THE JOURNAL OF INDONESIA SUSTAINABLE DEVELOPMENT PLANNING

VOL. 6 NO. 2 – AUGUST 2025

E-ISSN: 2722-0842 | P-ISSN: 2721-8309

Available online at
http://journal.pusbindiklatren.bappenas.go.id/

Research Paper

Environmental Security in Belt and Road Initiative Green Development Coalition (BRIGC)

A Study of Pakistan, Kenya, and Indonesia

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Abstract

This study examines the efficacy of the Belt and Road Initiative Green Development Coalition (BRIGC) in balancing China's economic interests with environmental security in BRI partner countries, namely Pakistan, Kenya, and Indonesia. Using descriptive qualitative and desk research, the research is based on Barry Buzan's theory of security expansion and the concept of Anthropocentrism. The analysis reveals that, although BRIGC promotes green development, weaknesses in policy enforcement, limited authority, and inability to bind partner countries continue to cause BRI projects to produce environmental damage, debt dependency, and threats to human security. In all three countries, BRI projects reflect an anthropocentric development model, where the state's economic interests take precedence over environmental protection and community welfare. This study concludes that the BRIGC has been unable to fulfill its function as an effective green coalition in promoting sustainable development.

Keywords: BRIGC; Belt and Road Initiative; Pakistan; Kenya; Indonesia.

ARTICLE INFO
Received: January 14, 2025
Received in revised form: April 16, 2025
Accepted: August 31, 2025

doi: 10.46456/jisdep.v6i2.815

THE JOURNAL OF INDONESIA SUSTAINABLE DEVELOPMENT PLANNING
Published by Centre for Planners' Development, Education, and Training (Pusbindiklatren), Ministry of National Development Planning/National Development Planning Agency (Bappenas), Republic of Indonesia

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Supported by Indonesian Development Planners Association (PPPI)

Please cite this article in APA Style as:
Valentine, Y., Trihartono, A., & Sunarko, B. S. (2025). Environmental security in Belt and Road Initiative Green Development Coalition (BRIGC): A study of Pakistan, Kenya, and Indonesia. *The Journal of Indonesia Sustainable Development Planning, Vol 6 (2),* 239-253.
https://doi.org/10.46456/jisdep.v6i2.815

1. Introduction

Infrastructure is one of the main pillars of global economic growth. Advanced infrastructure enhances connectivity and productivity, significantly supporting various economic activities. This connectivity and productivity have encouraged many countries to develop their infrastructure, whether in transportation, energy, or telecommunications, in order to compete in the global economy. According to Khatoon & Sakeena (2022), China is one of the developed countries that has successfully become a global economic powerhouse through its large-scale infrastructure development initiative, the Belt and Road Initiative (BRI). The Belt and Road Initiative is an infrastructure investment aimed at enhancing global connectivity and economic integration in Asia (Maliszewska & Mensbrugghe, 2019). The BRI is known as the world's largest infrastructure project, with the potential to increase trade among BRI member countries by 4.1% and global GDP by 0.7% by 2030 (Baniya et al. 2020). Infrastructure development is one of the most effective strategies for countries to boost their national and global economies.

Along with the success of the BRI in boosting the economy, the BRI has received significant criticism for its environmental impact. In its implementation, the BRI continues to focus on industries that are not climate-friendly. Many BRI projects in partner countries still heavily rely on fossil fuel-based energy systems, particularly coal, which has the potential to increase global warming and damage the environment. Hilton (2019) explains that 80% of China's BRI energy projects are directed toward fossil fuels, with only 3% supporting solar and wind energy projects. Nurgozhayeva (2024) emphasizes that if this trend of carbon-intensive development continues, BRI countries could contribute 66% of global carbon emissions by 2050. This excessive infrastructure investment further damages habitats, harming biodiversity and enabling illegal activities such as poaching (Huang et al. 2022). Given the carbon-intensive nature of the approach and its environmental implications, it is crucial for the BRI to shift toward green investments to protect the environment and promote global sustainable development.

The Belt and Road Initiative Green Development Coalition (BRIGC) is one of the BRI's initiatives in response to environmental issues in partner countries. BRIGC is a green coalition under the BRI to create green development in BRI projects that are in line with the Sustainable Development Goals or SDG 2030, especially SDG 15 on Life on Land. The BRIGC Charter emphasizes the BRIGC's mission to facilitate BRI member countries in realizing low-carbon and sustainable development (People's Republic of China, 2019). In achieving its objectives, the BRIGC serves as a platform for knowledge exchange and policy dialogue, aligning with one of the pillars of the BRI, namely policy coordination (People's Republic of China, 2019). BRIGC involves 134 partners, 26 of which are environment ministries from UN member countries spread across various continents (UNEP, 2020). Thus, BRIGC serves as a means for China to enhance its image as a country committed to environmental sustainability.

