P-ISSN: 2709-6254	Journal of Development and Social Sciences	Apr-June 2024, Vol. 5, No.2(S)
O-ISSN:2709-6262	https://doi.org/10.47205/jdss.2024(5-II-S)25	[244-256]

Journal of Development and Social Sciences
www.jdss.org.pk

RESEARCH PAPER

China Pakistan Economic Corridor and Sustainable Environment: Development, Impacts, and Policies

[1]Muhammad Faisal* and [2] Dr. Muhammad Usman Askari

1. Lecturer, Department of Political Science, Govt. Graduate College Shakargarh, Punjab, Pakistan
2. Associate Professor, Department of Political Science & International Relations, UMT, Lahore, Punjab, Pakistan

***Corresponding Author:** fkamran_15@yahoo.com

ABSTRACT

China Pakistan Economic Corridor (CPEC) is very significant project owing to its development in Pakistan and China. It is evident that this project is promoting sustainable development in both countries in many ways. The objective of this research paper is to study about the sustainability of CPEC in adopting the environment related initiatives. It has been argued that CPEC is a difference maker in terms of improving infrastructure, protecting environment and boosting of the trade between Beijing and Islamabad. That is why, both nations have adopted multi-dimensional initiatives to save the environment. However, there is need to improve this process. Still there are many environmental challenges to this significant project. Considering the development under this project both Pakistan and China aspire to engage in clean energy cooperation to ensure sustainable environment. Both countries need to formulate guidelines and protocols for a green investment project roadmap to address the challenges of sustainable environment which are still missing at the policy level. By employing qualitative methods based on research material from secondary sources, this research aims to study the initiatives taken by Pakistan to make CPEC an eco-friendly and environmentally sustainable project. This is evident that CPEC project experience moderate but short term environment challenges due major infrastructure reforms. Furthermore, these environmental challenges are stern and can create hindrance in economic development for Pakistan and China if certain environmental regulations could not be adopted. This paper recommends that both states needs to adopt concrete, composite, bilateral environmental cooperation for the sustainability of CPEC project for durable time frame.

KEYWORDS Clean Energy, Climate Change, CPEC, Development, Sustainable Environment

Introduction

China Pakistan Economic Corridor (CPEC) is described as difference maker for boosting the economic and infrastructural development and China's dream of Belt and Road Initiative. Former Prime Minister of Pakistan Shahid Khaqan Abbasi while inaugurating the long term plan for CPEC pointed that it will be a game changer project not for Pakistan but its fruits will also be equally beneficial for the region. It is the only capitalized project in Pakistan which is ever mounted since 1947. This project comprise the reorganization of Gwadar Port, roads, railways, energy stations, and other facilities which aims to establish sea-land connectivity between Islamabad and Beijing ranging from Gwadar in Pakistan to Kashgar city of Xinjiang province in China. Therefore, CPEC is described as the collection of infrastructure projects in Pakistan to boost its shattered economy (Rahim, Khan, & Muzaffar, 2018; Chen, Joseph, & Tariq, 2018). This project further resolve the connectivity issue and will ultimately enhance the bilateral and regional trade potential.

The CPEC aims to contribute in four major areas such as; infrastructural development (road-railway network, improving telecom communication networking), energy projects (construction of small, medium and large scale energy projects to overcome electricity crisis in Pakistan), Gwadar Port development and long term industrial

cooperation between China and Pakistan (Yaseen, Muzaffar, & Shahbaz, 2023; Ishtiaq, Khan, & Sohail, 2017). The CPEC was initiated in scenario when socio-economic indicators of Pakistan were down, local investment approaching to bottom line and domestic industry was also not performing well. The war on terror resilience in Pakistan has also heavily impeded the foreign direct investment.

For the critics, major concern of CPEC is associated with environment and climate change. It has been argued that the Chinese investment in BRI flagship projects has introduced a new set of environmental issues. These issues are related to deforestation, air pollution due to coal projects, challenges to the natural beauty of sight-seeing places. These are the worth concerns. However these are short-sighted briefs mostly based on misinformation and miscalculations based on short data provisions. There are certain challenges of environmental impact related to CPEC.

