

ENVIRONMENTAL GOVERNANCE STRUCTURE OF BELT & ROAD INITIATIVE: A POLYCENTRIC VIEW

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Abstract

The Belt & Road Initiative (BRI) is China's most significant economic ambition, and it has remained the center of attention in global politics since its launch in 2013. The infrastructural developments under BRI in more than 140 partner countries, particularly from developing and under-developed countries, will have far-reaching effects on global environmental governance. This research adopted a polycentric approach to explore institutional development in China to support its vision of green BRI, paying attention to the role of key stakeholders, policies, and environmental governance initiatives taken so far. The qualitative approach followed in this research found that the institutional framework of green BRI depends on the voluntary participation of business organizations. The self-governance principle is adopted in a variety of bilateral and multilateral sustainability initiatives. However, the achievement of the green BRI vision through the enforcement of stringent environmental regulations hinges not only on the priorities of China but also on the political and economic priorities of partner countries. This research concludes by outlining several challenges to global environmental governance and directions for future research.

Keywords

Belt & Road Initiative; Climate change; Environmental governance; Sustainable development; Environmental regulations; Polycentric approach; Telecoupling

1. Introduction

The President of China, Xi Jinping, launched BRI in 2013 to improve regional connectivity by investing in the redevelopment of the Silk Route to enhance trans-continental trade relations. The investments are made in developing roads and railways infrastructure, energy projects, and ports and airports across Eurasia, Asia, and Africa. Both land-based and maritime routes are developed under BRI. The far-reaching objectives of BRI go beyond infrastructural developments to coordination in trade policies, financial integration, and exchange of scientific knowledge and cultural harmony (NDRC, 2015). State-owned banks of China, in association with investments made by Chinese companies, private commercial banks, international organizations, and the governments of BRI partner countries, offer funding above USD 500 billion till 2018 (European Union Chamber of Commerce in China 2020).

The BRI related projects dominate the recent socio-economic projects of China with foreign countries (Zhang, 2018). The government of China has signed more than 200 agreements with 140 BRI partner countries and 30 international organizations till January 2021 (see details in Figure 1). The scope of BRI is expanding with the involvement of more partners, yet no official registry of projects is established in China. Therefore, geographical scope and a complete list of BRI projects cannot be prepared. Countries like Turkmenistan, which initially did not sign a bilateral agreement with China, have become part of BRI afterward (Xinhua, 2017b).

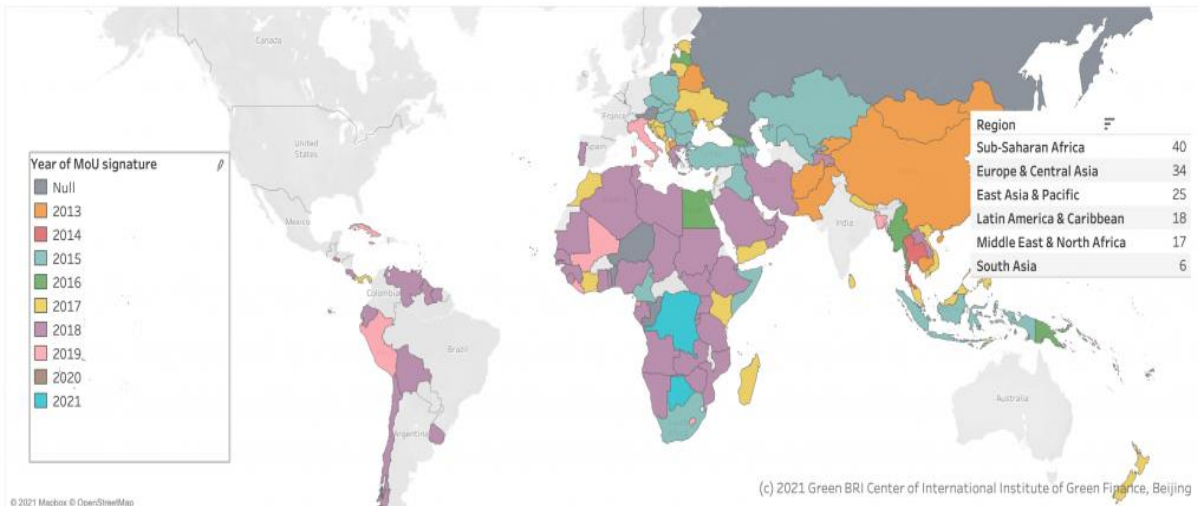
Due to the unprecedented volume of development activities under BRI, scholars and global organizations have raised concerns over the environmental implications of these infrastructural developments (Ascensão et al., 2018; Dong et al., 2018; Hughes et al., 2020; Ullah et al., 2022). It will be challenging to foster economic development without controlling environmental degradation as BRI traverses a variety of fragile climatic conditions. Several

