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Contours of connectivity: Socioeconomic Transformation and Local Perception of China-Pakistan Economic Corridor (CPEC) in upper Hunza, Pakistan

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The study focuses specifically on understanding how residents perceive both their changed livelihood situations and their ability to access development advantages while expressing worries about cultural and environmental sustainability factors. The study employed a quantitative survey design with a cross-sectional approach. The researcher obtained data through multistage cluster sampling from residents located in Sost and Passu settlements. Research data was collected through both digital and face-to-face distribution of a structured questionnaire, which used a five-point Likert scale. The data collected from 220 respondents yielded 200 valid results that underwent statistical description. The survey respondents showed both positive and negative feelings. The widespread view that CPEC drives economic growth and better connectivity also reveals several negative implications, including environmental damage and cultural loss, and a lack of participation in decision-making processes. Both positive and negative aspects of CPEC receive widespread acknowledgment from respondents with scores higher than 3.00 on important scales. Numerous analysts view the CPEC project as having two major effects: it drives regional development, but concurrently threatens local cultural practices and puts residents at risk of non-inclusion. The analysis demonstrates how development plans must integrate native valuations with impartial community involvement. Through this study, critical development sociology gains new insights by including the mountain population perspective, which is typically absent in large-scale infrastructure development planning processes. The research promotes culturally sensitive strategies for megaprojects through future development.

Keywords: CPEC, socioeconomic impacts, economic transformation, local perception, Hunza.

Development is crucial for societal advancement to meet the evolving demands of individuals and communities. Sustainable development goals (SDGs) have become the main objective of the development procedure (Bachmann et al., 2022). To support the development and well-being of individuals, the ninth SDG places a strong emphasis on resilient, sustainable, and dependable infrastructure, including regional and transnational infrastructure, with a focus on fair and affordable access for everyone (UN, 2017). Infrastructure is key for development because enhancements in the establishment, accessibility, and quality of infrastructure and services offered central to reflective changes in people's socioeconomic conditions. Further infrastructure links urban and rural areas and connects developing nations to developed nations, fueling the development process (Ramos-Suárez & Pérez, 2018). Working together to achieve common development goals demonstrates the stability and strength of the region as all nations advance toward these goals. When nations work together to achieve shared developmental goals, they demonstrate real progress and togetherness, which promotes stability and strengthens the region. Doors of shared development opened among different countries

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in September 2013 when Chinese President Xi Jinping introduced the "Silk Road Economic Belt and the 21st Century Maritime Silk Road" initiative during his visit to Central and Southeast Asian countries. This developmental initiative is known as the "Belt and Road Initiative" or BRI (Hui et al., 2021). The multibillion-dollar Belt and Road Initiative is the largest development initiative in human history undertaken by one nation, i.e., China. The main aims of the BRI are to advance social and economic connectivity, security cooperation, political and economic awareness, technological and economic advancements in the region, and to get closer to new infrastructure and a trade free zone (Devonshire-Ellis, 2015; Azizi, 2024) between China and countries in Asia, Africa, the Middle East, and Europe through a patchwork of new economic infrastructure, political diplomacy, and new trade zones (Yii et al., 2018). The CPEC is a leading project of the Chinese super investment BRI across the world (Abbas, 2019). Zheng Shanjie, Chairman of China's National Development and Reform Commission, noted that CPEC is:

"A significant loop in the larger chain of the Belt and Road Initiative and would allow the opportunity of a 21st Century Maritime Road." (CPT, October 11, 2024)

Premier Li Keqiang visited Pakistan in May 2013 and launched the massive project of CPEC. The project acts as a collective developmental gate between South Asia and Southeast Asia. On April 20, 2015, China and Pakistan signed 51 Memorandums of Understanding to demonstrate their increased commitment to mutual development, and this picture took the form of operational terms, strategies, and treaties thereafter (Kanwal et al., 2019). CPEC is not only a road track; relatively, it is a combination of various dimensional projects extending from roads and railways, Gwadar Port, energy projects, Special Economic Zones (SEZs), fiber optic cables across borders, airports, and many more (Khalid et al., 2022). The four main pillars of the CPEC are: Gwadar port, Communication infrastructure, Energy setup, and Industrial sectors.

