author's Own Findings

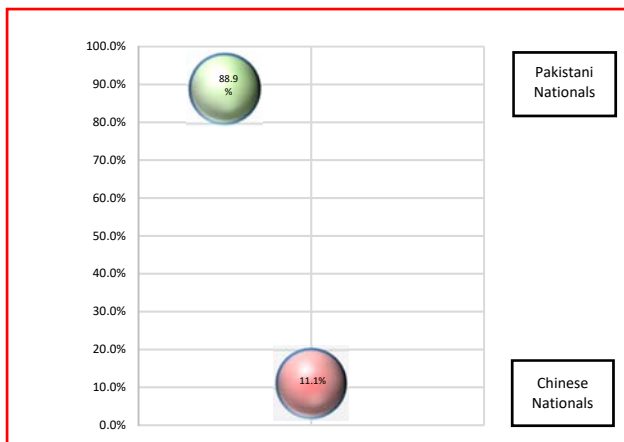
interchanges, 35 bridges over canal and 8 bridges over other major roads, while 6 underpasses and almost more than 300 culverts. 17,246 jobs have been created under this project from which more than 96 percent (16,676) of the workers possess the nationality of Pakistan, in contrast to a sum of only 570 workers, which only constitutes 3.3 percent of workers belonging from China. The project is expected to be completed by April, 2018. Currently, the project has consumed 57.4 percent (US\$ 865 million) of the total investment creating 17,246 number of jobs appreciating the standard of living of the region, while the rest of the investment is promising to create a thousand

more. Figure (8) represents the total labor employed from both Pakistani and Chinese nationalities in this project.

KKH Phase II (Thakot -Havelian Section)

The project KKH Phase II inaugurated on 28th of April, 2016, expected to complete in March,

Figure 10 KKH Phase II (Thakot-Havelian Section)



Source: Author's Own Findings

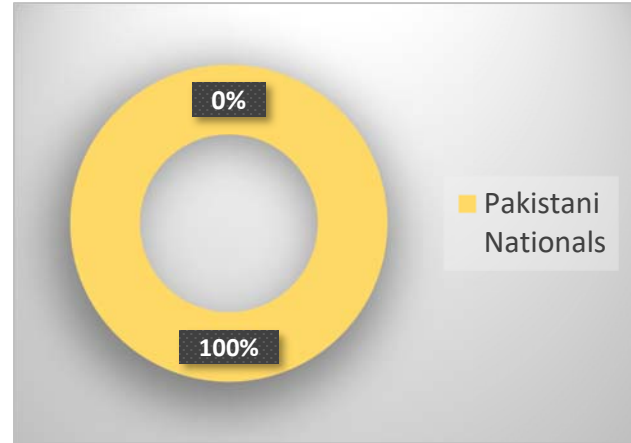
2020, joins the Gilgit Baltistan to the Capital of Pakistan. 90 percent of the project has been funded from the China Exim bank while the rest 10 percent will be funded by Pakistan. It comprises three interchanges within 39km between Havelian, Abbotabad and Mansehra, 5 tunnels within the region of Abbotabad, Karmong, Battal and Mansehra. Currently, the US\$ 1,366 million worth project, after consuming only 30 percent (US\$ 409 million) of the total estimated investment has created almost 900 direct jobs in totality. From which a huge portion is attributed towards the Pakistani nationals, of almost 800 (89 percent) while a few amount of labors are hired from China of

around 100 (12 percent). The first section covering 39km of the total project will open in May, 2018. The figure () illustrates the composition of labors.

Up gradation of D.I Khan (Yarik-Zhob), N-50 Phase I

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 which began in January, 2016 is expected to be finalized by 2018 utilizing US\$86 million (44 percent) of the total investment US\$ 195 million. This indicates the potential of the project to allocate and adjust more labors then existing till the finalization of overall project. The best part of this project is that the total direct jobs created under this construction is around 1,096, generating a thousand more indirectly. Moreover, all of the employment generated have only been hired from Pakistan increasing the employment rate and the living standards of domestic labors.