Chinese ministries have recently issued policies on sustainable development through green BRI to answer global criticism and seek international acceptance under the trend of low-carbon development (Ahmad et al., 2024; Belt and Road Portal, 2017a, see section 1.2).

Figure 1: Partner countries in BRI projects till Jan 2021

Source: Green BRI Center (2021)

Countries of the Belt and Road Initiative



In the most recent research, BRI is examined from its political and economic perspective, focusing on the rise of Chinese influence in the global economy (Beeson, 2018; Gong, 2019; Zhou & Esteban, 2018). There is no doubt that if BRI is successfully implemented as planned, it will drastically change the existing geopolitical landscape of the world (O'Neill, 2019; Rolland, 2017). The environmental issues due to BRI have attracted much attention from scholars; however, the research on the environmental governance of BRI is scarce and fragmented (Hughes et al., 2020; Khalid et al., 2022).

The environmental governance structure of BRI projects in partner countries is examined in this research. This governance structure combines several state-owned and private organizations, political regimes, norms of partner countries, and environmental regulations and decision-making procedures followed in BRI (Coenen et al., 2021; Wang, 2019; Ullah, 2019). This research addressed how and why the environmental governance of BRI needs the collaboration of the Chinese government, BRI partner countries, and institutions at an international and transnational level to ensure sustainable development. Since several independent and inter-dependent environmental governance institutions are involved in BRI, the governance architecture of BRI is the primary unit of investigation rather than the effectiveness of individual, institutional arrangements. Following Dauvergne and Clapp (2016), we have restricted our analysis to formal institutions and ignored the role of informal socio-cultural norms and values.

Our sources of evidence are official documents, government reports, published articles in high-quality journals, and reports of international organizations published in the English language. Although Chinese sources can potentially increase the level of information, all BRI policy data is available in English. BRI is a unique development project influencing a large part of the world and is still in the development phase; therefore, more empirical work is needed to understand its impact on the future. In the following sections, we have outlined BRI's environmental challenges and opportunities. We discuss the emerging governance structure, crucial governance challenges, and how BRI can influence global governance of climate

change. In the final section, we discuss future research directions on the assessment of BRI's environmental governance.

2. Environmental Implications of BRI

The analysts of BRI as a sustainable development initiative can be divided into two broad groups. First, governments, politicians, policymakers, and scholars consider BRI as an opportunity to achieve their goal of sustainable development (Jin, 2018; Lewis et al., 2021). President Xi Jinping emphasized this goal during the first BRI Forum in 2017 by saying, “efforts should be made to strengthen cooperation in ecological and environmental protection and build a sound ecosystem to realize the goals set by the 2030 Agenda for Sustainable Development” (Xinhua, 2017a). Moreover, BRI partner countries can use the funding provided by the financial institutions of China to fulfill their responsibilities under the Paris Agreement (Coenen et al., 2021; Malik & Ullah, 2024). In addition, China is leading the world in the production and use of renewable energy products. It can supply this equipment, knowledge, and expertise to unlock the renewable energy potential of partner countries (Andrews-Speed & Zhang, 2018; Harlan, 2021). Second, several observers have concerns about environmental degradation because of infrastructural development projects under BRI. They believe the environmental cost of infrastructural and trade developments under BRI would outweigh its economic gains (Ahmad & Ullah, 2023; Gondal & Ullah, 2011; Hillman, 2018; Li et al., 2017). The environmental impacts of BRI are multifarious, and it will impact the ecosystem directly and indirectly, bringing changes in deforestation as well as land use patterns (Latif & Ullah, 2024; Shan et al., 2019). The magnitude of GHG emissions would increase because of the infrastructural construction and maintenance required for roads (Zhang et al., 2017; Zhou et al., 2018). Therefore, in the lack of a practical framework that would govern climate change, BRI-related developments can lead to environmental degradation.

Table 1: Type of Belt and Road Initiative projects in 51 countries (n = 370).

