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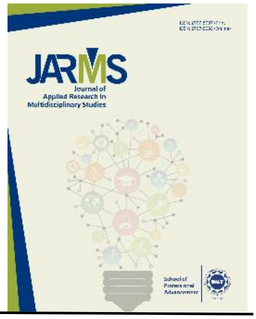

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Title: **Environmental Footprint of the China-Pakistan Economic Corridor (CPEC): A Quantitative Approach to CO2 Emissions and Climate Effects**

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Environmental Footprint of the China-Pakistan Economic Corridor (CPEC): A Quantitative Approach to CO2 Emissions and Climate Effects

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Abstract

The current study is one of the initial and premier studies that was conducted to understand the environmental and climatic concerns related to China-Pakistan Economic Corridor (CPEC). The base of the theory was developed on pollution heaven hypothesis and analysis of selected variables was conducted through SMART-PLS via using Structural Equation Modeling (SEM). The analysis indicated that environmental concerns related to CPEC are not only perceived as the major predictors for CO_2 emissions, however, they are also capable to harm climate and public health as well. The findings may help to develop a concrete policy framework for ongoing and upcoming phases of CPEC development. The framework would mitigate environmental risks associated with these activities and save the communities from environmental and health hazards of CO_2 emissions. A substantial framework on this aspect would not only increase the economic and social significance of the project, however, it would also be a significant step towards addressing ecological and climatic harm to the environment. Hence, the current study is one of the pervasive studies that may not only increase the knowledge and research work associated with CPEC, however, it would also aid in policy formulation to further strengthen the Pak-China relationship.

Keywords: carbon emissions, carbon footprint, China-Pakistan Economic Corridor (CPEC), climatic harms, environmental concerns, public health

Introduction

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The China-Pakistan Economic Corridor (CPEC) is a magnificent infrastructure development project that is aimed to strengthen the economic ties between China and Pakistan through silk route. As one of the flagship projects of China's Belt and Road Initiative (BRI), CPEC has attracted substantial attention due to its prospective economic benefits and geopolitical propositions. While the world is moving to a shift towards environmentally concerning practices, the environmental impact of such large-scale infrastructure projects has not been studied at length.

The progress of CPEC would result in the development of massive projects. Although, for effective management of these projects, there is a need for updated and mutually accepted environmental policies. However, due to the absence of a treaty between these two countries, there are high chances of environmental mitigation from stakeholders (Khan & Xu, 2021). On the other side, Pakistan is suffering from several climatic and environmental challenges including heat waves, floods, different diseases, and droughts. Still, these elements are being ignored in the assessment of environmental harms that may be caused by the initiation of CPEC. Therefore, CPEC is perceived as a project that is associated with economic as well as environmental and climatic issues in Pakistan (Kouser et al., 2020).

However, economic benefits must not be achieved at the cost of environmental harms since these harmful elements may impact human health and economic activities in a negative way. Thus, it is valid to consider two major elements of environmental regulations that is, benefits that may be attained through environmental impairment and opportunity costs linked with environmental mitigations (Khan & Xu, 2021). Hence, remedial measures are required by the government to diminish the negative impact of CPEC on humans as well as to settle flora and fauna due to the initiation of CPEC (Ali, 2018).

The current study assessed the environmental footprint of CPEC with a focus on CO2 emissions and climatic effects. By adopting a quantitative approach, the extent of CO2 emissions was analyzed resulting from the implementation of CPEC. Moreover, the current study also examined the potential climatic effects associated with these emissions.

The impact of infrastructure development on CO2 emissions and climate change has been a subject of increasing concern globally. Numerous studies highlighted the correlation between economic growth, energy consumption, and CO2 emissions. However, the specific analysis of CPEC's environmental impact, especially in the context of CO2 emissions and climatic effects, is still scarce.