China has strengthened its commitment to continue contributing to environmental protection. This commitment was emphasized by President Xi Jinping at the 75th UN General Assembly, stating that China is prepared to assume greater responsibilities and obligations in environmental protection. China's strong commitment to environmental sustainability contradicts the environmental crises faced by some countries due to BRI projects. A publication from the United States Government Accountability Office (2024) emphasizes that two-thirds of the 736 projects funded by China are in environmentally sensitive areas. Constantine (2023) from the Global Forest Coalition also states in his publication entitled "Debt, Displacement, and Biodiversity Loss: Assessing the Gender, Environmental, and Human Rights Implications of China's Belt and Road Initiative" that the BRI has further exacerbated environmental issues such as increased carbon emissions, land degradation, water pollution, and habitat destruction. These environmental crises disproportionately impact indigenous and rural communities, particularly women who rely directly on natural resources. Environmental crises resulting from BRI projects in various countries raise questions about China's commitment to green development.

The contradiction between BRIGC claims and the environmental crises experienced by partner countries raises critical questions about the effectiveness of BRIGC as a reflection of China's commitment to the environment. This study examines the effectiveness of BRIGC in balancing environmental security with China's economic interests, specifically in the three partner countries of Pakistan and Kenya. The researcher chose these three countries because of their active involvement in the BRI project and the growing concern over its ecological implications. The environmental implications have become a non-traditional security issue that threatens not only ecosystems but also human security, especially in the

three partner countries. Therefore, this research is important for assessing the role of BRIGC in achieving sustainable green development in the three partner countries. The research reveals BRIGC's inability to realize sustainable development in BRI projects, arguing that BRIGC is used as a tool to fulfill China's economic and geopolitical motivations in the region.

2. Methods

This research is entirely based on desk research. Data sources were taken from indexed journal articles and official reports from the government and international institutions about China and its relations with Pakistan, Kenya, and Indonesia through BRIGC. Sources were published between 2015 and 2025 to provide historical context and current developments. However, this research has time constraints from 2019 to 2024, during which BRIGC was involved in BTI projects selected for this research. Through a combined keyword search of the Belt and Road Initiative (BRI), Belt and Road Initiative Green Development Coalition (BRIGC), green development, environmental security and risk, economic interest, foreign debt and the names of countries, approximately 60-70 documents were collected. After screening the abstracts and full texts, 28 manuscripts were deemed most relevant.

All documents were read thoroughly, then manually coded using two axes. The first axis is labelled with country names, including Pakistan, Kenya, and Indonesia. The second axis encompasses themes such as policy design, implementation, people's responses, and outcomes. Each piece of information—whether statistical tables, interview quotes, or survey findings—was placed in the matrix. To ensure reliability, simple triangulation was conducted, where a finding must appear in at least two types of sources, written by different researchers and published more than one year ago. If not, the finding was marked as "tentative".

Once the matrix was complete, the author compared patterns within country gaps and then aligned them across countries. This constant comparison method produced easily comparable national narratives, highlighting common obstacles and unique factors in each context. Limitations certainly exist, including the document-based nature of the data, Mandarin language bias, and a time lag in the release of reports. However, the systematic sequence of steps—from literature selection, theme classification, to triangulation—ensures that this qualitative analysis remains robust as a foundation for further research or policy recommendations.

3. Results and Discussions

This section provides an in-depth analysis of BRIGC implementation in three partner countries: Pakistan, Kenya, and Indonesia. The analysis utilizes Barry Buzan's theory of security expansion and the critical concept of anthropocentrism. These frameworks are used to evaluate how BRIGC's human-centered approach can undermine environmental protection and other social and economic implications for national economic interests. The findings serve as the empirical basis for the conclusion, which summarizes the implications of BRIGC's limitations and proposes future research directions.

3.1 General Role of BRIGC

BRIGC is one of the multilateral coalitions under BRI that supports the greening of BRI. BRIGC was pioneered by the Chinese Ministry of Ecology and Environment in 2019 as an information transmission platform for BRI ecological development. Article 3 of the BRIGC Charter outlines that BRIGC's mission is to foster a global consensus on green BRI development, promote collaborative action, and support BRI countries in achieving green, low-carbon, and sustainable growth (People's Republic of China, 2019). Li Ganjie, China's Minister of Ecology and Environment, highlighted the importance of collaboration for a green BRI at the 2nd Belt and Road Forum for International Cooperation Thematic Forum. Minister Li Ganjie stated, "Building a green Belt and Road requires collaboration, … the BRI and the 2030 Agenda share the same goals, so we will build consensus, provide more green public goods for BRI participating countries and regions, and facilitate the realization of the SDGs" (Secretariat of BRIGC, 2021). This statement was further reinforced by Minister Miao Wei, China's Minister of Industry and Information Technology, who emphasized expanding the scope of green development cooperation through capacity

building and policy coordination. Both statements reflect China's normative commitment to realizing an ecological civilization through the BRI via the BRIGC.