- Around US $33 billion spending are reserved for 19 energy projects associated with CPEC and most of these projects are coal power plants. These coal power plants will have negative health consequences. Pakistan could ask China for alternatives of these plants (Baloch, 2018).
- In modernizing the road and energy sector in Pakistan, CPEC project lack the enforcement of environmental and social safeguard laws and policies to ensure sustainable development of the region. Large scale infrastructural projects associated with CEPC require land clearing by cutting down of massive number trees and cultivable land as well the displacement of communities and destroying the natural habitat of species. Disputes on land, water, livelihood and cultural values may trigger (Ali & Askari, 2023; Aslam, 2021).
- As the CEPC route will fully operational, almost 7000 vehicles will travel on daily basis on this route and emit 36. Million tons additional Corban Dioxide gas into the air making it more polluted. In addition to this, Pakistan also carries old age Heavy-Duty Trucks (HDTs) having no formal vehicular emission standards. This is also a dangerous associated social risk (Khalid, Ahmad,. & llah, 2021).
- Various decision on CPEC have taken beyond the laws and environmental regulations. It has been noted that, almost 54000 trees cut down to expand the road network under this project only in Khyber Pakhtunkhwa province endangering the natural habitats o several species. This situation is simultaneously experienced by Gilgit-Baltistan region. These decision needs to be re-evaluated by the stakeholders in line with principles of environmental sustainability (Ebrahim, 2017).

From the above discussion, it is evident that CPEC project experience moderate but short term environment challenges due major infrastructure reforms. Furthermore, these environmental challenges are stern and can create hindrance in economic development for Pakistan and China if certain environmental regulations could not be adopted.

Literature Review

The research and literature is available on different aspects of CPEC. Some of the aspects where plenty of research papers are available include CPEC and infrastructure development, Green Energy initiatives under CPEC, CPEC and SEZs, Regional and international importance of CPEC, Stability and Security of CPEC as well as environmental cost of CPEC. So far, minor research has been conducted on the topic of CPEC and environment sustainability.

This research is very significant in understanding the sustainability and development of CPEC as a corridor by considering the environment from which it drives through from Xinjiang to Gwadar. That is why focusing on the sustainability and

development aspects of CPEC, several sources which are quoted in this paper are based on core information while self-descriptive analysis. However, concrete evidences has been given, described and quoted.

Ali and Askari (2023) have analysed the impacts of CPEC on the natural environment of Pakistan. They proclaimed that the project has significantly impacted on the natural environment and disturb the life cycle of many species since its inception. The research proposed that there should be a strategy to protect the nature while working on CPEC development related projects. The government should devise policy and allocate resources for this purpose.

Aslam, H., (2021) in her study finds that, in CPEC agreement between China and Pakistan, it has not been proposed any guideline, framework or protocol for protecting the environment while working on infrastructure development. Several coal related energy projects was proposed which still have growing environmental threat to Pakistan. The research concludes that, it is dire need to adopt the global energy governance in this project.

Ali, M., Sajjad, W., and Haleem, A., (2020) opined that in the infrastructural working on CPEC, both biodiversity and environment have significantly disturbed. The researcher proposed "climate engineering" model to cope with environmental issues of CPEC. The installation of corban dioxide scrubbers, algal ponds and development of research stations alongside CPEC to study changes in the environment and find solutions accordingly.

Khalid, I., Ahmad, T., and Sami Ullah, have investigated in their study that there is scarcity on debate and discussion on environmental law pertaining to implementation of CPEC project. This research concludes that there is need to establish economic, environmental, and legal cooperation to address this issue for the sustainability of CPEC.

Additional studies and references quoted in this research paper are based on to study the background of the debate on "development versus environmental sustainability". However, by establishing a correlation between the two concepts, it has been established that for acquiring long term benefits of any development projects, environmental laws obligation and maintenance is essential and crucial.

Material and Methods

The research paper is based on the qualitative analysis of the sources which have been extracted from journals, official reports, books, media reports and documents. The analysis of the given sources have been incorporated in this article in a way so that an understanding can be developed that, why environment protection under international protocols is essential for Pakistan while benefitting from the CEPC for a durable time frame.

Results and Discussion

The result/findings of the research paper is given as following;

- Until the recent times, there is no legal commitment between China and Pakistan for developing environmental sustainability while joint venturing on CPEC infrastructure development
- Both states have only pledged verbally to consolidate a way to protect the biodiversity and local environment. However this commitment is not binding on the Chinese side.
- The critics especially the western narrative contextualize that CPEC drifted environmental pollution based on narrow findings.