Understanding the environmental consequences of CPEC is crucial for policymakers, researchers, and stakeholders involved in sustainable development initiatives. The findings would contribute to the existing body of knowledge on environmental impact of large-scale infrastructure projects with a specific focus on CPEC. The results would not only enhance the understanding of environmental footprint of CPEC, however, also provide valuable insights for policymakers and stakeholders.

Statement of Problem and Theoretical Framework

There is a need to conduct research that may provide a better understanding of CPEC for all the stakeholders to make a proper analysis of the projects and their prospects (Habib & Iqbal, 2022). Especially, climatic concerns of CPEC must be assessed more critically (Sultan et al., 2021). Therefore, theoretical framework of the current study has been grounded on pollution haven hypotheses. The hypothesis has been presented by Zubedi et al. (2018) who indicated that through Foreign Direct Investment (FDI), developed sides also transfer pollution-emitting industries and commodities to developing sides of the world. On the other hand, developing sides are in need of FDI with less developed environmental policies and regulations. Thus, these locations may easily be transformed into pollution havens. There are three major environmental concerns that are associated with CPEC that is, energy-related coal-based projects, cutting down trees, and increase in vehicle traffic (Kouser et al., 2020). In fact, the Global Climatic Index for 2017 ranked Pakistan among top 10 countries that may be harmed severely by climatic changes. Therefore, there is a high probability of fatalities as well as economic losses (Ali, 2018). However, very few studies have been conducted on this recent issue, for instance Ali (2018), Khan and Xu (2021), and Sultan et al. (2021) highlighted the environmental threats of CPEC.

However, most of these studies are either opinion-based, such as Ali (2018) and Ali et al. (2021) or qualitative in nature, for instance Khan and Xu (2021) and rear of these studies, such as Sultan et al. (2021) have investigated the phenomenon empirically. Although, none of the studies explored the association between energy projects, increase in cutting trees, increase of traffic due to CO_2 emission, and public health. Therefore, the conduction of the current study is quite fruitful for a better understanding of the phenomenon, further research, and policymaking as highlighted by Sultan et al. (2021) and Khan and Xu (2021).

Significance and Purpose

Studies have indicated that environment is a multidisciplinary concept. Therefore, the significance of laws and regulations associated with effective environmental management is very high. Thus, there is a pressing need to critically analyze the investments associated with CPEC with the objective of ensuring environmental sustainability (Khan & Xu, 2021). Studies like these are significantly important to gauge the impact of CPEC as a whole which may include concerns of all stakeholders (Habib & Iqbal, 2022).

Especially, when the climatic harms of CPEC seem to be more critical (Sultan et al., 2021), studies that may work upon the indication of Habib and Iqbal (2022), are required to conduct more detailed researches on CPEC and its potential harms to make future of the country safe. Hence, the current study was conducted purposively to understand the impact of environmental concerns that may cause drastic climatic changes.

Literature Review

Literature in the current study has considerably highlighted the negative environmental consequences of CPEC (Ali, 2018; Khan and Xu, 2021; Kouser et al., 2020). In fact, academicians and civil society also raised severe concerns due to the possibility of intensive CO_2 emissions associated with CPEC (Ali, 2018). As a matter of fact, several studies focused on the impact of FDI on atmosphere and environment, since FDI may also have negative impacts on atmosphere. Additionally, several other studies also aimed to analyze FDI on world's climate, however, the final verdict that may conclude the impact of FDI on global climate is yet to come. Hence, some of the studies are found to support FDI for an increase of energy production at the cost of environmental quality and some may highlight the other way (Zubedi et al., 2018).

CPEC and Energy Projects

Among various environmental concerns associated with CPEC, one is the initiation of energy-related projects. In fact, 19 projects with an investment of $ 33 billion are part of CPEC. About 75% of energy would be generated from coal-based energy projects located in Sindh, Punjab and Baluchistan provinces (Kouser et al., 2020). The major reason to prefer coal-based plants over renewable energy projects is the shortage of energy in the national grid and expensive technology associated with the production of renewable energy. However, the United Nations Framework Convention on Climate Change (UNFCCC) is attempting to prevent CO2 emissions. It is not only keeping the records of CO2's emissions but also obliges the countries to develop their emission inventories. None of the CFPPs are supplemented with required facilities. Hence, it is impossible to reduce carbon emission, carbon capture, and carbon sequestration including the emission of CO_2 as well (Ali et al., 2021).