Industry	Number of projects	Reported Cost (in USD billion)
Road	102	68.05
Rail	75	198.31
Seaport	26	39.13
Intermodal	12	44.59
Coal-fired power plants	66	64.23
Gas-fired power plants	20	10.51
Crude-oil fired power plants	3	6.50
Hydropower	24	32.50
Wind energy	22	5.01
Solar energy	7	5.00
Pipeline	7	22.40
Transmission line	6	3.50

According to a recent report by the Mercator Institute for China Studies (MERICS), more than USD 50 billion in funding under BRI completed projects has been spent on energy projects (USD 20 billion is spent on renewable energy, USD 15 billion on fossil-fuel-based power projects and USD 12 billion on optimization of grid infrastructure). The higher investment in renewable energy is because of several large hydropower projects. We have used the Reconnecting Asia Database (CSIS, 2020) to identify 370 BRI projects in 51 partner countries with more than USD 500 billion in investment and presented their composition in Table 1. The transport sector, with 215 projects, led the chart and was followed by the energy sector with 159 projects. However, despite Chinese leadership in producing and deploying renewable energy equipment, most energy projects under BRI are fossil fuels based (Andrews-Speed & Zhang, 2018; Khan et al., 2025). Projects in Pakistan, Russia, Bangladesh, and Belarus are estimated to be of the highest cost.

3. Environmental Governance of BRI

The complex infrastructure built under BRI is augmented by soft infrastructure through the concept of green BRI to develop a governance mechanism for the coordination and implementation of BRI projects. The objective of the governance mechanism is to ensure the collaboration of multiple stakeholders while finding solutions to complex problems (Young et al., 2015). In this research, environmental governance is treated as “the set of regulatory processes, mechanisms, and organizations through which political actors influence environmental actions and outcomes” (Lemos & Agrawal, 2006, p. 298). We have analyzed environmental governance from an institutional perspective, which can be defined as “persistent and connected sets of rules and practices that prescribe behavioral roles, constrain activity, and shape expectations” (Keohane, 2020, p. 3).

The governance of BRI projects involves autonomous public and private sector institutions from China and host countries, as well as international organizations. One group of scholars has analyzed this complex governance model using fragmentation (Biermann et al., 2009; Kim, 2020). Others followed a polycentric approach, focusing on the self-organizing ability of the governance architecture (Cole, 2011; Dorsch & Flachsland, 2017). The polycentric approach allows us to remain alert to changing trends due to the emergence of new stakeholders in the governance architecture (Folke et al., 2019). The long-distance flow of trade activities under BRI development requires the collaboration of states, societies, and market actors to handle governance challenges (Challies et al., 2019). In this research, we have used the theoretical perspective of the polycentric approach to analyze the environmental governance of BRI and the role of different national and international stakeholders.

3.1 Green BRI: Governance in China

Several stakeholders, including ministries of China, state-owned organizations in China, banks, and private companies, are involved in formulating and implementing policies related to BRI projects (see Figure 2 for details). In addition to regulatory requirements developed by government institutions, BRI-related industries have adopted international guidelines developed by the Organization for Economic Co-operation and Development (OECD) or United Nations (UN) (see Tables 2 and 3 for details). Industrial networks mutually agree on these additional policies and voluntarily adopt them to exhibit their aspirations for green BRI.

This voluntary nature of engagement is promoted in BRI host countries following a soft law, which means nearly all rules related to BRI projects are non-binding. The treaties are informal agreements promoting the exchange and cooperation of stakeholders (Wang, 2019). The two primary policy documents related to BRI are the “Visions and Actions on Jointly Building Silk Road Economic Belt and 21st Century Maritime Silk Road,” published in 2015, and the “Vision for Maritime Cooperation under the Belt and Road Initiative,” published in 2017 (NDRC, 2015; Xinhua, 2017b). Ecological protection is stressed in both documents, but no formal rules and regulations are prepared to be followed by all stakeholders.

Figure 2: A non-exhaustive list of crucial governance entities of China involved in the environmental governance of BRI.