BRIGC has also developed a system called the Traffic Light System to mitigate environmental risks in BRI projects. The Traffic Light System categorizes BRI projects based on their environmental risks and contributions to pollution, climate change, and biodiversity (Green Finance & Development Center, 2021). This system has three color categories: green, yellow, and red, which aim to identify and manage environmental risks in BRI projects, thereby accelerating the green transition. Green is identified in projects without significant negative environmental impacts, such as solar and wind renewable energy projects. Yellow is assigned to projects with moderate environmental impacts that can be managed with appropriate mitigation measures. Red is assigned to projects with significant environmental risks, such as new coal-fired power plants and large hydroelectric projects. Thus, the traffic light system serves as an important tool in ensuring that BRI projects not only contribute to the economy but also to environmental sustainability.

BRIGC faces obstacles in promoting green development in BRI's infrastructure megaprojects. BRI's dependence on non-renewable energy projects makes it difficult for BRI to transition to green infrastructure development. The BRIGC center faces difficulties due to weak governance, including the absence of legally binding regulations, low levels of participation, and transparency issues. In 2021, BRIGC released the Green Development Guidelines as a traffic light system to stop 'red' innovation in BRI (Boer et al. 2022). However, nearly half (48%) of the projects covered by BRI will still rely on fossil fuels by 2024 (Ng, 2025). The US GAO (2024) also found that 35% of BRI projects still have issues with corruption, labor rights violations, and environmental damage. Despite its progress and positive impacts, the BRI remains too dominant in unsustainable projects, hindering the BRIGC from maximizing the green transition, which could threaten environmental sustainability and human life.

BRIGC programs and innovations have not been fully implemented in BRI projects in partner countries. The ineffectiveness of the BRIGC program and policy implementation is due to the fact that BRIGC lacks a binding legal status in partner countries. This non-binding legal nature then hinders the coalition in enforcing green development policies designed for BRI projects. Limitations in BRIGC implementation are also caused by weak institutional oversight, the voluntary nature of cooperation, and the absence of broader environmental protection (Geng & Lo, 2023). Furthermore, the role of BRIGC in green development is often overshadowed by economic interests, as BRIGC serves as a symbolic platform for China's environmental diplomacy (Zhu et al., 2024). This implementation gap raises critical questions about the effectiveness of BRIGC in ensuring green development in partner countries. Thus, this gap prompts an analysis of how these shortcomings are reflected in their impact on selected partner countries, namely Pakistan, Kenya, and Indonesia.

3.2 General Role of BRIGC in Pakistan, Kenya, and Indonesia

BRIGC has previously taken several steps to achieve green development in Pakistan through CPEC. Pang Xiao, Acting Head of BRIGC, explained the strong bilateral relationship between China and Pakistan in the context of CPEC for renewable energy projects during an online interview with Shakeel Ahmad on the YouTube channel "Political Economy." Pang Xiao stated, "I think it is easier to collaborate with Pakistan because they are more cooperative, and we have more trust in each other, so we can develop strategic planning for the China-Pakistan Economic Corridor from the outset" (Political Economy, 2022). He also explained, "For example, water dams and renewable energy projects require their own strategic precision for larger plans." Additionally, BRIGC supports the development of the Karot Hydropower Plant in Pakistan, a clean energy project aligned with SDG 7 (Yonghong et al., 2020). Through policy discussions and communication channels, BRIGC has brought together various stakeholders to support sustainable infrastructure development in BRI member countries, such as Pakistan.

Figure 1. The Roundtable on BRI Green Development and the BRI International Green Development Coalition (BRIGC) Policy Studies Release 2021 (BRIGC, 2021c)

In general, BRIGC has welcomed Kenya's participation in its environmental policy and capacity-building initiatives. To support ecological development, the BRIGC organizes various thematic discussions, collaborative studies, and information-sharing opportunities. As a developing country, the environmental partnership has enhanced Kenya's ability to address important environmental issues. Through the Roundtable on BRI Green Development and the BRIGC Policy Studies Release 2021, as illustrated in Figure 1, the BRIGC has facilitated the exchange of information and experience between Chinese and Kenyan institutions on carbon neutrality (Yonghong, 2021). "Research on Green Transportation Development in BRI Participating Countries" is one of the policy studies conducted by BRIGC that offers three-time frames for the long-term growth of green transportation in Kenya: preparation, establishment, and upgrading. Kenya received recommendations from this study on how to enhance the green development of the country's transportation initiatives, including creating low-carbon transportation equipment and an energy-efficient transportation infrastructure network (BRIGC, 2021b). Through policy discussions, BRIGC has provided Kenya with green policy guidance to enhance green development, especially in BRI infrastructure projects.

