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**ТУРУКТУУ ӨНҮГҮҮ ЖАНА РЕГИОНАЛДЫК БАЙЛАНЫШ: «БИР АЛКАК, БИР ЖОЛ»
ДЕМИЛГЕСИ АЛКАГЫНДА КЫТАЙ МЕНЕН БОРБОРДУК АЗИЯНЫН КЫЗМАТТАШУУСУ**

**УСТОЙЧИВОЕ РАЗВИТИЕ И РЕГИОНАЛЬНАЯ СВЯЗАННОСТЬ:
СОТРУДНИЧЕСТВО КИТАЯ И ЦЕНТРАЛЬНОЙ АЗИИ В РАМКАХ ИНИЦИАТИВЫ
«ОДИН ПОЯС, ОДИН ПУТЬ»**

**SUSTAINABLE DEVELOPMENT AND REGIONAL CONNECTIVITY: CHINA – CENTRAL
ASIA COOPERATION UNDER THE BELT AND ROAD INITIATIVE**

Кыскача мүнөздөмө: Бул макалада Кытай менен Борбордук Азиянын кызматташуусунун динамикасы «Бир алкак, бир жол» демилгесинин (БАБЖ) алкагында каралып, анын туруктуу өнүгүүнү илгерилетүүдө жана регионалдык байланыштарды чыңдоодо мааниси белгиленет. Тарыхый байланыктарга жана акыркы инвестициялык тенденцияларга таянуу менен изилдөө БАБЖ долбоорлорунун экономикалык, социалдык жана экологиялык өлчөмдөрүн талдайт. Айрыкча көңүл инфраструктураны өнүктүрүүгө, сооданы кеңейтүүгө, энергетикалык кызматташууга жана маданий алмашууларга бурулат, мунун бардыгы Борбордук Азиянын глобалдык рынокторго интеграцияланышына өбөлгө түзөт. Ошондой эле саясий туруксуздук, экономикалык теңсиздик жана коопсуздук маселелери сыяктуу чакырыктар каралат. Авторлор натыйжалуу башкаруу жана инклюзивдүү саясат кызматташуунун пайдасын максималдуу пайдалануу үчүн зарыл экенин белгилешет. БУУнун Туруктуу өнүгүү максаттары менен шайкеш келген БАБЖ демилгеси экономикалык өсүштүн куралы гана эмес, региондун узак мөөнөттүү туруктуулугу менен гүлдөп-өнүгүүсүнө багытталган жол катары бааланат.

Аннотация: В статье рассматривается динамика сотрудничества Китая и Центральной Азии в рамках инициативы «Один пояс, один путь» (ОПОП), с акцентом на её роль в продвижении устойчивого развития и укреплении региональной связанности. Опираясь на исторические связи и современные инвестиционные тенденции, исследование анализирует экономические, социальные и экологические измерения проектов, реализуемых в рамках ОПОП. Особое внимание уделяется развитию инфраструктуры, расширению торговли, энергетическому сотрудничеству и межкультурным обменам, которые в совокупности способствуют интеграции Центральной Азии в глобальные рынки. Также рассматриваются вызовы, такие как политическая нестабильность, экономическое неравенство и проблемы безопасности. Делается вывод о том, что эффективное управление и инклюзивная политика являются необходимыми условиями для максимизации выгод от сотрудничества. В увязке с Целями устойчивого развития ООН инициатива «Один пояс, один путь» представляется не только инструментом экономического роста, но и путём к долгосрочной стабильности и процветанию региона.

Abstract: This article explores the dynamics of China–Central Asia cooperation within the framework of the Belt and Road Initiative (BRI), highlighting its role in promoting sustainable development and enhancing regional connectivity. Drawing on historical ties and recent investment trends, the study examines the economic, social, and environmental dimensions of BRI-driven projects. Particular attention is given to infrastructure development, trade expansion, energy collaboration, and people-to-people exchanges, which collectively underpin the integration of Central Asia into global markets. The article also addresses

challenges such as political instability, economic disparities, and security concerns, arguing that effective governance and inclusive policies are essential for maximizing the benefits of cooperation. By aligning with the United Nations' Sustainable Development Goals (SDGs), the BRI is positioned not only as a tool of economic growth but also as a pathway toward long-term stability and prosperity in the region.

Негизги сөздөр: Кытай менен Борбордук Азиянын кызматташуусу; «Бир алкак, бир жол» демилгеси; туруктуу өнүгүү; регионалдык байланыш; соода жана инвестициялар; инфраструктура; энергетикалык кызматташуу; маданий алмашуу; геосаясий чакырыктар.