- Several decisions that have been taken to date are associated with CPEC modernization falls short in environmental obligation and safety rules
- Both nations pledged to cooperate in green energy initiatives but the pace of this cooperation very slow.

Economic Development versus Environmental Challenge

The industrial revolution of 17th century in Europe transformed the economy of the region. It reformed the old patterns of labor who worked on bonded nature. This revolution introduced laws and legal protocols in every domain. It was a period of global transition for human economy towards mechanical manufacturing of goods. An advance entrepreneurial spirit was emerged as the consumer markets were created outside the west owing to expansion of colonization. This market also made some protocols for the native working class so that rules and regulations must be prevail in that phase of economic transformation. In that era, environment has less privilege due to its low impacts on human population due to lack of scientific data and analysis until the beginning of 21st century.

The beginning of environmental protection laws is the post age development of humanitarian law which was universally accepted in 1948. After the enactment of human rights at UN Assembly, environment also advocated as human right issue owing to its importance due to growing GHG debates at various international forums. In 1960s, several movements by various human rights organizations were started specifying better sanitation and health safety for industrial workers. The Stockholm conference on sustainable development in 1972, give space to discuss the environment. Furthermore, in 1983, world commission on environment and development was framed to study the impact of industrialization on environment. In 1992, first UN *Earth Summit* was called in Rio de Janeiro. The declaration of this conference for the first time asked the world development must be fulfilled so as to equitably meet the development and environmental needs of current and upcoming generation. Several world-wide environmental organizations, bodies, international climate regulations, protocols and industrial legal dossiers were framed. The debate reversed from the old age concept of development at the expense of environment reshaped into development with sustainable development (Nelson, 2002).

It is argued that climate change as a factor for economic sustainability introduce new set of policy challenges for many developing states including Pakistan due to scare resources, lack of technology and poor development. Tackling the problem of economic security are now falls in the ambit of abiding the environmental protocols under international environmental monitoring agencies. Hence, economic progress is now depends on the adaptation of environmental obligations (Ramay, 2018).

Long Term Economic Plan for CPEC

Long term economic plan of CPEC is associated in four major areas such as infrastructure development, energy cooperation, Gwadar Port development and the establishment of long term industrial cooperation. So far, US $ 65 billion budget is estimated to complete projects with additional cost of environmental degradation. A brief analysis of these four components is given as following;

Infrastructure Improvement: Infrastructure improvement is the primary component of CPEC. Special Economic Zones have also been proposed to establish with less environment cost and low carbon emission. Some of the important infrastructural projects under CPEC are given as following;

Table 1
Infrastructure Projects under CPEC

Completed Projects	• KKH Phase-II (Havelian-Thakot section)	120 km
	• Multan-Sukhur Motorway	392 km
	• Hakla-D.I Khan Motorway	297 km
	• Orange line Railway Track, Lahore	27 km
	• China-Pakistan Optical Fibre Cable	820 km
	• Pilot Project of Digital Terrestrial Multimedia Broadcast	N/A
Under-construction	• Zhob-Quetta link (N-50)	305 km
	• Khuzdar-Basima Road (N-30)	106 km
	• Hoshab-Awaran Road Section (M-8)	146 km
	• KKH Alternate Route Shandur (Chitral Road)	213 km
	• Realignment of KKH Phase-I, Thakot-Raikot section	250 km
	• Peshawar-D.I Khan Motorway	360 km
	• Awaran – Khuzdar Road Section (M-8)	168 km
	• Dir Expressway	29.6 km
	• Digitalize existing three sites of PTV DTMB-A	N/A
Long Term Projects	• Mirpur – Muzaffarabad – Mansehra Road	200 km
	• Karachi Circular Railway	43 km
	• Mashkhel – Panjgur Road	200 km
	• Quetta Mass Transit	N/A
	• Greater Peshawar Region Mass Transit	N/A

Source: https://cpec.gov.pk/infrastructure

Green evaluation of stability, role of environmental protection is directly associated with CPEC. The significance of environmental protection is critically associated with CPEC's success. The obligation of environmental protocols is eminent towards India and China. Shah, Muzaffar, & Yaseen, 2020). Hence, there is significance competition for environmental obligation in CPEC. Most of the international organizations emphasize on the development of eco-friendly projects associated with CPEC (Hao, Shah, Nawaz, Nawaz, Noman, Zafar, 2020). The environment preservation aspect cannot be ignored in this long term project.