BRIGC has been collaborating with Indonesia to facilitate the energy transition in BRI projects within the country. As the BRI Green Coalition, BRIGC serves as a facilitator and promoter of BRI green development cooperation, with a focus on renewable energy, climate policy, and energy transition. This role is carried out in Indonesia through partnerships, research, policy recommendations, joint studies, and policy dialogues. In December 2024, BRIGC signed a Memorandum of Understanding with the Institute for Essential Services Reform (IESR) (IESR, 2024). IESR is Indonesia's leading think tank on energy transition and climate change that promotes the transition to a low-carbon energy system by advocating for policies based on scientific studies (IESR, 2025). Through this partnership, the BRIGC participates in joint studies for the identification of potential areas of cooperation in energy transition, facilitates access to expertise from Chinese and international partners, and promote knowledge exchange with the BRI network of members and partners for sustainable development in Indonesia (IESR, 2025). Thus, BRIGC plays a crucial role in promoting green development in Indonesia.

3.3 BRIGC in Pakistan: The Thar Coal Power Plants Block-I and Block-II under the China-Pakistan Economic Corridor (CPEC)

Thar Block-I and Block-II are flagship energy projects under CPEC. These power plants consist of 1320 MW and 660 MW coal-fired power generation facilities, sponsored by Shanghai Electric Power Company Limited and are located in Tharparkar District, Sindh Province. With the aim of generating electricity, this project utilizes the abundant coal supply in Sindh Province's Thar coal field. Malik (2023), a Senior Research Economist at the Pakistan Institute of Economic Development, notes that the Thar Desert is home to the world's largest coal reserves, with 175 billion tons of lignite coal. Ninety-five percent of Pakistan's 185 billion tons of coal reserves are found in the Thar Desert (Ali et al. 2021). This massive coal resource is estimated to generate 100,000 MW of electricity over two and a half centuries, reflecting an anthropocentric development model that views nature solely as a resource for human-centered progress (Butt et al., 2023). Thar Block-I has enhanced Pakistan's capacity to generate reliable electricity, paving the way for a brighter future.

Although the Thar Power Plant has increased Pakistan's electricity supply and the prosperity of its citizens, the project poses a threat to the environment. The project's heavy reliance on coal has resulted in significant carbon emissions. The lack of modern technology for coal-fired power plant projects and poor governance have made it difficult for Pakistan to reduce carbon emissions. Ali et al. (2021) explain that all of Pakistan's coal-fired power plants under the CPEC should ideally use ultra-supercritical equipment and modern emission capture technology. However, this vision has not been realized, as none of the coal-fired power plants currently use such advanced technology. Due to this issue, coal-fired power plant projects, such as Thar Block-I, are estimated to produce 5.34 metric tons of CO2 per year, comparable to the 5.80 metric tons produced by Thar Block-II (Ali et al. 2021). Blocks Thar I and II have become a threat to the environment and the long-term sustainability of Pakistan.

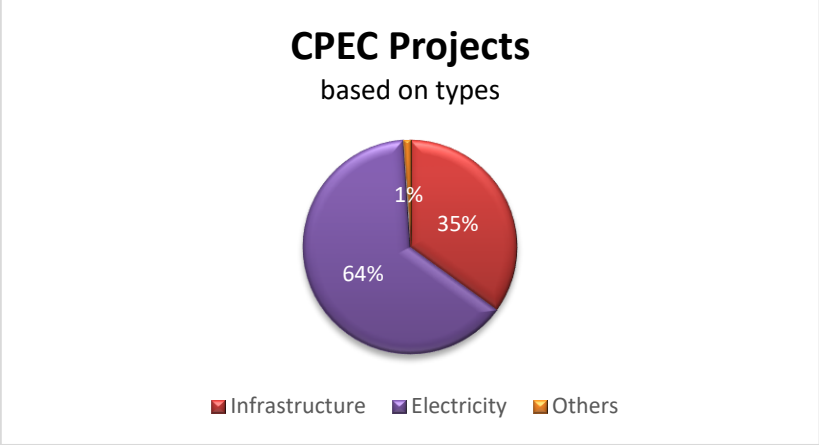

Figure 2. Percentage of CPEC Projects by Type (Rafiq, 2020)

Figure 2 illustrates that the majority of CPEC projects in Pakistan are focused on electricity generation, which undoubtedly has a significant environmental impact in the country. Aside from carbon emissions, the Thar Power Plant generates several environmental issues while providing reliable electricity to Pakistani citizens. This initiative has contributed to several environmental crises, affecting soil, air, and water. The Thar Power Plant is expected to become a significant source of air pollution and a hotspot for CO_2 in South Asia (Ali & Askari, 2023). Aslam et al. (2021) also highlight that toxic metals from coal-fired power plant activities in the Thar coal area have detrimental effects on groundwater aquifers and drinking water supplies. Women and children living near coal mines and coal-fired power plants are the most vulnerable to the effects of water and soil contamination (Aslam et al., 2021). The large-scale use of coal for power generation in this project has made Pakistan one of the main contributors to greenhouse gas emissions and global warming.