Coal-Based Energy Plants in CPEC and Increase in CO_2 Emission

Traditional coal-based electricity plants also resulted in the emission of enormous CO_2 and smog which are the major predictors of an increase in global warming. Most of the areas of Sindh and Punjab are already affected by smog and, thus the extent of increase in CO2 emission can be imagined with fully operational coal-based electricity plants (Kouser et al., 2020). CPEC is going to utilize most of the country's coal resources to generate electricity. Although, the use of coal was not appreciated in the generation of electricity and same has been highlighted by similar sorts of agreements, for instance in 2015, Paris did not permit its partnering countries to use coal for power generation (Khan & Xu, 2021).

Factually, the use of coal for power generation is only suitable for short-term, supplemented with the use of latest technologies, in order to mitigate the environmental harms due to the liberation of CO_2 (Ali, 2018). Although, for making CPEC operational, there is a need to use several machines, engines, and generators that would cause massive emissions of carbon, sulfur, volatile organic compounds, and oxides of nitrogen (Sultan et al., 2021). Studies have also indicated that the initiation of coal-based energy projects under CPEC increased CO_2 emission by around 61%, that is, from 2015 to 2020 and by 2030 it may rise up to 468,699 kilo tons (Malik et al., 2020).

H_1A: There is a relationship between coal-based energy plants in CPEC and an increase in CO_2 emissions.

CPEC and Deforestation

Another environmental concern associated with CPEC is the chopping down of trees to construct roads and infrastructure. These roads are divided into four major sub-categories including Northern, Western, Eastern, and Central. The structure started in the Kashghar part of China and touches Gwadar, Baluchistan. Thus, 54,000 trees were chopped down in the initial phase of CPEC which lasted till 2017 and due to this, the risk of climate change has increased tremendously (Kouser et al., 2020). Similar is the case for Khyber Pakhtunkhwa where the green belts of Hazara division and Mansehra and Battagram districts were chopped down to develop routes for CPEC (Dadwal & Purushothaman, 2017). The latest study conducted by Sultan et al. (2021) also indicated that the development of industrial zones, special economic zones, and transportation routes caused significant chopping of trees and green belts.

Deforestation for CPEC and Increase in CO_2 Emission

It has been estimated that one single tree can absorb around 50 pounds of CO_2 and it has also been predicted that due to the chopping of trees at an enormous level, millions of pounds of CO_2 would not be absorbed by plants (Kouser et al., 2020). Similarly, it has been indicated by Khalid et al. (2021) that chopping down 54,000 trees under CPEC would cause a substantial increase in CO_2 emissions. Thus, carbon dioxide emission may become a disaster as areas associated with CPEC are already affected by global warming. Therefore, chopping down trees may cause massive negative harm (Kakar et al., 2021).

H_2A: There is a relationship between chopping of trees for CPEC project and an increase in CO_2 emissions.

CPEC and Increase in Traffic

The last important aspect of CPEC, associated with environmental degradation, is an increase in vehicle traffic, especially in Northern areas of Pakistan (Kouser et al., 2020). An increase in traffic on routes linked with CPEC would also result in increased emissions of carbon, volatile organic compounds, and oxides of nitrogen. In fact, with full potential, CPEC would be evidencing 7000 trucks passing through these routes every day and that may cause significant raise in CO_2 emissions (Sultan et al., 2021)

