

Belt and Road Initiative for Sustainable Development (BRISD) for Pakistan: Aligning with the 5Es Framework

Saba Farah

saba.farah1549@gmail.com

School of Public Administration, Hohai University, Nanjing, China

Mahnoor Javed

mahnoormj24797@gmail.com

Department of Strategic Studies, National Defence University, Islamabad, Pakistan

Umair Khan

ummah6817@gmail.com

Tianjin Foreign Studies University, China

Hadia Safeer Choudhry

hadiasafeer74@gmail.com

Department of International Relations, Fatima Jinnah Women University, Rawalpindi, Pakistan

Corresponding Author: * Saba Farah saba.farah1549@gmail.com

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ABSTRACT

Belt and Road Initiative (BRI), which has already accumulated global investments of over one trillion dollars, provides not only transformation prospects but also considerable challenges to the participating countries. In the case of Pakistan, one of the major beneficiaries due to the China-Pakistan Economic Corridor (CPEC) worth around \$62 billion, it is important to capitalize on the initiative to realize the long-term development goals of Vision 2050. The rationale behind the writing of this research article is the creation of an analytical model of how BRI inspired investments can be aligned to the United Nations Sustainable Development Goals (SDGs) so that the growth of infrastructure can be converted into sustainable national development. The main idea of the given study is to present a 5E framework-Export-led growth, E-Pakistan digitalization, Environmental resilience, Energy security, and Equity and social empowerment- a way of governance and an evaluation mechanism. The research study begins with identifying the literature gap and highlighting how this study seeks to contribute to and expand the current body of knowledge. The second part presents the theoretical framework, focusing on how the Belt and Road Initiative for Sustainable Development (BRISD) can be effectively implemented through Pakistan's 5Es framework. This section illustrates that the future of Pakistan China cooperation is not limited to the construction of highways, roads, and power grids, but extends toward the transformation of Pakistan's economy and society to achieve a sustainable future. The third part discusses the methodological approach, detailing the use of both primary and secondary sources to develop a comprehensive understanding of the topic. Finally, the study examines how the Belt and Road Initiative is evolving into a new phase the BRISD for Pakistan ensuring that the benefits of development are equitably shared among all citizens and that this ironclad friendship supports Pakistan's own sustainable development agenda.

Keywords: Belt and Road Initiative (BRI); UN Sustainable Development Goals (SDGs); Pakistan Vision 2050; 5E Framework

INTRODUCTION

The Belt and Road Initiative is one of the vehicles for accelerating the implementation of the 2030 Agenda for Sustainable Development (United Nation, 2015) .The Belt and Road Initiative (BRI) has

much potential to contribute to the Sustainable Development Goals (Table 1). The China-Pakistan Economic Corridor is often regarded as a symbol of the ironclad friendship between Pakistan and China (Small, 2025) . Now, Pakistan steps into the second phase of CPEC, known as CPEC 2.0, a flagship project of the Belt and Road Initiative (Ministry of Planning, 2021). While CPEC's initial phase focused more on infrastructure, this time it is shifting toward sustainable development. This transformation can be termed the **Belt and Road Initiative for Sustainable Development (BRISD)** for Pakistan. A vision that will align with Pakistan's National Development Agenda and lays the fundamental for Pakistan Vision 2050 (Government of Pakistan, 2023).

Table 1: Alignment of Core Principles between the Belt and Road Initiative (BRI) and the Sustainable Development Goals (SDGs)

Principle / Aspect	Belt and Road Initiative (BRI)	Sustainable Development Goals (SDGs)
Overarching Mindset	Peace, inclusive development, and common prosperity.	Peaceful, just, and inclusive societies free from fear and violence.
Guiding Philosophy	Seeks common ground while shelving differences; respects different development paths; advocates tolerance among civilizations.	Recognizes that there can be no sustainable development without peace and no peace without sustainable development.
Approach to Partnership	Inclusive and open to all countries and international organizations; promotes transnational partnerships among governments, enterprises, and civil society.	To be implemented by all countries and all stakeholders through a collaborative partnership and a spirit of global solidarity.
General Vision	To achieve common, diversified, independent, balanced, and sustainable development.	To achieve integrated and indivisible sustainable development by balancing economic, social, and environmental dimensions.