The Pakistani people have long been at risk and vulnerable to health problems due to the Thar Power Plant and other coal-fired power plants. Large amounts of mercury have been deposited into the soil ecology by power plants. As a result, Pakistani residents are now exposed to high levels of air pollution, which further reduces their life expectancy by making them susceptible to a range of diseases. According to a report from the Center for Research on Energy and Clean Air, air pollution from coal-fired power plants and mining in Thar, Pakistan, is expected to cause 29,000 deaths (Myllyvirta, 2020). Local residents in Thar, Pakistan, are also at risk of skin and lung diseases, stress, and asthma due to the presence of Thar Block-II (Hagler Bailly Pakistan, 2016). This project is estimated to result in approximately 40,000 new cases of asthma, 19,900 additional cases in children, and 20 million sick days (Myllyvirta, 2020). These unsustainable projects threaten non-traditional security for Pakistani citizens, so BRIGC must act immediately to ensure non-traditional security in Pakistan from BRI projects.

Despite green projects and other initiatives in the CPEC, BRIGC has yet to fulfill its objectives in Pakistan. As the BRI's green coalition, BRIGC is responsible for ensuring green BRI development through policy discussions and initiatives. Despite various initiatives undertaken, limitations in authority and the absence of enforcement mechanisms hinder BRIGC's effectiveness as an environmental security body. Thar Block-I was completed on February 5, 2023, four years after the establishment of the BRIGC in April 2019, and is currently operational (Ministry of Planning Development & Special Initiatives, 2024b). Although not operating at full capacity in May 2024 due to system limitations, Thar Block-II was completed

in July 2019 and is currently operational (Ministry of Planning Development & Special Initiatives, 2024a). To support these operations, several Chinese banks and companies have committed to lending US$800 million to Thar Block-II (Global Energy Monitor, 2025). The operation of these two projects demonstrates the inability of BRIGC to prevent and address unsustainable BRI projects in Pakistan.

BRIGC's failure to implement green development in CPEC has contributed to the West's perception of BRI. The Western views the BRI as one of China's primary foreign strategies, aimed at advancing its national interests as a global economic power. Therefore, loans and debt structures within the BRI are also part of China's efforts to accelerate its economic development. China invested $1.016 trillion in the Belt and Road Initiative in 2022, with 145 of the 149 countries being less developed countries such as Pakistan (Nedopil, 2023, 2025). In the case of Pakistan, the CPEC has resulted in unpaid debt that the country cannot repay, despite the fact that the CPEC helped the country's economy grow between 2015 and 2018. Approximately 30 percent of Pakistan's total foreign debt of US$100 billion is owed to China and Chinese commercial banks, making China the country's largest bilateral creditor (Khaliq, 2023). China's "debt trap diplomacy" has also affected other developing countries, causing debt repayment problems that are seen as a calculated tactic to advance its economic interests.

3.4 BRIGC in Kenya: The Mombasa-Nairobi Standard Gauge Railway (SGR)

Kenya considered environmental sustainability when building the Mombasa-Nairobi Standard Gauge Railway. The railroad is known as the "Green Railway" because it crosses the Mombasa Mangrove Wetland Park and Tsavo National Park. As a result, the SGR is quite close to Africa's largest wildlife sanctuary, which is home to almost all animal species. SGR built 14 sizable wildlife crossings and installed 79 bridges along the railroad to protect migration routes and wildlife habitats (Xinhua & Jianghui, 2022). The same report shows that Kenya has constructed a substantial animal corridor, measuring more than 6,5 meters in height, to enable elephants and giraffes to pass through. In addition, SGRs are replacing trucks in the transportation of goods, thereby reducing the carbon footprint of rail transportation (Xinhua & Jianghui, 2022). These measures demonstrate Kenya's commitment to maintaining the long-term viability of the project and environmental sustainability.

SGR's eco-friendly efforts are insufficient to safeguard Kenya's environment. The overall construction of SGR is not environmentally friendly, as it has several detrimental impacts on the surrounding ecosystem. Its construction and implementation have damaged every component of the environment, including soil, water, and air. Nyumba et al. (2021) note that watersheds and drainage systems are examples of local natural hydrological ecosystems that have been altered by SGR, resulting in sedimentation, flooding and soil erosion. The construction of the SGR also reduced vegetation, resulting in a 13% decrease in agricultural land along the railway line (Lape et al. 2023). An estimated 500.61 hectares of vegetation, including nine vegetation types critical to the sustainability of wildlife in Nairobi National Park, were lost during the construction and operation of the SGR (Ambani & Mulaku, 2021). In accordance with Buzan's theory of security expansion, the SGR has demonstrated how the very state it is meant to protect can threaten Kenya's environmental security.