Traffic Increase Due to CPEC and Increase in CO_2 Emissions

An increase in traffic, especially in urban areas is the major factor that causes air-pollution and with the initiation of CPEC, there would be a substantial increase in traffic passing through CPEC routes (Ahmad et al., 2022). A massive increase in CPEC-related routes would also result in a significant increase in CO_2 emissions. In fact, the estimated CO_2 emissions due to traffic increase may reach up to 36.5 million tons (Kouser et al., 2020). Carbon emission also causes potential enhancement of air pollution along CPEC routes and it is majorly caused due to increased air traffic (Ahmad et al., 2022). As a matter of fact, increased traffic may result in the decomposition of glaciers and land sliding and, therefore there is a need to install catalytic converters in trucks to reduce carbon emissions (Habib & Iqbal, 2022).

H_3A: There is a relationship between an increase in traffic due to CPEC and an increase in CO_2 emissions.

Emission of CO_2, Global Warming and Deteriorated in Public Health

Increase in CO_2 emissions is directly related with climate change which may also destroy glaciers and cause a significant increase in floods (Kouser et al., 2020). Therefore, air pollution is not only impacting the human health negatively, however, global climate as well. The major threat is for middle- and low-income countries and Pakistan is included in the list of these countries that are exposed to $PM_{2.5}$ causing significant harm to human health and well-being of the people (Ahmad et al., 2022).

H_4A: There is a relationship between CO2 emissions and increase in global warming.

H_5A: There is a relationship between increase in global warming and decrease in public health.

H_6A: There is a serial mediation of an increase in CO_2 emissions and increase in climatic harms in the relationship of energy projects of CPEC and a decrease in public health.

H_7A: There is a serial mediation of an increase in CO_2 emissions and increase in climatic harms in the relationship of cutting trees due to CPEC and a decrease in public health.

H_8A: There is a serial mediation of an increase in CO_2 emissions and increase in climatic harms in the relationship of increased traffic due to CPEC and decrease in public health.

Research Methodology

Research methodology refers to that part of the study which not only discusses how data is collected, however, it also legitimizes the base of the data collection and analysis (Kothari, 2004). Therefore, using the instrument of research onion by Saunders et al. (2009) research methodology has been divided into three major sections mentioned below.

Research Design

The research is based on the indication of Ahmad et al. (2022), Habib and Iqbal, (2022), Ali et al. (2021), and Kouser et al. (2020) in order to identify the impact of three main environmental concerns of CPEC on CO_2 emissions and climate change. However, the current study is different in comparison with earlier ones since it aimed to understand the impact of environmental concerns quantitatively. On the other side, all the previous studies were qualitative except Sultan et al. (2021) which only addresses the impact of energy projects. Although, according to Ahmad et al. (2022), Ali et al. (2021), and Kouser et al. (2020) there is a need to analyze the impact of other environmental concerns, especially on CO_2 emissions and climate change. Thus, the major purpose of the study was to build knowledge associated with epistemology as a research philosophy that has been highlighted as a philosophy of knowledge by Saunders et al. (2009). The philosophical stance that is used to connect philosophy with data collection technique (Saunders et al., 2015) is post-positivism which is relatable to qualitative designs as well as quantitative designs (Žukauskas et al., 2018). Although, the current study used a quantitative technique to address the concerns of Habib and Iqbal (2022) as climatic harms of CPEC needs further and thorough attention Sultan et al. (2021).

Sampling Design

Some of the prior studies, such as that of Chang et al. (2021) used secondary data to estimate the risk of land sliding and Durani and Khan (2018) employed a mixed approach to determine the environmental impact of CPEC. In past, government did not approve any new CPEC projects (Iqbal, 2021) and some of the projects were also halted (Younis et al., 2021). Hence, the basis of secondary data cannot be used for estimation. The current study collected the data from primary sources by using a questionnaire (Lashari et al., 2021). Although, the study focused only on inhabitants of areas located near proximity of CPEC. A similar data collection approach was used to collect the data pertaining to social, economic, and environmental impacts of CPEC. Although, this time the data was collected with minor adaptation, that is, respondents must have 16 years of education in order to understand the gist of study and questionnaire effectively. The total number of circulated questionnaires were 1300, however, the analysis was conducted on 1045 questionnaires.