Ключевые слова: сотрудничество Китая и Центральной Азии; инициатива «Один пояс, один путь»; устойчивое развитие; региональная связанность; торговля и инвестиции; инфраструктура; энергетическое сотрудничество; культурный обмен; геополитические вызовы.

Keywords: China–Central Asia cooperation; Belt and Road Initiative; sustainable development; regional connectivity; trade and investment; infrastructure; energy cooperation; cultural exchange; geopolitical challenges.

Introduction The Belt and Road Initiative (BRI), launched by the Chinese government in 2013, has become one of the most ambitious strategic projects aimed at strengthening interregional connectivity and deepening cooperation between China and Central Asian countries.

The initiative places particular emphasis on infrastructure development, trade promotion and the strengthening of humanitarian ties. This approach reflects China's new sustainable development strategy, which focuses on the integration of social, economic and environmental dimensions.

Economic cooperation is central to China–Central Asia cooperation, with investment seen as a key tool for deepening regional integration. Strengthening regional connectivity is understood not only as the development of transport and energy networks, but also as the creation of conditions for the free movement of people, capital, ideas and information.

For Central Asian countries, especially those with limited natural resources such as Uzbekistan, Kyrgyzstan and Tajikistan, strengthening access to global markets is a strategic priority. At the same time, all countries in the region stand to gain from greater economic interdependence and joint development. Cooperation in the field of water and energy resources is of particular importance, given the transboundary nature of water use and energy security issues in the post-Soviet period, when the region's national economies are undergoing rapid transformation.

Thus, the Belt and Road Initiative is not only a tool for economic expansion, but also a platform for the formation of a sustainable development model for Central Asia, capable of uniting the interests of the countries of the region and China in the long term.

Literary review

The Belt and Road Initiative (BRI) has undergone significant evolution in recent years: from a predominantly economic project aimed at strengthening transport and trade connectivity, it has gradually transformed into a platform centred on the principles of sustainable and green development.

The Green Belt and Road Initiative (GBRI) is China's international cooperation strategy aimed at expanding cooperation between China, Asia and Europe through trade development, political dialogue and cultural exchange. Its ultimate goal is to contribute to the achievement of the Sustainable Development Goals (SDGs) on a global scale (Liu et al., 2023). By early 2020, China had signed over 200 agreements on joint promotion of the Green Belt and Road with 138 countries and 30 international organisations, demonstrating the growing international recognition of this initiative (Huang et al., 2021).

Chinese government regulations have played an important role in institutionalising the environmental agenda within the BRI. In April 2017, the policy document *Guidance on Promoting Green Belt and Road* was adopted, which defines the key directions for green construction of the belt and road. It emphasises the need to promote low-carbon, circular and sustainable production and consumption patterns, strengthen international cooperation on environmental protection and build an 'ecological civilisation' (Huang et al., 2021). Thus, even at the conceptual level, the initiative has ceased to be solely an instrument of economic expansion and has taken on a more comprehensive character, in which environmental and social aspects occupy an important place alongside economic ones.

Positive changes in the implementation of the initiative are reflected in the participating countries. According to research, the BRI is contributing to the transformation of

environmental regulation in Vietnam, Indonesia and Thailand, stimulating investment in renewable energy, sustainable urban planning and the development of green technologies (Jing et al., 2024). One of the key areas is energy cooperation, which allows countries to exchange resources, overcome barriers in the energy sector, optimise their energy structure and increase their 'green factor productivity' (He et al., 2021).

Regional cooperation is seen as an important tool for promoting sustainable development goals within the BRI. Researchers note the need to deepen cooperation between countries in the areas of technology exchange, joint development of clean energy, reduction of pollutant emissions, improvement of waste management systems, and promotion of sustainable urbanisation and industrialisation (Chen et al., 2025). It is emphasised that infrastructure projects implemented within the framework of the BRI are positively correlated with the promotion of green development in Asia and Europe (Ullah et al., 2025).

However, the literature also notes a number of challenges. Environmental uncertainties, varying levels of economic development among participating countries, and mixed reactions from local communities have led to an ambivalent perception of the initiative: on the one hand, it inspires hope for a 'green future,' while on the other, it raises scepticism about its real environmental effectiveness (Foggin, 2018). Despite the fact that a number of green development initiatives have been put forward over the decade of the BRI's existence, only a limited number of projects have been officially designated as 'Green BRI' (Pron, 2025). Researchers emphasise the need for a multi-level and comprehensive approach that balances economic growth and environmental protection (Jing et al., 2024).