For Pakistan, the Belt and Road Initiative for Sustainable Development (BRISD) offers an opportunity for national transformation. To make this initiative effective, it is important to align it with Pakistan's development program. This is where the 5E's of the National Transformation plan serve as a strategic framework. The 5E's i.e., Export, E-Pakistan and Innovation, Environment and Climate Change, Energy and Infrastructure, and Equity and Empowerment (Nation, 2023) establish a clear order and channel for a "Sustainable Pakistan."

Research Gap

Despite extensive research on the economic and infrastructural impacts of the Belt and Road Initiative (BRI) and the China-Pakistan Economic Corridor (CPEC) in Pakistan, existing literature offers limited insight into the initiative's alignment with the broader Sustainable Development Goals (SDGs) and national strategies such as Vision 2050. Most studies focus on sector-specific outcomes, including energy, trade, or industrial growth, without providing a comprehensive, multi-dimensional evaluation that integrates economic, environmental, technological, and social. Furthermore, the extent to which BRI projects promote innovation, digital transformation, social equity, and empowerment key elements captured in the 5Es framework remains underexplored. This gap highlights the need for a systematic assessment of the Belt and Road Initiative for Sustainable Development (BRISD) in Pakistan that examines not only its economic contributions but also its capacity to foster inclusive, environmentally sustainable, and technologically advanced development aligned with national and global sustainability agendas.

Research Objectives

- To evaluate the Belt and Road Initiative for Sustainable Development (BRISD) in Pakistan through the lens of the 5Es framework Exports, E-Pakistan and Innovation, Environment and Climate Change, Energy and Infrastructure, and Equity and Empowerment.
- To identify policy measures for improving the sustainability and inclusiveness of BRI-driven development in Pakistan.
- To assess the alignment of BRI projects with Pakistan's national development strategy (Vision 2050).

Theoretical Framework

The present study is guided by the Complex Interdependence Theory, originally proposed by Robert Keohane and Joseph Nye (1977). This theory emerged as a response to the traditional realist belief that international relations are driven primarily by military power and state security. According to Keohane and Nye, the modern world is characterized by deep and complex networks of interdependence among states, where cooperation in areas such as trade, investment, energy, technology, environment, and education plays a more significant role than mere military strength.

In the context of the Belt and Road Initiative for Sustainable Development (BRISD), this theory provides a meaningful lens to understand the evolving nature of the Pakistan-China partnership. The relationship between the two countries has gradually transformed from a traditional security alliance into a comprehensive developmental partnership based on shared interests and mutual growth. The China-Pakistan Economic Corridor (CPEC) serves as a practical example of this interdependence, where both countries are engaged in multifaceted cooperation that extends far beyond infrastructure development. Pakistan and China are cooperating in areas such as industrial modernization, digital transformation, energy transition, e-learning, and environmental protection. For instance, the development of Gwadar Port and the establishment of Special Economic Zones (SEZs) have increased Pakistan's trade competitiveness and connectivity with Central Asia and the Middle East. Similarly, energy projects under CPEC, such as the Sahiwal Coal Power Plant and Hydropower Projects in Khyber Pakhtunkhwa, have added over 5,000 MW of electricity to the national grid, addressing chronic energy shortages and boosting industrial productivity. From a non-economic perspective, cooperation has also expanded into education, technology, and social development. The Pak-China Virtual Education Alliance (2022) and Huawei ICT Academies in Pakistan are examples of how digital innovation and e-learning have deepened interdependence between the two countries. Likewise, environmental collaborations such as the Green Corridor Initiative (2023) aim to promote climate-resilient agriculture and renewable energy investment, aligning with the United Nations Sustainable Development Goals (SDGs 7, 9, and 13).

RESEARCH METHODOLOGY

To examine how the Belt and Road Initiative for Sustainable Development (BRISD) aligns with Pakistan's development goals through the 5Es Framework i.e., Exports, E-Learning and Innovation, Environment and Climate Change, Energy and Infrastructure, and Equity and Empowerment this research work has consulted both primary and secondary sources of data.