Thus, the response rate for the study was 80 respondents. Out of these respondents, 78% were male and 22% were females. Similar was the case with the study conducted by Khalil et al. (2021) where the data was collected from respondents who lived near CPEC routes. However, larger male segment was also observed which is especially valid for the current study where respondents must have a graduate degree to answer the environment-related questions effectively.

Research Instrument and Statistical Testing

Research instrument for this study comprised a close-ended questionnaire that was formulated through Ali et al. (2018), Aman et al. (2022), Kanwal et al. (2019), Khalil et al. (2021), Sultan et al. (2021), and Xiaolong et al. (2021). The analysis was conducted by using SMART-PLS which was also used by Aman et al. (2022) and Sultan et al. (2021) on relevant studies on CPEC. Although, Structural Equational Modeling (SEM) was employed as a statistical technique used by Aman et al. (2022), Kanwal et al. (2019), and Sultan et al. (2021).

Statistical Testing and Analysis

SEM is a tool that is ideal to solve business research problems, especially when the model is accompanied by unobserved or latent variables. This tool is a part of second generation of multivariate data analysis and might be implemented by using PLS-SEM, Co-Variance Based Sem and Web-Based-Approach known as Generalized Structured Component. However, the best way to implement SEM is PLS-SEM as by using this method, researchers would be free from model specifications, theoretical implications, and sample size (Wong, 2013). However, SMART-PLS also highlights significant paths along with relevant effects (Vijayabanu & Arunkumar, 2018).

Figure 1 is placed for highlights' outer loadings that are similar to factor loading and used to validate the elements used in the process of research (Afthanorhan, 2013). However, the minimum value that may validate any element in the research model is 0.70 (Trianasari et al., 2022). Though, one may use elements with outer loading of 0.60 or above if the inclusion may not harm the overall reliability of the construct or produce a harmful impact on convergent criteria (Sander & Teh, 2014). Thus, in light of the mentioned criteria, there is no need to remove any of the elements in the Confirmatory Factor Analysis (CFA) and the model is optimum to be used for inferential statistics.

Figure 1

Confirmatory Factor Analysis (CFA) and Outer Loading

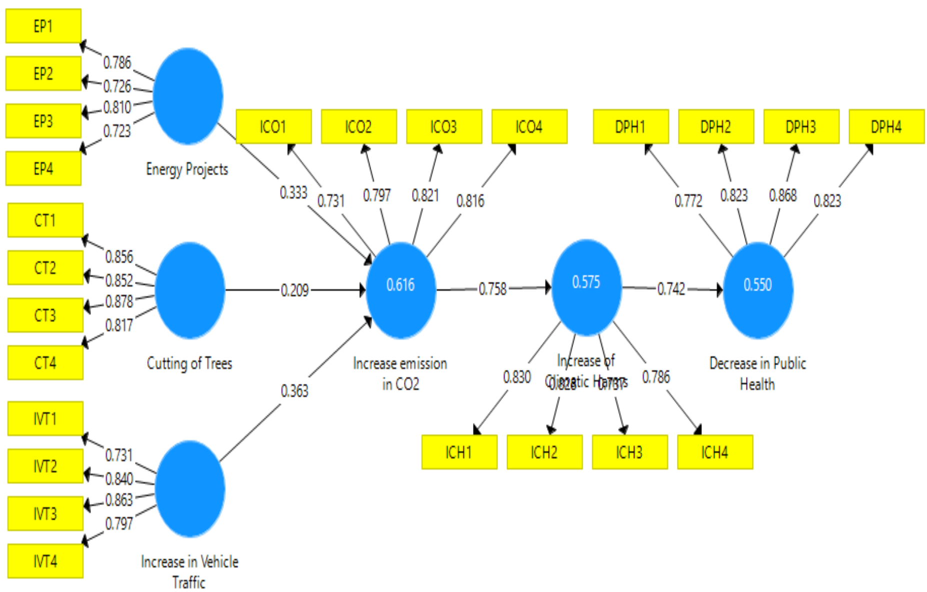


Table 1

Construct Reliability and Convergent Validity

	Cronbach's Alpha	rho _A	Composite Reliability	Average Variance Extracted (AVE)
Cutting of Trees	0.874	0.88	0.913	0.725
Decrease in Public Health	0.839	0.84	0.893	0.676

