

China-Central Asia Research Initiative 2025:

Energy, Climate and Financial Dependency



Just Transition or Power Imbalance? Assessing Equity in China-Central Asia Climate Cooperation

Dr. Zhyldyz Tegizbekova, Narxoz University

Abstract

This study examines whether climate cooperation between China and Central Asian states embodies a just transition or perpetuates existing power asymmetries. Adopting an ecological justice and post-development lens, we critically assess equity and inclusion in China-Central Asia climate initiatives, focusing on how benefits, decision-making power, and responsibilities are shared. Using comparative case studies of renewable energy projects in Kazakhstan and Kyrgyzstan, the research applies distributive and procedural justice criteria to evaluate outcomes. It is found that China's substantial role in regional climate action has delivered important low-carbon investments and capacity gains for instance, adding over 1,000 MW of clean energy capacity in Kazakhstan¹ and launching new solar and wind projects in Kyrgyzstan that promise jobs and energy security². However, power asymmetries and governance gaps persist. Climate projects are often negotiated through top-down, state-centric channels with limited local participation, reflecting broader structural dynamics in both China and Central Asia rather than unilateral exploitation. The result is a mixed picture: while cooperation aligns with decarbonization goals and offers mutual benefits, it struggles to fully realise just transition principles of fairness, inclusion, and equitable benefit-sharing. I argue that these challenges stem from systemic issues in finance and governance - such as donor-recipient imbalances and weak transparency, rather than any singular malign intent. The paper concludes with recommendations to enhance equity in Sino-Central Asian climate partnerships, highlighting the need for greater community involvement, transparency, and institutional reforms so that green cooperation can advance social justice alongside climate objectives.

Introduction

China's expanding role in global climate governance has extended into Central Asia, where fossil fuels still supply 95 percent of the region's total primary energy, yet electricity mixes vary: Kazakhstan remains heavily coal-dependent with renewables accounting for only about 12 percent, while Kyrgyzstan generates nearly 90 percent of its electricity from hydropower. Through initiatives often linked to the Belt and Road Initiative (BRI), China has financed renewable energy projects, sustainable infrastructure, and environmental programs across Central

¹GT Staff Reporters, "China, Central Asian Countries Explore New Opportunities After Astana Summit," *Global Times*, June 19, 2025, <https://www.globaltimes.cn/page/202506/1336523.shtml>

² "Chinese Company to Build Solar and Wind Power Plants in Kyrgyzstan," *QazaqGreen*, July 9, 2025, <https://qazaqgreen.com/en/news/central-asia/2863/>.

Asian countries. These partnerships ostensibly promise mutual development benefits: Central Asian states gain much-needed green investment to meet rising decarbonization goals. At the same time, China strengthens regional ties and markets for its clean technology³. Kazakhstan and Kyrgyzstan have both welcomed Chinese investment in solar, wind, and grid modernization as part of their energy transitions. Yet scholarship questions whether this cooperation meets the requirements of a just transition, which entails not only reducing emissions but also ensuring fairness and inclusive participation (Heffron & McCauley, 2018). The central question is whether China's role facilitates an equitable transition or reinforces power imbalances under a green veneer.

Initial evidence suggests significant asymmetries: China provides most finance and technology, while Central Asian states act largely as recipients. Yet this reflects the limited availability of alternative partners in affordable clean energy technology, rather than China's unilateral expansion. This raises concerns over debt, external influence, and whose interests are prioritized, familiar issues from broader BRI debates. Deals are typically negotiated state-to-state, with limited community involvement, reflecting a technocratic model critics describe as "environmental authoritarianism⁴."

At the same time, China's role is more nuanced than uniformly exploitative depictions suggest. In some cases, Chinese firms adapt to local frameworks: for example, participating in Kazakhstan's renewable auctions⁵. Outcomes thus depend not only on Chinese practices but also on host-country governance and broader global finance structures that pair capital-rich lenders with poorer states. These systemic dynamics, more than intent, shape inequities.

Literature Review

China's Climate Cooperation and Power Dynamics in Central Asia

China's engagement in Central Asia's energy and climate sectors must be understood against the backdrop of the BRI and China's evolving climate diplomacy. Since the mid-2010s, Beijing has increasingly emphasised a "Green

³ "China, Central Asian Countries Explore New Opportunities After Astana Summit," *Global Times*, June 19, 2025, <https://www.globaltimes.cn/page/202506/1336523.shtml>

⁴ Environmental authoritarianism is a "governance model where environmental decisions are made by a central authority, often with limited public participation or transparency." It prioritizes environmental outcomes over democratic processes, using strict regulations, surveillance, and enforcement to achieve sustainability goals, <https://doi.org/10.1093/oxfordhb/9780198871996.013.31>

⁵ Wang Jihong and Chen Haobi, "Kazakhstan's 2025 Renewable Energy Auctions," *Law.asia*, April 28, 2025, <https://law.asia/kazakhstan-renewable-energy-auctions-2025/>

BRI⁶,” pledging to incorporate sustainability into its overseas investments. In practice, this shift has coincided with notable growth in Chinese-funded renewable energy projects in Central Asia. For example, since 2018, China has invested in major solar and wind farms in Kazakhstan⁷, augmenting (though not replacing) its longstanding investments in oil, gas, and transport infrastructure. This investment is motivated partly by China’s global climate commitments and image, but perhaps more directly by Central Asian countries’ own demand for cleaner energy to address issues like power shortages and pollution⁸. In other words, host countries have actively sought Chinese partnership to boost renewables, given domestic budget constraints and insufficient local technology (Liu et al. 2023; ADB 2021). China’s advanced solar, wind, and grid technologies, and its capacity to finance large projects quickly, make it an attractive partner for Central Asian states striving to meet targets such as Kazakhstan’s 2060 carbon neutrality goal or Kyrgyzstan’s renewable energy ambitions.

Critical perspectives raise concerns that “win-win” climate collaborations may reproduce inequitable power relations. A key critique draws on authoritarian environmentalism, noting that China’s external governance often mirrors its domestic model: top-down control and technocratic decision-making with little public input. Zhang and Zhang (2021) argue that when this is exported to Central Asia, where governance is already centralized and civil society is weak, it further sidelines local stakeholders. Decisions about siting projects or allocating jobs are typically made by elites and corporate actors, Chinese or national, rather than through inclusive dialogue. While efficient for implementation, this undermines procedural justice, which requires participation. Post-development theorists add that such patterns perpetuate elite-driven “development” paradigms in a green guise, neglecting local knowledge and alternative pathways.

Another body of literature focuses on the distributive outcomes of China-Central Asia climate cooperation. Here, the question is who gains and who bears the burdens from these projects. The result, according to Indeo (2021) and Kassenova

⁶ The Green Belt and Road Initiative (Green BRI) refers to China’s effort to integrate environmental sustainability into its Belt and Road projects by promoting renewable energy, ecological infrastructure, and low-carbon development in partner countries

⁷ Farkhod Aminjonov and Olesya Dovgalyuk, “Central Asia–China Gas Pipeline (Line A, Line B, and Line C),” *People’s Map*, updated February 7, 2023, <https://thepeoplesmap.net/project/central-asia-china-gas-pipeline-line-a-line-b-and-line-c/>; OSCE Academy in Bishkek, “BRI in Central Asia: Unified Database for CADGAT Data Articles No 20-27 (Excel),” *CADGAT Database*, <https://www.osce-academy.net/en/research/cadgat/>; American Enterprise Institute, “China Global Investment Tracker,” <https://www.aei.org/china-global-investment-tracker/>; World Resources Institute, “China Overseas Finance Inventory Database,” last updated October 10, 2024, <https://datasets.wri.org/dataset/cofi>.

⁸ Yunis Sharifli, “Green New Wave: How China Adapts to Central Asia’s Renewable Energy Landscape,” *Carnegie Endowment for International Peace*, April 19, 2024, <https://carnegieendowment.org/posts/2024/04/green-new-wave-how-china-adapts-to-central-asias-renewable-energy-landscape?lang=en>.

(2019), is a model of climate cooperation that reinforces asymmetries rather than resolves them.⁹¹⁰ China's financial and technological dominance creates a donor-recipient dynamic that risks favouring the interests of the lender and local political elites. For instance, loans from Chinese banks for renewable energy infrastructure often come with conditions - such as the use of Chinese contractors, equipment, or even labour - which ensure that a significant share of economic benefits (contracts, technology value-added) flows back to China or to a narrow circle of insiders. In Central Asia, weaknesses in transparency and accountability can exacerbate this trend; if deals are struck behind closed doors, local communities have little say in how benefits are shared or burdens mitigated. Debt dependence is another concern frequently cited: Central Asian countries like Kyrgyzstan face high external debt to China, raising questions about the long-term equity of financing green projects via more loans (ADB, 2021). While renewable projects ideally generate revenue from electricity sales, if they underperform or require state subsidies, the public may ultimately bear the costs without seeing proportional benefits in jobs or services.

Moreover, public perceptions in Central Asia add another layer of complexity. Local populations have at times reacted with suspicion or resentment toward Chinese-funded ventures, especially when these are perceived to operate opaquely or to marginalise locals. Kassenova (2019) notes that public opinion seems to run counter to official enthusiasm: while Central Asian elites embrace Chinese investment, ordinary citizens often express "China threat" anxieties¹¹ Toktomushev (2020) documents cases in Kyrgyzstan and Kazakhstan where opaque agreements, land use concerns, and the exclusion of domestic labor triggered public resistance to Chinese projects¹². In one notable incident, a planned \$280 million Chinese-backed logistics centre in Kyrgyzstan's Naryn region was cancelled in 2020 after locals protested what they saw as a murky deal that would benefit outsiders at their expense¹³. Such episodes, though not directly about renewable energy, illustrate a trust deficit that can carry over to "green" projects if communities feel sidelined. The spectre of "debt-trap diplomacy" and loss of sovereignty, however debated its reality, looms in public discourse. All this

⁹ Indeo, F. (2021). China's Belt and Road Initiative in Central Asia: The Case of the Energy Sector. *Eurasian Geography and Economics*, 62(2), 137–156

¹⁰ Kassenova, N. (2019). More Politics than Substance: Three Years of Chinese Economic Cooperation in Central Asia. Foreign Policy Research Institute (FPRI). <https://www.fpri.org/article/2018/10/more-politics-than-substance-three-years-of-russian-and-chinese-economic-cooperation-in-central-asia/>

¹¹ Aigoul Abdoubaetova, ed., *China's Belt and Road Initiative in Central Asia: Ambitions, Risks, and Realities*, Special Issue 2 (Bishkek: OSCE Academy in Bishkek, 2020), https://www.osce-academy.net/upload/file/BRI_08_07.pdf.

¹² Kemel Toktomushev, "Anti-Chinese Sentiments in the Extractive Industry: A Central Asian Example," *China US Focus*, January 22, 2021, <https://www.chinausfocus.com/foreign-policy/anti-chinese-sentiments-in-the-extractive-industry-a-central-asian-example>.

¹³ Ibid.

suggests that the procedural legitimacy of climate cooperation is as important as its technical merits: without local buy-in and transparency, even well-intended projects may face a social backlash.

At the same time, other scholars urge a balanced view that recognizes variations and mutual agency in China-Central Asia dealings. Some empirical studies have found that Chinese firms adapt to host country frameworks when those are in place¹⁴ For example, in Kazakhstan's renewable energy auction program (2018-2020), Chinese companies participated through open bidding rather than exclusively through government-to-government channels. They secured several projects, competing alongside Western, local, and other investors, which suggests a departure from purely state-driven deals. In such instances, host country policies (e.g. competitive tenders, local content rules) shape the terms of Chinese engagement and can curb the most imbalanced outcomes. Similarly, in Uzbekistan, when initial tenders saw Chinese bidders losing out to others due to price competition, Chinese actors explored alternative modes like partnering as EPC (engineering-procurement-construction) contractors or suppliers to projects led by others¹⁵. These adjustments indicate that Chinese entities are not monolithic or omnipotent; they respond to incentives and constraints set by local governance. Indeed, recent analysis by Muratalieva (2024) emphasises that Central Asian states have room to bargain and shape outcomes if they "get the fundamentals at home right" - meaning strong institutions, transparent procurement, and diversified partnerships¹⁶. In other words, the extent to which climate cooperation yields equitable, *just* outcomes depends partly on Central Asian governments' own approaches to governance and public involvement, not just on Chinese practices alone¹⁷. This literature cautions against painting China as a unilateral puppet-master; instead, it highlights an interactive dynamic where local agency (or its absence) plays a crucial role in determining whether cooperation is exploitative or empowering.

In summary, existing research portrays a complex picture of China-Central Asia climate cooperation. On one hand, there are clear power asymmetries - financial, technological, and political that skew negotiations and may undermine the principles of a just transition. On the other hand, context and agency matter: variation in national policies and openness can lead to different outcomes on the

¹⁴ Yunis Sharifli, "Green New Wave: How China Adapts to Central Asia's Renewable Energy Landscape," *Carnegie Endowment for International Peace*, April 19, 2024, <https://carnegieendowment.org/posts/2024/04/green-new-wave-how-china-adapts-to-central-asias-renewable-energy-landscape?lang=en>.

¹⁵ *ibid.*

¹⁶ Nargiza Muratalieva, "Chinese Lending Adapts to Central Asia's Realities," *Carnegie Endowment for International Peace*, August 19, 2024, <https://carnegieendowment.org/posts/2024/08/china-investment-central-asia-debt?lang=en>.

¹⁷ *ibid.*

ground. These insights underscore the need to evaluate specific cases of climate projects in Central Asia for their equity implications, paying attention to who has a voice and who benefits. To do so, we turn to the conceptual framework of the just transition and the twin lenses of distributive and procedural justice to assess China-supported climate initiatives in the region.

Just Transition and Climate Justice: Frameworks for Analysis

The concept of a just transition provides a normative framework for evaluating climate cooperation initiatives. At its core, a just transition calls for aligning climate action with broader social justice goals, ensuring that the shift to a low-carbon economy is fair and inclusive¹⁸. This concept, which emerged from labour and environmental justice movements, insists that the benefits of decarbonization (clean air, new jobs, energy access) are widely shared, and the burdens (economic dislocation, costs of transition) are not shouldered disproportionately by the most vulnerable.¹⁹ Two key dimensions of justice are often highlighted: distributive justice, which concerns the allocation of costs and benefits among different groups, and procedural justice, which concerns the fairness of decision-making processes (who gets a voice, and how decisions are made)²⁰. In international climate cooperation, distributive justice asks whether economic gains - investment, jobs, revenues - are shared fairly with host countries and local communities, and whether burdens such as debt or environmental impacts are mitigated. Procedural justice concerns whether stakeholders, from officials to community members, are genuinely involved in planning, and whether negotiations are transparent and accountable.

Applied to China-Central Asia projects, these criteria highlight key trade-offs. Newell and Mulvaney (2013) argue that low-carbon transitions in unequal contexts must also address energy poverty, otherwise climate action risks creating new injustices. For instance, a solar farm feeding industry while nearby villages remain energy-poor raises distributive concerns. Heffron and McCauley (2018) likewise stress integrating climate, energy, and environmental justice, insisting affected communities must have a say. In Central Asia, this means considering land use, water, or employment impacts: Was a village consulted before a wind farm occupied its pasture? Are there plans to retrain coal workers for renewable jobs? These questions are central to assessing procedural fairness.

From a post-development and critical political economy angle, some theorists go further to interrogate the structural context of these collaborations. A key critique

¹⁸ Peter Newell and Dustin Mulvaney, “The political economy of the ‘just transition’,” *The Geographical Journal* 179, no. 2 (2013): 132–40, <https://doi.org/10.1111/geoj.12008>.

¹⁹ *ibid.*

²⁰ *ibid.*

is that if climate cooperation is pursued within a traditional growth-driven, capitalist framework, it may not truly be “just” or sustainable. Eco-socialist perspectives, such as those advanced by Kohei Saito, warn that green initiatives under capitalism can reproduce the same patterns of exploitation of people and nature that caused the climate crisis²¹. Saito’s reading of Marx’s ecology suggests that a just transition requires deeper transformations: moving away from profit-driven growth and addressing global inequalities. In practical terms, this perspective would question whether China-Central Asia climate projects are challenging or reinforcing existing power hierarchies and economic logics. For instance, if renewable energy projects are predicated on Central Asian states taking loans to buy Chinese technology, and the revenues primarily enrich a transnational capitalist class (including Chinese state companies and local oligarchs), then the underlying model might be labelled “green capitalism” rather than a genuine just transition. Saito argues that capitalism’s demand for unlimited growth is incompatible with ecological sustainability²², implying that superficial greening won’t ensure justice if fundamental power relations remain unaltered. Therefore, our analysis is informed by this awareness of structural factors. We thus remain attentive to signs of what one might call *green extractivism* or *carbon colonialism* - scenarios where renewable energy investment becomes a new avenue for extracting value under unequal terms. At the same time, this study acknowledges that China’s involvement has also enabled positive outcomes like technology transfer and capacity-building that wouldn’t occur otherwise, which a dogmatic critique might overlook.

Methodology and Limitations

This study adopts a qualitative case study approach grounded in climate justice and critical political economy. It compares Kazakhstan and Kyrgyzstan, selected for their contrasting contexts and relevance to China’s climate engagement. Kazakhstan, endowed with significant fossil and renewable energy resources and supported by relatively stronger institutions and national energy policies, demonstrates how host-country capacity and resource wealth may balance cooperation outcomes. Kyrgyzstan, by contrast, is a smaller, aid-dependent, and energy-importing state with substantial debt exposure, illustrating sharper structural asymmetries in financing, bargaining power, and technological access. Together, they highlight how domestic conditions mediate the equity of climate cooperation. Each case centres on a flagship Chinese-supported renewable project. Case 1 examines the 100 MW Zhanatas Wind Farm in Kazakhstan, a major BRI success story since 2021. Case 2 focuses on emerging initiatives in Kyrgyzstan,

²¹ “The ecosocialist views of Karl Marx – An interview with Kohei Saito,” *Climate & Capitalism*, June 16, 2019, <https://climateandcapitalism.com/2019/06/16/ecosocialist-views-of-karl-marx-kohei-saito/>.

²² *ibid.*

notably the planned 1 000 MW Issyk-Kul solar plant announced after the 2023 China-Central Asia Summit. These cases were selected for their visibility and strategic weight, capturing both operational outcomes and current trajectories.

The analysis relies on document analysis and secondary sources. Materials include official agreements (e.g. the 2023 Xi'an Declaration), national renewable energy strategies, project contracts and press releases, and reports by organizations such as the ADB and CAREC. Academic publications, policy briefs, and investigative media were used to triangulate narratives and provide insight into implementation and public perceptions. A systematic content analysis assessed how documents address just transition principles: fairness, benefit-sharing, consultation, and compared policy rhetoric with project realities. This desk-based approach is justified by both feasibility and relevance. Many details of interest, such as loan terms or government statements, are accessible only through documents, while fieldwork faces political sensitivities. Triangulation across multiple sources enhances reliability, and where available, facts were cross-checked (e.g. projected vs. actual jobs).

The comparative design follows a most different systems logic: both countries host Chinese climate projects but differ in capacity, economic size, and public sentiment. Common patterns point to Chinese practices, while divergences reveal domestic influences. Intra-case process-tracing (from agreements to implementation) further clarifies procedural aspects, such as whether projects emerged from tenders or closed negotiations.

Finally, the study is conceived as policy analysis. The goal is to identify gaps between stated ambitions of “mutual benefit” and concrete outcomes, offering lessons for more equitable climate cooperation. The analytical stance remains critical but impartial: recognizing China's contributions while highlighting systemic inequities rooted in finance, governance, and institutional asymmetry.

Several limitations apply. Reliance on official documents risks a “paper bias,” as agreements may diverge from practice; to offset this, investigative journalism and independent reports were used to capture issues like cost overruns or local grievances. The lack of fieldwork means community perspectives are inferred from secondary sources and may overlook nuances. The Kyrgyzstan case is also forward-looking, projects remain in planning, so findings are provisional and based on early negotiations. Attribution of causality is similarly constrained in complex cooperation settings, though comparative design and process-tracing strengthen inference. Despite these limitations, the approach provides a solid basis for an exploratory, policy-oriented analysis.