The Mombasa-Nairobi Standard Gauge Railway also raises concerns about various wildlife issues. The sustainability of wildlife habitats is undoubtedly threatened by the SGR railway infrastructure, which passes through several national parks. Although there are significant animal routes under the railroad, wildlife migration is threatened due to habitat loss and reduced vegetation cover. A study found unauthorized settlements along the SGR that obstruct wildlife movement and cause ecosystem disruption (Nyumba et al., 2021). Approximately 500 elephants were reportedly unable to access Tsavo East National Park due to the railroad, while other animals such as lions, black rhinos, zebras and wildebeest were also disrupted by the construction of the SGR, which affected their migration routes (Ambani & Mulaku, 2021; Tsavo Trust, 2025). The construction and operation of SGR also create noise pollution of up to 109 dB(A), which causes millions of animal deaths each year and affects their behavior (Ambani & Mulaku, 2021; Nyumba et al., 2021). Human-wildlife conflicts have increased, and migration routes have been disrupted due to SGR construction and operation, exacerbating environmental instability in Kenya.

The various programs and policy recommendations provided by BRIGC are ineffectively implemented in the SGR. As a non-legally binding coalition, BRIGC suffers from weaknesses in law

enforcement and a lack of binding authority to ensure effective implementation. Additionally, BRIGC is also limited in its integration with local governance. The BRIGC has developed Green Development Guidelines for BRI Projects to categorize projects based on environmental risks, conduct environmental impact assessments (EIAs), and ensure close monitoring throughout the project cycle (BRIGC, 2020). Although SGR has undergone EIA, environmental degradation, such as pollution and habitat fragmentation, continues to occur (Xia, 2019). In addition, the non-binding nature of BRIGC's guidelines means there is no mechanism to ensure host governments comply with the recommended standards. This demonstrates BRIGC's failure to ensure the integration of BRIGC's green standards into the operations of each SGR project in Kenya.

BRIGC's ineffectiveness in creating green development in Kenya also occurred in various aspects. The recommendation to classify projects in the Traffic Light System was also not maximized in the SGR project. The SGR has significant environmental risks as it crosses national parks and sensitive ecosystems. However, the SGR is not subject to the scrutiny or remedial actions that the BRIGC framework suggests for “red” or high-risk projects. Incentives and penalties to encourage compliance with green standards by BRIGC are also not applied in the context of SGR. This is evidenced by the lack of accountability for environmental performance among financial institutions and investors in SGR, as well as minimal differentiation in financing based on environmental risk (BRIGC, 2020). This suggests that the BRIGC is failing to prioritize the needs of local governments, which is sidelining environmental protection in favor of construction and economic objectives.

The failure of BRIGC to achieve green development in Kenya highlights that China’s economic priorities continue to outweigh environmental protection. In addition to the various environmental crises that resulted from the SGR project, Kenya also owes a substantial amount of debt to China as a consequence of this project. While the SGR project helped Kenya improve connectivity and the country's economy, the loan from China has become a debt burden for Kenya as a developing country. According to Bootwalla (2020), China's Exim Bank is Kenya's largest sponsor in building the SGR, with an initial loan of approximately 2.3 billion US dollars and an interest rate of 5.6%. China has also set a strict set of conditions for providing loans to Kenya, including high interest rates and a 15-year repayment period with a 5-year grace period. Some reports indicate that Kenya's total debt to China from the SGR project has risen to 737.5 billion Kenyan Shillings, or the equivalent of $5.6 billion US dollars by 2024 (Kamau, 2024). The substantial amount of debt, accompanied by strict interest rates and penalties in the SGR project, has increased the debt burden and threatens the sustainability of the Kenyan economy.

The debt burden imposed on Kenya through the SGR project or the BRI project in general has created dependency and threatened Kenya’s economic security. Apart from the huge debt Kenya owes to China from the BRI project, Kenya itself already has a relatively large bilateral debt to China. As of 2023, Kenya's bilateral debt to China is approximately US$6.3 billion, accounting for 64% of Kenya's total bilateral external debt (Kell, 2023). Nguntjinazo (2025) has estimated that Kenya's debt will increase to over $8 billion due to new infrastructure projects and the restructuring of existing debt. In servicing this debt, Kenya allocates more than 22% of national income to debt servicing and nearly 10% of its government revenue to interest payments on its external debt (Mati, 2024). This economic dependency aligns with Buzan's idea that the state can also be a source of insecurity, especially when foreign investment threatens national stability. It also highlights how the BRIGC development agenda remains anthropocentric, prioritizing economic gains over long-term environmental and human security.

3.5 BRIGC in Indonesia: High-Speed Rail (HSR) Jakarta-Bandung

The Jakarta-Bandung High-Speed Rail (HSR) is an infrastructure development project between Indonesia and China, facilitated by BRI, in Southeast Asia. Established in 2015, HSR improves connectivity between Indonesia's two largest urban areas, Jabodetabek and Bandung. With its short travel time, HSR represents a major leap forward in modernizing infrastructure, aligning with President Jokowi’s vision. HSR connects Jakarta to Bandung at 350 km/h with a total route length of 142 km in just 40-46 minutes (Wijaya, 2024). Chen et al. (2024) anticipate that the speed of the SHR will stimulate the development of satellite cities and new economic zones along the route, particularly in Karawang, which is already an established industrial center. Additionally, the speed of the HSR has also alleviated chronic traffic congestion in the Jakarta-Bandung corridor, thereby supporting the development of transit-oriented

development (Purba et al. 2020). The Jakarta-Bandung HSR is a transformative infrastructure project that epitomizes Indonesia's infrastructure modernization ambitions through the BRI.