	Cronbach's Alpha	rho _A	Composite Reliability	Average Variance Extracted (AVE)
Energy Projects	0.760	0.76	0.847	0.581
Increase emission in CO2	0.803	0.81	0.871	0.627
Increase in Vehicle Traffic	0.823	0.83	0.883	0.655
Increase of Climatic Harms	0.808	0.82	0.873	0.634

Table 1 reflects construct reliability and convergent validity. Elements that may reflect the reliability of the model are Cronbach's Alpha, Goldstein rho, and composite reliability. However, composite reliability along with the average variance extracted is also used to reflect convergent validity (Hair et al., 2013). The minimum acceptable value for Cronbach Alpha is 0.4 and 0.6 for composite reliability (Vijayabanu & Arunkumar, 2018). However, higher values of these measures are always appreciated in order to increase the reliability of the construct. On the other side, it is also indicated that AVE is the best tool to gauge convergent validity and it does not need the support of any other elements if the value is 0.5 or above (Yaacob et al., 2021).

Table 2 reflects discriminant validity through Heterotrait-Monotrait Ratio (HTMT). HTMT is perceived as the best option to measure discriminant validity (Iqbal et al., 2021). Although, most of the studies predict the maximum value to assure that discriminant validity is 0.85 (Hair et al., 2013). However, there are studies, such as Hamid et al. (2017) and Hoong et al. (2019) indicating that the maximum cutoff value for HTMT is 0.90. Hence, on the basis of these criteria, HTMT (Discriminant Validity) is found to be fit for the model.

Table 2

Heterotrait-Monotrait Ratio (HTMT)

	Cutting of Trees	Decrease in Public Health	Energy Projects	Increase emission in CO_2	Increase in Vehicle Traffic	Increase of Climatic Harms
Cutting of Trees						
Decrease in Public Health	0.608					
Energy Projects	0.691	0.790				

	Cutting of Trees	Decrease in Public Health	Energy Projects	Increase emission in CO_2	Increase in Vehicle Traffic	Increase of Climatic Harms
Increase emission in CO2	0.748	0.824	0.862			
Increase in Vehicle Traffic	0.743	0.805	0.815	0.829		
Increase of Climatic Harms	0.691	0.635	0.896	0.832	0.808	

Table 3

Quality Criteria (Predictive Accuracy)

	R Square	*R* Square Adjusted
Decrease in Public Health	0.550	0.548
Increase emission in CO2	0.616	0.609
Increase of Climatic Harms	0.575	0.572

Table 3 reports predictive accuracy based on a 1% change in the independent variable to predict the change in the dependent variable. However, according to Hair et al. (2013), the least acceptable variation in the dependent variable is 0.25 and lower than that the model is not perceived as fit. However, in order to assure a higher fit, a value of 0.50 is perceived as a moderate fit and a value of 0.75 or above is perceived as an excessive fit.

Table 4 represents the measurement of bootstrapping, that is, reflecting the impact of a selected variable over others and, therefore it is part of inferential statistical testing in SMART-PLS (Silaparasetti et al., 2017). According to Wong (2013), two majors are used to highlight the impact of one variable over the others, that is, p-value and t-value. In order to fulfill the criteria for t-value (statistics), the value must be 1.97 or above and to fulfill the criteria for p-value, the value must be 0.05 or less.