Case Studies and Analysis

Case 1: Zhanatas Wind Farm (Kazakhstan) - A Green Partnership Under Asymmetry

A view of wind turbines at the 100 MW Zhanatas wind farm in Kazakhstan's Zhambyl region - Central Asia's largest wind project to date, developed jointly by Chinese and local companies under a bilateral cooperation framework²³

The Zhanatas Wind-Power Station is a 100 MW wind farm consisting of 40 turbines, located near the town of Zhanatas in southern Kazakhstan. Commissioned in June 2021, it was the largest wind power facility in Central Asia at the time of launch. The project emerged from the China-Kazakhstan Production Capacity Cooperation framework a high-level bilateral initiative aligning with the BRI and Kazakhstan's Nurly Zhol economic policy. Zhanatas was among 52 priority projects identified between the two governments, underscoring its geopolitical and economic significance. The development is jointly owned by China's state-owned China Power International Holding (a subsidiary of State Power Investment Corporation) and Visor Investment, a Kazakh private firm²⁴. Financing was a mix of Chinese and multilateral sources: the Asian Infrastructure Investment Bank (AIIB) and European Bank for Reconstruction and Development (EBRD) co-financed the project alongside loans from Chinese policy banks²⁵. The involvement of international lenders introduced certain standards (e.g. environmental and social safeguards, procurement rules) not always present in pure BRI projects.

On the surface, Zhanatas offers a strong example of positive distributive justice outcomes. By the end of 2022, the wind farm had generated 750 million kWh of clean electricity, helping alleviate chronic power shortages in southern Kazakhstan²⁶. The 100 MW Zhanatas Wind Farm, operational since 2021, represents one of Central Asia's largest renewable projects and a flagship of China-Kazakhstan cooperation. Compared with coal generation, it saves about 255,000 tons of coal and avoids ~673,000 tons of CO₂ annually, contributing to Kazakhstan's goal of 15% renewables by 2030. The project created local jobs, generated regional tax revenue, and trained young engineers through on-site collaboration with Chinese experts-significant knowledge transfer in a country that previously had little wind power expertise. Local businesses benefited

²³ "Feature: Chinese-funded wind farm injects vitality into Kazakh town," *Xinhua*, May 12, 2023, <https://english.news.cn/20230512/7f14a2860cc74899b0376fb0a5b12c25/c.html>.

²⁴ *ibid*.

²⁵ Asian Infrastructure Investment Bank (AIIB), "Kazakhstan: Zhanatas 100 MW Wind Power Plant," accessed August 10, 2025, <https://www.aiib.org/en/projects/details/2019/approved/Kazakhstan-Zhanatas-100-MW-Wind-Power-Plant.html>

²⁶ "Feature: Chinese-funded wind farm injects vitality into Kazakh town," *Xinhua*, May 12, 2023, <https://english.news.cn/20230512/7f14a2860cc74899b0376fb0a5b12c25/c.html>

indirectly through construction and maintenance, while the developer also made small community contributions (hospital vehicles, park renovations).

Yet distributive outcomes show clear asymmetries. China Power International holds a majority stake, so most revenues flow abroad. Kazakhstan benefits from taxes and some dividends, but high-value components such as turbine manufacturing remained Chinese, limiting local value-added. Employment gains are modest, as wind farms require few long-term staff, though skilled workers did benefit. Reports of imported Chinese labor in other Kazakh projects raised sensitivities, but no major disputes emerged in Zhanatas, perhaps due to the remote location and some local job creation. On energy access, the wind farm feeds the national grid, offering diffuse benefits but no targeted relief for nearby communities. In distributive terms, the state and urban consumers gain cleaner power, while unskilled workers and rural residents benefit less directly.

Debt financing illustrates a more balanced model. The project involved multiple lenders-AIIB, EBRD, and China Exim Bank-so repayment relies on project income rather than state budgets, reducing fiscal risk. Diversified financing also constrained any single actor's leverage, contrasting with other BRI projects where reliance on Chinese loans created vulnerabilities. Zhanatas thus shows how Kazakhstan, with stronger institutions and external partners, mitigated some asymmetries and secured a relatively equitable outcome within a structurally uneven partnership.

Although the Zhanatas project was bilaterally designated, it operated within Kazakhstan's broader regulatory framework for renewables. By 2018, the Ministry of Energy had introduced a renewable auction system, and even projects outside it—such as Zhanatas—were subject to scrutiny by multiple agencies and alignment with national energy strategies. The participation of the EBRD further enhanced procedural legitimacy, requiring environmental impact assessments and stakeholder engagement plans consistent with its safeguards. Notably, no major local opposition was reported. The wind farm was built on a sparsely used site near an old phosphate mine, minimizing land conflicts, and residents of Zhanatas, whose economy had declined since the mine's closure, largely viewed the project as a welcome source of jobs and revitalization²⁷. The Zhanatas project was broadly welcomed and avoided the controversy that often surrounds Chinese ventures. Its alignment with Kazakhstan's energy strategy and visible benefits - jobs, CSR efforts, and clean power helped ease public concern. Yet participation was limited: the project was negotiated at high levels, with communities informed rather than consulted, and environmental hearings largely formal. Transparency remained weak, as key contract terms were undisclosed. Still, Kazakhstan's

²⁷ "Feature: Chinese-funded wind farm injects vitality into Kazakh town," *Xinhua*, May 12, 2023, <https://english.news.cn/20230512/7f14a2860cc74899b0376fb0a5b12c25/c.html>

stronger institutions provided leverage, a 15-year guaranteed tariff ensured bankability, and local content rules added some domestic benefit. While participatory justice was minimal, regulatory capacity allowed the state to shape outcomes more than is typical in weaker settings.

On balance, Zhanatas illustrates a partially just transition. Distributively, it delivered clear public goods: clean energy, reduced shortages, and some jobs, without major harms or displacement. Benefits for locals were modest compared to returns captured by the investor, since ownership and high-value-added activities remained with Chinese entities. Still, relative to a counterfactual of no project or slower renewable rollout, the outcome is a net gain for Kazakhstan. Procedurally, the project reflected an elite-to-elite model: decisions were made by governments and companies, with local communities informed rather than consulted. Civil society had little role, and contract details were not transparent. While this falls short of just transition ideals, it is consistent with Kazakhstan's top-down governance. Importantly, some host control was exercised: guaranteed tariffs secured bankability on national terms, and a JV with Visor ensured domestic capital participation. The lack of protest suggests a degree of social acceptance, aided by the project's alignment with public interest in clean energy.

In summary, Zhanatas shows how Chinese-backed renewables can advance low-carbon goals while remaining asymmetrical in ownership and decision-making. Kazakhstan's institutions and multilateral partners helped balance outcomes, preventing the project from being one-sided. The case underscores the importance of mediating institutions and diversified financing. As Kazakhstan pursues 50% clean electricity by 2050, embedding transparency, competitive auctions, and stronger benefit-sharing will be crucial to move closer to the ideals of a just transition.

Case 2: Kyrgyzstan's Emerging Renewable Deals - Promise and Pitfalls of a Just Transition

In Kyrgyzstan, large-scale climate cooperation with China is a newer phenomenon, still in formative stages. For most of the past decade, China's investments in Kyrgyzstan were concentrated in traditional sectors - mining, transport infrastructure, and energy projects like the Datka-Kemin power transmission line and Bishkek's power plant modernization (the latter a controversial coal-fired project by a Chinese company). It is only in the last few years that green projects have entered the agenda, driven by Kyrgyzstan's growing energy insecurity (chronic electricity shortages and aging hydro infrastructure) and China's regional diplomacy pivoting toward sustainability. A turning point came with the first China-Central Asia Summit in May 2023, where Kyrgyzstan and China signed an investment agreement to construct a 1,000 MW solar power plant in the Issyk-Kul

region²⁸. This mammoth solar project, equivalent to nearly half of Kyrgyzstan's current installed capacity, grabbed headlines as a flagship Green BRI venture for the country. Subsequently, a series of announcements followed: China's Shenzhen Energy Group agreed to build two 300 MW renewable plants (one solar, one wind) in Kyrgyzstan by 2026²⁹; other Chinese firms expressed interest in hydropower and electric vehicle assembly, and the Kyrgyz government declared green energy a priority for new foreign investment.

As of mid-2025, these projects are in the MoU or early implementation phase. For instance, ground preparation for the first wind farm (a relatively small 1 MW pilot turbine in Issyk-Kul) began in 2025³⁰, while feasibility studies for the large solar farms are underway. This case is thus about the *process* of initiating a just transition partnership, rather than final outcomes. The main questions are: how are these deals being structured, and do they incorporate principles of fairness and inclusion from the start? And what challenges might impede a just transition in the Kyrgyz context?

Early evidence suggests Kyrgyzstan's climate agreements with China are even more top-down than Kazakhstan's. The 1 000 MW Issyk-Kul solar plant was brokered at presidential level, then delegated to the National Investment Agency and ministries negotiating directly with Chinese SOEs. Public information remains scarce; financing terms-loan, IPP, or joint venture-are unknown. This opacity echoes past Chinese deals in the region, where details emerge only later (Muratalieva, 2024).

Local participation has been minimal despite Issyk-Kul's environmental sensitivity and dependence on tourism. There is no sign of community consultations or environmental hearings, though local authorities may have been informed. Kyrgyzstan's governance, though more pluralistic than some neighbors, still centralizes strategic investment decisions in the executive. The country also lacks strong requirements for social impact assessments unless international donors are involved, raising concerns if Chinese funding dominates.

The absence of transparency has already sparked debate in Kyrgyz media, with worries that new "green" projects could repeat patterns of opaque Chinese ventures such as mines or the failed Naryn logistics center - that drew criticism for closed negotiations and rumors of corruption. Without greater openness and community engagement, the Issyk-Kul project risks reproducing these tensions,

²⁸ Nargiza Muratalieva, "Chinese Lending Adapts to Central Asia's Realities," *Carnegie Endowment for International Peace*, August 19, 2024, <https://carnegieendowment.org/posts/2024/08/china-investment-central-asia-debt?lang=en>

²⁹ "Chinese Company to Build Solar and Wind Power Plants in Kyrgyzstan," *Fergana News*, July 8, 2025, <https://en.fergana.news/news/138811/>

³⁰ *ibid.*

even as it promises major climate and energy benefits³¹. In the case of the At-Bashy logistics center in 2020, secrecy and perceived inequity (land leased cheaply to a Chinese firm, few local jobs promised) led to protests that cancelled the project³². If the Issyk-Kul solar plant entails, say, allocating a large tract of land to a Chinese developer for decades, local communities might fear loss of grazing land or other resources. The government would need to manage these perceptions proactively by sharing information and including local stakeholders in benefit discussions, so far, it's unclear if that is happening.

Kyrgyzstan's leadership has portrayed the new solar projects as advancing national interests. During President Japarov's 2025 visit to China, when key agreements were signed, officials emphasized green energy as essential for energy security and job creation. The government maintains that the projects will modernize infrastructure and generate new employment and skills in the renewable sector³³. By making such claims, they implicitly set a benchmark by which the public will judge the outcomes. It also suggests that Kyrgyz leaders recognize the need to sell the project to their populace as beneficial, learning perhaps from past protests. The establishment of a new "Green Energy" department and talk of a climate technology center indicate some institutional movement toward managing the transition (some of this is in partnership with international organizations, e.g. UNDP, which might help introduce participatory practices).

If implemented, the planned 1,000 MW solar plant, along with another 600 MW from announced projects could transform Kyrgyzstan's energy landscape. The country remains reliant on aging hydropower and winter imports, with chronic shortages constraining growth. Large-scale solar capacity would stabilize supply and even enable summer exports, as peak sunshine coincides with hydro surpluses. The potential gains are significant: improved energy security, progress toward Kyrgyzstan's conditional NDC target of a 44 percent emissions cut by 2030, and reduced import costs. The projects could also spur local industries through subcontracting, maintenance, and training, as Shenzhen Energy's 2026 plan includes local job creation and technical capacity building.

A key question is who captures the financial gains. If structured as foreign direct investment, the Chinese company will secure returns through electricity sales to Kyrgyz consumers or the state. This likely involves a power purchase agreement

³¹ Kemel Toktomushev, "Anti-Chinese Sentiments in the Extractive Industry: A Central Asian Example," *China US Focus*, January 22, 2021, <https://www.chinausfocus.com/foreign-policy/anti-chinese-sentiments-in-the-extractive-industry-a-central-asian-example>

³² *ibid.*

³³ "Chinese Company to Build Solar and Wind Power Plants in Kyrgyzstan," *Fergana News*, July 8, 2025, <https://en.fergana.news/news/138811/>

with fixed tariffs, ensuring profit but potentially locking Kyrgyzstan into high prices - an issue seen in past contracts. Ideally, competitive tenders would set fair rates, but initial signs suggest these projects were negotiated directly at political level, not through open bidding.

Without competition, Kyrgyzstan risks overpaying or granting generous concessions such as tax breaks or guaranteed purchases regardless of demand. Carnegie analysis notes that Kyrgyzstan's weaker bargaining position has previously led to such outcomes, with some Chinese firms even operating tax-free by special arrangement. This highlights distributive justice concerns: while the country gains new capacity, the financial structure may disproportionately favor the investor³⁴. If similar concessions are given to attract solar investment (like free land leases, tax holidays), that is foregone public benefit. It might still be worth it if the project delivers cheap, clean power - the details will matter.

Another distributive concern is debt. Kyrgyzstan's external debt to China is already about 40% of its total external debt. If the solar project is financed by a loan to the Kyrgyz government (e.g. from China Exim Bank), it could exacerbate debt stress unless the terms are soft and the project pays for itself. The government might be betting that the revenues from selling solar electricity will cover loan repayment - which could hold true if managed well. Yet, if there are cost overruns or technical issues and the project under-delivers, the state budget could be on the hook. Given Kyrgyzstan's fragile economy, this is not a trivial worry. The debt-trap narrative, while often exaggerated, resonates strongly in Kyrgyzstan where Chinese loans built critical infrastructure but also left a heavy repayment burden. For instance, the earlier Datka-Kemin transmission line project was a success technically, but its loan added to debt, leading Kyrgyzstan in 2021 to request China for debt relief or restructuring (which China was reluctant to provide³⁵). Any new major borrowing for solar could face public skepticism: "Are we swapping one dependency (on imported power) for another (debt to China)?"

On the flip side, these renewable projects might reduce Kyrgyzstan's spending on emergency energy imports (which in recent winters have been very costly) and thus improve its fiscal position in the long run. Also, international climate finance might step in - there is a chance institutions like the Green Climate Fund or EBRD could co-finance if invited, which would lighten the Chinese debt component. The Xi'an Summit's rhetoric about a "regional center for climate technologies"³⁶ and

³⁴ Nargiza Muratalieva, "Chinese Lending Adapts to Central Asia's Realities," *Carnegie Endowment for International Peace*, August 19, 2024, <https://carnegieendowment.org/posts/2024/08/china-investment-central-asia-debt?lang=en>

³⁵ *ibid.*

³⁶ "Xi'an Declaration of the China-Central Asia Summit," *News Central Asia (nCa)*, May 20, 2023, <https://www.newscentralasia.net/2023/05/20/xian-declaration-of-the-china-central-asia-summit/>

multilateral cooperation leaves open the possibility that not all eggs will be in China's basket, but concrete action is pending.

At the community level, distributive justice hinges on whether Issyk-Kul residents see tangible gains: jobs during construction, some long-term technical posts, local infrastructure, or more reliable electricity supply. Large solar farms, however, create limited permanent employment, so expectations must be managed. If many skilled jobs go to imported Chinese workers, resentment could emerge, especially since the government has promised thousands of jobs. Past projects in Kyrgyzstan drew complaints that locals were overlooked or underpaid compared to Chinese laborers. Recently, perhaps mindful of such tensions, Chinese companies have pledged to increase local hiring in infrastructure projects. Whether these commitments are realized in Issyk-Kul will be key to local acceptance and distributive fairness³⁷. Another critical issue is land and environmental impact. A 1000 MW solar farm could require thousands of acres in Issyk-Kul, where land is valuable for farming, herding, and tourism. To date, no details have been disclosed about site selection or compensation for affected users. A just approach would prioritize non-arable land, conduct thorough environmental assessments, and provide community benefit-sharing, such as allocating a share of revenue to local budgets.

If such measures are absent, grievances could arise. Kyrgyzstan has active NGOs and a history of local protest over environmental issues, as seen at the Canadian-run Kumtor mine. While solar carries fewer risks than mining, any large foreign project in Issyk-Kul, given its ecological sensitivity and nationalist sentiment will be closely scrutinized.

Kyrgyzstan's relatively vibrant civil society means that if people feel shortchanged, they are likely to voice it. The concept of a "just transition" is not widely known at the grassroots, but the underlying issues (fair jobs, local say, sovereignty) are very much salient. Nationalist politicians could spin these projects as "China buying Kyrgyz land" or "Kyrgyzstan becoming an energy colony," especially if details remain opaque. It doesn't help that simultaneously, Kyrgyzstan has allowed Chinese companies to gain control of some coal mines and logistics centers, stirring controversy³⁸. Even beneficial solar projects may face skepticism amid fears of Chinese influence. To gain acceptance, the government must show clear benefits for ordinary citizens. If well implemented, Issyk-Kul could strengthen

³⁷Kemel Toktomushev, "Anti-Chinese Sentiments in the Extractive Industry: A Central Asian Example," *China US Focus*, January 22, 2021, <https://www.chinausfocus.com/foreign-policy/anti-chinese-sentiments-in-the-extractive-industry-a-central-asian-example>

³⁸ Muratalieva, "Chinese Lending Adapts to Central Asia's Realities."

China's image by delivering reliable power and cleaner air, shifting relations from "warm politics, cold public" toward greater public support.

At this stage, Kyrgyzstan's cooperation with China carries both promise and risk. The planned solar plant could advance a just transition if it builds local capacity and reduces inequality, yet top-down deal-making, dependence on a single partner, and opaque terms risk reproducing old asymmetries. Engaging frameworks like CAREC's Climate Vision 2050 and international climate finance could strengthen oversight. A mixed consortium model, combining Chinese investment with multilateral partners such as AIIB or EBRD, would enhance transparency and participation. For now, projects remain largely bilateral, prioritizing speed over consultation. Kyrgyz authorities still have space to embed fairness through public consultations, local employment, and community benefit agreements, while China has incentives to ensure local acceptance.

Discussion: Balancing Climate Goals with Equity in Sino-Central Asian Cooperation

The two case studies - Kazakhstan's relatively successful but asymmetrical wind farm and Kyrgyzstan's nascent solar project both cases confirm the centrality of power asymmetry: China is the dominant financier and technology provider, while its partners depend heavily on external resources. Yet the outcomes demonstrate that asymmetry is not predetermined. In Kazakhstan, stronger institutions and diversified financing diluted the imbalance, allowing the government to align the project with national development plans. Kyrgyzstan, with weaker governance and limited alternatives, faces a higher risk of one-sided dependence. This suggests that host-country agency and policy frameworks are decisive in determining whether cooperation remains mutually beneficial or slides toward inequity.

A common thread across both cases is the deficit of procedural justice. Projects have been negotiated primarily through state-to-state channels and executed by government agencies and Chinese companies, leaving communities with little say. In Kazakhstan, while international institutions provided some oversight, community voices were marginal. In Kyrgyzstan, opacity and the absence of meaningful consultation are even more pronounced. Neither case shows evidence of grievance mechanisms, advisory committees, or regular public reporting, all of which are standard features of participatory governance elsewhere. This lack of inclusivity risks creating resentment and undermines the legitimacy of the transition.

From a distributive justice perspective, outcomes are mixed. Renewable energy projects yield clear public goods: lower emissions, improved energy security, and

some employment, while their social and environmental costs are modest compared to extractive industries. Yet economic gains remain uneven: Chinese firms retain most profits and high-value activities, local elites benefit selectively, and citizens see only indirect advantages such as cleaner air or steadier supply. Reliance on external financing may also shift costs to future taxpayers. The presence of multilateral partners like the EBRD and AIIB in Kazakhstan has introduced environmental and labor safeguards, competitive procurement, and greater accountability, mitigating asymmetries. Kyrgyzstan's bilateral model lacks such oversight, increasing the risk of opaque or unfavorable terms. Broadening partnerships and linking projects to international climate funds could thus improve distributive fairness.

China's own behavior also shows variation. In Kazakhstan, its companies adapted to existing frameworks, working through auctions and joint ventures. In Kyrgyzstan, the emphasis has been on rapid delivery, with fewer safeguards. This flexibility reveals a dual reality: China can align with high standards when required, but it may also proceed with minimal safeguards if hosts do not demand more. Its shift away from fossil fuels and toward renewables is a positive development, but the equity of outcomes continues to depend on the governance demands of recipient states.

Finally, public opinion and civic resistance act as important correctives. Both Kazakhstan and Kyrgyzstan have experienced protests against Chinese projects in the past, especially around land and labor issues. This legacy has made governments cautious, encouraging them to avoid overtly unfavorable deals. Even without direct participation, the possibility of public backlash influences negotiations. While Zhanatas faced little opposition, Issyk-Kul is likely to be watched closely by NGOs and communities, raising the stakes for inclusive and transparent decision-making.