The study utilizes government reports, official statements, scholarly publications, development policy papers, and media sources to assess the multidimensional impacts of BRISD and the China-Pakistan Economic Corridor (CPEC). Key materials include the Pakistan Economic Survey (2023-24), Ministry of Planning, Development & Special Initiatives reports, UNDP Pakistan (2023) publications, and World

Bank data (2024). In addition, policy speeches of Pakistani and Chinese officials, CPEC Authority progress documents, and Belt and Road Forum communiqués (2017-2023) have been examined to understand the strategic narrative and policy orientation behind BRISD. To ensure reliability and validity, data have been gathered from multiple credible and independent sources across academic, institutional, and media domains. The study also integrates insights from YouTube lectures, policy dialogues, and expert interviews delivered by Pakistani development economists, environmental researchers, and regional policy scholars.

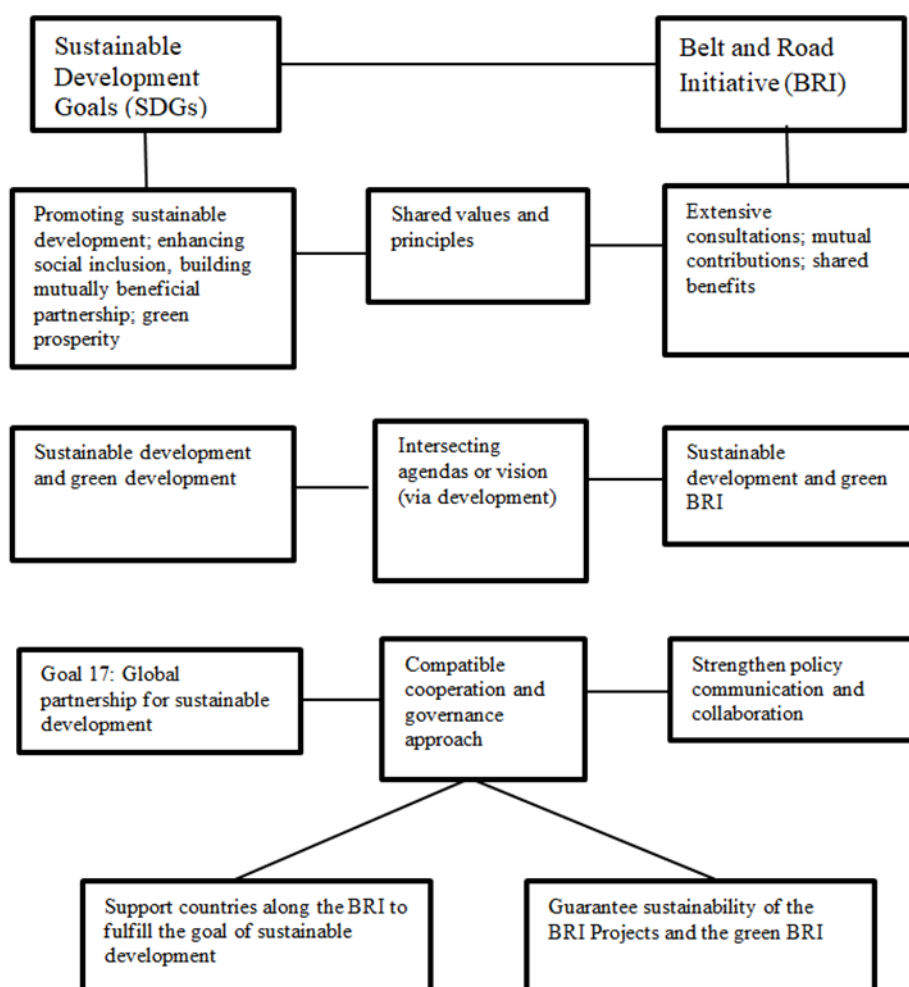
Methodologically, the research privileges the qualitative analytical approach using process tracing and thematic analysis. The process tracing technique has been applied to identify how and through what mechanisms BRISD has influenced Pakistan's progress in each of the 5E dimensions. This allows for the observation of causal linkages between Chinese investments, national policy shifts, and tangible developmental outcomes in Pakistan. The research work further employs comparative policy analysis to situate Pakistan's BRISD experience alongside other regional BRI participants such as Bangladesh, Indonesia, and Malaysia, in order to highlight both shared benefits and unique national challenges. Through thematic mapping, the study identifies the patterns of cooperation under BRISD-economic, technological, and social and evaluates their alignment with the United Nations Sustainable Development Goals (SDGs 4, 7, 9, 10, and 13) and Pakistan Vision 2050. The 5Es Framework serves as the analytical tool to measure BRISD's alignment with sustainable development in Pakistan.