Particular attention is paid to the multilateral dimension of the initiative. It operates in a multilateral cooperation format aimed at comprehensive regional integration and covering five priority areas: politics, infrastructure, trade, finance and humanitarian ties (Toe et al., 2021). This cooperation is particularly valuable for Central Asian countries, as it gives them access to Chinese technology and expertise in infrastructure construction, which is in line with their long-term national development strategies (Meng, 2021). The effect is further enhanced through linkages with other integration initiatives, such as the Eurasian Economic Union (EAEU) or European Union programmes, which open up opportunities

for Kyrgyzstan and other countries in the region to simultaneously develop infrastructure and advance decarbonisation goals (Komendantova et al., 2022).

The political format of the BRI emphasises transparency and coordination with existing regional mechanisms, which is seen as evidence of China's focus not on creating military-political alliances, but on forming an open and inclusive model of economic interaction (Abzhapparova et al., 2023). Multilateral cooperation also serves as a basis for strengthening cultural ties, mutual trust and intercultural dialogue (Ustemirova, 2024).

Contemporary research emphasises that the future of the initiative depends on its ability to overcome the diversity of national priorities and economic systems of the participating countries, ensure the sustainability of debt obligations and prevent infrastructure investments from becoming a burden for recipient countries (Sheng et al., 2023). At the same time, the environmental agenda is becoming both a challenge and an opportunity for the BRI: expanding investment in renewable energy sources, raising environmental standards for infrastructure projects, and integrating global sustainable development goals into the implementation of the initiative pave the way for its long-term transformation into a tool for sustainable development.

Thus, a review of the literature shows that the Belt and Road Initiative is gradually moving beyond a narrow economic model and becoming a comprehensive platform where issues of economics, ecology, energy, and cultural exchange are intertwined. Despite the ambiguity surrounding the initiative, its greening and increased multilateral cooperation make it an important tool for promoting sustainable development in Eurasia and beyond.

Methodology

The present study employs a qualitative research design, combining systematic literature review and comparative analysis of policy documents, academic studies, and official reports related to the Belt and Road Initiative (BRI) and its "green" dimension. The primary objective of this methodological approach is to identify the evolution of China–Central Asia cooperation under the BRI framework and to evaluate its role in promoting sustainable development and regional connectivity.

The literature review is based on peer-reviewed journal articles, policy papers, and reports from international organizations published between 2015 and 2025. These sources provide insights into economic, environmental, and

geopolitical dimensions of the BRI. A particular emphasis was placed on studies examining the implementation of the Green Belt and Road Initiative (GBRI) and its alignment with the United Nations Sustainable Development Goals (SDGs). To ensure objectivity and reliability, the selected sources were cross-referenced and categorized according to thematic clusters: infrastructure development, trade and investment, energy cooperation, environmental sustainability, and multilateral governance.

Additionally, the study uses a comparative case approach, drawing examples from Central Asian countries such as Kazakhstan, Kyrgyzstan, and Uzbekistan. These cases illustrate how BRI projects interact with local development priorities, environmental policies, and regional integration mechanisms. The comparative method allows for the identification of similarities and divergences in the implementation of BRI projects, highlighting both opportunities and challenges for sustainable development in the region.

Finally, the research applies an analytical framework that integrates concepts of sustainable development, regional connectivity, and international cooperation. This framework enables the evaluation of BRI projects not only in terms of their economic performance but also with regard to their social inclusiveness and environmental impact. The methodology thus provides a comprehensive foundation for assessing the contribution of the BRI to the transformation of regional cooperation between China and Central Asia.

Research Questions

To guide the analysis, this study formulates the following research questions:

1. How has the Belt and Road Initiative (BRI) evolved from an economic connectivity project into a platform that incorporates sustainable development and green principles?

This question aims to identify the transformation of the initiative and the mechanisms through which the environmental and social agenda has been integrated into its strategy.

2. What are the key economic, social, and environmental impacts of BRI cooperation between China and Central Asian countries?

Here, the focus is on how BRI projects affect infrastructure development, trade, the energy sector, as well as environmental sustainability and social inclusion in the region.

3. How does the Green Belt and Road Initiative (GBRI) align with the United Nations Sustainable Development Goals (SDGs) in the context of Central Asia?