However, both criteria must be fulfilled to legitimize the impact of variables on others through bootstrapping (Hair et al., 2013). Similar has also been highlighted in Figure 2 which is actually the reflection of all the analysis and bootstrapping in a single go. Thus, on the basis of Table 4, it is optimum to believe that all the environmental aspects of CPEC are causing an increase in CO_2 emissions that impacts the climate in a negative way and a deterioration in public health.

Table 4

Quality Criteria (Predictive Accuracy)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	*p* Values
Cutting of Trees -> Increase emission in CO2	0.209	0.217	0.066	3.162	0.002
Energy Projects -> Increase emission in CO2	0.333	0.334	0.064	5.166	0.000
Increase emission in CO2 -> Increase of Climatic Harms	0.758	0.761	0.039	19.583	0.000
Increase in Vehicle Traffic -> Increase emission in CO2	0.363	0.354	0.072	5.026	0.000
Increase of Climatic Harms -> Decrease in Public Health	0.742	0.746	0.044	16.903	0.000

Table 5

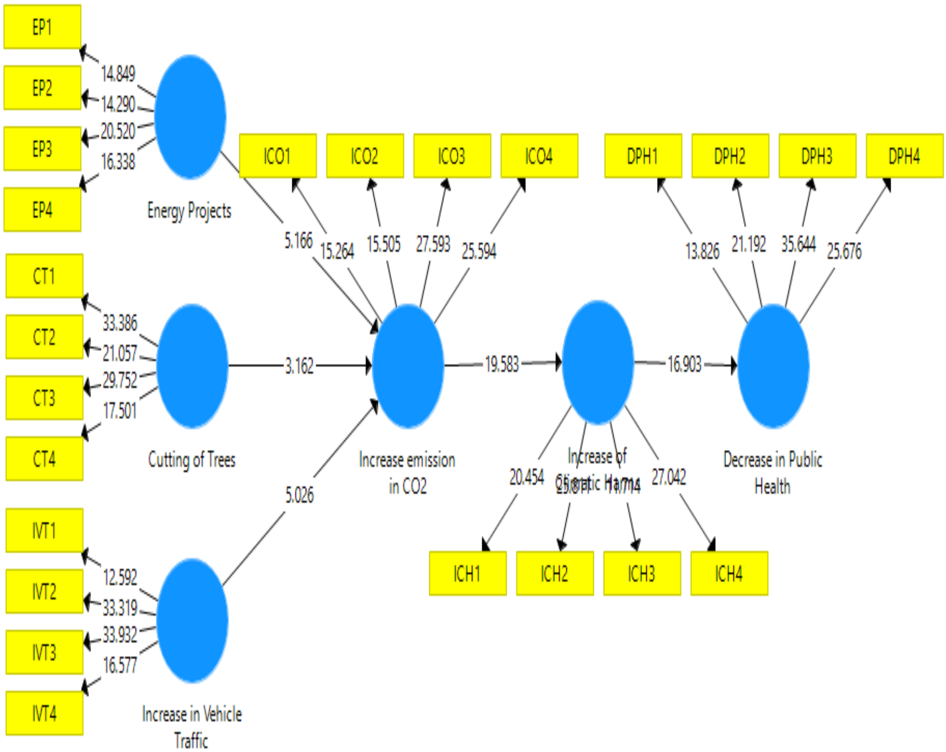
Specific Indirect Effect (Mediation Analysis)

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	*t* Statistics |O/STDEV|	*p* Values
Cutting of Trees -> Increase emission in CO2 -> Increase of Climatic Harms -> Decrease in Public Health	0.118	0.123	0.040	2.953	0.003
Energy Projects -> Increase emission in CO2 -> Increase of Climatic Harms -> Decrease in Public Health	0.187	0.190	0.043	4.357	0.000
Increase emission in CO2 -> Increase of Climatic Harms -> Decrease in Public Health	0.562	0.569	0.057	9.945	0.000
Increase in Vehicle Traffic -> Increase emission in CO2 -> Increase of Climatic Harms -> Decrease in Public Health	0.204	0.202	0.049	4.202	0.000