Taken together, the cases reveal both progress and persistent challenges. They underscore that renewable projects, while environmentally beneficial, are not automatically just. Procedural inclusivity remains weak, distributive benefits are uneven, and the structural imbalance between China and its partners continues to shape outcomes. Yet the comparison also demonstrates that outcomes are not fixed: stronger institutions, diversified partnerships, and public scrutiny can shift cooperation toward greater fairness. China-Central Asia climate cooperation thus represents both a microcosm of global debates and a testing ground for whether large-scale green investments can be implemented without reproducing familiar inequities.

Conclusion and Recommendations

China-Central Asia climate cooperation sits at a crossroads between opportunity and cautionary tale. On one hand, these partnerships have begun to deliver tangible progress in a region heavily dependent on fossil fuels, channelling investment into renewable energy that neither side could likely achieve alone at this pace. On the other hand, without deliberate efforts to address power imbalances and inclusion, the risk is that a low-carbon transition will be *green in form but unequal in substance*. A truly just transition in Central Asia requires more than solar panels and wind turbines - it needs empowered communities, fair distribution of economic gains, and governance that is accountable to the public interest.

Our research found that Chinese-supported climate projects in Central Asia do provide mutual benefits, but they often fall short of just transition ideals. Benefits (clean energy, infrastructure, and some jobs) are real and appreciated, yet decision-making remains top-down, and benefits are not always broadly shared in an equitable manner. Power asymmetry is the backdrop - China's economic clout versus Central Asia's needs, but its effects can be managed with sound policy. Cases like Kazakhstan's wind farm show that when a host country exercises agency (through regulation, partnership, and oversight), it can bend cooperation toward more balanced outcomes. In contrast, weaker governance (as in Kyrgyzstan so far) can lead to deals that, while green, reproduce patterns of dependency or elite capture that have long characterised the region's external relationships.

We also observed that contextual factors - such as public sentiment, institutional frameworks, and involvement of other actors - significantly influence whether climate cooperation edges closer to or further from a just transition. There is no one-size-fits-all: the China-Central Asia relationship is dynamically "co-constructed" by both sides. This means Central Asian states are not powerless and China is not inflexibly imposing; there is room to negotiate terms that incorporate justice considerations, if pursued earnestly.

To move toward greater equity in China-Central Asia climate cooperation, several measures need to be considered jointly by governments, Chinese partners, and international institutions. A first priority is to institutionalize transparency and public participation. Publishing agreements, holding parliamentary debates, and consulting local communities on site selection, environmental impacts, and benefit-sharing would create legitimacy and improve design. In Kyrgyzstan, for example, involving Issyk-Kul residents before finalizing solar project details could help avoid future discontent. China, too, has a role in encouraging its companies

to adopt global engagement standards, while multilateral organizations could act as neutral facilitators of consultations, even where they are not financiers.

A second priority concerns the structure of financing. To prevent unsustainable debt, climate projects should combine Chinese loans with concessional funding from climate finance mechanisms. Renegotiation clauses in case of economic downturns would safeguard fiscal space. China might also expand its use of grants and interest-free loans for smaller-scale community projects, such as rural solar or efficiency measures. Exploring joint ownership models could distribute burdens and benefits more evenly, ensuring that profits do not flow exclusively abroad but remain partly with governments or communities. Equally important is building local content and capacity. Projects must include binding targets for local employment and procurement, complemented by investments in training. Joint renewable energy training centers, linked for instance to the Ashgabat regional climate technology hub, could provide skills for engineers and technicians. Partnerships between Chinese firms and Kyrgyz vocational institutes to train installers, or scholarship programs sending Central Asian students to Chinese universities in clean energy fields, would deepen human capital and reduce dependency over time.

Justice also requires direct community benefit-sharing. Rather than ad hoc donations, developers could commit a share of revenue to local funds, finance clinics, or guarantee preferential power supply to surrounding villages. Institutionalizing such mechanisms would ensure that communities see tangible improvements alongside national gains. Stronger legal and regulatory frameworks will further embed justice into cooperation. Updating laws to mandate strategic environmental assessments, labor protections, and consultation requirements would prevent bilateral projects from bypassing safeguards. Kazakhstan could expand its renewable auctions to include community benefit criteria, while Kyrgyzstan could legislate impact assessments for large-scale energy projects. By codifying expectations, governments would create a level playing field for all investors, Chinese or otherwise. The regional dimension is also crucial. By coordinating through CAREC or Green Central Asia, states can establish shared guidelines for fair climate projects, reducing the risk of one country accepting terms detrimental to all. If all Central Asian governments insist on higher standards, China is likely to adapt, especially as it seeks to position itself as a leader of “green development.” Collective action would also facilitate transboundary cooperation, ensuring that renewable energy benefits are distributed across borders.

Finally, monitoring and accountability mechanisms are essential. Independent auditing of social and environmental commitments, backed by public reporting, would provide oversight. Civil society and media must have space to monitor and

report impacts. China's credibility would be enhanced if its companies cooperated with such processes, supporting third-party evaluations and community oversight committees, demonstrating adherence to its "Green BRI" commitments.

In conclusion, China–Central Asia climate cooperation has simultaneously accelerated the region's green transition and reproduced familiar patterns of asymmetry and exclusion. Steering this cooperation toward greater equity is both normative and pragmatic. Projects that embed fairness are more stable, face less resistance, and deliver lasting legitimacy to all parties. The Central Asian experience is thus instructive for other developing regions: the choice lies between reinforcing old hierarchies under a green label or forging a genuinely inclusive model of cooperation. By learning from early cases such as Zhanatas and Issyk-Kul and making deliberate corrections, China and Central Asian states can ensure that their partnership not only decarbonizes economies but also uplifts the communities most affected, fulfilling the true promise of a just transition.

Bibliography

Abilgaziev, M. (2023). Feature: Chinese-funded wind farm injects vitality into Kazakh town. *Xinhua News Agency*. http://www.news.cn/english/2023-05/01/c_137934563.htm

Asian Development Bank. (2021). *Renewable energy development in Central Asia: The role of policy, regulation, and finance*. ADB.

CAREC (Central Asia Regional Economic Cooperation). (2021). *CAREC climate change vision 2050*. Asian Development Bank. <https://www.carecprogram.org/uploads/CAREC-Climate-Change-Vision-2050.pdf>

Carnegie Endowment for International Peace. (2024). *Green new wave: China adapts to Central Asia's renewable energy landscape*. <https://carnegieendowment.org/2024/03/14/green-new-wave-china-adapts-to-central-asias-renewable-energy-landscape-pub-91102>

Fergana News. (2025a). Chinese company to build solar and wind power plants in Kyrgyzstan. <https://fergana.media/en/news/128477/>

———. (2025b). Kyrgyzstan and China sign renewable energy cooperation agreements. <https://fergana.media/en/news/128480/>

Government of Kazakhstan. (2018). *Kazakhstan renewable energy development strategy*. Ministry of Energy.

Heffron, R. J., & McCauley, D. (2018). What is the 'just transition'? *Geoforum*, 88, 74–77. <https://doi.org/10.1016/j.geoforum.2017.11.016>

Indeo, F. (2021). China's Belt and Road Initiative in Central Asia: The case of the energy sector. *Eurasian Geography and Economics*, 62(2), 137–156.

Kassenova, N. (2019). More politics than substance: Three years of Chinese economic cooperation in Central Asia. *Foreign Policy Research Institute*. <https://www.fpri.org/article/2019/01/more-politics-than-substance-three-years-of-chinese-economic-cooperation-in-central-asia/>

Liu, X., Zhang, Y., & Wang, H. (2023). Green Belt and Road: Renewable energy cooperation between China and Central Asia. *Energy Policy*, 172, 113299. <https://doi.org/10.1016/j.enpol.2023.113299>

Ministry of Foreign Affairs of the People's Republic of China. (2023). *Xi'an Declaration of the China-Central Asia Summit*. https://www.fmprc.gov.cn/eng/zxxx_662805/202305/t20230519_11079708.html

Muratalieva, N. (2024). Chinese lending adapts to Central Asia's realities. *Carnegie Endowment for International Peace*. <https://carnegieendowment.org/2024/01/23/chinese-lending-adapts-to-central-asia-s-realities-pub-90955>

Newell, P., & Mulvaney, D. (2013). The political economy of the 'just transition'. *The Geographical Journal*, 179(2), 132–140. <https://doi.org/10.1111/geoj.12008>

Saito, K. (2019). Marx in the Anthropocene: Interview with Kohei Saito. *Climate & Capitalism*. <https://climateandcapitalism.com/2019/02/21/kohei-saito-marx-in-the-anthropocene/>

Toktomushev, K. (2020). "Anti-Chinese sentiments in the extractive industry: A Central Asian example" (PONARS Eurasia Policy Memo No. 672). *PONARS Eurasia*. <https://www.ponarseurasia.org/anti-chinese-sentiments-in-the-extractive-industry-a-central-asian-example/>

Zhang, B., & Zhang, L. (2021). Authoritarian environmentalism in China and its influence abroad. *Environmental Politics*, 30(1–2), 263–282. <https://doi.org/10.1080/09644016.2020.1791122>

Governance and Dependency in BRI Energy Cooperation: A Comparative Study of Kazakhstan and Mongolia

Yelif Ulagpan, Shanghai Jiao Tong University

Abstract

This paper examines how domestic governance shapes the developmental and sustainability outcomes of Chinese energy investments under the Belt and Road Initiative (BRI). Focusing on Kazakhstan and Mongolia (two resource-rich yet institutionally contrasting states in Inner Asia³⁹) it explores whether BRI energy projects reinforce structural dependency on China or create pathways for diversification and resilience. Using a comparative framework grounded in dependency and state capacity theories, the study shows that the outcomes of BRI energy cooperation depend less on China's strategy than on the governance capacities of host states. In Kazakhstan, centralized governance enables relatively faster but less transparent project implementation, while in Mongolia, democratic pluralism allows some space for public debate but often leads to fragmented decision-making.

Beyond infrastructure adaptation, the study argues that for the "Green BRI" to be genuinely sustainable, China must integrate social inclusion, environmental responsibility, and institutional accountability into project design and implementation. Yet sustainable outcomes do not depend on China alone. For host countries such as Kazakhstan and Mongolia, the challenge lies in ensuring that foreign investments advance long-term development goals (i.e. economic diversification and institutional strengthening) rather than serving as short-term fiscal or infrastructure fixes. Thus, the future of BRI energy cooperation will hinge on how effectively China and its partners align ambition with accountability and turn adaptation into genuine mutual learning.

³⁹ Note: The term "Inner Asia" is used here in its broader geographical and historical sense to encompass the continental interior of Eurasia, including Mongolia and Kazakhstan. It reflects shared ecological, historical, and geopolitical characteristics that distinguish the region from both East and Central Asia in a narrow political sense.

Introduction

“Steel camel fleets” racing along the Belt and Road—this striking metaphor from [China Railway Express](#) captures the ambition of the BRI. Since its launch in 2013, the BRI has expanded into one of the most ambitious infrastructure and development programs in modern history, with over 140 countries formally participating.⁴⁰ At its core, the initiative seeks to improve trade and connectivity by making significant investments in infrastructure, especially in the fields of energy, transportation, and digitalization. Of these, energy cooperation (which encompasses both fossil fuels and renewable energy sources) is one of the cornerstones of China's external economic strategy.

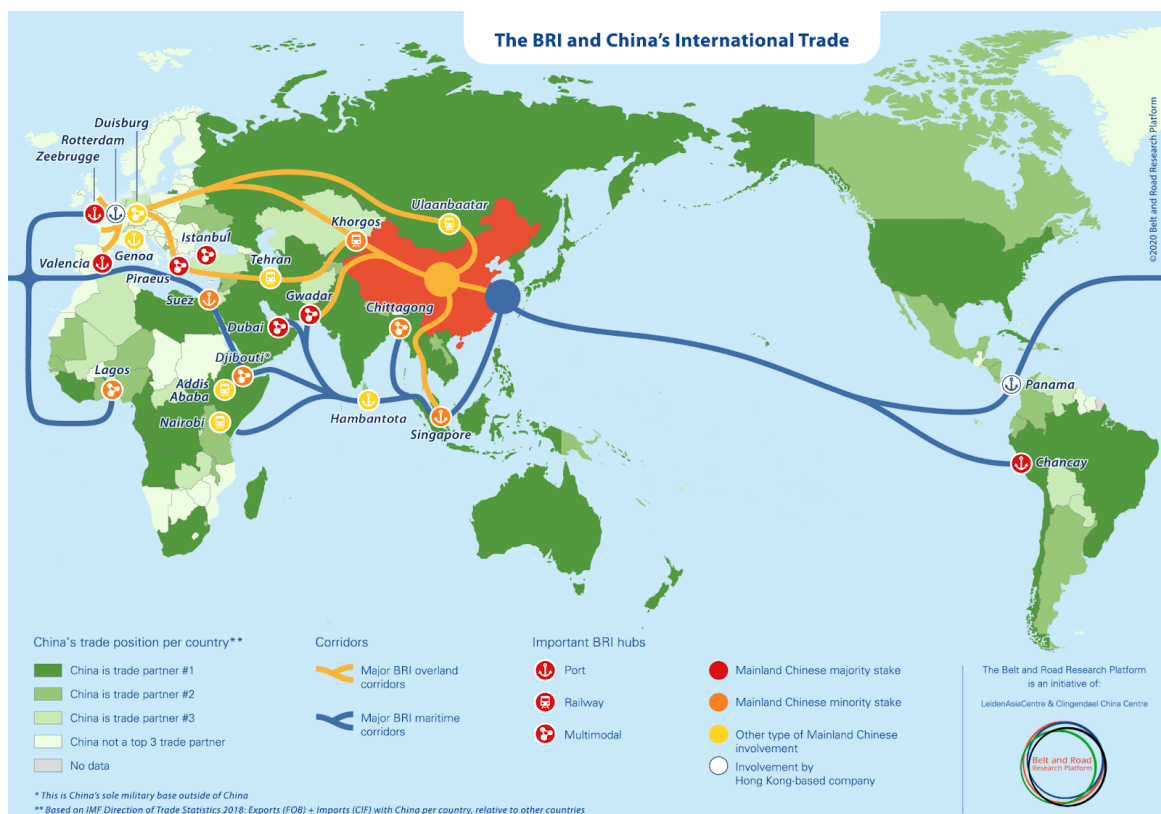


Figure 1: New Silk Road Economic Belt and New Maritime Silk Road. Source: Map of New Silk Road Economic Belt and New Maritime Silk Road developed by The Belt and Road Research Platform (<http://www.beltroadresearch.com/>) accessed via Clingendael China Centre, 2025.

⁴⁰ Nedopil, Christoph. Countries of the Belt and Road Initiative. Shanghai: Green Finance & Development Center, FISF Fudan University, 2025. <https://greenfdc.org/countries-of-the-belt-and-road-initiative-bri/>

This study looks at how energy cooperation under the BRI is being implemented in two neighboring states in Inner Asia - Kazakhstan and Mongolia. Both are landlocked, resource-rich, and dependent heavily on coal (Mongolia) and hydrocarbons (Kazakhstan), and share deep economic ties with China and are strategically located along key BRI corridors. Under the BRI project, Kazakhstan participates in both [the New Eurasian Land-bridge Corridor](#) and the China–Central Asia–West Asia Economic Corridor, key components of the BRI’s overland network. The two sides signed a cooperation plan to integrate Kazakhstan’s national *Nurly Zhol* (translated as “Bright Path”) program with the construction of the Silk Road Economic Belt, which includes 55 priority projects, nearly half of which are in the oil and gas sector, with a combined value exceeding \$27 billion.⁴¹

Mongolia, by contrast, is part of the China-Mongolia-Russia Economic Corridor (CMREC), and the BRI has been integrated with its national *Taliin Zam* (“Steppe Road”) development program, with Chinese investment increasingly targeting energy infrastructure in the Gobi region, including coal, renewables, and grid expansion.⁴² Despite these surface similarities, the implementation and outcomes of BRI energy projects in the two countries diverge significantly, reflecting differences in domestic governance, institutional capacity, and policy priorities.

Therefore, this paper investigates the following questions:

⁴¹ Kazakh Invest. “Construction of Kazakh–Chinese Investment Projects Will Be Carried Out in Accordance with the Legislation of Kazakhstan.” Press release, September 10, 2019. Accessed June 28, 2025. <https://invest.gov.kz/media-center/press-releases/stroitelstvo-kazakhstansko-kitayskikh-invest-proektov-budet-vestis-v-sootvetstvi-s-zakonodatelstvom/>

⁴² Yelif Ulagpan, “Belt and Road Initiative: Opportunities and Challenges for Mongolia,” *The Asia-Pacific Journal: Japan Focus*, February 1, 2021. Accessed June 28, 2025, <https://apjif.org/2021/3/ulagpan>.

- Do BRI energy investments in Kazakhstan and Mongolia reinforce structural dependency on China or foster diversification of their economic and energy sectors?
- How do Kazakhstan and Mongolia's differing governance structures and institutional capacities shape the outcomes of BRI energy cooperation?
- To what extent do these outcomes advance or hinder sustainable development in each country?
- How does China's strategic energy diplomacy adapt to and shape partner country vulnerabilities under the BRI framework?

By addressing these questions, the study highlights how BRI projects are not simply imposed by Beijing but are co-produced through interaction with domestic political and institutional contexts. The comparison of Kazakhstan and Mongolia thus provides insight into the varied trajectories of energy cooperation under the BRI and their broader implications for development, dependency, and sustainability.

Literature Review

BRI, Energy, and Governance in Comparative Perspective

Research on the BRI has expanded rapidly since 2013, reflecting both its global reach and contested implications. Over the last decade, thousands of studies have looked at the BRI's broad impact, from changes in the global economy and politics to its role in development planning. Early research mostly focused on power imbalances⁴³ and fears about so-called "debt-trap diplomacy".⁴⁴ More recent scholarship, however, has shifted toward examining the initiative's environmental

⁴³ Nadège Rolland, "Drivers of the Belt and Road Initiative," in *China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative* (Seattle: The National Bureau of Asian Research, 2017), 93–113, https://www.nbr.org/wp-content/uploads/pdfs/programs/chinas_eurasian_century_ch3.pdf

⁴⁴ Hong Yu, "China's Push for the BRI in a Changing World: Origins and Motivations," in *Understanding China's Belt and Road Initiative*, vol. 26 of *Asia in Transition* (Singapore: Springer, 2024), https://doi.org/10.1007/978-981-99-9633-9_1

and developmental dimensions,⁴⁵ particularly in the face of climate change challenges and China's 2021 pledge to stop financing overseas coal power.⁴⁶ This evolving literature highlights tensions between the BRI's promise of economic connectivity and its uneven environmental and social impacts.