Energy Cooperation: Almost 35 energy projects has been proposed under CPEC. In the beginning, coal power plants were planned. After adaptation of new five year plan by China in 2020, coal technology has now been abandoned and alternative energy plans such as solar, wind and hydropower takes avenues.

Table 2
Energy Projects under CPEC

Completed Projects	• Sahiwal Coal-fired Power Plant	1320 MW
	• Port Qasim Coal-fired Power Plant	1320 MW
	• Hub Coal-fired Power Plant	1320 MW
	• Thar Coal Power Plant	660 MW
	• HUBCO Thar Coal Project	330 MW
	• SSR Thar Coal Power Project	1320 MW
	• HUBCO Thal Nova Power Project	330 MW
	• China Dawood Wind Farm Gharo, Thatta	50 MW
	• Karot Hydro Power Project AJK	720 MW
	• Quaid-e-Azam Solar Park Bahawalpur	400/600 MW
	• UEP Wind Farm, Thatta	100 MW
	• Gorges Wind Project	100 MW
	• Matiari to Lahore HVDC line	4000 MW
Under-construction Projects	• Coal-fired Power Project, Gwadar	300 MW
	• Suki Kinari Hydropower Project	870 MW

Under-consideration Projects	• Thar Mine Mouth Oracle Power Project	1320 KW
	• Cacho Wind Power Project	50 MW
	• Western Energy Wind Power Project	50 MW
	• Azad Pattan Hydro Project	700.7 MW
	• Kohala Hydro Project	1124 MW

Source: https://cpec.gov.pk/energy

Ongoing coal projects have environmental and health consequences while the alternative and renewable projects are eco-friendly. There is hope that the future energy endeavors under CPEC will be environment friendly.

Gwadar Port Development: Gwadar Port development plan is aimed to execute in two phases. The first phase is over. While the work on second phase is in progress. The proposed projects under this significant project is listed as following;

Table 3
Gwadar Development Projects

Completed Projects	• Development of Port and Free Zone • Gwadar Smart Port City Master Plan • Pak-China Technical and Vocational Institute • Gwadar Eastbay Expressway • Pak-China Friendship Hospital • 1.2 MDG Desalination Plant
On-going Projects	• New Gwadar International Air Port • Necessary facilities of fresh water treatment , water supply and distribution • 300 MW Coal-fired Power Plant • 5 MGD Water Desalination Plant Gwadar
Long Term Projects	• Construction of Breakwater • Dredging of Berthing areas and Channels • Fish Landing Jetty & Fishermen Boat making Industry • Gwadar Smart Environment Sanitation System and Landfill Project

Source: https://cpec.gov.pk/gwadar

The Gwadar Port development plan have many environmental consequences owing to its massive degradation activities. The long term environmental impacts are also visible in Balochistan particularly in areas where Coal Power plants are functioning (Durrani & Khan, 2018).

Industrial Cooperation: Rapid industrial cooperation under CPEC between Beijing and Islamabad will also have environmental consequences for Pakistan. The country is already experiencing climate stress. This estimated that almost 7000 trucks will travel to China via CPEC route while emitting Carbon Dioxide on massive scale resulting in deterioration of climate of these region. It will also equally disturb the region if environmental protocols will not be followed (Awais, M., Samin, T & Hwang, J., 2019).

China-Pakistan Perspective on CPEC's Sustainable Environment

China view CPEC for transforming the Xinjiang region of China by connecting it with Pakistan's Gwadar Port. Ranging from development to energy project, this project aims to boost the economic ties between the two neighboring nations. When Chinese, government started investing in coal energy projects, eminent international organizations critically examine the development and raise some important concerns. However, the Chinese

government argue that these are not valid concerns by the major powers. On the other hand, the Beijing administration also revise its strategy owing to environmental concerns.

There are two major components of Chinese investment under CPEC; investment for improving infrastructure and the investment for energy projects. Thirty percent resources has been allocated for the former while rest of 70 resources for the later. It is worth important that, ongoing five year Chinese development plan has strike down the projects associated with carbon emissions. It also revise the same in CPEC and replaced those with green energy projects (Baloch. 2018).