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	*t* Statistics |O/STDEV|	*p* Values
Cutting of Trees -> Increase emission in CO2 -> Increase of Climatic Harms	0.158	0.165	0.051	3.113	0.002
Energy Projects -> Increase emission in CO2 -> Increase of Climatic Harms	0.252	0.255	0.052	4.821	0.000
Increase in Vehicle Traffic -> Increase emission in CO2 -> Increase of Climatic Harms	0.275	0.270	0.058	4.718	0.000

Table 5 is also a part of inferential statistics, although it has been placed in order to reflect specific indirect effects in comparison with the direct effects shown by Table 4. Both, Table 4 and Table 5 are part of inferential statistics as indicated by Silaparasetti et al. (2017). Therefore, the criteria indicated by Hair et al. (2013), and Wong (2013) must be fulfilled accordingly as indicated in Table 4.

Figure 2
Boot Strapping



Thus, in light of Figure 2, Table 4, and Table 5, it is optimum to accept all the hypotheses, that is, H_1A, H_2A, H_3A, H_4A, H_5A; H_6A; H_7A and H_8A.

Conclusion and Discussion

The current study concluded that there is a definite relationship between all three environmental aspects associated with CPEC and an increase in the emission of CO_2. Moreover, inferential testing through SMART-PLS also clarified the relationship of all three environmental concerns associated with CPEC, with climatic harm as well as with a decrease in public health. Therefore, it is legitimate to declare the use of pollution haven hypotheses by Zubedi et al. (2018) as the legitimate choice for the current study.

Similarly, the selection of all the major environmental aspects indicated by Kouser et al. (2020) on and decreases in public health through the increase of climatic harm and decrease in public health also found significant. This signifies the indication made by Habib and Iqbal (2022) associated with further research related to CPEC in order to produce significantly impactful findings for stakeholders. In fact, Khan and Xu (2021) made a significant contribution to knowledge and research by contributing statistically to climatic and environmental concerns related to CPEC.

In short, the inferential statistical testing of the current study underlined all the dimensions in literature related to energy projects, chopping of trees, and traffic increase. Hence, the study underlined Ali (2018), Khan and Xu (2021), Ali et al. (2021), and Kouser et al. (2020) for all the indications associated with energy projects and increase in CO_2 emissions. Similarly, the study also underlined Dadwal and Purushothaman (2017), Kakar et al. (2021), Khalid et al. (2021), Kouser et al. (2020), and Sultan et al. (2021) for all the indications associated with the chopping down of trees and increase in CO_2 emissions. The study also underlined Ahmad et al. (2022), Habib and Iqbal (2022) and Kouser et al. (2020) for all the indications associated with an increase in traffic and increased CO_2 emissions. Thus, there is no hesitation in believing the negative impact of these environmental concerns on climate change as predicted by Kouser et al. (2020) and the deterioration in public health as highlighted by Ahmad et al. (2022) and Kouser et al. (2020).

Policy Implications

The study clarified the drastic impact of the three environmental concerns on climate as well as public health. Hence, these findings must be considered aligning with optimal policy measures for making CPEC operational in the coming times, as indicated by Ali (2018). Hence, better environmental and climate policies as indicated by Nazir and Yu (2023) may be incorporated with CPEC projects to reduce environmental and climatic degradation.

Future Research

The current study is one of the primary ones that was conducted to relate all the environmental concerns of CPEC with an increase in the emission of CO_2, climate harms, and a deterioration in public health. Although, further studies may be conducted by analyzing each of these environmental concerns, that is, associated with CPEC individually and comprehensively. Further research may also be conducted by using moderating factors that may prevent CO_2 emissions, such as demands and approvals of reversible energy projects. This may clarify the impact of recently added energy and transportation projects on the visibility of CPEC as well as on the role of CPEC on global climate.

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