One line of scholarship often has interpreted and saw the BRI not just as a strategic move to solve China's own problems such as dealing with too much industrial capacity and securing steady access to energy and resources, but also it was seen as a way to reshape global trade routes in its favor.⁴⁷ But more recent research offers different perspectives. For example, instead of seeing it as a strategy tightly controlled solely by Beijing, BRI is also observed from local perspectives.⁴⁸ Studies show that local conditions and the priorities of host countries often shape how projects are carried out. Indeed, it's not a grand strategy from China that drives things, but also what works locally that matters most. This perspective is particularly relevant in Central Asia, where Chinese-backed pipelines and power plants are simultaneously framed as opportunities for modernization⁴⁹ and as potential sources of dependency.^{50 51}

⁴⁵ Longlong Liu, Enyi Zhou, and Muhammad Asif, "Sustainable Development Goals 2030 and the Belt and Road Initiative: Complexities in Innovation, Biodiversity, and Foreign Direct Investment," *Journal of Environmental Management* 388 (2025): 125921, <https://doi.org/10.1016/j.jenvman.2025.125921>

⁴⁶ Xiping Dong, Yan Zhuang, and Tian Gai, "Analyzing Belt & Road's Impact on Sustainable Development via Green Economy, Public Investment, and Renewable Energy," *International Journal of Hydrogen Energy* 116 (2025): 647–658, <https://doi.org/10.1016/j.ijhydene.2025.02.294>

⁴⁷ William A. Callahan, "China's 'Asia Dream': The Belt Road Initiative and the New Regional Order," *Asian Journal of Comparative Politics* 1, no. 3 (2016): 226–243, <https://doi.org/10.1177/2057891116647806>

⁴⁸ Lee Jones and Jinghan Zeng, "Understanding China's Belt and Road Initiative: Beyond 'Grand Strategy' to a State Transformation Analysis," *Third World Quarterly* 40, no. 8 (2019): 1415–1439, <https://doi.org/10.1080/01436597.2018.1559046>

⁴⁹ Nargis Kassenova, "China's Silk Road and Kazakhstan's Bright Path: Linking Dreams of Prosperity," *Asia Policy* 24 (2017): 110–116, <https://www.jstor.org/stable/26403209>

⁵⁰ Bingham Du, J. Juman, A. V. Khamzayeva, and Xuan Zhai, "Energy Cooperation between Kazakhstan and China under 'One Belt and One Road': Current State, Challenges and Perspectives," *Buketov Business Review (Economy Vestnik)* 29, no. 2 (2024): 7–18, <https://doi.org/10.31489/2024ec2/7-18>

⁵¹ Yang Yu, Zi He, and Yi Liu, "Global Energy Cooperation between China and Central Asia: Current Situation, Risks, and Countermeasures," *Bulletin of Chinese Academy of Sciences (Chinese version)* 33, no. 6 (2018): Article 5, <https://bulletinofcas.researchcommons.org/journal/vol33/iss6/5/>

A second strand of literature focuses on environmental sustainability and energy transitions. Environmental research on the BRI has gone through three key phases based on publications. While from 2014 to 2017, the focus was mainly on the environmental impact of large infrastructure projects, research began focusing more on how to balance economic growth with protecting the environment between 2018 and 2020. More recently, between 2021 and 2023, there's been a growing focus on green finance, innovation, and climate goals.⁵² This change reflects the increasing global pressure to address climate change including the United Nation's Sustainable Development Goals and China's own pledge to reach carbon neutrality, which has pushed Beijing to promote a "Green BRI".⁵³ Nonetheless, empirical evidence indicates that fossil fuel projects still dominate Chinese overseas energy investments, particularly in states with weak environmental standards.⁵⁴⁵⁵⁵⁶ The tension between sustainability pledges and continued carbon-intensive development remains a major challenge for countries such as Kazakhstan and Mongolia, given their dependence on hydrocarbons and coal, respectively.

A third body of work highlights the role of governance and institutional mediation. In particular, comparative studies show that host-country institutions play a

⁵² Yongyue Gong et al., "A Decade of Ecological and Environmental Research on the Belt and Road Initiative: Evolution and Future Directions," *Resources, Conservation and Recycling* 217 (2025): 108217, <https://doi.org/10.1016/j.resconrec.2025.108217>

⁵³ de Boer, D., C. Nedopil, and D. Fan. 2022. *China Clarifies Its Vision for a Green Belt and Road Initiative*. ClientEarth. April 4, 2022. <https://www.clientearth.org/latest/latest-updates/news/china-clarifies-its-vision-for-a-green-belt-and-road-initiative/>

⁵⁴ Lihuan Zhou, Sean Gilbert, Ye Wang, Miquel Muñoz Cabré, and Kevin P. Gallagher, *Moving the Green Belt and Road Initiative: From Words to Actions* (Washington, DC: World Resources Institute, 2018), <https://www.wri.org/research/moving-green-belt-and-road-initiative-words-actions>

⁵⁵ John A. Mathews and Hao Tan, "China's New Silk Road: Will It Contribute to Export of the Black Fossil Fuelled Economy?" *The Asia-Pacific Journal: Japan Focus* 15, no. 8 (April 15, 2017): Article 1, [<https://apjif.org/2017/08/mathews>]

⁵⁶ Wood Mackenzie. "China Belt & Road Initiative Brings in 128 GW Installed Power Capacity in 10 Years." Press release, November 20, 2023. <https://www.woodmac.com/press-releases/china-belt-and-road-10-years-on/>

decisive role in shaping BRI outcomes.⁵⁷ Namely, they highlight that where state capacity is strong, projects are more likely to align with national development strategies.⁵⁸ On the contrary, however, where governance is fragmented or politicized, investments may deepen corruption, reinforce elite interests, or exacerbate inequality.⁵⁹ This insight is especially helpful in understanding the contrast between Kazakhstan's centralized approach, which allows for tighter state control over project selection, and Mongolia's more fragmented democratic system, where BRI-linked projects have been more vulnerable to public controversy and governance failures, which will be covered in the later part of the paper.

At a conceptual level, these dynamics must also be understood within China's evolving vision of the BRI itself. As Chinese scholars conceptualizes it, the BRI's evolution into 'version 2.0' marks a transition from a model centered on infrastructure delivery for partner countries to an 'architecture of connectivity' supporting shared global development.⁶⁰ This framing implies a shift in China's self-presentation from a builder of projects to a designer of global systems, situating the BRI as a new mode of globalization rather than a regional economic policy alone.

⁵⁷ Muhammad Abdul Kamal, Syed Hasanat Shah, Wang Jing, and Hafsa Hasnat, "Does the Quality of Institutions in Host Countries Affect the Location Choice of Chinese OFDI? Evidence from Asia and Africa," *Emerging Markets Finance & Trade* 56, no. 1 (2019): 208–227,

<https://doi.org/10.1080/1540496X.2019.1610876>

⁵⁸ Chunyang Pan, William X. Wei, Etayankara Muralidharan, Jia Liao, and Bernadette Andreosso-O'Callaghan, "Does China's Outward Direct Investment Improve the Institutional Quality of the Belt and Road Countries?" *Sustainability* 12, no. 1 (2020): 415, <https://doi.org/10.3390/su12010415>

⁵⁹ Elaine K. Dezenski and Josh Birenbaum, "Tightening the Belt or End of the Road? China's BRI at 10," *Foundation for Defense of Democracies*, February 27, 2024, memo,

<https://www.fdd.org/analysis/2024/02/27/tightening-the-belt-or-end-of-the-road-chinas-bri-at-10/>

⁶⁰ 王义桅. 2017. "'一带一路' 2.0 : 开创新型全球化 ['Belt and Road 2.0: Ushering in a New Globalization'],"

中国科学院院刊 32 (4): 387–394. <https://doi.org/10.16418/j.issn.1000-3045.2017.04.009> ⁶⁰ English translation: Yiwei Wang, "'One Belt and One Road' 2.0: Ushering in a New Globalization," *Bulletin of Chinese Academy of Sciences* 32, no. 4 (2017): 387–394,

<https://bulletinofcas.researchcommons.org/journal/vol32/iss4/9/>

Overall, literature review underscores the need for further comparative analysis. The BRI cannot be understood as a uniform model but rather as a set of investments that interact with domestic governance, energy strategies, and environmental constraints. Yet systematic comparisons between Kazakhstan and Mongolia remain limited. Therefore, this study contributes to filling that gap by examining how their distinct institutional settings shape the developmental and sustainability trade-offs of the BRI energy cooperation.

Methodology

This study employs a qualitative comparative case study design, focusing on Kazakhstan and Mongolia as analytically relevant cases within Inner Asia. Both countries are geographically proximate, resource-dependent, and active participants in BRI-related energy projects, yet they differ markedly in governance structures and institutional capacity. This contrast makes them suitable for examining how domestic political economies shape the outcomes of Chinese energy cooperation.

Data sources

The analysis draws on a combination of primary and secondary materials. Statistical data on energy production and consumption were retrieved from international databases such as the International Energy Agency (IEA), the Energy Institute Statistical Review, and Our World in Data. Specific indicators, such as China Index percentages, were incorporated to reflect the scope and intensity of China's influence in Kazakhstan and Mongolia. The China Index is produced by Doublethink Lab, a civil society organization that measures the global reach of PRC influence using social, behavioral, and computational research methods. This dataset helps contextualize the economic, technological, and policy linkages with China in each country.

However, some project-level data remain incomplete or inconsistently reported, which limits the ability to fully quantify the scope and outcomes of certain BRI energy investments. To address these gaps, the study triangulates quantitative data with policy documents, BRI project databases, government press releases, and multilateral development reports. Academic publications and media coverage were also examined to capture scholarly debates and public controversies surrounding BRI energy projects. Through this triangulated approach, the comparative analysis reflects both the structural context and the practical realities of governance, dependency, and sustainability trade-offs in Kazakhstan and Mongolia.

Analytical Framework

The research framework is grounded in two complementary theoretical perspectives.

- Dependency theory⁶¹ is used to analyze the asymmetric economic and political relationships that often emerge when resource-rich but institutionally weaker states engage with more powerful external actors. In this study, it is used to assess whether BRI projects deepen structural dependency on China or open up new opportunities for diversification. To explore this, the analysis combines quantitative data such as China Index scores that show the scale and intensity of China's influence in economic, technological, and policy areas with qualitative evidence from policy documents, project reports, and media sources.

⁶¹ Theotonio Dos Santos, "The Structure of Dependence," *American Economic Review* 60, no. 2 (1970): 231–236, <http://digamo.free.fr/dosantos70.pdf>

- State capacity⁶² offers a framework to analyze how effectively governments design, coordinate, and implement policies when managing foreign investment. Through this lens, Kazakhstan appears more successful in integrating BRI projects into its national development strategies, while Mongolia's fragmented institutions and weaker administrative coordination have led to inconsistent outcomes. This contrast raises questions about how sustainable and equitable BRI engagement can be in countries with limited institutional capacity. To illustrate these patterns, the study draws on data from international energy sources such as the IEA, the Energy Institute Statistical Review, and Our World in Data, along with project-level information, to compare how institutional strength shapes energy cooperation, dependency, and sustainability trade-offs.

By integrating these theoretical lenses with diverse quantitative and qualitative sources, the study provides a nuanced understanding of how domestic governance mediates the opportunities and constraints of BRI energy projects in different institutional settings.

Results and Discussion

National Energy Profiles and Structural Constraints

Understanding how BRI projects take shape requires situating them within the broader energy landscapes of China, Kazakhstan, and Mongolia. Differences in resource endowments, infrastructure, and trade orientation create distinct opportunities and constraints for Chinese investment and shape the bargaining space available to each partner.

⁶² Patrick A. Imam and Jonathan R. W. Temple, *State Capacity and Growth Regimes* (IMF Working Paper No. WP/25/14, International Monetary Fund, 2025), <https://doi.org/10.5089/9798400296673.001>

As such, this section proceeds in three steps. First, it outlines BRI energy projects in both countries (Kazakhstan & Mongolia), distinguishing between fossil fuel, renewable, and grid investments. Second, it outlines the national energy profiles of China, Kazakhstan and Mongolia, emphasizing structural opportunities and constraints. Third, it compares how governance and institutional factors shape patterns of dependency, leverage, and sustainability trade-offs, clarifying the mechanisms through which BRI adapts to local political economies.

BRI Energy Projects in Practice: Mapping Cooperation

Identifying what constitutes a “BRI project” is not always straightforward, since official labels are applied inconsistently. This study follows the classification used by the Central Asia Data-Gathering Analysis Team (CADGAT), which considers BRI-related projects if they are publicly identified as such, financed by Chinese policy banks or institutions such as AIIB or the Export–Import Bank of China, and launched after 2013.⁶³ Using this framework, the following subsections outline the major energy projects involving Chinese investment in Kazakhstan and Mongolia.

Kazakhstan: Fossil Fuel Infrastructure and Renewable Energy Expansion

Kazakhstan has been one of the principal destinations of Chinese energy investment in Central Asia, particularly in oil and gas sector. The country hosts around 20 major BRI-linked projects, most of which are concentrated in the hydrocarbon sector. Central to this cooperation are cross-border pipelines that have reshaped regional energy flows. Namely, the Kazakhstan–China oil pipeline system exemplifies this dynamic. Running from western oil fields to China’s Xinjiang border, it provides Beijing with a direct supply route while diversifying

⁶³ Farrukh Aminjonov, Aijan Abylkasymova, Aimée Aimée, Bakhtiyor Eshchanov, Dilmurat Moldokanov, Indra Overland, and Roman Vakulchuk, *BRI in Central Asia: Energy Connectivity Projects, Central Asia Regional Data Review* 22 (2019): 1–14, OSCE Academy, https://osce-academy.net/upload/file/22_BRI_Energy.pdf

Kazakhstan's export markets beyond Russia.⁶⁴ Completed in stages since the early 2000s, the network now transports tens of millions of tons of crude annually.

Similarly, the Beineu-Bozoi-Shymkent gas pipeline (part of the broader Central Asia–China gas corridor) has reduced Kazakhstan's dependence on Russian infrastructure while simultaneously supplying domestic settlements along its route.⁶⁵ In turn, these projects reveal how energy infrastructure under the BRI serves dual purposes: reinforcing China's supply security while allowing Kazakhstan to strengthen its role as a regional exporter.

While hydrocarbons continue to dominate bilateral cooperation, recent years have also seen growing Chinese involvement in Kazakhstan's renewable energy sector. Projects such as the Turgusun hydropower station and the Zhanatas and Shelek wind farms⁶⁶ mark milestones in the diversification of Kazakhstan's energy portfolio.⁶⁷ While their combined output remains limited compared to fossil fuel capacity, these initiatives signal Beijing's interest in showcasing "green BRI" projects.

Moreover, Chinese private companies, most notably Universal Energy, have expanded this trend by financing a mix of solar and wind installations across several regions such as [Kaskelen](#) & [Kagshagay](#) in Almaty region,⁶⁸ [Zhangiztobe](#) in East Kazakhstan⁶⁹ and three wind power plants [Abay](#) 1 -50 megawatts (MW) in

⁶⁴ Ibid.

⁶⁵ China–Central Asia Cooperation Forum Secretariat, "Beineu–Bozoy–Shymkent Pipeline," n.d., <https://china-centralasia.org/en/project/41#:~:text=Beineu-Bozoy%20pipeline%20is,in%20the%20South%20Kazakhstan%20region>

⁶⁶ Power Construction Corporation of China. 2023. "Kazakhstan Shelek Wind Farm." October 24. Accessed June 28, 2025. https://en.powerchina.cn/2023-10/24/c_828574.htm

⁶⁷ Xinhua Silk Road Information Service, "China-Undertaken Hydropower Station in Kazakhstan Runs Smoothly," June 18, 2021, accessed June 28, 2025, <https://en.imsilkroad.com/p/322207.html>

⁶⁸ Universal Energy, "Kapchagay 100 MWp Solar Power Station," accessed June 28, 2025, <https://www.universalenergy.com/en/projects/70>.

⁶⁹ Universal Energy, "Zhangiztobe 30 MWp Solar Power Station," accessed June 28, 2025, <https://www.universalenergy.com/en/projects/4>

Zhetysu,⁷⁰ [Abay 2](#) -100MW in Abai region,⁷¹ [Ybrai-Kostanay](#).⁷² These projects not only add to Kazakhstan's renewable capacity but also embed Chinese technology and construction expertise within the domestic sector.⁷³ Recent summit-level agreements suggest future cooperation may extend to coal gasification and even green hydrogen initiatives, though fossil fuel partnerships continue to dominate in practice.⁷⁴

Mongolia: Grid Modernization, Fossil Projects and Renewable Aspirations

In Mongolia, BRI-related cooperation has focused less on pipelines and more on electricity infrastructure. A flagship example is the Mandalgovi-Ulaanbaatar high-voltage transmission line, completed in 2019 with Chinese financing. By linking coal-rich provinces to the capital, the line improves domestic energy security while supporting large mining projects in the South Gobi region. China has also supported the expansion of the Erdenet thermal power plant and financed new coal-fired capacity near Ulaanbaatar.⁷⁵ Together, these projects underscore Mongolia's continued reliance on fossil fuels, even as it seeks to advance renewable energy goals.

Despite coal's dominance, Mongolia also aspires to become a renewable energy hub. With vast wind and solar potential, particularly in the Gobi Desert, the

⁷⁰ Universal Energy, "Abay 50 MW Wind Power Plant," accessed June 28, 2025, <https://www.universalenergy.com/en/projects/700>

⁷¹ Universal Energy, "Abay 100 MW Wind Power Plant," accessed June 28, 2025, <https://www.universalenergy.com/en/projects/69>

⁷² Universal Energy, "Ybyrai 50 MW Wind Power Plant," accessed June 28, 2025, <https://www.universalenergy.com/en/projects/67>.

⁷³ Tang, Yingzhi. 2021. "Guest Post: Energizing Kazakhstan: Renewable Energy Opportunities." *Green Finance & Development Center*, April 26. <https://greenfdc.org/energizing-kazakhstan-renewable-energy-opportunities/>

⁷⁴ Azimzhan Khitakhunov, "Second Central Asia-China Summit: Initiatives and Priorities," *CAPS Unlock*, July 4, 2025, <https://capsunlock.org/second-central-asia-china-summit-initiatives-and-priorities/>

⁷⁵ *News.mn*, "China Supports Erdenet Thermal Power Plant Expansion," March 25, 2019, accessed June 28, 2025, <https://www.news.mn/en/786989/>

government has promoted the idea of an “Asian Super Grid” that would potentially export clean electricity to China, Japan, and South Korea. While still largely aspirational, smaller-scale Chinese-backed projects in wind and solar have already been launched, and official targets envision renewable energy reaching 30 percent of generation by 2030.⁷⁶ Achieving this goal will require overcoming significant obstacles in transmission infrastructure, financing, and governance.

Comparative reflections

Overall, the experiences of Kazakhstan and Mongolia show how the BRI adjusts to each country’s specific needs and circumstances. In Kazakhstan, Chinese investment has strengthened the country’s position as a major hydrocarbon exporter, while also supporting a gradual move toward renewables. In Mongolia, cooperation has focused on improving power generation and modernizing the electricity grid, with renewable energy still more of a long-term goal than an immediate priority. In both cases, BRI projects help meet pressing energy needs but also deepen reliance on Chinese financing, technology, and markets.

National Energy Profiles

China

Despite major investments in renewables, China’s domestic energy system remains dominated by fossil fuels, particularly coal, which continues to account for more than half of total supply (61%). Regarding the share of imported coal, while it makes up less than 10% of China’s overall coal consumption, the country remains vulnerable to fluctuations in the global coal market. On the other hand, oil and natural gas play significant supplementary roles (18,3% and 7,9%

⁷⁶ Монголын Үндэсний Худалдаа Аж Үйлдвэрийн Танхим [Mongolian National Chamber of Commerce and Industry], “Эдийн засгийн салбарууд [Economic Sectors],” n.d., accessed June 28, 2025, <https://www.mongolchamber.mn/p/315>

respectively), but reliance on imports has deepened in recent years. By contrast, the contribution of wind, solar, and bioenergy, though growing rapidly, still represents only a modest share of the national mix at 3,2%.⁷⁷

This dual reality (i.e. domestic dependence on coal alongside ambitions to lead in clean energy technology) explains Beijing's two-track strategy under the BRI: securing external fossil fuel flows while simultaneously promoting exports of renewable technologies. In this context, China's push to export green technologies and know-how serves multiple strategic purposes. From an economic perspective, it opens vast markets for Chinese renewable industries such as solar panels, wind turbines, electric vehicles, and grid technologies. From a political point of view, it strengthens China's influence in shaping the global energy transition narrative through the BRI, positioning it as an indispensable partner for developing countries seeking affordable low-carbon pathways.

Moreover, these green exports potentially help project China as a responsible climate actor and counterbalance international criticism of its coal-intensive domestic energy structure, thus creating a positive image-making. Arguably, through this blend of economic opportunity, diplomatic outreach, and soft power projection, Beijing effectively integrates green technology diplomacy into its broader geopolitical strategy.