The CPEC route connects Xinjiang province of China and Gwadar Port in Baluchistan province of Pakistan, via Kashgar, and Khunjerab (Kanwal et al., 2019; Ahmad et al., 2017). Gilgit Baltistan (GB) is the early point of CPEC in Pakistan. The CPEC goes through Xinjiang and passes through GB through the Hunza district for around 300 Km before entering Khyber Pakhtunkhwa (KP) from the Kohistan district. It is expected that the CPEC will alter the entire society of Pakistan, with a specific emphasis on GB. Under CPEC different projects are launched in this area, the most important project is the development of the Karakoram Highway 213 km long (worth $46 billion spent on Transportation Infrastructure) that connects Rawalpindi and Kashgar via GB; one of nine Special Economic Zones (SEZs) premeditated under CPEC, one will be established at Moqpondass, Gilgit, 820-kilometre Pak-China Fiber Optic between Khunjerab Pass and Rawalpindi, energy projects such as 100 MW KIU at Hunza River and 80 MW Phander—both will be constructed under the CPEC and many more projects are underway in this region. Further, all road networks, communication systems, and gas and oil pipelines must pass through this region. Therefore, GB will benefit more than the rest of the country (Ali et al., 2024). A successful CPEC is also likely to open new corridors of prospects for GB, as GB is one of Pakistan's least developed regions in Pakistan (Ali et al., 2024). Pakistan's strategic location has been pivotal in making it a preferred choice for establishing CPEC through Pakistan. Both countries benefit from CPEC in multiple ways, as shown in Table 1.

Table 1

Summary of CPEC benefits to China and Pakistan

For China	For Pakistan
➢ Shortest route for transporting oil	➢ Overcome the energy crisis
➢ Avoid the Malacca Strait route	➢ Improvement in Infrastructure
➢ Easy access to international markets	➢ Development of Gawadar Port
➢ Targeting the less developed regions	➢ Establishment of Special Economic Zones
➢ Bring political security to Xinjiang Province	➢ Development of Gawadar International Airport

- Overall economic development of China
- Overcome the internet issue

The empirical significance of this study is in its potential to make available evidence-based insights into the real-world effects of Mega Construction Projects (MCPs) on the local community. By systematically analyzing socioeconomic changes in infrastructure development, e-commerce, business opportunities, and social dynamics, this research aims to generate valuable data that can inform stakeholders and policymakers. The empirical approach not only boosts the comprehension of the effects of CPEC on GB but also contributes to understanding community welfare and sustainable development in regions undergoing economic transformation. The outcomes can serve as a critical resource for future projects; make certain that they are understood by the needs and conditions of the local people.

The empirical significance of this study lies not only in highlighting the perceived benefits of CPEC but also in critically examining its unintended consequences, including environmental degradation, cultural erosion, and social exclusion. While infrastructure development often promises regional uplift, it can simultaneously reinforce inequalities, displace traditional livelihoods, and marginalize local voices in planning and implementation. By capturing both aspirations and anxieties, this study foregrounds the dual nature of development as a driver of opportunity and a source of tension. Local forms of resistance, whether through critique, skepticism, or limited cooperation, reflect the lived complexities of communities negotiating top-down megaprojects. This framing aligns with critical development sociology, which urges scholars to go beyond technocratic evaluations and engage with the conflicting realities of large-scale interventions. Through a grounded analysis of local perceptions in Upper Hunza, the study aims to contribute to more inclusive, responsive, and culturally sensitive development paradigms.

Theoretical framework

To provide a deeper analytical lens for examining the localized impacts of CPEC, this study draws upon key perspectives from critical development theory. First, James Ferguson's (1994) concept of "anti-politics machine" provides a compelling critique of how development interventions often depoliticize structural inequalities by framing them as technical issues. This lens helps to analyze how large-scale infrastructure projects like CPEC can obscure power relations and reinforce state authority in peripheral regions like GB. Second, Arturo Escobar's (2011) post-development theory challenges the assumption that Western-defined development models are universally applicable. Escobar argues that megaprojects often impose external economic logics that marginalize indigenous cultural and ecological knowledge. In the context of Upper Hunza, this perspective is useful for interpreting community concerns about cultural erosion and environmental degradation resulting from CPEC-led modernization. These theoretical insights help frame the empirical analysis within a broader discourse on uneven development, power asymmetries, and local agency. By engaging with these frameworks, the study moves beyond surface-level socioeconomic indicators to critically interrogate the discursive and structural dimensions of development in a geopolitically sensitive and environmentally fragile region.

Literature review

CPEC has been addressed as a game-changer for the economy of Pakistan, and GB, a tactically significant yet less developed region, is composed to be one of its main beneficiaries. The CPEC project is supposed to be economically advantageous for the residents. Economic influence refers to economic profits, such as getting opportunities, employment, trade, and other related financial assistance that the project provides to local inhabitants (Khalid, et al., 2022). As Ramay (2020) noted, Pakistan has fewer sustainable opportunities to eliminate poverty; therefore, this multi-billion-dollar project can vary the intention of the people and the country. The local communities could be eased out through these initiatives if they bring some positive changes to their personal and social, and economic well-being (Hassan, 2020). A study conducted by Aman et al., (2022) stated that CPEC has the potential to change the quality of life, increase employment opportunities, and reduce poverty in Pakistan. According to their findings, the CPEC project led to the