On the other hand, Pakistan and China also formulated long term for CEPC in 2017 with joint consultation. Due importance has been given to climate friendly projects. Mutual areas for cooperation on green energy projects are also include in this plan. This plan is valid until 2030 when the project will be fully operationalized (CPEC long Term Plan, 2017).

Pakistan pledge to exercise the international climate protocols. Thus, it also adopted the Alternative and Renewable Energy Policy in 2019. The aim of this policy is to produce at least 30 percent of its energy needs from environment friendly sources such as wind and solar projects. This is an important step which further improve the economic and environmental posture of CPEC (Yar, M.A., Salman, Dr. A & Ahmed, Dr. I., 2022).

Although there exists no document on environment aspect for the cooperation between China and Pakistan, however the stakeholders from both sides pledge to exercise environment friendly tools in CPEC. Some of the important commitments are given as following;

- China and Pakistan verbally planned for halting the new coal power projects
- Pledge to make more investment in hydropower, solar and wind energy projects under CPEC
- Both nations committed to enhance the clean energy cooperation under CPEC
- Both countries have global energy governance under additional environmental protocols and desire to implement them in CPEC related projects
- Both nations also committed to establish green freight transport policies in CPEC
- The Chinese stakeholders wants to promote cooperation with traders and business community in Pakistan to establish low carbon SEZs model (Aslam, 2021).

Pakistan seeks cooperation from domestic stakeholders for the successful execution of CPEC related projects in the domain of eco-friendly policies. It is not an easy task as the government needs both resources and technological skills for improving this fate. It is also required to explore the environmental protocols for the successful implementation of China-Pakistan Economic Corridor (Surahio, M.K., Gu, S & Soomro, M.M., 2022). In order to advance industrial competitiveness within a short span of time, the adaptation of environmental protocols and laws and their proper implementation is very essential. In this employment opportunities will increase as better working environment will increase the working efficiency of labors and industrialists.

CPEC Environmental Initiatives

Owing to environmental threats, both Pakistan and China have deliberately taken several initiatives. The primary objectives of these initiatives is to acquire long term benefits from this important project by uplifting the socio-economic fate of the region and the people. The detail of some those initiatives is given below;

Green CPEC Initiatives: This initiatives was taken by the two countries in 2022 to makes CPEC a green and decarbonized. Through diverse range of significant development

projects, CPEC aims to boost the socio-economic well-being of the people of Pakistan by setting the foundation of an environment friendly and sustainable country.

Green Infrastructure Initiative: This initiative emphasizes on adaptation of green and eco-friendly practices in building/construction/infrastructure roadmap, sustainable practice in transportation system and establishment of green spaces along CPEC route. This will eventually improve the air quality and mitigate the environmental degradation (Liaqat, 2024).

CPEC Green Corridor Initiative: Under this initiative, China is helping Pakistan in modernizing the agriculture sector by developing it on corporate lines. Agriculture research, advance farming and irrigation system technologies, quality export facilities and access to regional markets are some other tracks under this initiative. This will not only improve the economic condition of farmers but equally improve the environment as well.

Green CPEC Alliance: This forum offers invaluable platform for dialogue and action towards sustainability of CPEC.

Gwadar Environment Plan: For transforming Gwadar as *'Shining pearl'* of CPEC, the scientists of Pakistan and China are experimenting to produce plants which can adapt local environment for maintaining better air quality.

Pak-China Friendship Green Park: For developing vibrant Gwadar Port with improved environment and economy, both nations have planned to establish this park with the assistance of local people. The primary objective of this park is to promote sustainable environment by implementing proper environmental laws and protocols.

Green Financing: For developing low carbon SEZs, both nations needs to establish green financing system with the assistance of banks and corporate sector.

Sustainable and Green Energy Projects: Since 2020, both countries pledged to establish bilateral cooperation to produce sustainable and green energy projects under CPEC. Karote Hydropower Project is a significant example where a biodiversity management plan has been taken to preserve and protect the aquatic and wildlife species. Strict measures have also been taken to protect the river water quality around the site of the project.

Water Preservation Plan: Water preservation plan has also been to found to protect and preserve the river water from pollution. Suki Kinari Hydropower Project is a fine example of such management plan.