		Role in environmental governance of the BRI
State Council	<p>Selected departments constituting the State Council</p> <ul style="list-style-type: none"> • Ministry of Ecology and Environment • Ministry Agricultural and Rural Affairs • Ministry of Water Resources • Ministry of Finance • Ministry of Foreign Affairs • Ministry of Commerce • Ministry of Natural Resources 	<p>Various government entities share responsibility for the environmental governance of the BRI. The Ministry of Ecology and Environment (MEE) is the main government agency in charge of developing environmental policies and guidelines, and enforcing environmental laws and regulations. Apart from the MEE, the Ministry of Natural Resources (MNR), the Ministry of Water Resources (MWR), and the Ministry of Agriculture and Rural Affairs (MARA) were actively involved in reaching bilateral and multilateral cooperation agreements and developing BRI-related initiatives and projects during the second Belt and Road Forum in 2019.</p>
	<ul style="list-style-type: none"> • National Development and Reform Commission <ul style="list-style-type: none"> ○ Belt and Road Promotion Center ○ Office of the Leading Group for the BRI ○ National Energy Administration 	<p>The National Development and Reform Commission (NDRC) is the lead organization coordinating the pursuit of the BRI. It is the most powerful institution under the State Council – the chief executive organ of the People’s Republic of China. In 2015, a Small Leading Group for the BRI was established to make key decisions on the BRI and to oversee all BRI-related activities. An Office of the Leading Group for the BRI has been set up under the NDRC to handle day-to-day management and coordination with relevant ministries and organizations. In addition, a Belt and Road Construction Promotion Center was founded in 2017, which carries out strategic planning tasks.</p>
	<p>Selected agencies directly under the State Council</p> <ul style="list-style-type: none"> • State-owned Asset Supervision & Administration Commission • China Banking Insurance Regulatory Commission • China International Development Cooperation Agency 	<p>The State-owned Asset Supervision & Administration Commission (SASAC) and the China Banking and Insurance Regulatory Commission (CBIRC) play important roles in governing the environmental performance of Chinese banks and companies overseas. For instance, CBIRC plays an active role in providing guidelines to improve the environmental performance of Chinese banks and companies overseas. The newly-established China International Development Cooperation Administration (CIDCA) helps manage ‘softer’ areas such as education, vocational training, and agriculture.</p>
	<p>Selected policy banks under the State Council</p> <ul style="list-style-type: none"> • Export-Import Bank of China • China Development Bank 	<p>Two major financial supporters of the BRI, the Export-Import Bank of China and the China Development Bank, have put in place environmental and social safeguards. For example, the Export-Import Bank requires environmental impact assessments, monitoring and review. The China Development Bank joined the United Nations Global Compact, an initiative to encourage businesses worldwide to implement sustainability principles. However, the environmental policies of these Chinese Policy Banks have been criticized for being less mature and rigorous than those of other international financial institutions.</p>

Source: Ministry of Foreign Affairs (2019)

The policies related to green BRI are laid out in two documents, the “Guidance on promoting a green Belt and Road” and the “The Belt and Road Ecological and Environmental Cooperation Plan”. These documents promote the adoption of environment-friendly development under BRI, stressing low-carbon sustainable development while ensuring biodiversity protection and adhering to changing climatic conditions. In these documents, alignment with the 2030 Agenda for Sustainable Development has been stressed to promote the green BRI (Belt and Road Portal, 2017b, section 1.2). Through these policies, China presents itself as an advocate of governance of global climate change. However, only the list of 25 different projects is provided without further details on the implementation side. Several environmental conservation projects are scheduled to be integrated with BRI by 2025 to achieve higher standards for protecting and accomplishing SDGs by 2030 (Belt and Road Portal, 2017b, section 2.3). The most prominent feature of these two policy documents is China’s push for developing a corporate environmental governance framework under BRI. Corporations must adhere to international regulations, fulfill social responsibility, and follow green BRI guidelines issued by different government ministries (Belt and Road Portal, 2017b).

Table 2: Key policies and guidelines issued by the government for environmental aspects of BRI