creation of jobs, enterprises, trade, services, and other commercial activities that will improve the economic situation of the nation. The local economy has undergone restructuring, which has affected the locals' perception of normalcy, employment opportunities, and a low level of poverty because of CPEC expansion. Residents believe that the nation's general quality of life may have numerous advantages. Similarly, a study conducted by Ali et al., (2017) stated that the energy sector is expected to create millions of jobs, resulting in lower poverty rates in the whole country. Specifically, power generation is beneficial for small and medium enterprises. Energy projects will overcome the energy crisis and blackout problems of the country, increase economic activities, and attract foreign investment. Raza et al., (2018) highlighted the economic benefits of Pakistan with the expansion of the CPEC projects. For example, it is anticipated that the project will support advance 1.1 million people from poverty, due to its cross-country communication infrastructure and increasing financial activities. It will also generate seven million jobs, with a 2.5% annual growth rate (Dawn, 2020). However, jobs like maintenance, security, or low-paying jobs are offered to Pakistanis (Rana, 2022). Kanwal et al., (2020) examined the local community provision towards the development of the CPEC project and stated that local community support is associated with the profits. The entire country of Pakistan benefits from the CPEC plan, but the less developed areas like GB, which lack industries, notably benefit. Literature indicated that CPEC has the potential to raise the standard of living of residents of GB. A study conducted by Muhammad et al., (2023) on the role of CPEC infrastructure projects on inhabitants 'quality of life and exploring the mediating role of tourism growth in GB. Their findings showed that CPEC has a positive effect on the quality of life and tourism development in the area. According to Haq and Farooq's (2016) results, CPEC will have a positive impact on several dimensions, including increased household income and employment opportunities. Additionally, districts with higher rates of poverty and lower levels of well-being will see improvements in their quality of life and general well-being. The development of KKH is effective in terms of transportation, through which goods are easily transported, reducing the time and cost is expected to enhance regional connectivity. Further, KKH provides service opportunities and increases business competitiveness, thus leading to economic escalation (Alam et al., 2023). However, the socioeconomic benefits are not consistently distributed. The influx of funds and developmental activities might worsen existing inequalities within the local community. Nonetheless, locals supply the lowest labor, with Chinese people holding the highest official posts. The shortage of vocational schools in the GB region limits the local population's ability to fully benefit from CPEC due to their lack of relevant skills and knowledge. So, we cannot rely on CPEC to improve the locals' economic circumstances because it only generates temporary jobs. The most significant benefit expected to be received by the Gilgit Baltistan, KPK, and Northern areas of Pakistan is the revitalization of tourism (Zulfiqar et al., 2019). For example, the randomness of the weather impacts the agrarian products of GB every year, and the local people are left with limited livelihood prospects. Therefore, these local people are additionally reliant upon the tourism sector. The CPEC project would bring a new era to the tourist industry in GB. The KKH passes through the Northern and Southern parts of GB via the famous Hunza Valley. The CPEC Project improves the hotel industry, generating jobs for thousands of literate and illiterate residents of GB. Furthermore, it would advance, extend, and upgrade the KKH and embellish other industries like cottage, handicrafts, and cultural activities, including mountain festivals, and attract adventure tourism from all over the world. In this way, poverty-threatened people would have improved maintainable income opportunities for livelihood (Nazneen et al., 2022). The speedy increase in tourist arrivals in Gilgit-Baltistan has been eased by the infrastructural development of the CPEC (Baig & Zehra 2020). The whole region of GB is well-known for its dry fruits, cherries, apples, apricots, peaches, pears, and potatoes. Thousands of tons of dry fruits are being ecstatic to Pakistani cities from GB yearly, and if the infrastructures get better under CPEC projects, then the GB goods will get access to national as well as international markets and produce huge income for the marginalized community of this zone. Similarly, infrastructure helps in rural-urban connectivity. Small villages along the CPEC route will be connected to large cities, where local farmers will be able to sell their goods at reasonable prices and quickly increase their household income. In addition to the project-based jobs, the local communities can capitalize on the asset opportunities, and the entrepreneurial undertakings would further augment the project opportunities created.