Transition to Green and Sustainable Development Initiative: China wants to lead CPEC as green and sustainable project under its Global Development Initiatives 2030 duly attain from UN 2030 SDGs. The aim is to achieve balanced and inclusive development (Javid, 2023).

The stakeholders from China and Pakistan have partnered with each other on Green CPEC Initiatives for ensuring CPEC's green and sustainable development, Pakistan's commitment with environment laws and protocols is very significant. Therefore, the focus must be on fulfilling the environmental sustainability for achieving long economic benefits.

A New Deal on Green Economy under CEPC

A sizeable measures has been taken by Pakistan and China to promote green economic framework under CPEC for developing sustainable economic growth. Some of the important MOUs regarding CPEC are given as under;

- An MOU signed between SDPI and World Wildlife Fund-Pakistan in 2023 to bridge the gaps in policies of environmental protection and ecological and biodiversity conservation during the execution of CPEC projects
- An MOU signed between Pakistan and China to preserve the and safeguard the cultural heritage amid climate challenge
- An MOU was signed between the two countries to address the climate change issues. China will provide necessary instruments and will also arrange capacity building training and workshops link with disaster risk management for Pakistani officials
- International Union for Conservation of Nature (IUCN) in collaboration with Pakistan is presently working on declaration of Marine Protected Area with primary mission of biodiversity and ecosystem conservation for promoting the eco-tourism in the future.

Environmental impacts related to CPEC project are deliberately diverse consequences for agro-ecology of the region. A recent report by WWF-Pakistan intakes that an approximate 20 percent from every one million migratory birds finding their hideouts in Chitral region will eventually lost their inhabitants or migrate elsewhere due to initiation mega-development projects under CPEC. It is a valid time and zone to implement the environmental MOUs. It is the responsibility of stakeholders from both Islamabad and China to develop policies and then consider them for compliance with environmental sustainability and socio-economic advancement and improve in human health (Khan & Chang, 2020; Ali, Mehwish, A., Sajjad, W., & Haleem, A., 2020).

Enacting International Environmental Protocols in CPEC Projects

CPEC introduce the importance of widespread and wide range livestock and agriculture farming. Resultantly, the nature of this farming is organic and environmental friendly. Additionally, improved water channel's system will take place upon completion of various CPEC projects. Here, this composite project by Pakistan and China can introduce more avenues for developing sustainable economy with the passage of time if both fraternal friends mutually agreed on making it environmentally sustainable (Asghar, A. J., Cheema, A.M., Hameed, M.I., Abbas, S.Q & Fatima, U., 2021).

IUCN conducted a roundtable discussion on the situational scenario of environment protection with regard to CPEC. Where, the participants implored that 'Pakistan's is environmental condition is seriously fragile owing to CPEC projects sustainability. Professor Dr. Rehana Siddique from Pakistan Institute of Development Economics stressed the need environment assessment both ongoing and completed CPEC projects. Presently, there is not homogenous environmental protection agency and protocols to monitor such development either in Pakistan or in China. This discussion ended with the pledge that CPEC project under BRI seriously increased the environmental risks which particularly needs to be addressed by both Beijing and Islamabad (IUCN, 2016).

The implementation of international environmental protocols is very essential to frame CPEC truly sustainable and eco-friendly. Although both the governments have composite approach in this way. However, there is need to adopt a composite policy approach resulting through excessive consultations and recommendation. The critique made by different international environmental organizations needs to be evaluated by both sides. Where the indigenous communities and other species are endangered, alternative mechanism must be adopted.

Sustainable Environment for Sustainability of CPEC

The CPEC project has gained historical criticism from countries and organizations since its inauguration. The project initiated and will eventually complete in two phases. The first phase is developing infrastructure of CPEC route. This phase prioritized rapid

development of infrastructure over sustainability. Additionally, to overcome the energy crisis at the domestic level, Pakistan constructed various coal power plants which eventually raised substantial environmental concerns by many countries. The work on these power plants was initiated in 2015. The criticism was based on aspiring and the execution of massive development projects on different locations. The major concern by the international stakeholders was that the coal plants will increase the air pollution in already climate ridden country and will eventually threat to environment.