⁷⁷ International Energy Agency, *China: Energy Mix*, accessed August 6, 2025, <https://www.iea.org/countries/china/energy-mix>

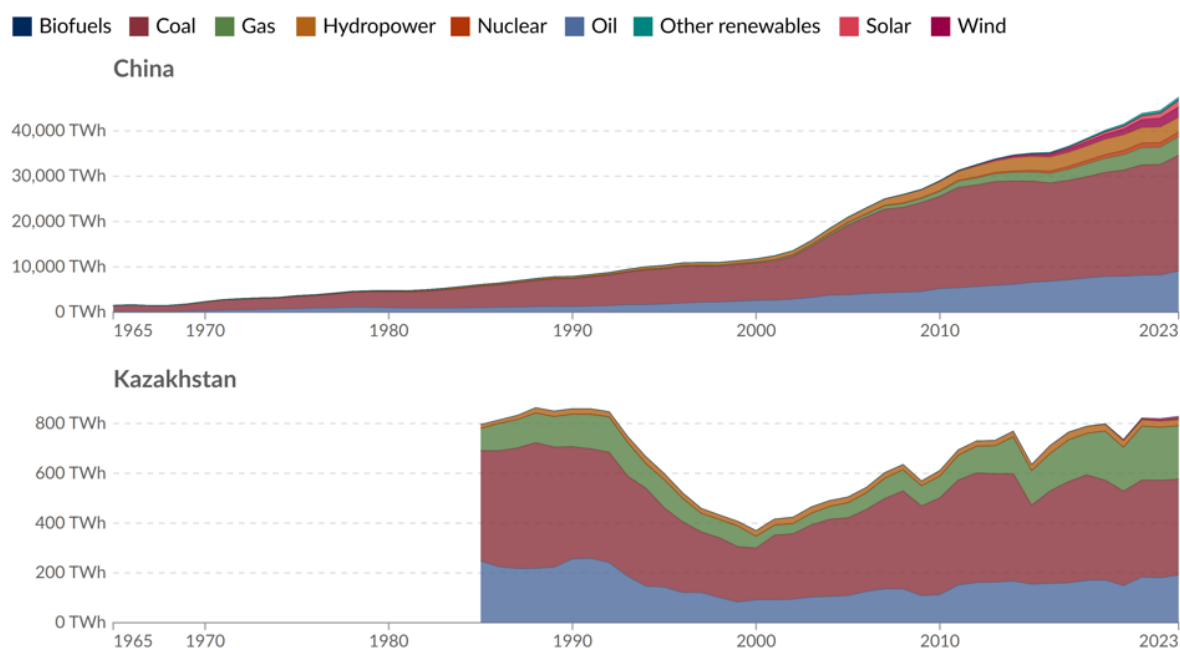


Figure 2: Primary energy consumption by source. Source: Energy Institute - Statistical Review of World Energy (2024) accessed via Our World in Data: <https://ourworldindata.org/energy>

Note: Primary energy is the energy available as resources, such as the fuels burnt in power plants, before it has been transformed. This relates to the coal before it has been burned, the uranium, or the barrels of oil. Primary energy includes energy that the end user needs, in the form of electricity, transport, and heating, plus inefficiencies and energy that is lost when raw resources are transformed into a usable form.

Kazakhstan

Kazakhstan's energy system is shaped by its status as a hydrocarbon exporter. The country possesses abundant oil and gas reserves and an extensive pipeline network linking it to regional and global markets. Domestically, coal and natural gas dominate electricity generation (49% and 27%, respectively), together accounting for more than two-thirds of the supply. Oil, meanwhile, remains the largest source of export revenue, with the majority of production (85%) located in the western regions in just a few large fields (Tengiz, Kashagan, Karachaganak,

Zhanazhol, and Imashevskoye).⁷⁸ Kazakhstan consistently exports more energy than it imports (with net energy exports accounting for 53,5% of the 2023 total energy production), underscoring its role as a net supplier in Eurasia.⁷⁹

However, this export-oriented profile coexists with domestic supply imbalances. Despite its vast reserves, Kazakhstan still imports certain refined petroleum products and electricity, particularly in regions where infrastructure bottlenecks and geographical dispersion hinder efficient distribution. This paradox arises from the country's uneven spatial development (i.e. a small and widely dispersed population across a vast territory) which complicates the operation and maintenance of a unified national energy system. Furthermore, many transmission lines, power plants, and refineries date back to the Soviet period and require significant modernization to meet contemporary efficiency and environmental standards. On top of that, energy production is regionally uneven. For example, oil and gas are concentrated in the west as mentioned earlier, coal in the north, and the south has limited generation capacity, which makes energy transport and infrastructure management more difficult.

Therefore, these domestic challenges make Kazakhstan both a major exporter and a selective importer, depending on the type and location of energy demand. They also help explain China's success in positioning itself as a key partner in Kazakhstan's energy modernization. Through BRI-linked investments in cross-border grids, pipelines, and renewable energy infrastructure, China has been able to address some of these infrastructural gaps while simultaneously expanding its strategic footprint in the country's energy landscape.

⁷⁸ International Energy Agency, *Kazakhstan Energy Profile* (Paris: IEA, 2021), accessed June 28, 2025, <https://iea.blob.core.windows.net/assets/a398cfb3-4f0b-4b8f-b82e47b8d7b93d52/KazakhstanEnergyProfile.pdf>

⁷⁹ International Energy Agency, *China: Energy Mix*, accessed August 6, 2025, <https://www.iea.org/countries/china/energy-mix>

Mongolia

Mongolia presents a contrasting case. The country holds vast coal reserves, with about 2.52 billion metric tons proven in 2022 and potential reserves reaching up to 100 billion tons, but it lacks the infrastructure to process and transport them efficiently.⁸⁰ As a result, much of the population still depends on old and inefficient power plants. Coal continues to generate about 86 percent of Mongolia's electricity, a situation maintained by state subsidies and slow modernization.

Although the government aims to raise renewable energy to 30 percent of total power by 2030, progress has been slow. In 2022, wind and solar provided less than 10 percent of the country's electricity, far below the global average.⁸¹ Yet Mongolia has enormous potential to grow in this area. For instance, according to estimates, its wind and solar resources could produce around 2,600 gigawatts of power, or about 5,457 terawatt-hours of clean electricity each year.⁸² Most of this potential lies in the Gobi Desert, where strong winds and plenty sunlight could generate far more energy than the country currently consumes if transmission infrastructure were expanded. However, limited domestic capacity to develop these resources has left Mongolia dependent on foreign investment, especially from China.

⁸⁰ Sarah Barnhart, *Mongolia's Energy Consumption*, EBSCO Research Starters, 2024, <https://www.ebsco.com/research-starters/power-and-energy/mongolias-energy-consumption>

⁸¹ International Energy Agency, *Mongolia: Renewables*, accessed August 6, 2025, <https://www.iea.org/countries/mongolia/renewables>

⁸² Asian Development Bank, "Unlocking Mongolia's Rich Renewable Energy Potential," *ADB News & Features*, June 2, 2020, <https://www.adb.org/news/features/unlocking-mongolias-rich-renewable-energy-potential>

Comparative Analysis: Governance, Dependency, and Development & Sustainability Trade-offs

Governance and Institutional Mediation

While resource endowments and infrastructure shape the types of BRI projects Kazakhstan and Mongolia attract, these structural factors alone cannot explain their divergent experiences. The decisive variable lies in governance capacity and institutional design, which determine how external investments are negotiated, implemented, and perceived domestically.

The comparison highlights the uneven dynamics shaping BRI energy cooperation. Namely, China's outward investments serve a dual purpose: securing fossil fuels while promoting its image as a clean energy leader. Kazakhstan uses its export potential and centralized governance to draw in large-scale pipeline and renewable projects that fit neatly with state-led development strategies. Mongolia, on the other hand, struggles with domestic energy shortages and fragmented governance, making it more reliant on foreign financing for both traditional and renewable projects.

These political and structural contrasts reflect deeper differences in state systems and international alignments. Kazakhstan's centralized political order with stable leadership and clear policy direction has enabled extensive energy and infrastructure partnerships with China. Yet this stability coexists with familiar governance issues, including corruption and weak transparency, as shown by the country's modest performance on global governance indices.⁸³

⁸³ World Bank. 2025. *Interactive Data Access | Worldwide Governance Indicators*. Washington, DC: World Bank. <https://www.worldbank.org/en/publication/worldwide-governance-indicators/interactive-data-access>

Specifically, Kazakhstan's centralized political system has enabled the executive to align BRI projects with national strategies such as Nurly Zhol, the country's national infrastructure and economic development program launched in 2014, aimed at modernizing transport, energy, and logistics networks to strengthen internal connectivity and regional trade. This technocratic style of governance provides coordination advantages, allowing large-scale energy and transport projects to move forward with relative speed. However, it is worth noting that centralization comes with its own risks as decision-making is opaque, oversight is oftentimes weak, and elite capture is common. In turn, what this means is that while the outcome is efficient in implementation there is limited accountability.

By contrast, Mongolia presents the opposite picture. Its pluralistic but volatile democracy promotes openness and public scrutiny but also brings policy instability. Namely, political rivalries and weak regulatory enforcement complicate project management, while active civic engagement can delay or reshape major initiatives.⁸⁴ For example, the 2022 "Coal Mafia" protests in Ulaanbaatar,⁸⁵ triggered by corruption allegations in coal exports to China, show how Mongolia's democratic system channels public anger into visible mobilization, a scenario unlikely in Kazakhstan's more controlled environment.

Moreover, anti-Chinese sentiment further influences Mongolia's domestic politics, reflecting both economic dependence and societal unease over Chinese-led mining and infrastructure projects.⁸⁶ In the South Gobi region, for example, herder communities have opposed a proposed coal transport highway to China,

⁸⁴ "Protesters in Mongolia Try to Storm State Palace," *Al Jazeera*, December 6, 2022, <https://www.aljazeera.com/news/2022/12/6/protesters-in-mongolia-try-to-storm-state-palace>

⁸⁵ Julian Dierkes, "Mass Protests in Mongolia Decry 'Coal Mafia,' Corruption," *The Diplomat*, December 6, 2022, <https://thediplomat.com/2022/12/mass-protests-in-mongolia-decry-coal-mafia-corruption/>

⁸⁶ Mendee Jargalsaikhan, "Lingering Anti-Sinic Sentiments in Post-Communist Mongolia: Why Dislike the Chinese?" *Voices from Central Asia* No. 19 (January 2015), <https://centralasiaprogram.org/publications-all/7342/>

citing threats to grazing lands and environmental harm from dust and truck traffic.⁸⁷

Apart from this, it is important to mention that both countries operate within a broader geopolitical arena where Russia remains a key non-Chinese player, supplying oil, electricity, and expertise, while Western and multilateral actors such as the European Union, Japan, and the Asian Development Bank support renewable and modernization efforts. Thus, while China is the dominant investor under the BRI framework, both Kazakhstan and Mongolia continue to pursue multi-vector energy diplomacy, balancing Chinese engagement with other partnerships to maintain strategic autonomy and diversify development paths. This delicate balancing act is influenced by both current and future shifts in regional geopolitics as well as geographic constraints.

In essence, Mongolia's openness fosters debate but also instability, whereas Kazakhstan's centralization ensures predictability at the expense of transparency. In turn, these governance patterns shape the scale, form, and sustainability of each country's dependence on China.

Dependency and Leverage

Governance structures directly affect how dependence on China develops and is managed. In Kazakhstan, dependency is primarily export-based, rooted in oil and gas pipelines that bind the country to Chinese markets. While this raises concerns about overreliance on one buyer, Kazakhstan's overall debt to China remains modest. By 2024, Astana owed about \$9.2 billion, mostly to the China Export-Import Bank or Exim Bank, representing roughly 3.5 percent of GDP, a level that

⁸⁷ Thomas White and Enkhbat Sainbayar, "Mongolian Herders Fear a New Coal Highway to China," *Dialogue Earth*, November 7, 2024, <https://www.clientearth.org/latest/latest-updates/news/china-clarifies-its-vision-for-a-green-belt-and-road-initiative/>

has stayed fairly stable over the past few years.⁸⁸ This manageable exposure reflects stronger fiscal discipline and greater bargaining capacity.

Mongolia's dependency, by contrast, is more immediate and structural, rooted in its need for external financing and infrastructure to cover domestic energy deficits. According to analysts, although the share of Chinese loans in Mongolia's total foreign debt declined slightly to 9.7 percent in 2023, these still account for 16.7 percent of the country's GDP, underscoring persistent financial dependence on Beijing despite diversification efforts.⁸⁹ Beyond fiscal exposure, dependency also manifests institutionally. According to the China Index (2024), Kazakhstan's strongest links with China are in technology (79.5%), economy (54.5%), and foreign policy (56.8%), reflecting its role as a technologically connected energy transit state. Mongolia's engagement, however, concentrates in foreign policy (70.5%), law enforcement (54.5%), and economy (54.5%), implying deeper institutional coordination but limited societal or technological integration.

These contrasts illustrate two distinct dependency profiles. Kazakhstan portrays itself as a stable yet selectively autonomous energy partner capable of aligning Chinese projects with national priorities. Mongolia's growing alignment, by contrast, reflects deepening infrastructural and policy dependence, most visibly reflected in the Power of Siberia 2 gas pipeline and related grid modernization projects. Thus, China not only uses financial leverage but also strengthens its influence by adapting projects to local needs, like funding Kazakhstan's export routes or upgrading Mongolia's power networks.

⁸⁸ Nargiza Muratalieva, "Chinese Lending Adapts to Central Asia's Realities," *Carnegie Endowment for International Peace*, September 23, 2024, <https://carnegieendowment.org/videos/2024/09/chinese-lending-adapts-to-central-asias-realities?lang=en>

⁸⁹ B. Enkh-Amgalan, "Assessing Mongolia's Economic Dependence on China: A Foreign Economic Dependence Index Analysis," *Journal of International Relations* (Vol. 47, No. 2, 2023), published January 17, 2025, <https://journal.num.edu.mn/jir/article/view/9461>

In particular, the previously mentioned Power of Siberia 2 pipeline illustrates how regional energy relations are changing alongside new political and economic alignments. Spanning 963 kilometers across Mongolia, it is planned to transport around 50 billion cubic meters of Russian gas to China annually. The project will operate alongside the first Power of Siberia pipeline, which runs 3,000 kilometers through Siberia to China's Heilongjiang province.⁹⁰ Though delayed for several years, a recent legally binding agreement signed by Russia, China, and Mongolia during the September 2025 SCO summit signaled renewed momentum. The decision also marks a subtle recalibration of Mongolia's traditional "third neighbor" or *multipillar* foreign policy, which has long aimed to balance China and Russia with Western partnerships. Under what observers describe as steady pressure from both Beijing and Moscow, Ulaanbaatar now appears to be moving toward closer alignment with its two powerful neighbors.⁹¹

In turn, such alignment brings potential benefits and risks. From Mongolia's perspective, on the one hand, deeper cooperation could provide the country with new infrastructure, stable transit revenues, and greater access to cleaner energy. On the other hand, excessive reliance on China and Russia could weaken Mongolia's ability to make independent foreign-policy decisions, a freedom the country has always valued. From Russian perspective, Mongolia's new stance offers a strategic advantage helping diversify export routes after losing access to European markets. For China, Mongolia's cooperation enhances the continuity of the China-Mongolia-Russia Economic Corridor, advancing BRI objectives by securing a more reliable overland route for energy and trade.

⁹⁰ Bolor Lkhaajav, "China-Mongolia-Russia Agreement on Power of Siberia 2 Could Reroute Energy Trade," *The Diplomat*, September 6, 2025, <https://thediplomat.com/2025/09/china-mongolia-russia-agreement-on-power-of-siberia-2-could-reroute-energy-trade/>

⁹¹ Sumiya Chuluunbaatar, "Mongolia Exits SCO Observer Status, Draws Closer to China and Russia," *The Diplomat*, September 5, 2025, <https://thediplomat.com/2025/09/mongolia-exits-sco-observer-status-draws-closer-to-china-and-russia/>

However, these closer ties also raise long-term questions for all three actors. While for Mongolia, the main question seems to be whether deepening economic integration may come at the cost of strategic autonomy and weaken its “third neighbor” diplomacy, for Russia, while the project strengthens leverage over Mongolia, it also locks Moscow into a narrower set of energy partnerships. For China, expanding its presence along the corridor could bring increasing environmental, infrastructure, and social responsibilities that might limit its strategic flexibility. In this sense, it can be said that while these developments could indeed tighten their trilateral cooperation, it simultaneously could also deepen the trade-off between immediate economic gains and long-term sovereignty particularly for smaller partners such as Mongolia.

That said, governance capacity ultimately determines whether dependency evolves into a strategic partnership or deepens into structural subordination. In other words, strong governance can transform dependency into a more balanced relationship where both sides benefit, whereas weak governance often results in greater external control and influence. As discussed earlier, Kazakhstan’s centralized governance enables more effective management of external engagement, whereas Mongolia’s fragmented institutions often make its responses more reactive. This divergence, in turn, directly shapes their developmental and sustainability outcomes, which will be discussed next.

Development and Sustainability Trade-offs

The developmental outcomes of BRI energy cooperation differ sharply between Kazakhstan and Mongolia, depending on how governance and dependency intersect with sustainability goals. Namely, Kazakhstan’s efforts to expand renewables remain constrained by the dominance of fossil fuel infrastructure described earlier, while Mongolia’s reliance on coal continues to shape both its energy mix and financing priorities. In Mongolia, BRI projects have improved

energy access and connectivity but largely through coal-based expansion, undermining renewable energy goals. In both contexts, weak regulatory oversight limits governments' ability to align foreign investment with long-term sustainability priorities.

From a sustainability perspective, the main challenge is balancing growth with environmental protection and social inclusion. While Chinese-funded fossil fuel projects have enhanced energy access and fiscal stability, they risk locking both countries into carbon-intensive pathways that undermine climate resilience.⁹²⁹³ Projects like the Zhanatas Wind Farm and Turgusun Hydropower Station in Kazakhstan show that BRI investments can support renewable diversification. However, these efforts remain overshadowed by larger oil and gas ventures that deepen hydrocarbon dependence. Even renewable projects face governance shortcomings such as insufficient environmental assessments and disregard for biodiversity. For instance, Zhanatas paid little attention to migratory bird routes,⁹⁴ while Turgusun raised concerns about methane emissions and inadequate fish passages.⁹⁵ Additionally, the lack of accessible environmental data makes it difficult for policymakers, local communities, and researchers to monitor impacts or ensure accountability. As a result, while progress is visible, sustainability gains remain partial.

⁹² Benjamin K. Sovacool, Mari Martiskainen, Andrew Hook, and Lucy Baker, "Beyond Cost and Carbon: The Multidimensional Co-Benefits of Low Carbon Transitions in Europe," *Ecological Economics* 169 (2020): 106529, <https://doi.org/10.1016/j.ecolecon.2019.106529>

⁹³ Junze Zhang, Shuai Wang, Prajal Pradhan, Wenwu Zhao, and Bojie Fu, "Untangling the Interactions among the Sustainable Development Goals in China," *Science Bulletin* 67, no. 9 (2022): 977–84, <https://doi.org/10.1016/j.scib.2022.01.006>

⁹⁴ Asian Infrastructure Investment Bank, *Kazakhstan 100 MW Zhantas Wind Power Project* [Project summary], 2019, accessed June 28, 2025, https://www.aiib.org/en/projects/approved/2019/_download/kazakhstan/Kazakhstan-100-MW-Zhantas-Wind-Power-Project.pdf, p.10

⁹⁵ Rivers without Boundaries, "The Turgusun-1 Project Demonstrates Why Hydropower Is a Bad Option for Kazakhstan," *Rivers without Boundaries*, August 13, 2021, <https://www.transrivers.org/2021/3409/>⁵⁴ *Mining.com*, "Mongolia-China Railway Extension to Increase Coal Transport Capacity by 30M Tons," May 25, 2023, <https://www.mining.com/mongolia-china-railway-extension-to-increase-coal-transport-capacity-by-30m-tons/>

Mongolia's situation, as discussed earlier, illustrates a similar paradox. While Chinese-backed transmission lines and thermal power plants have stabilized electricity supply and supported mining-driven growth, coal dependence and weak institutional capacity continue to slow the renewable transition and worsen air pollution.⁹⁶ The trade-offs are therefore shaped less by the scale of investment and more by governance patterns and planning capacity, which were detailed in the previous section.

Across both cases, the evidence shows that the BRI is not a one-size-fits-all model but a flexible framework that interacts differently with domestic political economies. Kazakhstan demonstrates how a centralized state can integrate Chinese investments into national plans efficiently but opaquely. Mongolia illustrates how democratic pluralism invites contestation but weakens policy coherence and oversight.

BRI energy projects in both countries reveal a clear paradox. While they help address infrastructure gaps and improve energy access, they often fall short in promoting long-term sustainability. Without stronger domestic regulations, transparent procedures, and consistent planning, these gains risk being offset by environmental damage and institutional weaknesses. The outcomes are shaped more by the governance choices of Kazakhstan and Mongolia than by China's intentions.

⁹⁶ *Mining.com*, "Mongolia-China Railway Extension to Increase Coal Transport Capacity by 30M Tons," May 25, 2023, <https://www.mining.com/mongolia-china-railway-extension-to-increase-coal-transport-capacity-by-30m-tons/>

Conclusion and Policy Implications

This paper has explored how Chinese energy investments under the BRI have developed in two neighboring yet institutionally different countries—Kazakhstan and Mongolia. The analysis shows that BRI energy cooperation in both cases reveals both the potential and the limitations of China's developmental diplomacy. Despite official narratives of mutual benefit, the actual outcomes continue to be shaped by imbalances in governance capacity, bargaining power, and environmental oversight.