The Jakarta-Bandung HSR has had a positive impact on many aspects of Indonesia. As a high-speed train, HSR provides a fast, timely, and convenient alternative to land transportation. The speed and effectiveness in mobilizing from HSR sustainably drive the country's growth, both in the economy, environment, and tourism. The Minister of State-Owned Enterprises of the Republic of Indonesia, Erick Thohir, said that HSR has contributed about 86.5 trillion Rupiah to the regional GDP of Jakarta and West Java from 2019 to 2023 (Xinhua, 2024). Additionally, the SHR high-speed line is electrified, resulting in annual fuel cost savings of around IDR 3,2 trillion for Indonesia and reducing the country's dependence on private vehicles. The electrification of trains also results in lower carbon emissions compared to conventional vehicles, thereby supporting Indonesia's green development goals (JICA, 2015). Overall, the Jakarta-Bandung HSR has significantly contributed to Indonesia's economic growth and environmental sustainability.

Figure 3. HSR construction worsened the February 2020 floods in Bandung (Rachman & Lamboge, 2020)

Despite the positive impacts, the Jakarta-Bandung HSR has also generated various negative environmental impacts. The use of electricity on the high-speed rail line has resulted in fuel cost savings and reduced carbon emissions. However, the planning and construction phase of the HSR has also created environmental crises. Construction activities such as roadside soil dumping have clogged drainage channels, leading to flooding in Jakarta and West Bandung. Danis Sumadilaga, Acting Director General of Public Works, emphasized that this was due to management practices that paid little attention to security, health, safety, and the environment (China Dialogue, 2020). In addition to flooding, HSR also caused structural damage and landslides due to blasting for tunnels, one of which occurred in the Tipar Sari Asih housing complex, Cimahi (AidData, n.d.). The environmental impacts of the Jakarta-Bandung HSR are contradictory to Indonesia's green development goals.

The various environmental crises associated with the Jakarta-Bandung HSR project indicate that this project has not fully prioritized environmental protection. This is shown by various efforts to overcome environmental issues that have not been effectively implemented in this project. Although the project has an Environmental Impact Assessment, its implementation has not been effective, triggering other environmental issues. In the process, the environmental impact analysis for the SHR project remains inadequate due to the loss of drainage flow resulting from changes in land use (Rachman & Lamboge, 2020). In addition, WALHI West Java emphasized concerns that the high-speed rail could impact water supply and cause environmental stress around the project (China Dialogue, 2020). Long-term environmental stress can increase local carbon emissions, posing a threat to human security (Shen et al. 2023). This highlights the importance of implementing green infrastructure effectively to ensure environmental security for the people of Indonesia.

The HSR project has also had significant social and community impacts, both positive and negative. On the positive side, HSR has successfully created jobs, provided technical training, and contributed to urban development. But in its implementation, HSR has also threatened the lives of the surrounding communities with forced evictions, damage to homes, and inadequate community engagement. HSR has created about 51,000 jobs during the construction and operation phases, increasing economic growth

opportunities in various sectors (Chen et al., 2024). Unfortunately, the organizers forcibly evicted hundreds of households, causing widespread protests and social unrest. Additionally, local farmers in the area lost their productive rice fields, which were converted into dumping grounds for excavated soil, thereby eliminating their primary source of income (China Dialogue, 2020). This aligns with Buzan's argument that the state can act as both a guarantor and a source of security threats when it prioritizes economic interests over environmental safety.

The important role of BRIGC in Indonesia is unfortunately still very limited in addressing the environmental impacts resulting from the HSR project. As the BRI's green coalition, the BRIGC has provided various green development guidelines for BRI projects, including the Jakarta-Bandung HSR. However, these guidelines do not bind HSR projects to adhere to certain standards or implement certain mitigation measures. Generally, the BRIGC lacks the authority to enforce environmental standards, conduct audits, or require recovery of any resulting environmental damage (BRIGC, 2021a). Environmental mitigation for this project is managed by local governance, project management, and KCIC itself. Environmental mitigation processes on HSR projects, such as avoiding high-risk areas, track safety, and monitoring environmental conditions, are all carried out by KCIC (KCIC, 2023). BRIGC's inability to enforce environmental protection aligns with Buzan's emphasis on expanded security, suggesting that regional governance mechanisms have limitations in addressing non-traditional security threats.