Consequently, Pakistan diverted its path to alternative way by exponentially growing the green energy projects and other eco-friendly techniques. The mainstreaming of these policies instrumentally expand the environmental cooperation between Pakistan and China. As Pakistan adopted its alternative energy policy in 2019, China also abandoned its coal plants policy in 2020 when it declared the five year development plan (2020-2025).

Furthermore, infrastructure development under CPEC galvanized an opportunity to integrate the green practices into urban planning and construction practices in Pakistan. This laid the foundation of these practices for establishing sustainability. Although, policy framework has been adopted by different provincial governments but still narrow practices are available in this initiative. With regard to expand CPEC on regional scale as providing access to Middle East and Central Asian States China move on greener policies and initiatives, characterized by decreasing funding for coal and other fossil fuel projects and projected this investment in green projects to provide it optimum for more sustainable future (Liaqat, 2024).

CPEC can minimize the adverse impacts of climate change and ensure long term sustainability of development initiatives if;

- Initiatives like afforestation program is fully drive like 10 million Tsunami tree plantation program
- Wild life conservation programs must be advanced to protect wildlife species from the environmental impacts of CPEC.
- Ecosystem restoration efforts must fully comply with in Gwadar, Chitral and Gilgit-Baltistan regions.
- Incorporation of environmental safeguards and conservation measures are very essential for at project planning, initiation and execution levels.
- Holistic environmental approach is very critical for gaining sustainable future of CPEC.
- There is dire need to revisit the present environmental laws/protocols made by legislatures of both countries, institutional framework and governance/policy mechanism under the supervision of professionals, skilled and proficient environmentalists (Butt, M.J., Chang, Y.C & Zulfiqar, K., 2021).

Conclusion

CPEC is truly a *game-changer* project for both China and Pakistan for achieving sustainable economic development. It is the most significant project in the history of Sino-Pak relations. It provide extensive interconnectivity road patterns for both countries. This project is prematurely supervised under *Bilateral Investment Treaty* and *Free Trade Agreement*. Both of these agreements were signed in 1989 and 2006 respectively. There exists not a single clause in these two agreements regarding the protection of environment while trading with each other. Additionally there is also not existed any stringent institutional mechanism to address the environmental harm or degradation. This is very critical juncture.

On the other hand, Pakistan is climatically is enlisted in an endangered list according to the *Global Climate Index 2014-2023.* Under these reports, Pakistan has been declared as

one of the worst climate affected nation in the world. No doubt, Pakistan needs major development, trade and energy projects like CPEC to meet the population needs and exponential economic growth. But it is equally important for the nation to implement the environmental protocols in the same way. These protocols and laws previously have less consideration by successive government regimes in both Pakistan and China.

Recommendations

So far, many sustainable directives have been adopted and implemented regarding the planning, development and execution of CPEC, still needs more than earlier. All those directives have significant improvement capacity which needs to be inspected on durable grounds. A sound *environmental engineering* is very crucial to approaching the sustainable future of this project. The paying for environmental cost is extremely essential for sustainability of CPEC. In addition to this, following recommendations are extremely important to build the sustainability of environment in context of CPEC;

- For protecting the environment and the species associated with this environment, the government of Pakistan must make relevant laws. CPEC is a durable project and significant laws will make it more durable and sustainable
- There should be established an institutional mechanism to defuse the issues associated with the sustainability of CPEC. The stakeholder from provincial government should also incorporate in those institutional platforms to combat review their provinces choices along with the policies
- Pakistan needs to adopt the international standards in reforming its infrastructure keeping in view the international protocols so that efforts must keep to save the nature not particularly in CEPC projects but as a whole
- Pakistan must need to establish cooperation with its neighboring countries to improve the sustainability of environment in terms of peace, development and collective progress
- The last but not least is to keep alive the awareness campaigns in the society about the critical situation of environment and a common citizen can play a positive role must be encouraged.

References

Ali, M., Sajjad, W & Haleem. A. (2021). Climate Engineering: A Strategic Approach to Combat Environmental Potential Risks Associated with Pak-China Economic Corridor (CPEC) Development, *Reviews on Environmental Health*, 36(1), 143-144

Ali, T. Z., & Askari, M. U. (2023). Impacts of the China-Pakistan Economic Corridor on the Natural Environment of Pakistan. *Pakistan Social Sciences Review*, *7*(4), 653-663.