Figure 11 up gradation of D.I Khan (Yarik-Zhob), N-50 Phase I



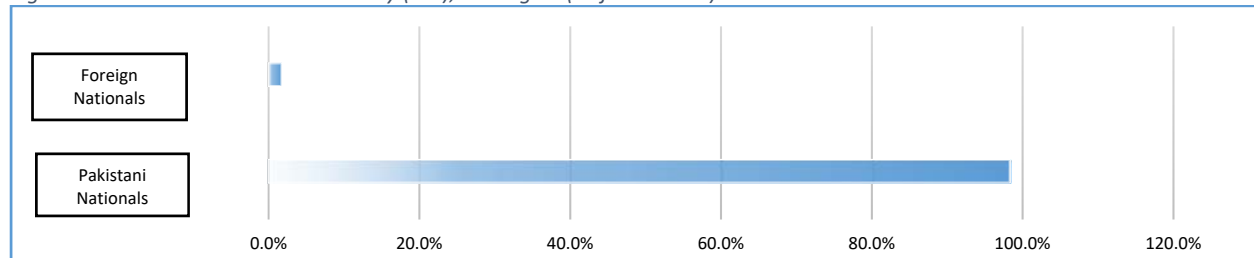
Source: Author's Own Findings

Faisalabad-Multan Motorway (M4), Package II (Gojra-Shorkot)

Faisalabad-Multan M-4, comprises 5 sections, all of which are of great importance linking with the M-3 which 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 Pindi Bhattian to Faisalabad (53km), then Faisalabad to Gojra (58km), Gojra to Shorkot (62km) which has been considered to analyze in the present study, Shorkot to Khanewaal (64km) and finally from Khanewaal to Multan (57km).

The work progress on the 62km Gojra to Shorkot motorway is swiftly underway which is expected to be completed in March, 2018 consisting 8 junctions and interchanges in Gojra and 11 of these in Shorkot. After completion more than 200km from Pindi Bhattian till Multan will be saved, cutting down the traveling distance from about two and a half hours. The total employment generated under this project is 1,503. Employing 1,477 labors from Pakistan and only 26 labors from China. The following figure shows the composition of labors with respect to Pakistani and Chinese nationalities.

Figure 12 Faisalabad-Multan Motorway (M4), Package II (Gojra-Shorkot)

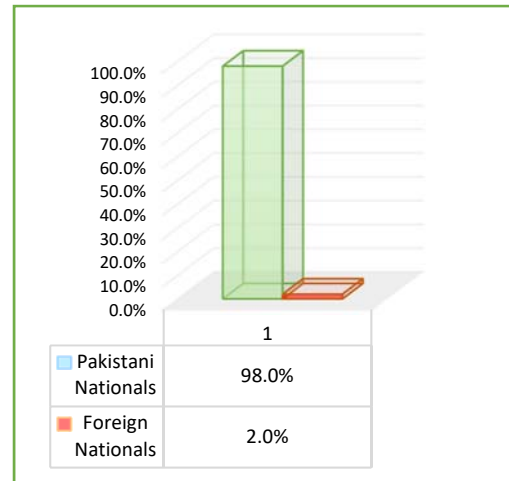


Source: Own Findings

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, Abbotabad, eventually Battagram and Thakot. This project is being financed by the Asian Development Bank and the funds provided by the United Kingdom. It will reduce the total time of travel from Havelian to Islamabad to just 30 minutes. This project was designed as 4-lane road, but, now it is being planned to extend on 6-lane. The total people employed within this project was 1,020. From which 1,000 (98 percent) of the people have been employed from Pakistan while only 20 (2 percent) have been hired from China.

Figure 13 E-35 (Expressway)