Belt and Road Initiative (BRI)

The Chinese Government's Belt and Road Initiative (BRI) is based upon a historical paradigm. In 1800, a German traveler devised the term "Silk Road" to describe a trade route from China to Europe and camels used for the transportation of different goods. In this initiative, camels will be replaced with high-speed rails for the transportation of the goods. The BRI project opens a new paradigm of global diplomacy and economic connectivity with neighboring countries.

Belt and Road Initiative (BRI) and the United Nations 2030 Agenda for Sustainable Development

The Belt and Road Initiative (BRI), launched by China in 2013, has increasingly aligned with the United Nations 2030 Agenda for Sustainable Development, aiming to foster global cooperation and sustainable growth. Firstly, the principles and values of the BRI and SDGs are very similar. The 2030 Agenda (or the SDGs) consists of a number of concepts, e.g., promoting sustainable, widespread and green prosperity, enhancing social inclusion, building mutually beneficial partnerships, and the protection of the material and ecological basis for human development. (Hoare, 2019). The BRI emphasises the principles of extensive consultations, mutual contributions, and shared benefits. The BRI embeds China's global development view, i.e., 'collaborative development' and China's approach to reform, i.e., 'adaptive governance' (Figure 2). Under the notion of the BRI, it is encouraged that countries work in concert and move towards the objectives of mutual benefit and common security. Specifically, for example, they need to 'improve the region's infrastructure, lift their connectivity to a higher level; further enhance trade and investment facilitation, establish a network of free trade areas that meet high standards, maintain closer economic ties, and deepen political trust; enhance cultural exchanges; encourage different civilizations to learn from each other and flourish together; and promote mutual understanding, peace and friendship among people of all countries (Kosolapova, 2023).



Secondly, the BRI has a similar vision as the 2030 Agenda. Sustainable development and green development are covered by the notion of both agendas. Both are committed to promoting inclusive and sustainable economic growth and social development; the BRI's vision to realize diversified, independent, balanced, and sustainable development in the countries along the BRI echoes the sustainable development goals set out in the 2030 Agenda. Infrastructure development, which is included in the SDGs, is the core mission that the BRI intends to achieve. Hence, there are plenty of opportunities that the BRI can have to contribute to problems that SDGs are intending to solve through the special importance of infrastructure connectivity. In terms of green development, environmental relevant factors are not only included in the specific SDGs, e.g., SDG6-clean water and sanitation, SDG 13-climate action, SDG14-life below water and SDG 15-life on land, but are also being incorporated into the BRI. The notion of greening the BRI was shared and emphasised at the Second Belt and Road Forum for International Cooperation. Building a green BRI means protecting the environment as a priority. The Belt and Road Green Investment Principles (GIP) and the BRI International Green Development Coalition (BRIGC) were launched during the forum. The BRIGC (UNEP, 2021), which involves 134 partners, is a voluntary international network to ensure the environmental sustainability of the BRI and sustainable development of all countries concerned in support of SDGs. On the basis of existing factors in relation to the environmental, social, and governance (ESG) and responsible investment initiatives, the GIP aims to ensure that the new

investment projects in Belt and Road countries incorporate sustainable development and low-carbon practices.