This question allows us to assess the extent to which China's initiatives are consistent with the global sustainable development agenda and the extent to which they contribute to its achievement.

4. What challenges and risks hinder the effective implementation of BRI in Central Asia, and what policy mechanisms could enhance cooperation?

This question covers issues of political instability, economic disparities and environmental threats, and identifies possible ways to enhance the effectiveness and sustainability of cooperation.

Empirical Findings and Discussion

The analysis of China–Central Asia cooperation under the Belt and Road Initiative (BRI) reveals several empirical patterns that demonstrate both the achievements and limitations of the initiative in promoting sustainable development and regional connectivity. Drawing on secondary data, case studies, and thematic literature, this section discusses the economic, environmental, and social dimensions of the BRI, as well as the challenges that emerge from its implementation.

Economic Integration and Infrastructure Development

One of the most tangible outcomes of the BRI in Central Asia is the expansion of infrastructure networks and trade relations. Between 2013 and 2018, the total trade volume of Central Asian countries with China grew at an average annual rate of 14.6%, with China emerging as the primary trade partner for Kazakhstan, Kyrgyzstan, and Uzbekistan. Investments in large-scale projects such as the China–Central Asia gas pipeline, the modernization of the China–Kyrgyzstan–Uzbekistan transit road, and the development of dry ports in Kazakhstan (Khorgos) underscore the strategic role of connectivity in regional economic growth. These projects not only facilitated cross-border trade but also generated multiplier effects, including job creation and industrial diversification. Nevertheless, economic disparities remain: wealthier economies such as Kazakhstan attract a disproportionate share of investment, leaving peripheral countries like Kyrgyzstan and Tajikistan more vulnerable to uneven development.

Environmental and Green Development Outcomes

Empirical evidence suggests that the Green Belt and Road Initiative (GBRI) has gradually become a cornerstone of China's engagement with Central Asia. Investments in renewable energy

projects, such as the Zhanatas Wind Power Station in Kazakhstan, highlight the potential of the BRI to contribute to low-carbon transitions. Furthermore, policy frameworks like the Guidance on Promoting Green Belt and Road (2017) have provided a normative basis for incorporating ecological principles into project planning. However, despite high-level commitments, only a fraction of BRI projects are formally classified as “green,” raising concerns about the consistency of implementation. Environmental challenges, including water scarcity, land degradation, and carbon emissions, remain acute in Central Asia, underscoring the need for stricter monitoring mechanisms and environmentally responsible financing models.

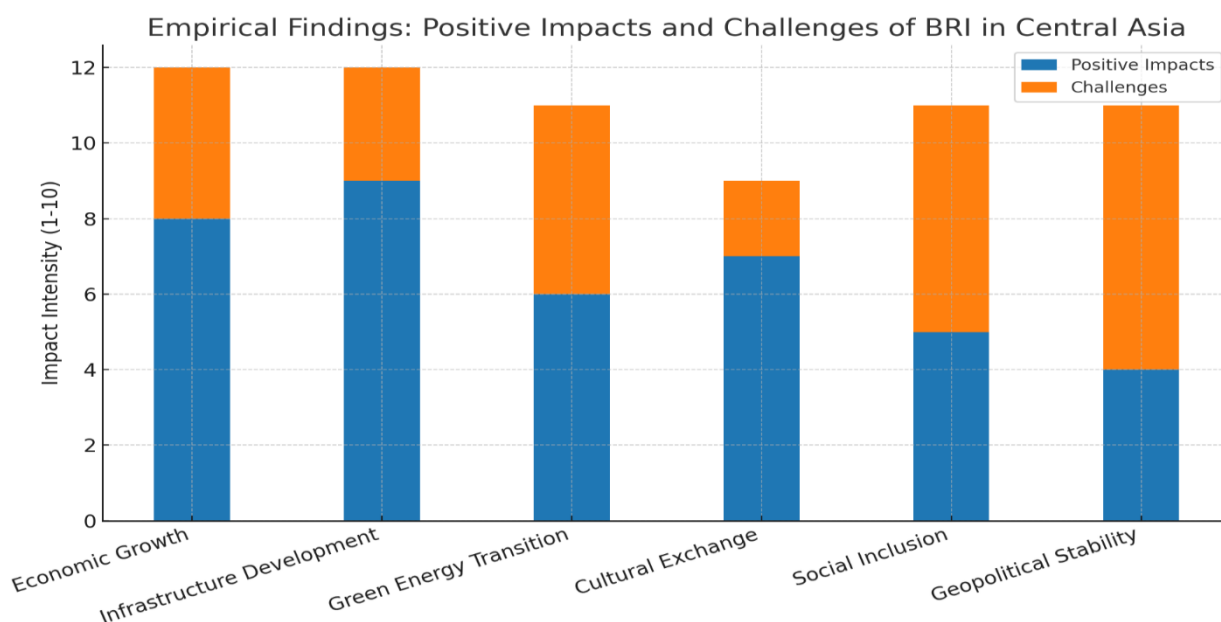
Social Inclusion and People-to-People Connectivity