For example, starting your own business in the shape of a workshop, food stall, real estate, hotels, etc., with a low budget, easily. This will lead to a reduction in poverty and increase the income of locals in Pakistan (Khan et al., 2023; John et al., 2020). So, we can say that CPEC has a direct or indirect impact on the socio-economic dimension of residents of GB. As found by Haq and Farooq (2016), in the comparatively backward and less developed zones, one of the main reasons for a low literacy level is the long traveling time between their residences to the educational institutions. Despite the deep links that happen between the two countries, China and Pakistan have fairly diverse cultures, norms, and ways of life. Student exchange programs and increased tourism are two of the ways that the CPEC will help the two countries engage with one another and better understand one another (Khan et al., 2023). In addition to facilitating physical connectivity, CPEC establishes a technology link with the internet under the umbrella of 3G and 4G networks. A study conducted by Khan et al., (2020) stated that e-commerce in GB has flourished under the optic fiber project of CPEC. They stated that now the residents of GB can buy and sell products online. This initiative will reduce unemployment among youth in GB. However, they need to be trained and technologically developed to take advantage of e-commerce. The mega project on only influences the QoL, employment, education, and health, but also influences indigenous culture. A study conducted by Ali et al., (2024) examines the influence of CPEC on the cultural uniqueness of local communities in GB. The study concludes that the local community is optimistic about social cohesion and integration of people from various parts of Gilgit-Baltistan due to the CPEC project. The locals think that GB would change linguistically and in terms of lifestyle because of the CPEC, and that its effects on culture are being overlooked. According to the local community, the socioeconomic impacts of the CPEC would cause cities to develop more quickly than rural regions, which will drive people from rural areas into Gilgit-Baltistan's urban centers (CH & Mushtaq, 2025).

After a review of the literature, it is evident that the majority of studies on the socioeconomic effects of CPEC have focused on the initial phases of this massive project. There is a noticeable gap in the literature with regard to the second and Third phases of CPEC, which are anticipated to be completed by 2025 and 2030, respectively. Furthermore, previous studies have mostly concentrated on specific segments or regions

On the CPEC route, hence, a comprehensive analysis of the Hunza district that comprises the study area, GB, has not been conducted. In addition, the optical fiber network provides internet services all over GB. This will provide educated youth with an alternative means of income. E-commerce would allow inhabitants of GB to buy and sell goods and services conventional transversely the border. E-commerce will benefit hugely from the ease with which CPEC's fiber project would get items or services to market. The purpose of this study is to fill the knowledge gap on e-commerce and CPEC that exists in the literature. The CPEC project involves the construction of power plants, transportation networks, road networks, optical fiber installations, and special economic zones. These initiatives are essential to increasing accessibility within cities and boosting regional transportation networks. Consequently, entrepreneurs are likely to take on novel ideas and look for creative methods for generating income.

Method

Study Design

A quantitative approach through cross-sectional survey assessment methods measures the socioeconomic changes within GB communities from the CPEC implementation. The quantitative method proved appropriate because it enables systematic collection and analysis of data about public sentiment along with economic transformations and development results in CPEC projects. Community members participate in the survey through a cross-sectional design that captures their current opinions about aspects of life in strategically major areas located along the Karakoram Highway, such as Sost, Passu, and adjacent settlements. The locations experience direct CPEC impacts because they lie nearest to border infrastructure and transit routes. The design follows questionnaires that produce consistent results while enabling statistical assessment. The design system enables extensive data collection across physically separated and distant

communities that reside in Upper Hunza. This quantitative study generates quantitative assessments at the community level to offer empirical data about local development under CPEC.

Study Area and Population Sampling

This study employed a quantitative research methodology to assess the socioeconomic ramifications of CPEC on the residents of upper Hunza, located in northern Pakistan and bordering China. This region has been purposely selected for research purposes as it functions as a crucial conduit between China and Pakistan. A significant portion of the residents in this area are engaged in agricultural activities, thereby making CPEC an alternative source of income for the local populace. Additionally, all CPEC projects necessitate passage through the study area, rendering it imperative to ascertain whether local inhabitants are benefiting from CPEC initiatives. Consequently, this research aims to ascertain whether these projects effectively contribute to the socioeconomic upliftment of the residents by providing an alternative income source alongside agriculture, which renders upper Hunza a pertinent area for examination following the study's aims and objectives.

Data collection procedures

The data collection involved the creation of a questionnaire. A questionnaire was established that asked a variety of questions intended to measure the specific aims of the study. Likert scales measure attitudes by asking people to indicate how strongly they agree or disagree with a series of statements about a topic (Tanujaya et al., 2022). For this purpose, a five-point Likert scale with the response ranging from strongly agree “5” to strongly disagree “1”. Each question was presented based on a 5-point scale from (1) strongly disagree, (2) disagree, (3) neutral, (4) agree, and (5) strongly agree. The questionnaires were distributed through various means, including online survey platforms, due to participants residing in various remote regions of Gilgit. In addition, face-to-face questionnaires were also filled in by participants. After we sent out the questionnaires, we followed up with calls, used social media sites like Facebook and WhatsApp, and sent follow-up emails to encourage responses. Over 12 weeks, we got 220 respondents. Some questionnaires were discarded because of missing data. Finally, we got 200 complete forms. Upon the compilation of opinions, attitudinal scores were subsequently computed for each response item, and threshold points were established. The derived cutoff score was calculated following the methodology proposed by Akpabio (2007), which involved summing five Likert scale responses (1+2+3+4+5) and subsequently dividing the total by 5. This process yielded an average of five Likert scores, which was determined to serve as the cutoff score. A mean score for a question exceeding 3.00 (the designated cutoff score) was deemed to signify a substantial contribution and thus warranted further consideration. Following the comprehensive collection of data, it underwent additional scrutiny through the application of descriptive statistics, encompassing frequencies, percentages, and means.