Namely, China's flexible approach to adapting projects to local conditions has made it easier to implement many BRI initiatives. However, this practicality hasn't always led to better involvement of local communities or stronger attention to long-term social and environmental issues. The real test for Beijing will be whether it can move beyond simple adaptation and start genuinely learning from these experiences—by applying lessons on community engagement, environmental protection, and fair benefit-sharing. How well China does this will shape whether the next phase of the BRI becomes a platform for shared, sustainable development rather than just a series of infrastructure deals.

In sum, this study finds that:

- First, BRI engagement in Kazakhstan and Mongolia differs according to domestic institutional capacity consolidating Kazakhstan's position as a regional energy hub while addressing Mongolia's infrastructure deficits.
- Second, governance capacity shapes how dependency is managed. Kazakhstan's centralized system allows more strategic negotiation, whereas Mongolia's fragmented institutions leave it more externally influenced.

- Third, renewable energy projects remain secondary to fossil fuel cooperation, showing that sustainability goals are still more rhetorical than transformative.
- Finally, the experiences of both countries indicate that China's approach continues to prioritize stability and connectivity over social inclusion and environmental responsibility.

These findings highlight that while host-country governance clearly shapes outcomes, the question of whether China itself is learning from these experiences remains open. For host countries, the key challenge is to build stronger institutions, those that ensure transparency, fair regulation, and consistent policies so that foreign investments genuinely support long-term stability instead of reinforcing old dependencies. In the end, the direction of BRI cooperation in the region will depend on how well both China and its partners can match their development goals with shared values of sustainability, responsibility, and mutual understanding.

Bibliography

- Altanshagai, Tuvshintugs. (2024, June 26). "Mongolia's Precarious Energy Security." *The Diplomat*. <https://thediplomat.com/2024/06/mongolias-precarious-energy-security/>
- Aminjonov, Farrukh, Aijan Abylkasymova, Aimée Aimée, Bakhtiyor Eshchanov, Dilmurat Moldokanov, Indra Overland, and Roman Vakulchuk. (2019). "BRI in Central Asia: Energy Connectivity Projects." *Central Asia Regional Data Review*, 22, 1–14. OSCE Academy. [https://osce-academy.net/upload/file/22 BRI Energy.pdf](https://osce-academy.net/upload/file/22_BRI_Energy.pdf)
- Andric, Jelena M., and Jiayuan Wang. (2025). "Measuring the Sustainability Performance of Infrastructure Projects under the Belt and Road Initiative." *KSCE Journal of Civil Engineering*, 100294. <https://doi.org/10.1016/j.kscej.2025.100294>
- Asian Infrastructure Investment Bank. (2019a). *Kazakhstan 100 MW Zhantas Wind Power Project* [Project summary]. https://www.aiib.org/en/projects/approved/2019/_download/kazakhstan/Kazakhstan-100-MW-Zhantas-Wind-Power-Project.pdf
- . (2019b). *Kazakhstan Zhanatas 100 MW Wind Power Plant* [Project summary]. <https://www.aiib.org/en/projects/details/2019/approved/Kazakhstan-Zhanatas-100-MW-Wind-Power-Plant.html>
- . (2019c). *Zhanatas Wind Power Plant Project: Environmental and Social Assessment* (English). AIIB. https://www.aiib.org/en/projects/approved/2019/_download/kazakhstan/Zhanatas-WPP-Environmental-and-Social-Assessment-English.PDF
- Barnhart, Sarah. (2024). *Mongolia's Energy Consumption*. EBSCO Research Starters. <https://www.ebsco.com/research-starters/power-and-energy/mongolias-energy-consumption>
- Borgford-Parnell, Nicholas. (2011). "Synergies of Scale: A Vision of Mongolia and China's Common Energy Future." *Energy Policy*, 39(5), 2764–2771. <https://doi.org/10.1016/j.enpol.2011.02.046>
- Brown, Kerry, and Elizabeth Fox. (2023). *Mongolia – Challenges and Prospects in 2023*. Lau China Institute, King's College London, and Mongolia and Inner Asia Studies Unit, University of Cambridge. <https://www.kcl.ac.uk/lci/assets/2023/mongolia-challenges-and-prospects-in-2023-report.pdf>
- Chuluunbaatar, Sumiya. (2025). "Mongolia Exits SCO Observer Status, Draws Closer to China and Russia." *The Diplomat*. <https://thediplomat.com/2025/09/mongolia-exits-sco-observer-status-draws-closer-to-china-and-russia/>
- China–Central Asia Cooperation Forum Secretariat. (n.d.). "Beineu–Bozoy–Shymkent Pipeline." <https://china-centralasia.org/en/project/41>

- Council on Foreign Relations. (2021). *China's Belt and Road: Implications for the United States Findings*. Independent Task Force Report No. 79. <https://www.cfr.org/task-force-report/chinas-belt-and-road-implications-for-the-united-states/findings>
- Dai, Clement Huaweilang, and Daniel T. Gibson. (2013). *Minegolia: China and Mongolia's Mining Boom*. China Environment Forum, Wilson Center. <https://www.wilsoncenter.org/article/minegolia-china-and-mongolias-mining-boom>
- Dashpurev, Bayar. (2024). "The 'Coal Theft' Case: Corruption and Reform of Mongolia's Strategic Minerals Governance." *U4 Brief*, 2024(4). Chr. Michelsen Institute. <https://www.u4.no/publications/the-coal-theft-case-corruption-and-reform-of-mongolias-strategic-minerals-governance>
- de Boer, Dimitri, Christoph Nedopil, and Danting Fan. (2022, April 4). "China Clarifies Its Vision for a Green Belt and Road Initiative." *ClientEarth*. <https://www.clientearth.org/latest/latest-updates/news/china-clarifies-its-vision-for-a-green-belt-and-road-initiative/>
- Development Corridors Partnership. (2022). *Impact Assessment for Corridors: From Infrastructure to Development Corridors* (J. Hobbs & D. Juffe-Bignoli, Eds.). Development Corridors Partnership. https://developmentcorridors.org/wp-content/uploads/2023/06/development-corridors-final-v4-1371-1-3_compressed-1_compressed.pdf
- Dezenski, Elaine K., and Josh Birenbaum. (2024, February 27). *Tightening the Belt or End of the Road? China's BRI at 10* [Memo]. Foundation for Defense of Democracies. <https://www.fdd.org/analysis/2024/02/27/tightening-the-belt-or-end-of-the-road-chinas-bri-at-10/>
- Dimovska, Matilda. (2024, January 26). "Mongolia's Clean Energy Transition: A Pathway to Sustainable and Inclusive Development." *UNDP Mongolia*. <https://www.undp.org/mongolia/blog/mongolias-clean-energy-transition-pathway-sustainable-and-inclusive-development>
- Dierkes, Julian. (2022, December 6). "Mass Protests in Mongolia Decry 'Coal Mafia,' Corruption." *The Diplomat*. <https://thediplomat.com/2022/12/mass-protests-in-mongolia-decry-coal-mafia-corruption/>
- Dos Santos, Theotonio. (1970). "The Structure of Dependence." *American Economic Review*, 60(2), 231–236. <http://digamo.free.fr/dosantos70.pdf>
- Du, Binghan, J. Juman, A. V. Khamzayeva, and Xuan Zhai. (2024). "Energy Cooperation between Kazakhstan and China under 'One Belt and One Road': Current State, Challenges and Perspectives." *Buketov Business Review (Economy Vestnik)*, 29(2), 7–18. <https://doi.org/10.31489/2024ec2/7-18>
- Enkh-Amgalan, B. (2025). "Assessing Mongolia's Economic Dependence on China: A Foreign Economic Dependence Index Analysis." *Journal of International Relations*, 47(2). <https://journal.num.edu.mn/jir/article/view/9461>

- Extractive Industries Transparency Initiative. (2025). *Board Decision 2025-25 / BM-63: Kazakhstan Has Achieved a Fairly Low Score in Implementing the 2019 EITI Standard*. <https://eiti.org/board-decision/2025-25>
- Ghossein, Tania, Bernard Hoekman, and Anirudh Shingal. (2018, December 20). "Public Procurement in the Belt and Road Initiative." *World Bank Blogs*. <https://blogs.worldbank.org/en/trade/public-procurement-belt-and-road-initiative>
- Gong, Yongyue, Heming Wang, Asaf Tzachor, Tomer Fishman, Fengmei Ma, Lingli Hou, Yao Wang, Wenju Sun, Yihan Song, Kai Fang, Wei-Qiang Chen, Yuri Mazei, and Alexei Tiunov. (2025). "A Decade of Ecological and Environmental Research on the Belt and Road Initiative: Evolution and Future Directions." *Resources, Conservation and Recycling*, 217, 108217. <https://doi.org/10.1016/j.resconrec.2025.108217>
- Imam, Patrick A., and Jonathan R. W. Temple. (2025). *State Capacity and Growth Regimes* (IMF Working Paper No. WP/25/14). International Monetary Fund. <https://doi.org/10.5089/9798400296673.001>
- International Energy Agency. (n.d.). "China: Energy mix." <https://www.iea.org/countries/china/energy-mix>
- . (2021). *Kazakhstan Energy Profile*. IEA. <https://iea.blob.core.windows.net/assets/a398cfb3-4f0b-4b8f-b82e-47b8d7b93d52/KazakhstanEnergyProfile.pdf>
- . (2025). "Mongolia: Energy mix." <https://www.iea.org/countries/mongolia/energy-mix#how-is-energy-used-in-mongolia>
- Jargalsaikhan, Mendee. (2015). "Lingering Anti-Sinic Sentiments in Post-Communist Mongolia: Why Dislike the Chinese?" *Voices from Central Asia*, 19. <https://centralasiaprogram.org/publications-all/7342/>
- Jayaprakash, R. S. (2024, September 16). "The Power of Siberia-2 Saga: Russia's Energy Pivot to China Faces Roadblocks." *Observer Research Foundation*. <https://www.orfonline.org/expert-speak/the-power-of-siberia-2-saga-russia-s-energy-pivot-to-china-faces-roadblocks>
- Jones, Lee, and Jinghan Zeng. (2019). "Understanding China's Belt and Road Initiative: Beyond 'Grand Strategy' to a State Transformation Analysis." *Third World Quarterly*, 40(8), 1415–1439. <https://doi.org/10.1080/01436597.2018.1559046>
- Kamal, Muhammad Abdul, Syed Hasanat Shah, Wang Jing, and Hafsa Hasnat. (2019). "Does the Quality of Institutions in Host Countries Affect the Location Choice of Chinese OFDI? Evidence from Asia and Africa." *Emerging Markets Finance & Trade*, 56(1), 208–227. <https://doi.org/10.1080/1540496X.2019.1610876>

- Kassenova, Nargis. (2017). "China's Silk Road and Kazakhstan's Bright Path: Linking Dreams of Prosperity." *Asia Policy*, 24, 110–116. <https://www.jstor.org/stable/26403209>
- Kazakh Invest. (2019). "Construction of Kazakh–Chinese Investment Projects Will Be Carried Out in Accordance with the Legislation of Kazakhstan" [Press release]. <https://invest.gov.kz/media-center/press-releases/stroitelstvo-kazakhstansko-kitayskikh-invest-proektov-budet-vestis-v-sootvetstvii-s-zakonodatelstvom/>
- Kazakhstan–China Pipeline LLP (KCP). (n.d.-a). "About." <https://www.kcp.kz/company/about>
- . (n.d.-b). "Atasu–Alashankou." <https://www.kcp.kz/company/about>
- Khitakhunov, Azimzhan. (2025, July 4). "Second Central Asia–China Summit: Initiatives and Priorities." *CAPS Unlock*. <https://capsunlock.org/second-central-asia-china-summit-initiatives-and-priorities/>
- Lkhaajav, Bolor. (2025). "China-Mongolia-Russia Agreement on Power of Siberia 2 Could Reroute Energy Trade." *The Diplomat*. <https://thediplomat.com/2025/09/china-mongolia-russia-agreement-on-power-of-siberia-2-could-reroute-energy-trade/>
- Liu, Longlong, Enyi Zhou, and Muhammad Asif. (2025). "Sustainable Development Goals 2030 and the Belt and Road Initiative: Complexities in Innovation, Biodiversity, and Foreign Direct Investment." *Journal of Environmental Management*, 388, 125921. <https://doi.org/10.1016/j.jenvman.2025.125921>
- Ma, Ziyi, and Yu Ma. (2023, January 31). "What's After Coal? Accelerating China's Overseas Investment in Renewables." *World Resources Institute*. <https://www.wri.org/insights/whats-after-coal-accelerating-chinas-overseas-investment-renewables>
- Martin, Xiaoxue. (2021, March 5). "New Map of the Belt and Road Initiative." *Clingendael*. <https://www.clingendael.org/publication/new-map-belt-and-road-initiative>
- Mathews, John A., and Hao Tan. (2017, April 15). "China's New Silk Road: Will It Contribute to Export of the Black Fossil-Fuelled Economy?" *The Asia-Pacific Journal: Japan Focus*, 15(8), Article 1. <https://apjif.org/2017/08/mathews>
- Mining.com. (2023, May 25). "Mongolia-China Railway Extension to Increase Coal Transport Capacity by 30M Tons." <https://www.mining.com/mongolia-china-railway-extension-to-increase-coal-transport-capacity-by-30m-tons/>
- Misheel. (2022, April 18). "Construction of Eg Hydropower Plant Stalled for 31 Years." *The UB Post*. <https://www.ubpost.mn/a/12428>
- mongoliaINC. (2022a, August 23). "Mongolia Continues to Push for the Eg River Hydropower Plant." <https://mongoliainc.com/6761/>
- . (2022b, June 20). "Mongolia Kickstarts the Amgalan Thermal Power Plant Project." <https://mongoliainc.com/4270/>

- Morris, David. (2024). "Risks on the Belt and Road in Eurasia: Local Perspectives and Options." *Global Society*, 38(4), 421–443. <https://doi.org/10.1080/13600826.2024.2344501>
- Muratalieva, Nargiza. (2024). "Chinese Lending Adapts to Central Asia's Realities." *Carnegie Endowment for International Peace*. <https://carnegieendowment.org/videos/2024/09/chinese-lending-adapts-to-central-asias-realities?lang=en>
- Nedopil, Christoph. (2025). *Countries of the Belt and Road Initiative*. Green Finance & Development Center, FISF Fudan University. <https://greenfdc.org/countries-of-the-belt-and-road-initiative-bri/>
- News.mn. (2019, March 25). "China Supports Erdenet Thermal Power Plant Expansion." <https://www.news.mn/en/786989/>
- Oxford Business Group. (n.d.). "Mongolia Harnesses Surging Mining Exports to Diversify Economy." <https://oxfordbusinessgroup.com/articles-interviews/mongolia-harnesses-surging-mining-exports-to-diversify-economy/>
- Pan, Chunyang, William X. Wei, Etayankara Muralidharan, Jia Liao, and Bernadette Andreosso-O'Callaghan. (2020). "Does China's Outward Direct Investment Improve the Institutional Quality of the Belt and Road Countries?" *Sustainability*, 12(1), 415. <https://doi.org/10.3390/su12010415>
- Pattanayak, Sailendra, and Concha Verdugo-Yepes. (2020). "Protecting Public Infrastructure from Vulnerabilities to Corruption: A Risk-Based Approach." In G. Schwartz et al. (Eds.), *Well Spent: How Strong Infrastructure Governance Can End Waste in Public Investment* (chap. 10). International Monetary Fund. <https://www.elibrary.imf.org/display/book/9781513511818/ch010.xml>
- Petry, Johannes. (2022). "Beyond Ports, Roads and Railways: Chinese Economic Statecraft, the Belt and Road Initiative and the Politics of Financial Infrastructures." *European Journal of International Relations*, 29(2), 319–351. <https://doi.org/10.1177/13540661221126615>
- Popkov, Igor. (2024, June 13). "AIIB's Role in Driving Kazakhstan's Energy Transition." *Asian Infrastructure Investment Bank*. <https://www.aiib.org/en/news-events/media-center/blog/2024/AIIB-Role-in-Driving-Kazakhstan-Energy-Transition.html>
- Power Construction Corporation of China. (2023, October 24). "Kazakhstan Shelek Wind Farm." https://en.powerchina.cn/2023-10/24/c_828574.htm
- Reuters. (2025, May 8). "Russian and Chinese Firms in Active Talks on Power of Siberia-2 Gas Pipeline, TASS Reports." <https://www.reuters.com/sustainability/boards-policy-regulation/russian-chinese-firms-active-talks-power-siberia-2-gas-pipeline-tass-reports-2025-05-08/>
- Ritchie, Hannah, Max Roser, and Pablo Rosado. (2025). *Energy*. Our World in Data. <https://ourworldindata.org/energy>

- Rivers without Boundaries. (2021, August 13). "The Turgusun-1 Project Demonstrates Why Hydropower Is a Bad Option for Kazakhstan." <https://www.transrivers.org/2021/3409/>
- Rolland, Nadège. (2017). "Drivers of the Belt and Road Initiative." In *China's Eurasian Century? Political and Strategic Implications of the Belt and Road Initiative* (pp. 93–113). The National Bureau of Asian Research. https://www.nbr.org/wp-content/uploads/pdfs/programs/chinas_eurasian_century_ch3.pdf
- Soni, Sharad K. (2018). "China–Mongolia–Russia Economic Corridor: Opportunities and Challenges." In B. R. Deepak (Ed.), *China's Global Rebalancing and the New Silk Road* (pp. 101–117). Springer. https://doi.org/10.1007/978-981-10-5972-8_9
- Sovacool, Benjamin K., Mari Martiskainen, Andrew Hook, and Lucy Baker. (2020). "Beyond Cost and Carbon: The Multidimensional Co-Benefits of Low Carbon Transitions in Europe." *Ecological Economics*, 169, 106529. <https://doi.org/10.1016/j.ecolecon.2019.106529>
- Standish, Reid. (2022). "China's Belt and Road Grapples with Mounting Debt Crisis, Impacting Pakistan, Central Asia, and Beyond." *Radio Free Europe/Radio Liberty*. <https://www.rferl.org/a/china-debt-crisis-belt-road-initiative-kyrgyzstan-pakistan-/31970756.html>
- State Council Information Office of the People's Republic of China. (2020, August 4). "China's Belt and Road Initiative Promotes Energy Cooperation and Green Development" [Press release]. http://english.scio.gov.cn/beltandroad/2020-08/04/content_76345602.htm
- State Council of the People's Republic of China. (2021, September 5). "China-Funded Thermal Power Plant Expansion Completed in Mongolia" [Press release]. https://english.www.gov.cn/news/international/exchanges/202109/05/content_WS6133fdb2c6d0df57f98dfb1f.html
- TASS. (2024, September 3). "Russia–China Gas Pipeline Project via Mongolia Is Undergoing State Examination — Putin." <https://tass.com/economy/1837473>
- Ulagpan, Yelif. (2021, February 1). "Belt and Road Initiative: Opportunities and Challenges for Mongolia." *The Asia-Pacific Journal: Japan Focus*. <https://apjif.org/2021/3/ulagpan>
- Universal Energy. (2025a). "Abay 100 MW Wind Power Plant." <https://www.universalenergy.com/en/projects/69>
- . (2025b). "Abay 50 MW Wind Power Plant." <https://www.universalenergy.com/en/projects/700>
- . (2025c). "Ybyrai 50 MW Wind Power Plant." <https://www.universalenergy.com/en/projects/67>

- . (2025d). "Zhangiztobe 30 MWp Solar Power Station." <https://www.universalenergy.com/en/projects/4>
- . (n.d.-a). "Kapchagay 100 MWp Solar Power Station." <https://www.universalenergy.com/en/projects/70>
- . (n.d.-b). "Kaskelen 50 MWp Solar Power Station." <https://www.universalenergy.com/en/projects/70>
- Wang, Yiwei. (2017). "One Belt and One Road' 2.0: Ushering in a New Globalization." *Bulletin of Chinese Academy of Sciences*, 32(4), 387–394. <https://doi.org/10.16418/j.issn.1000-3045.2017.04.009>
- White, Thomas, and Enkhbat Sainbayar. (2024, November 7). "Mongolian Herders Fear a New Coal Highway to China." *Dialogue Earth*. <https://dialogue.earth/en/energy/mongolian-herders-fear-a-new-coal-highway-to-china/>
- Wood Mackenzie. (2023, November 20). "China Belt & Road Initiative Brings in 128 GW Installed Power Capacity in 10 Years" [Press release]. <https://www.woodmac.com/press-releases/china-belt-and-road-10-years-on/>
- World Commission on Environment and Development. (1987). *Our Common Future*. Oxford University Press. <https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf>
- Xinhua Silk Road Information Service. (2021, June 18). "China-Undertaken Hydropower Station in Kazakhstan Runs Smoothly." <https://en.imsilkroad.com/p/322207.html>
- Yu, Hong. (2024). "China's Push for the BRI in a Changing World: Origins and Motivations." In *Understanding China's Belt and Road Initiative* (Vol. 26 of *Asia in Transition*). Springer. https://doi.org/10.1007/978-981-99-9633-9_1
- Yu, Yang, Zi He, and Yi Liu. (2018). "Global Energy Cooperation between China and Central Asia: Current Situation, Risks, and Countermeasures." *Bulletin of Chinese Academy of Sciences (Chinese version)*, 33(6), Article 5. <https://bulletinofcas.researchcommons.org/journal/vol33/iss6/5/>
- Zhang, Junze, Shuai Wang, Prajal Pradhan, Wenwu Zhao, and Bojie Fu. (2022). "Untangling the Interactions among the Sustainable Development Goals in China." *Science Bulletin*, 67(9), 977–984. <https://doi.org/10.1016/j.scib.2022.01.006>
- Zhou, Lihuan, Sean Gilbert, Ye Wang, Miquel Muñoz Cabré, and Kevin P. Gallagher. (2018). *Moving the Green Belt and Road Initiative: From Words to Actions*. World Resources Institute. <https://www.wri.org/research/moving-green-belt-and-road-initiative-words-actions>
- Zoï Environment Network. (2018). *BRI Layout*. Zoï Environment Network. <https://zoinet.org/wp-content/uploads/2018/01/BRI-Layout-WEB.pdf>

Монголын Үндэсний Худалдаа Аж Үйлдвэрийн Танхим [Mongolian National Chamber of Commerce and Industry]. (n.d.). "Эдийн засгийн салбарууд [Economic Sectors]." <https://www.mongolchamber.mn/p/315>

Chinese Finance in Central Asia: Assessing the Risks and Realities of Public Debt Accumulation

Abstract

This study examines the role of Chinese financing in the development of infrastructure in Central Asia, with a particular focus on Uzbekistan and Kyrgyzstan. The aim of the study is to assess the structure, terms and conditions of Chinese loans and analyze how these financing mechanisms affect the financial stability, economic policy, and sovereignty of both countries. It also examines the transparency and public accountability of these loans, considering the level of control and the challenges faced by local authorities in managing these financial obligations. Based on interviews with experts, available data and case studies, this study provides an in-depth analysis of the structure of Chinese infrastructure investments, particularly under the Belt and Road Initiative (BRI), as well as the broader geopolitical and economic implications for the region. The findings show that while Chinese loans have contributed to significant infrastructure development in the region, concerns remain about debt sustainability, transparency, and political influence. The study highlights that Chinese financing often lacks the transparency associated with multilateral lending institutions, leading to public skepticism and political challenges. It also examines the risks associated with debt dependency and the likelihood of future economic crises caused by unsustainable borrowing practices. The study's key recommendations suggest that both countries should increase the transparency of loan agreements, implement stricter financial management policies and consider regional cooperation for more effective negotiations with China. The study concludes that while China's financial presence opens up opportunities for development, Central Asian countries must balance these benefits with the need for long-term economic stability and financial sovereignty.