Scope	Title	Year
Specific to BRI	• Visions and actions on jointly building Silk Road Economic Belt and 21 st century Maritime Silk Road	2015
	• Building the belt and road: Concepts, practices, and China's contributions	2017
	• Guidance on promoting a green belt and road	2017
	• Vision for maritime cooperation under the belt and road initiative	2017
	• The belt and road ecological and environmental cooperation plan	2017
	• Vision and actions on agriculture cooperation in jointly building silk road	2017
	• Economic Belt and 21 st century maritime silk road	2017
	• Vision and actions on energy cooperation in jointly building silk road Economic Belt and 21 st century Maritime Silk Road	2017
Related to BRI but not specific	• A guide on sustainable overseas Silviculture by Chinese enterprises	2007
	• A guide on sustainable overseas forests management and utilisation by Chinese enterprises	2009
	• Green credit guidelines	2012
	• Guidelines on environmental protection for overseas investment and cooperation	2013
	• Guidelines for establishing the green financial system	2016
	• Regulations on outbound investment and business activities of private enterprises	2017
	• China banking regulatory commission on the standardisation of banking service enterprises going abroad: Guide to strengthen risk prevention and control	2017
	• Measures for the management outbound investment regulations	2017
	• A guide on sustainable overseas trade and Investment of Forest Products by Chinese enterprises	In progress

Source: adapted from Coenen et al., (2021)

Table 3: Key policies and guidelines issued by industry associations for environmental aspects of BRI

Scope	Topic	Year
Policies related to BRI	• Guide on Social Responsibility for Chinese International Contractors (2012), Operational Manual for the Guide on Social Responsibility for Chinese International Contractors (2018)	2012, 2018
	• Guidelines for social responsibility in outbound mining investments	2015
	• Chinese due diligence guidelines for responsible mineral supply chains	2016
	• Environmental risk management for China's overseas investment guidelines	2017
	• Guidelines of sustainable infrastructure for Chinese international contractors	2017
	• The guidelines on China's sustainable agricultural overseas investment	2018
	• Guide for overseas investment and production of sustainable palm oil by Chinese enterprises	In progress

Source: adapted from Coenen et al. (2021)

In addition to preparing BRI-specific policies, a broader framework to direct and control Chinese overseas investments has been established. After several reports of violation of environmental regulations in overseas projects by Chinese companies, Beijing has issued several policies for compliance with the environmental laws of host countries. However, these policies again require voluntary compliance from Chinese companies, and no formal law exists to date for the environmental accountability of Chinese overseas investment (Coenen et al., 2021; Percival & Zhang, 2020). On the contrary, EIA has been a legal requirement in China for any construction-related project since 2003. Thus, a company can be held accountable for its impact on China's environment, but no legal sanctions for its impact on the environment in any other country.

Moreover, through the “Green Credit Guidelines” issued in 2012, China is trying to establish a sustainable banking system to identify, measure, monitor, and control their credit activities' social and environmental risks. Similarly, the “Guidelines for Establishing the Green Financial System” issued in 2016 shows Chinese commitment to promoting green finance. Compliance with these laws is mandatory in China; however, for overseas projects, the environmental laws of the host country are to be followed to determine the environmental and social risk of credit activities (CBRC, 2012).

It can be concluded that environmental laws related to BRI projects are non-binding and voluntary. Even though maturity has been observed in the governance of overseas investment, the environmental impacts of Chinese investments are weakly monitored, require voluntary adoption by companies, and are inconsistent with the domestic environmental governance structure (Ahmad, 2015a; Ullah, 2012). The green strategies in BRI projects are only aspirations, lacking effort for implementation (Hughes, 2019; Lu, 2020). The absence of legal and financial sanctions is the primary reason for companies not paying attention to environmental impacts (Iqbal et al., 2024). In contrast, environmental laws are strictly enforced in China, and violating companies are publicized for public awareness (Schreurs, 2017; Zeng & Eastin, 2007).

3.2 Green BRI: International and Transnational Governance

In addition to its environmental policies and guidelines issued to Chinese firms working overseas, China is designing an international and transnational governance structure of "green BRI". China is targeting a cooperation network to develop environmental protection along with enhancing the effectiveness of existing bilateral and multilateral cooperation agreements like China-ASEAN, Lancang-Mekong Cooperation, and the Euro-Asia Economic Forum (Maggio, 2019; Tillman et al., 2018).

The top priority of the Chinese government is to gain external recognition and legitimacy of BRI projects through the endorsement of international organizations, particularly the United Nations. In this regard, the diplomatic initiatives of China have led to cooperation agreements being signed with over 25 agencies of the UN, and over 20 high-level officials of the UN, such as the UN Secretary-General, have participated in the 2nd BRI Forum in 2019 (O'Neill, 2019). It recently established The Lancang-Mekong Environmental Cooperation Center, China-Cambodia Environmental Cooperation Center, and the China-Laos Environmental Cooperation Office to advance its bilateral and multilateral cooperation with BRI host countries (Maggio, 2019; Samiullah et al., 2021). The efforts to promote green development under BRI are augmented by the “Green Silk Road Envoys Program”, through which environmental officials of host countries are provided training and development opportunities. The Ministry of Ecology and Environment (MEE) launched this program in 2011. It provided training on green environment policies and enforcement of environmental laws to more than 1000 environmental experts from 20 countries, and the program aims to train 1500 more experts by 2022 (Dong et al., 2018).