Ethical consideration

This study adhered to recognized ethical standards for research involving human participants. All respondents were informed about the nature, purpose, and voluntary nature of the survey before participation. Informed consent was obtained verbally and/or digitally, and participants were assured of full confidentiality and anonymity in the handling of their responses. The data were collected solely for academic determinations and kept securely to prevent unofficial access. This research was conducted under the ethical guidelines of the Department of Sociology, School of Public Administration, Hohai University, and formal ethical approval was granted by the university. Participants were given the right to withdraw at any stage without any consequences.

Data analysis

Descriptive statistical methods analyze the data to understand local residents’ opinions about CPEC's social and economic changes. The data entry process, along with cleaning, resulted in 200 usable responses suitable for analysis. The survey relied on items rated on a five-point Likert scale from “5” Strongly Agree to

"1" Strongly Disagree to enable calculation of mean scores and frequency counts for different variables under research. The research method produced measurable main characteristics together with base patterns of public opinion within the sample group studied. The interpretation of Likert-scale data included a cutoff point selection based on Akpabio's (2007) evaluation method. A score of 3.00 created the evaluation standard, which provided a positive or significant impact assessment above 3.00, yet demonstrated a limited or negative impact evaluation below that level. The chosen analytical method delivered an unbiased method to evaluate the shifts in opinions about infrastructure development and employment, as well as livelihood transformations and inclusion in the CPEC advantages. Such analyses delivered essential information needed to establish conclusions about CPEC's socioeconomic impact on the study region and functioned as a basis for developing policy recommendations. To enhance the analytical depth of the findings, inferential statistical tests were also employed. Specifically, Pearson correlation analysis was used to assess the strength and direction of relationships between key variables such as income improvement, infrastructure development, employment generation, and quality of life. This allowed the study to go beyond surface-level patterns and statistically verify whether perceived benefits of CPEC (e.g., job creation or e-commerce growth) were significantly associated with respondents' reported socioeconomic conditions. The inclusion of inferential statistics supports more robust conclusions and provides a clearer understanding of the dynamics between infrastructure investment and local livelihoods in the region.

Results and Discussion

Socioeconomic characteristics of respondents

The sample required for this research included the residents of Upper Hunza. The socioeconomic information of the respondents is presented in Table 2. Males' respondents consisted of 55% of the data, and females consisted of 45% while the majority of respondents were married, i.e., 60%. The participants were divided into three age categories: young, middle-aged, and old (Iqbal et al., 2024). The majority, 69 (45%) of the respondents, fall into the category of 26 to 40 years. The major source of income was business 57 (28.5%), followed by farming 55 (27.5%).

Table 2

Socioeconomic characteristics of respondents

Category	Variable	Frequency	Percentage
Gender	Females	90	45%
	Males	110	55%
Age	15-25 young	50	25%
	26-40 middle	90	45%
	Above 41 old	60	30%
Marital Status	Married	120	60%
	Unmarried	80	40%
Education	Illiterate	30	15%
	Primary	35	17.5%
	Secondary	45	22.5%
	Higher	90	45%
Family Type	Joint family	130	65%
	Nuclear family	40	20%
	Extended family	30	15%
Total		200	100%

Reliability and correlation analysis

We conducted a reliability analysis for the questionnaire, and it is highly reliable. The Cronbach's Alpha Test of Consistency was employed to demonstrate the internal reliability of the model (Maharaj & Munyoka, 2019). Cronbach's alpha needs to be 0.700 or beyond (Nunnally & Ira 1994; Iqbal & Liang, 2025). The self-developed questionnaire's alpha value is .731, which is shown in Table 3.

Table 3
Reliability statistics

Cronbach Alpha Value	.731
No of items	17

Table 4
Person correlation matrix for key socioeconomic indicators

	R1	R2	R9	R4	R12	R13	R5	R3
R1	1	.36	-.25	.005	.091	-.34	-.188	-.134
R2	.036	1	.39	.175*	.715**	.089	.112	0.14
R9	-.025	.39	1	-.029	.036	.075	.027	-.084
R4	.005	.175*	-.029	1	.068	.118	.059	-.038
R12	.091	.715**	.036	.068	1	.054	.075	-.062
R13	-.34	.089	.075	.118	.054	1	.530**	.020
R5	-.188	.112	.027	.059	.075	.530**	1	.087
R3	-.134	0.14	-.084	-.038	-.062	.020	.087	1