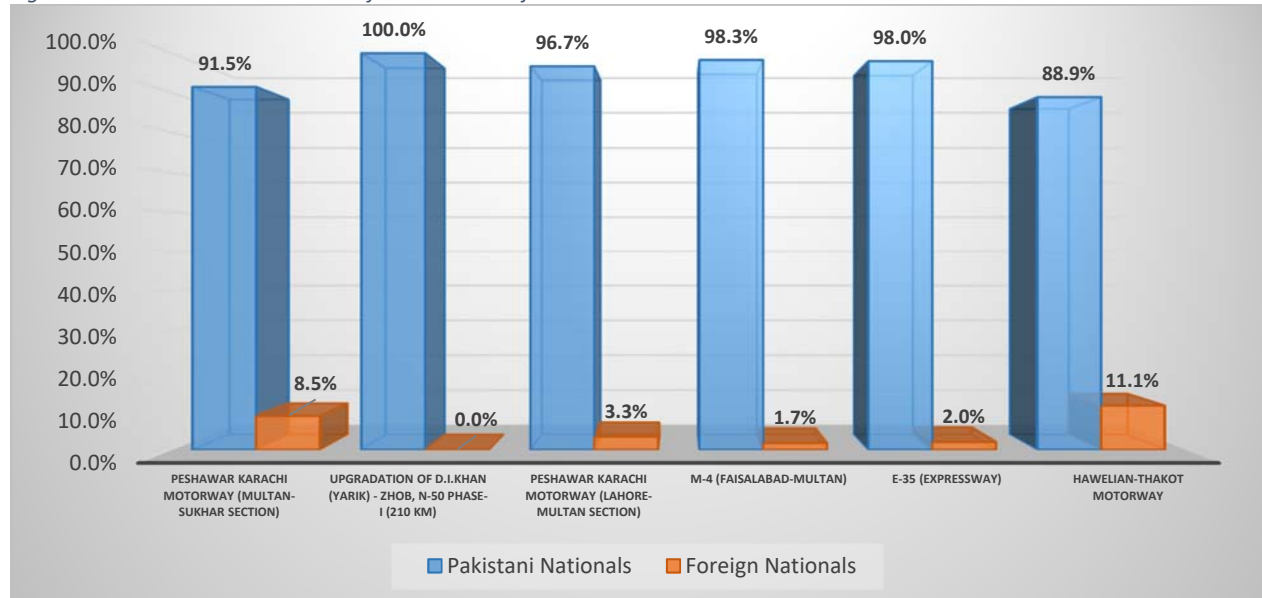


Source: Author's Own Findings

Job Creation under the Discussed Projects

In the previous sections, the projects under consideration have been discussed briefly which certainly signals and emphasizes its role in the development of overall infrastructure of Pakistan, especially, on its job markets. On the other hand, through various sources, we usually experience many criticism regarding the job market of Pakistan, yet most of the figures quoted are fabricated and are under influenced, while the real picture is consistently camouflaged. It is argued that the job market will be hijacked by foreigners while leaving the domestic labor as destitute. Figure () 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 14 Total Job Creation under Infrastructure Projects



Source: Author's Own Findings

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 labors with respect to Pakistani and Chinese nationality holders. The data collected provides that only 5 percent of the total jobs created is attributed to Chinese nationals while 95 percent of the workers are from 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

- Carnevale, A. P., & Smith, N. (2017). Trillion Dollar Infrastructure Proposals Could Create Millions of Jobs. *Center on Education and the Workforce, Georgetown University, available at <https://cew.georgetown.edu/wp-content/uploads/trillion-dollar-infrastructure.pdf>.*
- DISTRICT, B. (2008). ROADS SOCIO-ECONOMIC IMPACT ASSESSMENT.
- Duncan, T. (2007). Findings from studies of poverty impacts of road projects. *Asian Development.*
- Estache, A., & Garsous, G. (2012). The Scope for an Impact of Infrastructure Investments on Jobs in Developing Countries. *Notas económicas de la Corporación Financiera Internacional.*

- Forbes, D., El-Haram, M., Horner, M., & Lilley, S. (2012, September). Forecasting the number of jobs created through construction. In *TWENTY-EIGHTH ANNUAL CONFERENCE 2012 September 3-5* (p. 317).
- Garrett-Peltier, H. (2010). Estimating the Employment Impacts of Pedestrian, Bicycle, and Road Infrastructure-Case Study: Baltimore.
- International Labour Organization (2011), Local Development through Infrastructure Investments and Jobs- Advisory Support, Information Services and Training Programme (ASIST-AP), available at http://www.ilo.org/asia/whatwedo/projects/WCMS_098915/lang-en/index.htm
- Mundial, B. (2012). Transformation Through Infrastructure: Infrastructure Strategy Update FY2012-2015.
- Sinha, A., Prabhakar, A., & Jaiswal, R. (2015). *Employment dimension of infrastructure investment: state level input-output analysis* (No. 994872193402676). International Labour Organization.
- Thwala, W. D. (2008). Employment creation through public works programmes and projects in South Africa: Experiences and potentials. *Acta Commercii*, 8(1), 103-112.
- Yoshino, N., & Nakahigashi, M. (2000). The Role of Infrastructure in Economic Development (Preliminary Version). *Unpublished manuscript*.