Secondly, to promote BRI as a green development project, China has initiated different cooperation platforms collaborating with international organizations and NGOs. The “International Coalition for Green Development on the Belt and Road” (BRIGC) is a prominent example of such initiatives (Harlan, 2021). The coalition has support from the highest level of government as President Xi Jinping proposed this forum in 2017 in the 1st BRI forum (Xinhua, 2017b). Till August 2019, a total of 132 members comprising national environment ministries, intergovernmental organizations, NGOs, and private companies have joined this forum to extend support, guidance, and advice to its partner and contribute to the achievement of SDGs and targets assigned in the Paris Agreement (BRIGC, 2019).

The government of China uses green BRI to support its soft image and develop its profile as a global leader in global climate change governance (Coenen et al., 2021; Maqbool et al., 2024; Zhou & Esteban, 2018). Still, it is essential to note whether a green BRI governance structure will be integrated with the existing global environmental governance frameworks or establish its identity. The developments indicate that China intends to develop a separate governance structure through bilateral, multilateral, and regional cooperation agreements. China has shown intentions to lead the world in global environmental governance by being a rule-taker and rule-maker (Wang, 2017), and initiatives like BRIGC are a glimpse of it. However, most of these initiatives are in an early stage of development, and it is yet not clear what their mandate and structure would be. Therefore, it would be too early to say whether the global environmental governance leadership role will shift to the Global South and whether the new environmental governance structure will undermine or complement the existing system.

3.3 Green BRI: Governance in Host Countries

China has used several tactics to promote sustainable development as part of green BRI; however, a genuine green BRI needs practical efforts, particularly in developing environmental governance mechanisms in BRI host countries. Adherence to the policies of host countries is one of the prominent features of policy guidelines issued to Chinese companies working overseas. Therefore, the willingness and ability of partner countries to develop and enforce environmental laws can significantly improve the clean development image of BRI projects (Ullah et al., 2024a). However, BRI partner countries are mostly low-income developing countries in fragile economic conditions. These countries will likely be ready to compromise environmental sustainability to attract FDI for infrastructural development (Khan et al., 2019). There is a reasonable chance of inadequate enforcement of environmental regulations in these countries. Many of the BRI partner countries already hold a poor environmental governance record and are vulnerable to changes in global climate (Khalid & Ahmad, 2021; Tracy et al., 2017).

Another challenge is the complexity of the contractual arrangements of all BRI projects as several stakeholders, including investors, contractors, consultants, operators, government organizations, and ministries, are involved in the execution of projects. The official documentation of projects requires EIA; however, host countries have limited capacity to undertake such evaluations and monitor the impact on the environment (Ahmad, 2015b; Masood, 2019). Also, the EIA process is a complex and time-consuming activity, and it can result in modifications to the original plan, leading to a delay in the execution of projects. However, BRI projects are being executed quickly, and host countries and China are reluctant to accept anything that slows down the execution of projects (Masood, 2019).

The road infrastructure developed in BRI aims to increase trade and investment activity in partner countries, which can affect the environment of host countries in many ways (see details in Table 4). It has been observed that after the strict enforcement of environmental protection laws in China, Chinese companies are interested in shifting their less environment-friendly technologies and industries to other BRI countries. Their less stringent laws can cause an acceleration in the “pollution haven effect” (Harlan, 2021; Kolosov et al., 2017; Tracy et al., 2017; Wu et al., 2021). It can result in a “race to the bottom” if host countries show a willingness to compromise on environmental standards for the sake of FDI (see Table 4 for details). Many countries in BRI, including Pakistan, Bangladesh, and Cambodia, are already ranked high on the climate vulnerability index, thus having a high probability of becoming a pollution haven (Li et al., 2021). Therefore, BRI partner countries must develop a structure for coordination on legal and regulatory issues to avoid giving “jurisdiction shopping” opportunities to enterprises looking to shift their unsustainable technologies and industries from one country to another.