***P<.05, **P<.01**

To explore the relationships between various perceived benefits of CPEC, a Pearson correlation analysis was conducted, presented in Table 4. Notably, there is a strong positive correlation between income change (R2) and quality of life (R12), $r = 0.715$, $p < .01$, suggesting that perceived income improvements are significantly associated with better self-reported quality of life among respondents. Additionally, entrepreneurial opportunity (R5) shows a moderate positive correlation with cultural exchange (R13), $r = 0.530$, $p < .01$, indicating that increased economic activity may also foster cross-cultural interactions. Although some variables show weak or no significant relationships (e.g., infrastructure access and tourism impact), the observed correlations provide valuable insight into how respondents connect economic benefits with broader social improvements. These findings add analytical depth to the survey by confirming that income generation is a key driver of perceived socioeconomic transformation under CPEC, supporting earlier descriptive results.

Residents' perception of the benefits of CPEC

Table 5 delineates the frequency of responses of residents concerning the direct benefits accrued from the CPEC. For this purpose, participants were asked the question "Do you think which category gets the most benefits from CPEC?" Among the 200 participants surveyed in upper Hunza, the majority (n=90) stated that entrepreneurs derive the most substantial advantages from CPEC. This phenomenon is attributed to CPEC's facilitation of entrepreneurial opportunities for both male and female individuals. Presently, women in Hunza are engaged in operating small businesses that specialize in traditional foods, hats, handmade crafts, and similar products. Moreover, the respondents (n=60) indicated that CPEC has generated employment opportunities for individuals of varying educational backgrounds. Additionally, agricultural practitioners are also reaping benefits from CPEC initiatives. The populace of Hunza engages in agricultural activities. Farmers can now sell their produce directly in markets, thanks to the enhanced infrastructure developed under CPEC. Furthermore, respondents (n=50) reported that daily laborers are also experiencing advantages due to CPEC initiatives. These daily laborers are primarily individuals involved in the transportation sector, mining industry, vendor operations, driving, and retailing activities.