Beyond economics and ecology, the BRI has also advanced social and cultural cooperation. Empirical findings indicate that China provides approximately 1,000 scholarships annually to Central Asian students, supporting the development of human capital and enhancing cultural exchange. Tourism initiatives, such as the “Central Asia Silk Road Tourism Pentagonram,” further illustrate the initiative’s role in fostering

people-to-people ties. These undertakings enhance soft power relations and build mutual trust. However, questions remain about the equitable distribution of benefits across different social groups and regions. Critics argue that while metropolitan areas benefit from infrastructure and educational projects, rural and marginalized communities often remain excluded, thereby exacerbating social inequality.

Geopolitical and Security Dimensions

The BRI’s expansion in Central Asia cannot be disentangled from broader geopolitical dynamics. While the initiative has strengthened China’s economic presence in the region, it has also raised concerns about growing dependency and potential security risks. Infrastructure corridors, while facilitating legitimate trade, can also be exploited for illicit activities, including smuggling and trafficking. Moreover, political instability in Afghanistan and intra-regional rivalries among Central Asian states present additional risks to the long-term sustainability of BRI projects. These findings suggest that economic and infrastructural progress must be accompanied by institutional reforms, improved governance, and security cooperation.



The chart shows the ratio of positive effects and challenges of the Belt and Road Initiative in Central Asia across six key areas. The highest concentration of positive results is observed in trade and infrastructure, while environmental sustainability and social inclusion are

characterised by significant contradictions. High challenge scores in the areas of geopolitics and security underscore that institutional and political risks remain the main constraint to the long-term effectiveness of the BRI.

Positive Impacts vs. Challenges of BRI in Central Asia

Dimension	Positive Impacts	Challenges
Economic Growth & Trade	14.6% annual trade growth (2013–2018); China as main trade partner for Kazakhstan, Kyrgyzstan, Uzbekistan	Unequal distribution of trade benefits; dependence on Chinese markets
Infrastructure Development	Major transport and logistics projects (gas pipelines, Khorgos dry port) boosting regional integration	Kazakhstan attracts majority of investment; weaker inclusion of Kyrgyzstan/Tajikistan
Green Energy & Environment	Renewable energy projects (Zhanatas Wind Power Station); policy frameworks for low-carbon transition	Only a fraction of projects formally ‘Green BRI’; water scarcity and land degradation persist
Social Inclusion & Education	1,000 scholarships annually for Central Asian students; expanded academic exchanges	Benefits concentrated in urban centers; rural and marginalized groups underrepresented
Cultural Exchange & Tourism	Silk Road Tourism Pentagram; increased cross-border cultural cooperation	Tourism growth uneven; risk of cultural homogenization
Geopolitical & Security	Enhanced regional cooperation mechanisms; investment-driven stability in some areas	Concerns over dependency; risks from smuggling, terrorism, political instability in Afghanistan

The table systematises empirical data, highlighting the positive effects and challenges of the BRI in Central Asia. It shows that the initiative's successes are linked to increased trade, the introduction of renewable energy and expanded cultural cooperation, while the main challenges relate to the uneven distribution of benefits, environmental threats and social imbalances. This format of analysis highlights the need for a comprehensive approach: for the BRI to become an instrument of sustainable development, it is important to strengthen the environmental agenda and ensure more equitable participation of all countries in the region.

Discussion

Taken together, these empirical findings suggest that the BRI has significantly reshaped the development trajectory of Central Asia, positioning the region as a critical hub in China's transcontinental strategy. The initiative has generated measurable economic gains and contributed to infrastructure modernization, while also opening new opportunities for green development and cultural exchange. At the same time, persistent challenges—uneven distribution of investment, ecological risks, social inequality, and geopolitical tensions—point to the need for a more balanced and inclusive approach.