Table 4: Potential environmental effects of BRI trade and investment activities

Activity	Negative Effects	Positive Effects
Investment	<p>Pollution Haven Effect: As a result of stringent domestic policies in China, pollution-intensive industries will shift to those developing countries offering relaxed environmental regulations for attracting FDI (Khan et al., 2019).</p> <p>A race to the bottom—governments show a willingness to compromise on environmental regulations to attract FDI—will prove too costly for the global environment.</p> <p>An example of pollution-intensive industry relocation can be seen in cement industry relocation to Tajikistan due to strict regulations in China (Teo et al., 2019). In BRI, there are more than 100 new cement plants planned (Hughes, 2019).</p>	<p>Pollution Halo Effect: In BRI projects, foreign companies will develop the latest technologies and adhere to international environmental standards, spreading to local industry and stakeholders.</p> <p>Environmental leapfrogging will emerge as developed countries use their experience to implement sustainable development processes in developing countries, and dirty industrialisation could be avoided/minimised.</p> <p>An example could be coal-fired power plants under BRI. It is argued that China will reduce carbon emissions by installing the most updated and efficient machinery that developing countries could not otherwise afford.</p>
Trade	<p>Shanghai Effect: Shifting of exporters from a country with stringent environmental regulations to a country with laxer regulations can undermine the social, health, and environmental conditions of the host country (Adolph et al., 2017).</p> <p>An example could be the shifting of Gabon and cassava timber exporters from the EU market to China with relatively less stringent environmental regulations (Kaplinsky et al., 2011).</p>	<p>Race to the Top Effect: More stringent environmental regulations is enacted to remain competitive in markets with higher regulatory standards (Vogel, 2009). It could also be applicable in local consumer markets with higher consciousness for the environment.</p> <p>The export-oriented firms in China follow ISO 14000 and adhere to higher environmental standards for targeting markets of developed countries. In contrast, domestic sellers or exporters to developing countries do not follow these standards (Chen & Xu, 2021).</p>

On the contrary, if BRI partner countries adopt environmental standards and increase trade activities being conscious of the environment, it can trigger a “race to the top” (see details in Table 4). It has been argued by Liu (2018) that China intends to use BRI as a platform to improve the environmental standards of partner countries. For example, it is stated in the policy papers on the green BRI that the environment protection clause will be included in all free trade agreements by China (Belt and Road Portal, 2017a). Therefore, China will not apparently hold back from interfering with the internal affairs of host countries, primarily when it is connected to the environment. However, to the best of our knowledge, no single empirical evidence indicates that China is involved, to date, in any environmental governance of BRI partners and vice versa.

Since BRI extends to European countries, therefore it intersects with the EU’s environmental governance institutions. For instance, a project of Peliesac Bridge in Croatia is financed by the EU and built by companies from China. The consortium of Chinese companies established a Safety and Environment Protection Department and collaborated with local companies to meet the environmental standards set by the EU (Xinhua, 2019). This would

indicate that the involvement of the EU and other international organizations in BRI would not allow a race to the bottom because of their supra-national environmental laws, even if the projects are executed and funded outside the EU. These organizations can exert influence through their normative power to ensure environmental standards. Thus, the third-party involvement will make BRI host countries negotiate for better deals as seen in the US task force in the protection of human rights in the Myanmar special economic zone project (Hughes et al., 2020).

4. Challenges for the Green BRI Governance

The environmental governance structure of BRI projects has evolved as a fragmentation of several national, transnational, regional, and international institutions producing multiple programs, initiatives, and agreements. A self-regulatory mechanism against environmental protection is adopted in BRI, and enterprises and financial institutions are incentivized to adopt self-regulation mechanisms rather than the “command-and-control” approach. It offers far-reaching benefits by enabling the stakeholders to realize their responsibility to the environment. Thus, it can be inferred that BRI environmental governance architecture is based on soft law to promote multi-actor transnational cooperation on climate change (Folke et al., 2019).

Although several initiatives have been taken under the green BRI, multiple challenges to environmental governance are highlighted. Firstly, policy guidelines issued in BRI projects require the voluntary participation of stakeholders, not in the form of stringent legal requirements. The vision of green BRI is improbable to be achieved if a strict set of policies is not implemented for the desired results. The principles outlined for the governance structure of BRI projects need implementation; otherwise, it will give an impression of window dressing to the world rather than a pragmatic, action-oriented approach.