Thirdly, the 2030 Agenda advocates increased international cooperation, especially through the implementing means listed in SDG 17 to revitalize the global partnership for sustainable development. Meanwhile, the BRI seeks to strengthen policy communication, build multi-layered intergovernmental macro-policy communication and interaction mechanisms, and establish a platform for communication and exchange for consensus and mutual benefits. This can be also found in the fundamental principles for the BRI advocated by China, i.e., the principle of achieving share growth through discussion and collaboration. Both the implementation of the 2030 Agenda and the advancement of the BRI require the establishment of communication and exchange mechanisms as well as cooperation platforms. For example, the 21st Century Maritime Silk Road port cooperation mechanism established between China and 13 other countries intends to serve the demand for better infrastructure connectivity while the China-Latin America development financial cooperation mechanism established by China Development Bank aims to promote financial integration. The purpose of the Belt and Road Forum for International Cooperation in the view of China is the building of a more open and efficient international cooperation platform. Furthermore, the similarities between these two implementation platforms will enhance opportunities for further cooperation (Synergies, 2021).

The BRI and SDGs can interact with each other to fulfill the goal of sustainable development, especially with the support of countries along the BRI. On one hand, the BRI can be regarded as an important and historical opportunity for promoting and implementing SDGs. On the other, the BRI could maximise its outcomes if it were to be aligned with the SDGs and become a sustainable, investment-led model. This requires the BRI to aim to contribute to the achievement of the SDGs of participating countries in the areas of basic infrastructure, regional development, connectivity, and industrialization as per its stated goals.

Moreover, integrating SDGs into the BRI would extend and upgrade the initiative to explicitly serve sustainable transformation of the countries along the Belt and Road, ensuring that the BRI policy domains create leverage towards poverty reduction, environmental sustainability, and inclusive social development, all of which are deemed key elements for the BRI's success in the long term. In doing so, the BRI could serve as an accelerator, an effective vehicle to achieve the SDGs. At the same time, in lining up with the SDGs, the BRI would be in the proper position to advance the common good of participating nations in every key area of development. But this paper mainly focuses on and discusses issues in relation to infrastructure investment (including financing for those projects) for achieving sustainable development. By recognizing the important role that the BRI can play, the UN expressed its willingness to support the alignment of the BRI with SDGs for maximum sustainable development dividends.

In terms of infrastructure investment, infrastructure connectivity is a priority and a key object of the BRI, while financial integration provides a fundamental role to guarantee the long-term operation and development of infrastructure projects. SDG 8 also emphasises the importance of infrastructure. Financing is not only important for achieving the SDGs but also important for supporting and guaranteeing infrastructure projects along the BRI. Moreover, China, as the promoter of the BRI, should also consider its capacity to provide sustainable funding resources for BRI projects (e.g., collaborate with other countries' investment funds, financial institutions, or multilateral investment funds) and reduce relevant risks (e.g., sovereign debt risk).

RESULTS

Exports and Trade Integration

The Belt and Road Initiative (BRI), and particularly its Pakistan component under the China–Pakistan Economic Corridor (CPEC), has significantly reshaped Pakistan’s trade and export dynamics. The initiative promotes economic interdependence through improved connectivity, reduced transportation costs, and easier access to Chinese and Central Asian markets. According to Pakistan’s Economic Survey (2023-24), the country’s total exports rose from US\$30.65 billion in FY 2023-24 to US\$32.11 billion in FY 2024–25, marking an annual increase of 4.7%. Exports to China alone amounted to US\$2.38 billion in FY 2024-25, positioning China as one of Pakistan’s largest trading partners.

The composition of Pakistan’s exports to China, however, remains heavily reliant on raw and semi-processed commodities such as rice, cotton yarn, minerals, seafood, and sesame seeds. This reveals the structural weakness of Pakistan’s industrial base, the lack of value addition. The BRISD, through Special Economic Zones (SEZs) and industrial collaboration, aims to help Pakistan move from low-value to high-value manufacturing, including textile finishing, food processing, and light engineering.

Although Pakistan’s export performance has improved, the trade deficit persists, largely due to high imports of machinery, chemicals, and industrial inputs from China. Imports were estimated at US\$58.38 billion in FY 2024-25, resulting in a deficit of approximately US\$26.27 billion. The long-term success of BRISD in trade integration thus depends on how effectively Pakistan can diversify exports and build sustainable industrial capacity.