Asghar, A. J., Cheema, A.M., Hameed, M.I., Abbas, S.Q & Fatima, U. (2021, June). *The Critical Junction between CPEC, Agriculture and Climate Change*, Center for Chinese Legal Studies

Aslam, H. (2021). CPEC and Environmental Sustainability, *South Asian Voices*, July 20, 2021, accessed from, https://southasianvoices.org/cpec-environmental-sustainability/

Awais, M., Samin, T & Hwang, J. (2019). The Sustainable Development of the China Pakistan Economic Corridor: Synergy Among Economic, Social, and Environmental Sustainability, *Sustainability*, 11(24), 1-11

Baloch, S.M. (2018, April, 18). CPEC's Environmental Toll, *The Diplomat*,

Butt, M.J., Chang, Y.C & Zulfiqar, K. (2021). A Comparative Analysis of the Environmental Policies in China and Pakistan: Developing a Legal Regime for Sustainable China-Pakistan Economic Corridor (CPEC) under the Belt and Road Initiative (BRI), *IPRI Journal*, XXI (1), 83-122.

Chen, X., Joseph, S.K & Tariq, H. (2018). *Betting Big on CPEC*, Trinity College Digital Repository, 61-70

Durrani, M.Q & Khan, M.B. (2018). The Environmental Impacts of China-Pakistan Economic Corridor (CPEC): A Case Study, *Abasyn Journal of Social Sciences*, 11 (1), 201-221.

Ebrahim, Z. (2017). CPEC and the Environment: Good, bad and ugly?, *Dialogue Earth*,

Hao, W., Shah, S., Nawaz, A, Nawaz, M., Noman, S.M., Zafar, S.Z. (2020). The Impact of CPEC on Infrastructure Development, A Double Mediating Role of Project Success Factors & Project Management, *Revista Argentina de Clínica Psicológica,* XXIX (4), 737-750,

Ishtiaq, M., Khan, A & Sohail, M. (2017). How to Boost Exports through CPEC? Applying Growth Identification and Facilitation Framework (GIFF) to Pakistan, *PIDE Working Paper Series*, 349-365,

IUCN. (2019). Mainstreaming Environment in the China-Pakistan Economic Corridor is must to protect fragile environment of Pakistan, *International Union for Conservation of Nature*, blog,

Javid, S. (2023). *CPEC Promoting Green and Sustainable Development*, Center for Strategic and Contemporary Research

Khalid, I., Ahmad, T. & Sami Ullah. (2021). Environmental Impact Assessment of CEPC: A Way Forward for Sustainable Development, *International Journal of Development Issues*, 21(1), 159-171.

Khan, M.I & Chang, Yen-Chiang. (2020). *Love for the Climate in Sin-Pakistan Economic Romance: A Perspective of Environmental Laws*, Clean Technologies and Environmental Policy

Liaqat, S. (2024). Green CPEC and Sustainable Development in Pakistan, *Pakistan Observer*,

Long Term Plan for China-Pakistan Economic Corridor. (2017). from, https://pbit.punjab.gov.pk/system/files/LTP.pdf

Nelson, G. (2002). *Beyond Earth Day: Fulfilling the Promise*. New York: Wisconsin Press.

Ramay, S.A. (2018, January 15). CPEC and the Sustainable development it brings to Pakistan, *The Express Tribune*

Rahim, N., Khan, A. M., & Muzaffar, M. (2018). Problems and Prospects of CPEC for Economic Development and Regional Integration. *Global Economic Review*, III (I), 21-30

Shah, S. T. A., Muzaffar, M., & Yaseen, Z. (2020). Debunking Concerns of the New Delhi over CPEC**,** *Pakistan Languages and Humanities Review*, 4 (1), 33-46

Surahio, M.K., Gu, S & Soomro, M.M. (2022). China-Pakistan Economic Corridor: Macro Environmental Factors and Security Challenges, *SAGE OPEN*, 12(1), 1-18

Yar, M. A., Salman, Dr. A & Ahmed, Dr. I. (2022). Pakistan's Alternative and Renewable Energy Policy-Step Towards Energy Security, *Islamabad Policy Research Institute*, Policy

Yaseen, Z., Muzaffar, M., & Shahbaz, K. (2023). Pakistan-China Defense Cooperation: Opportunities and Challenges, *Asian Journal of Academic Research, 4*(3), 95-107