Secondly, the involvement of many countries in BRI has made it capital and labor-intensive and accelerated the economic activity in all host countries. The interconnected nature of human-environmental systems across BRI host countries has resulted in telecoupling, which presents a unique challenge to BRI's environmental governance. It is well known that climate change is a borderless phenomenon, and the rise in hazardous activities in one region can affect other regions (Kissinger et al., 2011).

According to the telecoupling perspective, distant and seemingly unrelated events can be symbiotic; therefore, the unsustainability of BRI regions is interdependent (Eakin et al., 2017; Friis et al., 2016). A practical manifestation of telecoupling is policy leakage. For instance, the stringent environmental policies in China are resulting in policy leakages and indirectly affecting the environmental governance of BRI, undermining the effectiveness of policy guidelines set out for overseas investments (Lima et al., 2019). For example, after enforcing a moratorium on commercial logging in China, timber imports from BRI countries have increased exponentially, mainly from Russia and Southeast Asia (Kolosov et al., 2017). The export of forestry products from Russia to China increased by 11% from 2013-18 (Han et al., 2018). According to Simonov (2018), the China-Mongolia-Russia-Economic Corridor will reopen the Sino-Russian border and increase the Roundwood exports to China. The increase in timber exports to China has resulted in deforestation in BRI host countries.

Thirdly, the green BRI is a hotly debated topic at the national level but lacks commitment from local government and business organizations, and the local government cannot enforce national policies on environment protection (Qi & Zhang, 2014; Ullah et al., 2024b). Since multiple stakeholders are involved in the environmental governance of BRI, the social and institutional distance between China and BRI host countries needs to be bridged. Despite being neighbors, there are vast institutional and social differences among the BRI countries (Eakin et al., 2017; Ullah, 2022). Similarly, there are striking differences in the legal and regulatory systems of BRI host countries, ranging from religion-driven laws to common or civil law

enforcement. Therefore, a link should be established between the environmental narrative of China through the application of sustainable development practices at local level projects and BRI without ignoring sociopolitical differences across partner countries.

5. Conclusions and Research Directions

Beijing is playing an active role in environmental governance by following a gentle approach. It is trying to develop an institutional structure promoting voluntary participation at the national, international, and transnational levels under the vision of green BRI. The success in this regard will increase Chinese influence in global environmental governance politics. The environmental governance system of China adopts a multi-actor system following an institution-building approach. China expects enterprises to adopt a self-regulating process to realize its vision of green BRI. A lot is said by China to promote its pro-environment image, but not much is seen in actions, particularly in BRI. By adopting a different environmental governance structure in BRI, China intends to change its tag from a rule-taker to a rule-maker in global politics. However, the success of BRI environmental governance is not solely dependent on China, but the host countries' capacity to monitor and implement environmental protection laws can undermine its effectiveness. The BRI policies encourage Chinese companies to follow the laws of host countries; therefore, the willingness of BRI host countries to compromise on the environment to attract FDI will have a substantial effect on the performance of the environmental governance of BRI.

The environmental governance of BRI is challenging, and several questions need to be answered for an appropriate future course of action. The size of BRI is expanding, and it is yet difficult to determine its scope of activities. The data requirements and methodological challenges will make it difficult for the scientific community to conduct comprehensive studies to forecast the potential effects of BRI projects on the regional and international environment. In addition, it is yet not empirically determined how BRI environment governance will affect the environmental laws and regulations of host countries. Will the stringent environmental policies in China lead to a policy leakage, and BRI countries choose the "race to the bottom", or will China play a leading role in enforcing strict environmental regulations and laying a foundation for the "race to the top"? Also, will the environmental governance structure of BRI result in policy convergence? In addition, it is yet to be determined how non-participating countries like the USA or the EU can influence the environmental governance of BRI.

This study on the environmental governance structure of BRI can serve as a basis for analyzing the role of different stakeholders and assessing the effectiveness of various governance initiatives. Finally, how this new environmental governance structure of BRI would interface with inter and intra-state power relations and national interests is a question that would interest experts in international relations and political science. BRI comprises several spatial and jurisdictional regions, with various institutions, governments, actors, and sectors that participate in governance, so it is a Herculean challenge. Orchestration of a governance structure for BRI projects to ensure environmental protection and monitor its effectiveness will, therefore, be a huge challenge with a long way to go.

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