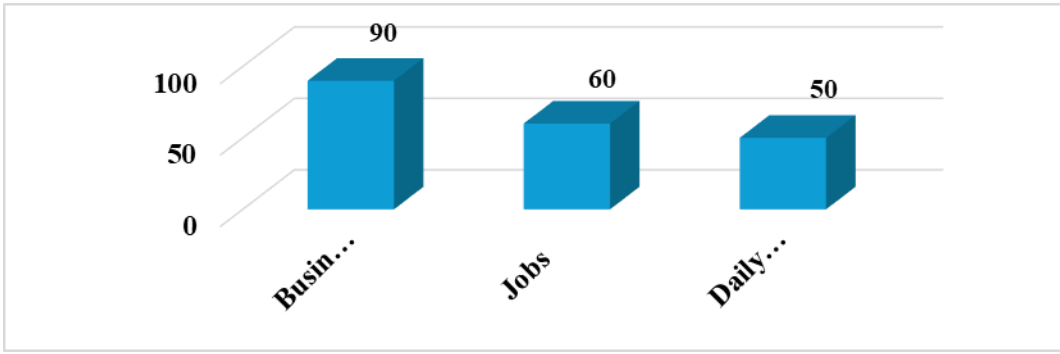

Figure 1: Benefits derived from CPEC to different sectors

Table 5

Socioeconomic Development

Questions	Response Categories					R	Mean (SD)
	SDA	DA	N	A	SA		
1. Expansion of existing business opportunities due to CPEC	5(2.5)	12(6.0)	45(22.5)	94(47.0)	44(22.0)	**2**	3.8000 (.93508)
2. Infrastructure (road, internet) improved under CPEC	3(1.5)	12(6.0)	45(22.5)	94(47.0)	46(23.0)	**5**	3.4800 (.86797)
3. CPEC has resulted in increased income	1(0.5)	29(14.5)	45(22.5)	77(38.5)	48(24.0)	**3**	3.7100 (1.005)
4. CPEC projects created jobs for natives	4(2.0)	10(5.0)	84(42.0)	77(38.5)	25(12.5)	**4**	3.5450 (.84946)
5. Tourism growth due to CPEC resulted in income-generating opportunities	3(1.5)	12(6.0)	45(22.5)	94(47.0)	46(23.0)	**1**	3.8400 (.89913)
6. CPEC resulted in an exchange of cultural values with China	5(2.5)	33(16.5)	76(38.0)	61(30.5)	25(12.5)	**8**	3.3400 (.97939)
7. New entrepreneurial opportunities for locals get benefits from CPEC	14(7.0)	50(25.0)	45(22.5)	54(27.0)	37(18.0)	**9**	3.2500 (1.21857)
8. CPEC has enhanced educational opportunities	2(1.0)	57(28.5)	63(31.5)	45(22.5)	33(16.5)	**9**	3.2500 (1.07390)
9. CPEC enhances the quality of life?	2(1.0)	49(24.5)	52(26.0)	54(27.0)	43(21.5)	**6**	3.4350 (1.10993)
10. CPEC impacted on language	10(5.0)	51(25.5)	58(29.0)	69(34.5)	12(6.0)	**15**	3.1100 (1.01640)
11. CPEC increases the availability of healthcare	10(5.0)	55(27.5)	57(28.5)	45(22.5)	33(16.5)	**11**	3.1800 (1.15511)
12. CPEC increased e-commerce	4(2.0)	39(19.5)	77(38.5)	66(33.0)	14(7.0)	**10**	3.2350 (.91321)
13. CPEC brought environmental concerns (pollution, deforestation)	5(2.5)	73(36.5)	52(26.0)	31(15.5)	39(19.5)	**14**	3.1300 (1.17900)
14. CPEC projects affected local agriculture and land use	22(11.0)	48(24.0)	57(28.5)	52(26)	21(10.5)	**16**	3.0100 (1.07034)
15. Bring entrepreneurial opportunities for females	10(5.0)	47(23.5)	65(32.5)	58(29)	20(10.0)	**12**	3.1550 (1.05191)
16. Local artisans and small vendors are benefiting from increased tourism due to CPEC	24(12.0)	48(24.0)	44(22.0)	45(22.5)	39(19.5)	**13**	3.1350 (1.30971)
17. Low-skilled workers benefit from CPEC	4(2.0)	42(21.0)	55(27.5)	77(38.5)	22(11.0)	**7**	3.3550 (.99697)

R=rank, SDA= Strongly Disagree DA= Disagree N= Neutral A= Agree SA= Strongly Agree SD= Standard Deviation

Respondents perceived that CPEC had made great contributions to the economic standing of locals, as evidenced by Table 5. Every indicator on the survey was assumed to be a ranking system where respondents were able to rank what they perceived as the most important aspect associated with CPEC. Respondents acknowledged all 17 items in the survey as important and contributed to their socioeconomic status, with a cutoff mean score of 3.00, used to distinguish between effective (α >3.00) and non-effective (α <3.00) factors. The maximum ranking was given to the simple circumstance that tourism growth due to CPEC increased income- generating opportunities (rank 1, α= 3.84) complementing with the expansion of existing business opportunities (rank 2, α= 3.80), new entrepreneurial opportunities for locals get benefits from CPEC (rank 9, α= 3.25) resulted in creating jobs for locals (rank 4, α= 3.54). The respondents believed that CPEC also created entrepreneurial opportunities for females (rank 12, α = 3.155), local artisans and small vendors

benefiting from increased tourism due to CPEC (rank 13, α = 3.135). This contributed to the income of the residents (rank 3, α= 3.71). The respondents assessed the advancement of infrastructure associated with CPEC as 5 rank (α= 3.48). The participants believed that e-commerce flourished under CPEC, with the rank provided by (rank 10, α = 3.235). A study conducted by Khan et al. (2020) stated that e-commerce in GB has flourished under the optic fiber project of CPEC. They stated that now the residents of GB can buy and sell products online, and this initiative will reduce unemployment among youth in GB. Moreover, CPEC has not only fostered job creation for educated individuals but also provided employment opportunities for low-skilled laborers (rank 7, α = 3.335). This development has improved the quality of life overall for residents of upper Hunza (rank 6, α = 3.43). These findings align with several studies that praise CPEC for improving connectivity, expanding economic opportunities, and fostering tourism-led development in GB (Aman et al., 2022), and also provide entrepreneurial opportunities for females (Ali, 2023). Earlier literature also emphasized the projected gains in regional governance, employment, and economic stability through enhanced connectivity and trade (Hussain & Khan, 2017). However, a deeper analysis reveals some critical nuances. For instance, while Aman et al., (2022) report general improvements in residents' quality of life, our data suggest that these benefits are not evenly distributed; entrepreneurs and highly educated individuals tend to gain more, while low-skilled workers and farmers benefit less directly. This disparity echoes Ferguson's (1994) critique of development as an "anti-politics machine," which depoliticizes inequality under the guise of technical progress.

Furthermore, our respondents' environmental concerns (ranked 14th) contrast with the more optimistic framing in development literature that often assumes infrastructure automatically fosters sustainability. Nazneen et al., (2019a) and Ch and Mushtaq (2025) also flagged ecological trade-offs, but our study demonstrates that such concerns are widely recognized at the grassroots level, not merely speculative or policy-driven. This contradiction challenges linear models of development and supports Escobar's (2011) post-development argument that modernization projects often displace local priorities and environmental ethics. Moreover, while literature often celebrates infrastructure as a gateway to social inclusion (Khalid et al., 2022), our findings indicate a perception of marginalization, particularly regarding decision-making and cultural identity. Resident fear of becoming passive recipients rather than active participants — a concern that aligns with Bourdieu's concept of symbolic capital exclusion, where access to resources is mediated by cultural and institutional power dynamics. Thus, while CPEC delivers material benefits, it also reinforces new forms of exclusion, particularly in terms of participation and cultural preservation. These contradictions reveal the complexity of developmental outcomes. Rather than treating CPEC as a universally beneficial project, our study contributes to a more grounded understanding that acknowledges uneven development, context-specific agency, and socio-ecological trade-offs — themes that remain underexplored in mainstream development literature.