From a theoretical perspective, the findings underscore the dual character of the BRI: it functions simultaneously as a driver of economic integration and as a testing ground for sustainable development policies. While the initiative has aligned itself with the UN Sustainable Development Goals, its practical outcomes remain uneven across the region. The discussion therefore

emphasizes the importance of embedding environmental safeguards, promoting equitable growth, and strengthening multilateral cooperation mechanisms to ensure that the BRI evolves into a genuinely transformative platform for sustainable regional development.

Conclusion

The analysis of China–Central Asia cooperation under the Belt and Road Initiative (BRI) demonstrates that the initiative has evolved from a primarily economic connectivity project into a multidimensional platform that integrates economic, environmental, and social dimensions of development. The findings indicate that the BRI has become a central driver of regional transformation, offering both opportunities for growth and challenges that must be carefully managed.

First, the economic outcomes of the BRI in Central Asia are evident. Trade volumes between China and Central Asian states have grown substantially, and large-scale infrastructure projects such as pipelines, railways, and dry ports have improved regional connectivity and reduced transaction costs. For countries with limited access to global markets, such as Kyrgyzstan and Tajikistan, these developments represent critical opportunities to diversify trade flows and stimulate industrial modernization. However, the benefits are distributed unevenly: wealthier states like Kazakhstan attract the majority of investment, while smaller economies remain vulnerable to dependency and volatility. This unevenness underscores the necessity of regional coordination mechanisms that ensure more balanced participation.

Second, the environmental dimension of the BRI reveals both promising developments and persistent limitations. The Green Belt and Road Initiative (GBRI) has introduced a policy framework for low-carbon development, with renewable energy projects—such as the Zhanatas Wind Power Station—serving as important case studies of ecological innovation. Nevertheless, only a fraction of projects are officially classified as “green,” and challenges such as water scarcity, land degradation, and emissions continue to pose serious risks. To address these issues, stricter environmental standards, transparent monitoring systems, and sustainable financing models are required. The alignment of BRI projects with the United Nations Sustainable Development Goals (SDGs) will remain a decisive factor in evaluating their long-term contribution to global sustainability.

Third, the social and cultural dimensions of cooperation highlight the initiative’s potential to deepen people-to-people ties and strengthen mutual trust. Scholarships for Central Asian students, academic exchanges, and cultural tourism projects demonstrate China’s efforts to invest in human capital and soft power. These measures promote inclusiveness and intercultural dialogue. Yet, concerns about equitable distribution persist: rural communities and disadvantaged groups often receive fewer benefits from these initiatives compared to urban populations. Ensuring broader social inclusion is therefore essential for achieving the people-centered vision of the BRI.

Finally, the geopolitical and institutional context shapes the trajectory of BRI cooperation. While the initiative strengthens China’s economic presence and provides opportunities for regional cooperation, it also generates apprehension about dependency and strategic vulnerabilities. Political instability in Afghanistan, as well as intra-regional rivalries, continue to challenge sustainable integration. Addressing these issues requires stronger regional governance mechanisms, institutional reforms, and greater transparency in project implementation.

In summary, the Belt and Road Initiative in Central Asia embodies a paradox: it simultaneously acts as a catalyst for economic modernization and as a source of structural imbalances. The success of the initiative will depend on whether China and its Central Asian partners can establish inclusive mechanisms of cooperation that prioritize environmental sustainability, social equity, and balanced regional growth. Looking ahead, embedding the SDGs into

BRI practices, expanding renewable energy investments, and strengthening cultural exchange programs will be crucial for transforming the initiative into a genuinely sustainable and integrative platform.

Thus, the study concludes that the BRI has the potential to become not merely a project of economic connectivity but a long-term strategy for shaping the sustainable development of Central Asia. However, this potential can only be realized if cooperation evolves toward a more equitable, transparent, and environmentally responsible model that truly reflects the principles of win-win development.

Executive Summary The Belt and Road Initiative (BRI) has transformed China–Central Asia cooperation, moving beyond trade and infrastructure toward green development, social inclusion, and cultural exchange. While the initiative has delivered tangible benefits—such as increased trade flows, renewable energy projects, and expanded educational programs—it also faces challenges of uneven investment distribution, ecological risks, and geopolitical uncertainty. The long-term success of the BRI in Central Asia depends on embedding sustainability principles, ensuring equitable participation of all countries, and strengthening regional governance mechanisms. Only through such adjustments can the BRI evolve into a genuine platform for sustainable development and inclusive growth in the region.

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