Introduction

The accumulation of public debt has become a pressing issue for developing economies, particularly in Central Asia, where Uzbekistan and Kyrgyzstan are increasingly turning to Chinese financing under the Belt and Road Initiative to address infrastructure deficits and stimulate growth. Although these investments have enabled projects in transport, energy, mining, and manufacturing that improve regional connectivity, they also pose significant risks related to debt sustainability, opaque lending terms and potential constraints on political autonomy and sovereignty (Shamiev, 2020). Lying at the crossroads of China, Russia, and Europe and endowed with rich natural resources, the region transitioned from centralized planning to a market economy after the collapse of the Soviet Union, requiring significant external capital investment. This made the BRI Beijing's primary tool for cooperation and economic influence through major trade routes and large-scale infrastructure investments (Urban, 2025). Against this backdrop, understanding the structure and management of Chinese loans, as well as their implications for financial stability, institutional accountability, and political autonomy in Uzbekistan and Kyrgyzstan, is crucial for assessing medium- and long-term economic prospects.

The study examines the role of Chinese financing in infrastructure development in Uzbekistan and Kyrgyzstan and assesses its impact on public debt dynamics, financial sustainability, and governance. It examines four areas of research: the structure and terms of loans, pricing, grace periods, maturities, and sectoral distribution of Chinese loans to draw conclusions about strategic priorities and risk profiles; debt sustainability and its impact on fiscal policy, long-term repayment burden, exposure to currency and refinancing risks, and implications for macroeconomic management, public spending, and resource allocation; governance and transparency, availability and quality of information on loan agreements, reliability of monitoring and audit mechanisms for Chinese-financed projects, and vulnerability to corruption associated with opaque mechanisms; as well as policy recommendations, practical measures to strengthen debt management, increase transaction transparency and ensure a balance between the benefits of Chinese investment and the need for financial sovereignty and long-term stability.

The study focuses on Uzbekistan and Kyrgyzstan, two countries that are getting financing under the BRI and share a Soviet past but have different economic structures and approaches to debt management. Uzbekistan's larger population, more diversified industrial base and significant natural resources make it a good example of how an economy with significant potential is using Chinese financing to modernize its transport and energy infrastructure, especially following the market-opening reforms implemented since 2017 (World Bank, 2020). On the contrary, Kyrgyzstan's smaller, landlocked and less diversified economy has become more dependent on Chinese infrastructure loans, which has increased its vulnerability to

debt crises and raised concerns about its long-term political and economic independence (Tanbaev, 2024).

Through expert interviews, primary data, and a targeted literature review, the study provides a comparative assessment of credit structures, fiscal risks and governance mechanisms, and evaluates how external creditors can influence national sovereignty. Its objective is to identify cases where Chinese financing has helped to address infrastructure bottlenecks and supported growth and cases where it has exacerbated risks related to sustainability, transparency and political influence, with a view to developing policies for more sustainable debt portfolios (Voice of America, 2022).

Literature Review

China's financial presence in Central Asia has expanded considerably since the launch of the BRI in 2013, but its scope and composition vary depending on the instrument, from sovereign and state-backed loans provided by policy banks, to state-affiliated construction contracts and overseas direct investment (ODI). Official Chinese policy documents identify Central Asia as an important land corridor connecting China with Europe through the Silk Road Economic Belt, with a focus on transport connectivity, energy cooperation and trade facilitation (Zhan, 2023).

The BRI has driven most of China's financial activity in the region. According to Lea Melnikova (2020), Central Asia ranks second in terms of BRI investment volume, trailing only Southeast Asia, with Kazakhstan receiving the vast majority of these funds. Major infrastructure projects in Kyrgyzstan and Tajikistan include highways, energy pipelines, and Kazakhstan's Khorgos Special Economic Zone (Yan, 2020). The programs seek to improve trade and energy flows between China and Europe, hence increasing China's economic power via Eurasian trade routes.

While China's financing in Central Asia consists primarily of loans and direct investments, state-backed loans have been more prevalent than traditional development aid. These loans are frequently project-specific, related to infrastructure development, and carried out by Chinese state-owned firms (Ch.Sabyrbek & Karimov, 2024). Though such financing approaches speed up infrastructure development, they raise worries about recipient countries' increasing debt burdens and the long-term viability of such lending policies.

Debt Diplomacy and Geopolitical Implications

One of the most hotly debated features of Chinese finance in Central Asia is debt-trap diplomacy. This term refers to the purported practice of China making loans to countries with unsustainable debt levels and then leveraging the fear of default to acquire political power (Kaleji, 2024). Critics contend that China's infrastructure

initiatives are part of a larger agenda to boost its geopolitical influence in the region. According to Gretski (2024), China's investments in Central Asia are intricately interwoven with security and geopolitical goals, not just economic ones. However, Chinese official white papers explicitly reject the “debt trap” framing, emphasizing mutual benefit and market orientation (SCIO, 2023).

The growing debt burden in Kyrgyzstan and Tajikistan is seen as a potential vulnerability for China's neighbors, as loan repayments could lead to increased Chinese political influence in these countries (Sanchez, 2024). For example, the lack of transparency in loan agreements, as well as the high interest rates often associated with Chinese financing, contribute to debt accumulation, potentially tying the economic fate of these countries to China. According to Muratalieva (2024), China's financial model allows it to build close relationships with local elites, leading to favorable investment terms and significant influence on domestic politics.

According to Jang (2022), this debt-driven geopolitical approach also highlights China's efforts to reduce Western influence in the region. The United States and the European Union, through institutions such as the IMF and the World Bank, have long been Central Asia's primary financiers. However, compared to Western institutions, China's finance approach emphasizes flexibility and minimum conditionality, making it an appealing choice for many Central Asian governments. This is especially noteworthy in light of Russia's decreasing influence in Central Asia following its focus on Ukraine, creating space for non-Russian capital in the field of logistics and energy modernization (Jang, 2022).

Previous Research on Public Debt Accumulation

Scholars and policymakers have both expressed worry about the growth of public debt as a result of Chinese loans. In recent years, numerous studies have examined the influence of Chinese financing on developing-country economies, particularly in Africa and South Asia. Kaleji (2024) underlines the growing concern in Central Asia, where countries such as Uzbekistan and Kyrgyzstan are becoming more reliant on Chinese financing. According to the *Foreign Ministry*, Kyrgyzstan's mounting debt to China, which is among the largest in the region in terms of GDP, has generated concerns about the country's financial viability (Standish, 2022).

The literature also highlights the dangers of over-reliance on a single creditor. Karibayeva (2020) implies that the prevalence of Chinese loans in these nations' finance portfolios may render them more subject to changes in Chinese economic policies. For example, a recession in China's economy could reduce investment, affecting loan payments and aggravating debt burdens. Furthermore, as Kederdine (2020) points out, the lack of transparency in loan arrangements makes it difficult to analyze these countries' actual debt burden and repayment capacity.

According to a study by Gruzer (2024), the nature of the investments complicates the issue of debt accumulation. While Chinese loans have funded major infrastructure development, the economic benefits from these projects are unknown, raising concerns about the investments' long-term viability. Despite the entry of Chinese funding, Kyrgyzstan has struggled with economic diversification and is strongly reliant on basic commodities and low-value-added sectors (Gruzer, 2024). Furthermore, as Muratalieva (2024) notes, the political implications of Chinese financing complicate the debt environment. In many situations, loans are granted with little control and the details of these loans are rarely made public, raising concerns about the exact price of these obligations. This lack of transparency increases the risk of excessive debt buildup.

Transparency and Governance Issues

Transparency and governance are critical issues in the study of Chinese financing in Central Asia. According to Tian (2018), one of the most serious obstacles to debt management in China is a lack of transparency in loan arrangements. Unlike the World Bank and other multilateral lending institutions, which have stringent reporting and auditing systems, China's financing frequently operates beneath the radar. This lack of openness is exacerbated by the fact that many loan agreements are signed between governments or state-owned corporations, with no input from public oversight bodies (Gelpern et al., 2021).

The governance issues associated with Chinese loans are most visible in countries such as Kyrgyzstan, where political instability and corruption have made it impossible to track the use of foreign funds. The story of the modernization of Kyrgyzstan's thermal power plant, in which a Chinese business was suspected of embezzling funds, demonstrates the potential for corruption and incompetence in the lack of appropriate accountability procedures (Gruzer, 2024). Furthermore, as Muratalieva (2024) points out, these governance concerns frequently lead to a loss of public faith in Chinese financing, with individuals and civil society organizations questioning the advantages of these investments.

Some researchers, however, suggest that the lack of openness may be due to political factors rather than deliberate opacity. According to Kurbanov (2018), governments in Central Asia may be reluctant to disclose the exact terms of Chinese loans due to popular backlash. Political elites may prioritize the immediate economic benefits of Chinese investment over the long-term consequences for debt sustainability and governance.

The literature studied in this part demonstrates that China's financial involvement in Central Asia is complex and deeply ingrained in the region's development plans. Chinese loans have played an important role in funding infrastructure projects.

However, these loans carry considerable dangers, including the possibility of unsustainable debt accumulation, governance issues and concerns about political influence.

While Chinese financing has supplied critical capital for infrastructure development, it has also created significant concerns about fiscal sustainability, transparency and public accountability. Policymakers are particularly concerned about the lack of transparency in loan arrangements and the dominance of Chinese funding in some nations, considering the long-term consequences of debt buildup.

This literature study lays the groundwork for further investigation of Chinese finance in Uzbekistan and Kyrgyzstan. This study intends to provide useful insights to the continuing discussion on China's involvement in Central Asian economic development by investigating the composition of Chinese loans, the political consequences of debt accumulation and governance and transparency difficulties.

Methodology & Data

Research Design

This study applies a qualitative approach to analyzing the role of Chinese financing in infrastructure development in Central Asia, specifically focusing on Uzbekistan and Kyrgyzstan. It is intended to examine the nuances of Chinese loans, their impact on financial stability, governance, transparency, and the geopolitical implications of China's financial involvement in the region. The choice of a qualitative methodology is due to the need to take into account the complexity of the subject of the study, which includes both specific financial mechanisms and more abstract factors such as political and economic relations, public opinion, and governance structures.

The case studies of Uzbekistan and Kyrgyzstan allow for a comparative analysis, revealing similarities and differences in how both countries manage their debt, interact with China, and navigate the geopolitical dynamics of Chinese influence on their economies. By focusing on these two countries, the study allows conclusions to be drawn about broader trends in Central Asia, while also examining the specific financial, political, and social conditions of each country.

Data Collection

Desk Review

The bulk of the data collection for this study involves a comprehensive desk analysis of existing literature, reports, and secondary data from reliable sources. The desk analysis process covers various scientific articles, policy documents, and research reports from international think tanks, scientific journals, and government agencies. This includes publications on Chinese financing in Central Asia, BRI, debt trap diplomacy (Kaleji 2024) and the geopolitical and economic dynamics of China's involvement in the region.

Furthermore, this paper utilizes financial data from global financial institutions such as the World Bank, the IMF, and regional organizations such as the Asian Development Bank (ADB), as well as databases on Chinese lending. These sources provide statistical data on lending conditions, debt-to-GDP ratios, financed sectors, and the distribution of Chinese loans across different Central Asian countries. The analysis of the documentation provides a basic understanding of the topic, identifies gaps in existing knowledge, and provides context for the more detailed field components of the study.

Semi-structured Interviews with National Stakeholders and Online Interviews with International Experts

One of the main data collection methods involves semi-structured interviews with national stakeholders from Uzbekistan and Kyrgyzstan. Semi-structured interviews are ideal for this study because they allow for flexible, in-depth discussions while ensuring systematic coverage of key topics. In addition to national perspectives, the study also includes online interviews with international experts who have conducted

research on Chinese financing in Central Asia. These experts include academics, researchers, and policy advisors with deep knowledge of Chinese economic strategies, debt diplomacy, and development financing practices. The reason for including international experts is to provide an external, comparative perspective on China's role in Central Asia and to present a broader global understanding of the issue. The interviews explore the terms of Chinese loans, their impact on national fiscal policy, transparency issues, and the broader political and economic implications of borrowing from China.

The expert interviews are particularly valuable for gathering information on the broader geopolitical and economic implications of Chinese financing. Experts shed light on the motives behind China's investment strategy, the risks associated with debt accumulation, and the long-term sustainability of Chinese loans. They are also asked to comment on the effectiveness of Chinese financing in achieving development goals in the region and to provide recommendations for improving debt management and public governance.

Interview Instruments and Expert List

The interviews were conducted based on a structured set of questions concerning the composition of Chinese loans, debt sustainability, budgetary impact, management practices, and transparency of financial agreements. The full set of interview questions is provided in *Appendix 1*, ensuring the transparency and reproducibility of the research tool.

In order to contextualize the results and demonstrate the reliability of the data sources, *Appendix 2* provides a list of all the experts interviewed, indicating their positions, affiliations, and areas of expertise. The inclusion of both the interview questions and information about the experts allows the research methodology to be verified while maintaining the clarity of the main text.

Secondary Data from Financial Institutions

In addition to document analysis and interviews, secondary data from financial institutions is an important component of the data collection process. Data from sources such as the World Bank, IMF, ADB and relevant Chinese lending databases, including the Export-Import Bank of China and the China Development Bank, provide the quantitative component of the study. This data includes loan amounts, interest rates, grace periods, maturities, and sectors financed by Chinese institutions. It allows for tracking debt accumulation trends over time, identifying target sectors, and conducting a comparative analysis of lending conditions in Uzbekistan and Kyrgyzstan.

Analytical Framework

Data collected during interviews, from secondary sources, and through document analysis is analyzed using a thematic analytical framework, which allows for the identification of recurring themes, patterns, and interrelationships within the qualitative data. Key themes include debt sustainability, transparency and governance, geopolitical implications, and the broader economic impact of Chinese financing. Comparative analysis is used to draw parallels between Uzbekistan and Kyrgyzstan, highlighting similarities and differences in debt management strategies, political and economic challenges, and the influence of China's broader geopolitical strategy on local policy decisions.

Limitations

The research design offers a comprehensive analysis, but it is not without limitations. The limited transparency of Chinese loan agreements, potential difficulties in accessing key stakeholders, especially government officials, and the small number of case studies limit the generalizability of the findings. The interviews with experts, while valuable, may reflect global perspectives rather than fully capturing local dynamics.

Results and discussions

Loan Composition and Terms in Uzbekistan and Kyrgyzstan

Chinese financing has played a critical role in infrastructure development in Uzbekistan and Kyrgyzstan, with a concentration on energy, transportation, and mining. However, the content of the loans, including terms and target sectors, varies greatly between the two countries, reflecting their different economic systems and development aspirations.

Chinese loans to Uzbekistan span a wide range of industries, including energy, chemicals and renewable energy. According to interviewed experts, Uzbekistan's diversified economic basis has attracted a diverse loan portfolio, particularly in light of the country's shift to a more market-oriented economy in 2017. Notably, joint ventures with Chinese corporations have helped to accelerate the development of high-tech industries such as electric car manufacture. These loans often have favorable terms, including low interest rates of roughly 2-3%, long repayment periods of up to 20 years, and grace periods of 5-7 years, making them appealing to the Uzbek government (AidData, 2021). Experts also point out that the Uzbek government has diversified its financing sources by luring both China and international organizations such as the World Bank, lowering the dangers associated with over-reliance on a single lender.

By contrast, Kyrgyzstan's reliance on Chinese investment is more specifically focused on infrastructure and mining, particularly road development, electricity grids, and

resource extraction projects like gold mining. These loans have comparable attractive terms, with interest rates of 2-3% and maturities ranging from 15 to 20 years (AidData, 2012). However, Kyrgyzstan has hurdles due to its small industrial base and a large concentration of loans in a few industries. *Experts* believe Kyrgyzstan's narrow specialization in mining and infrastructure exposes it to major dangers, particularly if commodity prices fluctuate or China's foreign policy shifts. Furthermore, Kyrgyzstan's vulnerability is aggravated by its inability to diversify its sources of financing, leaving it excessively reliant on Chinese cash (SpecialEurasia OSINT Team, 2024).

Uzbekistan's more diverse portfolio of Chinese loans enables it to benefit from a broader range of economic activity, lowering the dangers associated with over-reliance on a particular industry. On the other hand, Kyrgyzstan's emphasis on mining and infrastructure, although addressing urgent development demands, exposes the country to increased financial and geopolitical risk. This variation in credit structure demonstrates the various degrees of stability in the countries' economic strategies, with Uzbekistan's approach allowing better flexibility and resilience to external shocks.

Debt Sustainability and Fiscal Implications

Chinese loans have serious consequences for the financial stability of both Uzbekistan and Kyrgyzstan, with growing concerns about the long-term impact of rising debt levels on economic stability and national growth.

Uzbekistan's external debt is steadily increasing, with Chinese loans accounting for a large percentage. Uzbekistan's overall state debt is expected to exceed \$60 billion by 2023, with Chinese funding accounting for almost 50%. Despite concerns about rising debt levels, experts believe Uzbekistan's continuous economic development and diverse sources of funding give some protection against the risks of a financial crisis (Ministry of Economy and Finance of Uzbekistan, 2023). The government carefully balances Chinese loans with financing from other multilateral institutions, such as the World Bank and the ADB, to assist manage the debt burden. However, the expanding debt burden continues to be a source of concern, particularly in light of global economic unpredictability, such as commodity price swings and potential geopolitical developments.