BRIGC's inability to support the construction of a green HSR project reinforces China's economic motives behind the project. Besides being funded mostly by the China Development Bank, the HSR project also encourages China to export high-speed rail technology, engineering expertise, and construction materials to Indonesia. This is certainly beneficial for China's economy, given the substantial export demand from Indonesia for Chinese products and services. In addition, Indonesia also owes a substantial amount of debt to China, with an initial cost of around USD 5.29 billion financed with a debt-to-equity ratio of 75:25 (AidData, n.d.). Over time, the project cost increased to USD 7.5 billion or around IDR 114.1 trillion, due to cost overruns and delays (Wijaya, 2024). To cover the cost overruns, PT Kereta Api Indonesia (KAI) received additional financing from the CDB of around USD 448 million out of a total overrun of around USD 1.2-1.5 billion (Indonesia Business Post, 2024). The increasing debt burden and financial dependence on China reflect the dynamics of economic insecurity that align with Buzan's perspective, where economic structures can pose a long-term security threat.

China's economic motives in the Jakarta-Bandung HSR project reflect its state-driven anthropocentric nature. While the HSR project is framed as a transformative infrastructure investment, financial gains are still prioritized by China over environmental protection. Nabiilah & Sari (2024) confirmed the potential for Indonesia to fall into a debt trap if there is no comprehensive economic recovery effort to reduce dependence on foreign loans. Additionally, HSR's operational and maintenance costs amount to hundreds of millions of dollars each year, yet passenger numbers do not meet projections (Wijaya, 2024). This, in turn, undermines financial viability, reflecting China's development model that prioritizes industrial output over human-centered achievements. This aligns with anthropocentric logic, where environmental and social concerns are subordinated to national economic gains. As such, the HSR project highlights the BRIGC's limitations in striking a balance between an anthropocentric development model and sustainable ecological governance.

Conclusion

Based on the result and discussion, the answer to the research question in this study is that BRIGC has not been able to effectively balance green development with China's economic interests in Pakistan, Kenya, and Indonesia. In the case of Pakistan, BRIGC has failed to enforce meaningful environmental protection in CPEC. Although there have been some clean energy initiatives, such as the Karot Hydropower project, the dominant use of coal in Blocks I and II of Thar indicates a priority on economic gains over sustainable development. These coal projects have caused massive pollution, loss of biodiversity, and public health crises, including respiratory diseases and waterborne illnesses, which is contrary to SDG 15 Life on Land. Local participation and transparency in environmental mitigation are also low, indicating the ineffectiveness of BRIGC's green governance. Additionally, the substantial amount of Chinese investment has led to a greater economic dependence between Pakistan and China. The case of Pakistan aligns with Buzan's view of the state as a source of insecurity when economic ambitions override environmental and human safety concerns.

In the case of Kenya, BRIGC has also been unable to effectively balance green development with China's economic interests. Kenya initially benefited economically from BRI projects such as the SGR, which improved transportation infrastructure and created employment opportunities. However, environmental damage such as land degradation, ecosystem disruption, and wildlife displacement has conflicted with BRIGC's sustainability goals. Although BRIGC provides policy guidelines for green transportation, it lacks the enforcement capacity to prevent environmental threats caused by the SGR. Wildlife migration has been hindered, and critical habitats have been destroyed, increasing ecological insecurity and threatening livelihoods. China's loans to Kenya for BRI infrastructure add pressure to an already vulnerable economy, heightening concerns about debt sustainability. These outcomes highlight Buzan's notion that state actors can jeopardize environmental security and human well-being in development agendas. Kenya's experience demonstrates the symbolic role of the BRIGC, which has failed to bridge green diplomacy with enforceable environmental protection.

In the case of Indonesia, the Jakarta-Bandung High-Speed Rail exemplifies the integration of modern infrastructure and green rhetoric under the BRI. Although electric trains have the potential to produce low emissions, the construction phase caused flooding, landslides, and poor waste management. BRIGC partnered with IESR for energy transition, but lacks enforcement of HSR environmental risks or transparency in mitigation. Financially, Indonesia is burdened with rising debt, most of which is financed by the China Development Bank. Limited public involvement and low passenger numbers further threaten long-term financial sustainability, revealing human and economic insecurity. This reflects an anthropocentric development model centered on industrial expansion, which overlooks environmental issues. The Indonesian case illustrates the BRIGC's inability to balance China's economic interests in the BRI with environmental protection and human security guarantees in Indonesia.

Limitations

This study certainly has several limitations. First, several data sets related to project and policy evaluation had restricted access. Therefore, the analysis in this study is based solely on publicly available documents. Second, there is a potential for bias since several key references are only available in Mandarin. The author's limited understanding of the language has led to a reliance on automatic translation or secondary sources, which may affect the accuracy of the interpretation. Lastly, this analysis relies on secondary data without direct interviews, which could potentially enrich the findings. However, the author has minimized this weakness by using various credible sources, including direct quotations from official documents and publicly available online interviews. This approach helps ensure that the data used remains accurate and reflects actual conditions.

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