Strong gains were reported in the enhancement of educational opportunities due to the onset of CPEC (rank 9, α=3.25). This statement is in line with the study conducted by John et al., (2020). The Chinese government has broadcast numerous scholarships associated with CPEC, and a growing ratio of Pakistani students availing these scholarship opportunities is the indirect impact of CPEC. Additionally, relevant infrastructure to enable transportation to the educational institutes provided by CPEC also contributed to increasing the literacy levels of local communities (Saad et al., 2019). When exploring the impact of CPEC on language, the participants believed that it had also impacted language (rank 15, α =3.11). It is evident from the results of Shaikh and Chen (2021) that a recent upsurge of Chinese language programmes has been observed, mainly because of the CPEC projects. Further, Khan et al., (2022) stated that Higher Education Institutions in Pakistan make it mandatory to teach Chinese as a foreign language. Also, Pakistani students studying in China are required to pass Hànyuˇ Shuıˇpíng Kaˇoshì (HSK) as a degree requirement. Respondents showed the health sector is impacted by CPEC (rank 11, α =3.18). These results are in line with the research conducted in Gilgit by Naz et al., (2022); their findings showed that CPEC brings international trade, healthcare, and self-efficacy to Gilgit. In addition, she argued that the Silk Road increases health

opportunities in Gilgit. Similarly, Rashid and Farooq (2021) found that several mobile health units have also been introduced to several remote areas where healthcare services were previously inadequate.

Cultural values are also exchanged under CPEC, where respondents ranked it as (rank 8, $\alpha = 3.34$). This was studied by Rana (2022), the results showed that CPEC has a bigger impact on both countries concerning cultural exchange, which is achieved by Chinese employees who are involved in CPEC projects marrying Pakistani women and living in Pakistan. The respondents showed that environmental concerns (pollution, deforestation) arise due to CPEC activities.

The study findings demonstrated that CPEC activities brought environmental concerns such as pollution and deforestation (rank 14, $\alpha = 3.13$). These findings are in line with the study conducted by Ali and Mushtaq (2025), who stated that CPEC brings economic development at the expense of environmental degradation. Similarly, Nazneen et al., (2019a) found that infrastructural development and tourism mandates are a caution to environmental and socio-cultural sustainability. This has happened because of the CPEC project. It resulted in an influx of tourists to the terminus, increasing economic benefits alongside, causing air and water pollution, disrupting local culture, increasing crime rate, traffic congestion, waste, and litter, destroying ecosystems, biodiversity, and wildlife. The respondents believe that CPEC has affected local agriculture and land use, ranking it as 16 ($\alpha= 3.01$). The inhabitants of the study area were mostly related to agricultural activities. CPEC has brought a novel means of income. These results are reinforced by Zulfiqar et al., (2019), who found that CPEC opened new prospects for local individuals to increase their fruit production and uplift their livelihoods.

Conclusion

The development dynamics of CPEC show multiple layers while operating in the Upper Hunza territory. As a fundamental infrastructure, the corridor functions beyond its status as a highway since it transforms geography along with societal identity systems and organizational power structures. It evaluated the social and economic effects of the CPEC upon the communities situated within the strategic northern route of the Upper Hunza region. The current development initiatives receive diverse and intricate reactions from the community members. People view CPEC as both a path toward development and greater prospects because it enables better trading connections and diverse income options. Residents show concerns regarding environmental damage, as well as cultural disturbances, and a fear of becoming powerless stakeholders in global transformation projects. The twin perspectives people have about CPEC reveal an important contradiction between enormous infrastructure expansion and the actual circumstances faced by indigenous mountain residents. Quantitative findings confirm people perceive economic gain from the project, but existing data show powerful concerns related to the protection of traditions and fair distribution of authority. This research demands a participatory development approach based on local needs to enhance regional progress. Local communities need to be involved by implementing bodies and policymakers, not as recipients of benefits but as active participants who bring their agency along with their historical backgrounds and indigenous knowledge systems that demand respect for integration. The study places marginalized voices at its core to advance academic discourse about development sociology. The study supports the idea that meaningful, sustainable development necessitates infrastructure alongside inclusive practices and cultural sensitivity, and different approaches to defining progress that benefit all groups.

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