Table 2: Export and Trade Integration

Indicator	FY 2023–24	FY 2024–25	Change (%)
Total Exports	US\$30.65 billion	US\$32.11 billion	+4.7%
Exports to China	US\$2.56 billion	US\$2.38 billion	–7.0%
Total Imports	US\$54.73 billion	US\$58.38 billion	+6.7%

E-Pakistan and Innovation

The BRISD framework extends beyond infrastructure to the knowledge economy. Through the establishment of Pak-China Virtual Education and Innovation Centers, Pakistan has begun integrating digital technology into its higher education and training systems. The Huawei ICT Academies, launched in multiple Pakistani universities since 2022, have trained over 10,000 students in digital communication, cloud computing, and artificial intelligence.

As of early 2025, Pakistan has over 116 million internet users and 193 million mobile and broadband subscribers, representing a 45.7% penetration rate (Pakistan Telecommunication Authority, 2024). This digital expansion has accelerated e-learning adoption, particularly in remote areas where traditional education access was limited. Through CPEC’s Digital Corridor initiative, fiber optic connectivity has been extended from Khunjerab to Gwadar, facilitating high-speed data flow and regional linkages.

These developments align with SDG 4 (Quality Education) and SDG 9 (Innovation and Infrastructure). The emphasis on technology transfer and digital training under BRISD helps Pakistan move toward a knowledge-based economy, strengthening innovation ecosystems and empowering the youth for sustainable development.

Environment and Climate Change

Environmental sustainability is a central pillar of BRISD. Pakistan, ranked among the top 10 countries most affected by climate change, has increasingly collaborated with China on green initiatives. The Green Corridor Program (2023) under CPEC focuses on eco-friendly agricultural practices, renewable energy investment, and afforestation. Projects like the China-Pakistan Joint Research Center on Earth Sciences (2023) are conducting studies on water management, soil erosion, and climate-resilient infrastructure.

China's experience in renewable technologies has encouraged Pakistan to diversify its energy mix. The government's National Electric Vehicle Policy (2022) and the introduction of solar net-metering programs reflect this shift. Pakistan currently produces about 7% of its electricity from renewable sources, with a target to reach 20% by 2030.

Environmental collaboration under BRISD also contributes to SDG 13 (Climate Action). It highlights a shift from conventional development models toward low-carbon, green growth strategies. This transition is essential for Pakistan to ensure climate security while sustaining economic expansion.

Energy and Infrastructure Development

Energy and infrastructure represent the backbone of the BRISD framework in Pakistan. Prior to the launch of CPEC, Pakistan faced an average energy shortfall of 4,500 to 5,000 MW, which severely constrained industrial productivity and household welfare. Through Chinese investment and technological collaboration, Pakistan has added nearly 9,500 MW of new generation capacity between 2016 and 2024. Major projects such as the Sahiwal Coal Power Plant (1,320 MW), Port Qasim Power Plant (1,320 MW), Karot Hydropower Project (720 MW), and Engro Thar Coal Power Plant (660 MW) have been completed, substantially reducing the country's energy gap.

The focus is now shifting toward renewable energy. Pakistan's installed solar and wind capacity has increased from 1.3 GW in 2023 to around 2.5 GW in 2024, and is projected to reach 8.4 GW by 2026, making solar energy the second-largest contributor to the national grid. Transmission projects such as the ± 660 kV Matiari-Lahore HVDC line have strengthened the country's power evacuation infrastructure.

Infrastructure development under BRISD also includes transportation networks and port modernization. The Gwadar Port has emerged as a logistics hub connecting South Asia, Central Asia, and the Middle East. Road projects like the Havelian-Thakot Motorway and Sukkur-Multan Motorway have improved connectivity between key industrial centers. These developments not only enhance Pakistan's trade efficiency but also align with SDG 9 (Industry, Innovation, and Infrastructure) and SDG 7 (Affordable and Clean Energy).

Table 3: Energy and Infrastructure Development

Project	Type	Capacity (MW)	Status	Strategic Importance
Sahiwal Coal Power Plant	Coal	1,320	Operational	Stabilized base-load supply
Port Qasim Power Plant	Coal	1,320	Operational	Major urban grid support
Karot Hydropower Project	Hydro	720	Operational	Renewable clean energy
Engro Thar Coal Plant	Coal	660	Operational	Energy self-reliance
Quaid-e-Azam Solar Park	Solar	1,000	Operational	Supports green transition

Equity and Empowerment

Equity and social empowerment constitute the human development dimension of BRISD. The initiative has created over 200,000 direct and indirect jobs in Pakistan, especially in energy, logistics, and infrastructure sectors. According to the Ministry of Planning (2024), 60% of employment under CPEC Phase-I benefitted local communities, while new vocational training centers in Gwadar, Faisalabad, and Lahore are preparing workers for future phases.

Women's inclusion and small business empowerment are also being emphasized. Through the Pak-China Friendship Agriculture Project, women entrepreneurs are receiving training in agribusiness and value-added food production. The E-commerce Export Initiative (2024) is further helping small and medium enterprises (SMEs) access Chinese digital markets.

The focus on equity and empowerment supports SDG 5 (Gender Equality) and SDG 10 (Reduced Inequalities). By integrating inclusive policies and promoting local participation, BRISD ensures that development benefits are not restricted to elites but extend to broader social strata.

Table 4: BRI and SDGs

Dimension	Major Achievements	SDG Alignment
Exports & Trade	Improved connectivity, new markets, SEZs	SDG 8, 9
Energy & Infrastructure	9,500 MW added, transport modernization	SDG 7, 9
E-Learning & Innovation	116M internet users, Huawei academies	SDG 4, 9
Environment & Climate	Green Corridor, renewable shift	SDG 13, 15
Equity & Empowerment	200,000 jobs, women inclusion programs	SDG 5, 10

CONCLUSION

This research demonstrates that the Belt and Road Initiative for Sustainable Development (BRISD) possesses significant potential to act as a transformative force for Pakistan. However, its ultimate success hinges not on continued infrastructure investment alone, but on Pakistan's strategic ability to leverage these investments through the structured 5E framework. A synthesis of the findings reveals a critical imbalance in progress across the five dimensions, highlighting both the initiative's achievements and its most pressing vulnerabilities. The analysis unequivocally identifies Energy and Infrastructure as the strongest pillar of BRISD to date. The addition of nearly 9,500 MW of capacity and the modernization of key transport corridors have directly addressed historic bottlenecks, stabilized the economy, and laid the essential physical foundation for future growth. This success demonstrates the efficacy of the BRI model in executing large-scale, transformative infrastructure projects.

Conversely, the dimensions of Environment and Climate Change and Equity and Empowerment emerge as the weakest yet most critical for long-term, sustainable success. While green initiatives exist, the continued reliance on fossil fuels and the persistent challenges in ensuring equitable benefit distribution threaten to undermine the entire BRISD enterprise. Environmental degradation and social discontent represent existential risks that can fuel political opposition, create resource conflicts, and erode the very social license upon which these mega-projects depend. Without decisive action here, the economic gains in energy and exports risk being transient and socially divisive.

The "E" of Exports shows promising connectivity but lacks depth, trapped in a cycle of low-value commodity trade, while E-Pakistan and Innovation is a gateway to the future, building crucial digital capital but not yet fully mainstreamed into the core of BRISD's development model.

Therefore, the single most important policy recommendation is this: Pakistan must pivot from a passive recipient of BRI projects to an active, strategic manager of the BRISD portfolio, with a mandatory, cross-cutting sustainability and equity lens applied to all future investments. This requires:

Institutionalizing the 5E Framework: The government must embed the 5Es as mandatory criteria in the approval and evaluation of all BRI/CPEC projects. A "5E Impact Assessment" should become as standard as an environmental impact assessment, forcing a balance between economic, technological, environmental, and social objectives from the outset.

By adopting this synthesized and proactive approach, Pakistan can transform BRISD from a primarily infrastructure-focused program into a holistic catalyst for a resilient, innovative, inclusive, and truly sustainable national future. The choice is not whether to build, but what to build and for whom. The 5E framework provides the strategic compass to navigate this crucial transition.

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