Kyrgyzstan, on the other hand, is under more severe budgetary pressure due to its reliance on Chinese loans. In the future years (2025-2029), the government will be required to pay on average between \$274 million and \$538 million annually on its Chinese debt (Akchabar, 2025). Experts are concerned that Kyrgyzstan would struggle to pay these responsibilities, particularly if the economy slows or global commodity prices fluctuate. During the COVID-19 outbreak, Kyrgyzstan had to change its loan repayment plan with China, prolonging the repayment period to alleviate some of the

immediate financial burden. Despite these measures, the country's limited access to other financial sources and small economic base render it extremely vulnerable to a debt catastrophe.

Uzbekistan's diverse approach to financing allows it to manage its debt more flexibly and lower risks, but Kyrgyzstan's overreliance on Chinese loans puts it at greater danger of financial instability. Both countries face significant issues in managing debt sustainability, but Kyrgyzstan's smaller economy and limited access to alternate forms of finance make it more vulnerable.

Transparency and Public Accountability in Debt Management

Transparency and accountability in the management of Chinese loans have emerged as critical issues in both Uzbekistan and Kyrgyzstan, with experts emphasizing the lack of transparency in loan agreements and the problems it causes for financial management.

Uzbekistan has made some strides in improving the transparency of its relationships with overseas funders, especially China. However, analysts point out that the terms of Chinese loans are frequently not fully disclosed, and the public lacks access to critical information such as repayment schedules, collateral arrangements, and project prices. This lack of openness has raised public concerns about the fairness of these agreements and their long-term ramifications for Uzbekistan's economy. The government's reluctance to disclose such information further exacerbates concerns about corruption and inefficient management of Chinese-funded projects.

In Kyrgyzstan, transparency difficulties are even more pronounced. Experts have cited the case of a thermal power plant construction project in Bishkek, which has been plagued by charges of corruption involving Chinese contractors. The absence of publicly available information on loan terms, project prices, and payback schedules has resulted in an atmosphere where monitoring is low and mismanagement thrives. Experts highlight that, while China is not completely responsible, Kyrgyzstan's lack of a transparent framework makes assessing the effectiveness and fairness of Chinese financial agreements difficult.

In both cases Uzbekistan and Kyrgyzstan have significant hurdles in terms of transparency and accountability in managing Chinese loans. The absence of public access to detailed loan terms makes it difficult for residents, legislators, and other stakeholders to analyze the long-term consequences of these financial agreements. Increased transparency is critical to ensuring that Chinese financing promotes long-term development rather than causing financial instability or corruption.

Comparative Analysis of National Strategies (with Case Evidence)

Uzbekistan and Kyrgyzstan have adopted markedly different approaches to managing debts to China, shaped by their political economies, institutional capacity, and access to alternative finance. Uzbekistan has pursued an active, diversified strategy that pairs Chinese borrowing with multilateral support from the World Bank and the ADB, thereby reducing single-creditor concentration risk and improving bargaining leverage. A more centralized governance structure has enabled closer alignment of loan terms and project selection with national development priorities, though the overall rise in public debt still requires disciplined portfolio management and continued strengthening of debt-sustainability frameworks. Kyrgyzstan, by contrast, has relied more heavily on Chinese loans, particularly for transport infrastructure, power grids, and mining, while facing a less consolidated policy environment and fewer alternative financing options. This combination has made it harder to implement a coherent debt strategy, limited scope to negotiate terms, and increased exposure to macro-financial and geopolitical shocks.

Recent project experience illustrates these contrasts. In Kyrgyzstan, the North–South Road Corridor has faced delays and uncertain economic returns, while the Bishkek heating plant has been marred by corruption allegations, underscoring persistent challenges in procurement integrity, contract transparency, and project governance. The country's narrow productive base, centered on resource extraction, magnifies vulnerability to commodity price swings and heightens the risk that debt-service pressures will outpace fiscal capacity in downturns. Uzbekistan, in turn, has coupled Chinese financing with multilateral flows to support a broader industrial portfolio, including renewables and higher-value manufacturing (e.g., electric-vehicle-related investments), using creditor diversification to hedge refinancing and currency risks. Nonetheless, China remains a major creditor by some estimates accounting for a large share of Uzbekistan's public external debt so continued vigilance is warranted to prevent concentration from re-emerging through new project pipelines.

Taken together, the primary distinction lies not only in creditor mix but in institutional approach: Uzbekistan's diversified, policy-aligned borrowing has delivered greater flexibility and resilience, whereas Kyrgyzstan's heavier reliance on a single lender and sectoral concentration have amplified fiscal, economic, and governance risks. For both countries, the policy priorities converge: broaden the funding base beyond any single creditor; strengthen ex ante project appraisal and transparent procurement; publish key loan terms and performance data to enable independent oversight; and calibrate borrowing to demonstrable economic returns so that external finance supports long-term development while safeguarding financial sovereignty.

Policy Recommendations

Since Central Asian countries, particularly Uzbekistan and Kyrgyzstan, continue to cooperate with China on infrastructure financing under the Belt and Road Initiative, it is necessary to establish robust mechanisms for debt management, transparency, and protection of long-term financial sustainability. While Chinese investment has undoubtedly contributed to infrastructure and economic development, the associated risks, particularly with regard to transparency, financial management, and economic sovereignty, need to be effectively addressed. Below are key recommendations for improving debt management, enhancing transparency and ensuring financial sustainability in the context of growing Chinese lending.

Strengthening Debt Transparency

A major issue raised throughout this study is the lack of openness surrounding Chinese loans and related contracts. The opaque structure of these agreements, along with limited public access to the terms and circumstances, makes it difficult for both governments and the general public to properly comprehend the consequences of the debt accumulated. To address this issue, the following actions are suggested:

- **Public Disclosure of Loan Terms:** Both Uzbekistan and Kyrgyzstan should emphasize disclosing the specific terms of Chinese loans, such as interest rates, repayment schedules, grace periods, and collateral requirements. This would increase public accountability and enable more informed policy conversations about debt management.
- **Independent Debt Audits:** Setting up independent bodies to audit Chinese loans, maybe in partnership with international institutions like the World Bank or the IMF, would boost credibility. Regular debt audits should be required by law, allowing an external, independent party to evaluate the economic impact of these loans.
- **Legislative Oversight:** National legislatures should be more involved in overseeing the borrowing process, ensuring that loans are aligned with national development goals. This could entail forming a special parliamentary committee for debt management, which would assess major foreign loans before they are signed.
- **Transparency in Loan Allocation:** To guarantee that loans are deployed properly, both countries should demand transparency into how Chinese financing is being used in diverse industries. Public reporting on spending will help to alleviate concerns

about mismanagement or corruption while also providing clarity on the economic impact of loans.

Enhancing Fiscal Governance

To ensure that the rising debt burden does not endanger fiscal sustainability, Central Asian nations must improve fiscal control. This includes both enhancing public finance management systems and strengthening internal accountability procedures. The following recommendations aim to enhance fiscal governance:

- **Strengthening Public Financial Management (PFM) Systems:** Effective PFM systems are critical for managing public debt and allocating cash efficiently. Both Uzbekistan and Kyrgyzstan should engage in strengthening their PFM systems, with an emphasis on improving debt tracking, assuring timely and accurate fiscal data reporting, and improving coordination among various government institutions.
- **Establishing a National Debt Management Office (NDMO):** A specific NDMO should be formed to concentrate debt management responsibilities. This office would be in charge of tracking all debt, including Chinese loans, and ensuring that it aligns with the country's economic interests. It would also supervise debt restructuring operations, if necessary, and ensure that any new debt issued is sustainable.
- **Fiscal Transparency and Accountability:** Governments can improve fiscal transparency by providing easier access to information about public debt. This involves issuing detailed information on the present level of debt, debt servicing responsibilities, and how borrowed funds are distributed among industries. Regular fiscal policy updates, including projections and debt sustainability evaluations, should be made public in order to create trust and facilitate informed public debate.
- **Building Internal Capacities:** Both countries' fiscal authorities should be trained specifically on debt management and fiscal sustainability techniques. This will ensure that local leaders are prepared to negotiate and manage debt in a way that promotes long-term economic stability.

Recommendations for Future Engagement with China

While Chinese funding has brought much-needed infrastructure investment in Central Asia, the terms of these loans must be carefully scrutinized to avoid becoming unduly

reliant on Chinese capital. The recommendations below describe how Uzbekistan and Kyrgyzstan might engage with China in a more balanced and sustainable manner:

- **Diversifying Credit Sources:** Uzbekistan and Kyrgyzstan should diversify their external credit sources to avoid becoming unduly dependent on Chinese financing. Engaging with multilateral lenders such as the World Bank, the IMF, and the Asian Development Bank, as well as strengthening partnerships with other key economic powers, will lessen reliance on any single creditor.
- **Negotiating Better Loan Terms:** As both countries negotiate future loans with China, they should demand better terms such as lower interest rates, longer repayment periods, and less collateral requirements. This will alleviate the financial load on their economies, allowing countries to satisfy their obligations while maintaining budgetary sustainability.
- **Engagement in Bilateral Economic Dialogues:** Central Asian countries should hold regular discussions with their Chinese counterparts to explore the broader economic and geopolitical ramifications of Chinese financing. This will enable the countries to better align Chinese investment with their national interests and negotiate terms that favor long-term growth and development.
- **Incorporating Sustainability and Green Investments:** Given the growing importance of green funding, Uzbekistan and Kyrgyzstan should advocate for more Chinese funds to be used for environmentally sustainable projects. This is consistent with global trends toward sustainable development and might help the countries' reputations as emerging economies devoted to green growth.

Aligning Debt Management with National Development Goals

To ensure that Chinese loans help both nations achieve their long-term economic and social development goals, debt management measures should be integrated into national development plans. The solutions listed below will help ensure that debt buildup does not jeopardize national sovereignty or long-term development goals:

- **Aligning Borrowing with Development Priorities:** Debt should be used to fund projects that are in line with national development aspirations, such as infrastructure upgrading, renewable energy initiatives, and social services. Loans should be channeled to sectors with long-term economic rewards, such as education, healthcare,

and renewable energy.

- Long-Term Investment in Human Capital: Both countries should use some of their debt to invest in human capital, notably education and skill development, to ensure that the labor force can meet the demands of an expanding economy. While infrastructure investments are important, investing in education and training will lay a solid foundation for future economic growth.

- Public-Private Partnerships (PPP) for Sustainable Development: Public-private partnerships (PPPs) should be encouraged as a means of ensuring that infrastructure projects are both financially viable and in line with national development objectives. By incorporating local enterprises in project implementation, Uzbekistan and Kyrgyzstan can boost domestic sectors while avoiding overreliance on Chinese companies.

- Debt Sustainability Frameworks: Both countries should create debt sustainability frameworks (DSFs) to ensure that borrowing decisions take into account the long-term fiscal and economic implications. These frameworks should define debt targets, such as debt-to-GDP ratios, and provide explicit borrowing guidelines to prevent excessive debt creation.

- Public Participation and Civil Society Engagement: To guarantee that debt management is in line with societal goals, both countries should encourage public engagement in debt-related decisions. Engaging civil society organizations, local communities, and the media in conversations regarding Chinese loans and their impact on development can boost accountability while decreasing the possibility of political capture.

To properly manage their financial engagements with China, Uzbekistan and Kyrgyzstan must strengthen debt transparency, improve fiscal control, and ensure that Chinese financing is aligned with national development aspirations. Both countries may reduce the hazards of debt dependency while achieving sustainable economic growth by diversifying their funding sources, negotiating better loan terms, and ensuring that borrowed money contributes to long-term development. The proposed proposals aim to promote a balanced, transparent, and long-term approach to debt management, ensuring that Chinese finance benefits Central Asia's growth while protecting national sovereignty and economic stability.

Conclusion

The paper examines the complexity of Chinese finance in Central Asia, focusing on the experiences of Uzbekistan and Kyrgyzstan. The findings highlight that, while Chinese investments have made major contributions to infrastructure development, particularly through the BRI, they also represent significant concerns in terms of debt sustainability, transparency, and governance. These countries have seen an influx of Chinese loans, particularly for infrastructure projects, but concerns about the long-term economic ramifications, such as debt dependency and China's political leverage, persist.

One of the main takeaways from this study is the need for increased transparency in Chinese loan arrangements. The absence of precise information on the terms, interest rates, and repayment conditions of Chinese loans has created an ambiguous atmosphere, making it difficult for both the general public and policymakers to determine the true impact of these debts on country economies. Furthermore, the lack of a clear, independent auditing process for Chinese-financed projects has raised allegations of corruption and mismanagement, especially in large-scale infrastructure projects.

Both Uzbekistan and Kyrgyzstan face severe budgetary sustainability issues as their financial institutions are strained by a mounting debt burden. While the loans have helped to create crucial infrastructure, the long-term financial consequences, such as increasing fiscal pressure, lower budget flexibility, and potential crowding out of social expenditures, are problematic. Both countries must prioritize strengthening their fiscal governance frameworks and developing stronger debt management mechanisms, such as instituting independent audits and establishing clear debt targets that align with their national development goals.

The analysis also shows that China's geopolitical influence is a driving force behind the financing plan. The loans are not only an economic instrument, but also a way for China to secure its interests in the region, particularly in terms of security concerns related to its proximity to Xinjiang. This dynamic presents challenges for Central Asian governments, which must combine economic requirements with political sovereignty.

By considering these findings, it is recommended that Uzbekistan and Kyrgyzstan diversify their finance needs by interacting with a broader range of foreign partners to reduce their dependency on China. Furthermore, both countries should demand greater transparency and responsibility in their dealings with China, ensuring that loans are in line with sustainable development goals and do not jeopardize fiscal health or sovereignty. Finally, Uzbekistan and Kyrgyzstan's experiences provide vital lessons for the larger Central Asian region which must strike a difficult balance between economic progress and the hazards connected with foreign debt.

Bibliography

AidData. (2011). China Exim Bank provides \$110.5 million for Dehkanabad Potash Fertilizer Plant (Phase II) — Uzbekistan (Project ID#40128). <https://china.aiddata.org/projects/40128/>

———. (2012). Two sections of highway rehabilitation project — Kyrgyzstan (Project ID#40195). <https://china.aiddata.org/projects/40195/>

Amerika Ovozi. (2022, January). China's financial diplomacy helps establish influence in Central Asia. *Voice of America*. <https://www.amerikaovozi.com/a/china-central-asian-strategy/6418858.html>

Akchabar. (2025). Kyrgyzstan faces record foreign debt payments in 2030. <https://www.akchabar.kg/en/news/kirgizstanu-predstoyat-rekordnie-viplati-po-vneshnemu-dolgu-v-2030-godu-yeedbslmzjxwvmrv>

Gao, Zhan. (2023). Full text: The Belt and Road Initiative: A key pillar of the global community of shared future. State Council Information Office of the People's Republic of China. http://english.scio.gov.cn/whitepapers/2023-10/10/content_116735061_6.htm

Gelpern, A., Horn, S., Morris, S., Parks, B., & Trebesch, C. (2021). *How China lends: A rare look into 100 debt contracts with foreign governments*.

AidData. https://docs.aiddata.org/ad4/pdfs/How_China_Lends_A_Rare_Look_into_100_Debt_Contracts_with_Foreign_Governments.pdf

Gretsky, S. (2022, March 2). China's debt-trap diplomacy and Central Asia. *Jamestown Foundation*. <https://jamestown.org/program/chinas-debt-trap-diplomacy-and-central-asia/>

Gruzer, M. (2024, August 14). Could Uzbekistan's growing debt to China push Tashkent to search for alternative partners? *Bloomsbury Intelligence & Security Institute*. <https://bisi.org.uk/reports/could-uzbekistans-growing-debt-to-china-push-tashkent-to-search-for-alternative-partners>

Kaleji, V. (2024, October 23). China's debt-trap diplomacy in Central Asia. *The Central Asia-Caucasus Analyst*. <https://www.cacianalyst.org/publications/analytical-articles/item/13823-chinas-debt-trap-diplomacy-in-central-asia.html>

Karibayeva, A. (n.d.). *Public attitudes toward China in Central Asia*. The Caspian Policy Center. <https://api.caspianpolicy.org/media/uploads/2020/05/Public-Attitudes-Toward-China-in-Central-Asia.pdf>

Kenderdine, T. (2020, December 12). China's policy banks are lending differently, not less. *The Diplomat*. <https://thediplomat.com/2020/12/chinas-policy-banks-are-lending-differently-not-less/>

Kurbanov, S. (2018). China's Belt and Road Initiative and its impact in Central Asia. In *China's Belt and Road Initiative and its impact in Central Asia* (Chapter 9). Central Asia Program. https://centralasiaprogram.org/wp-content/uploads/2018/01/OBOR_CAP_2018.pdf

Melnikovová, L. (2020). China's interests in Central Asian economies. *Human Affairs*, 30(2), 239–252. <https://doi.org/10.1515/humaff-2020-0022>

Ministry of Economy and Finance of Uzbekistan. (2023). *The state debt of the Republic of Uzbekistan*.

https://api.mf.uz/media/document_files/State_debt_2022_ENG_bHBBgRd.pdf

Muratalieva, N. (2024, August 19). Chinese lending adapts to Central Asia's realities. *Carnegie Endowment for International Peace*.

<https://carnegieendowment.org/posts/2024/08/china-investment-central-asia-debt?lang=en>

Sabyrbek, Ch., & Karimov, N. (2024, July 23). The risks of China's loans to Uzbekistan. *The Diplomat*. <https://thediplomat.com/2024/07/the-risks-of-chinas-loans-to-uzbekistan/>

Sanchez, W. A. (2024, February 27). Can Central Asia escape China's debt trap? *NE Global Media*. <https://www.neglobal.eu/can-central-asia-escape-chinas-debt-trap/>

Shamiev, S. (2020). *China's Belt and Road Initiative in Central Asia: Ambitions, risks and realities*. OSCE Academy. https://www.osce-academy.net/upload/file/BRI_08_07.pdf

SpecialEurasia OSINT Team. (2024, November 19). Chinese expansion in Central Asia through Kyrgyzstan. *SpecialEurasia*. <https://www.specialeurasia.com/2024/11/19/chinese-investments-kyrgyzstan/>

Standish, R. (2022, August 3). China's Belt and Road grapples with mounting debt crisis, impacting Central Asia, Pakistan, and beyond. *Radio Free Europe/Radio Liberty*. <https://www.rferl.org/a/china-debt-crisis-belt-road-initiative-kyrgyzstan-pakistan-/31970756.html>

Tanbaev, O. (2024). China's debt trap: Kyrgyzstan's example as a lesson for Uzbekistan. *ProReforms.uz*. <https://proreforms.uz/publications/chinas-debt-trap-kyrgyzstans-example-as-a-lesson-for-uzbekistan-329>

Tian, H. (2018). China's conditional aid and its impact in Central Asia. In *China's Belt and Road Initiative and its impact in Central Asia* (Chapter 2). Central Asia Program. https://centralasiaprogram.org/wp-content/uploads/2018/01/OBOR_CAP_2018.pdf

Urban, W. (2025, March 19). *PB 66: China's Belt and Road Initiative revisited*. FIW. <https://www.fiw.ac.at/en/publications/fiw-pb-66-chinas-belt-and-road-initiative-revisited/>

World Bank. (2020, June). *South Caucasus and Central Asia — The Belt and Road Initiative: Uzbekistan country case study*. World Bank Group. <https://openknowledge.worldbank.org/entities/publication/b4b6d7b5-c017-5289-aea5-a9ffa1b31bde>

Yang, J. (2022, October 10). China leading the race for influence in Central Asia. *DIIS*. <https://www.diis.dk/en/research/china-leading-the-race-influence-in-central-asia>

Yau Tsz Yan, N. (2020). China's Belt and Road Initiative in Central Asia: Ambitions, risks and realities (p. 32). OSCE Academy. https://www.osce-academy.net/upload/file/BRI_08_07.pdf

Energy Cooperation Between China and Kazakhstan

Abstract

This paper examines Chinese energy investment in Kazakhstan, analyzing how Chinese firms have structured their participation across both renewable and traditional energy sectors between 2018 and 2027. Kazakhstan faces a growing electricity deficit and is actively diversifying its generation mix away from dependence on Russian imports, creating conditions for expanded foreign investment. China's engagement has evolved from early dominance in oil and gas toward a more complex landscape encompassing solar, wind, gas-fired, and thermal modernization projects. Using a fourfold investment typology — Developer/EPC+F, EPC+F Contractor, EPC Contractor, and OEM Supply — the paper analyzes project-level case studies to assess how financing mechanisms, ownership structures, and Power Purchase Agreement frameworks shape outcomes on the ground. The findings reveal a dual structure of engagement: privately owned enterprises participate primarily through competitive auction-based PPAs, while state-owned enterprises dominate large-scale projects secured through intergovernmental agreements offering sovereign guarantees and premium tariffs. Chinese firms are expected to contribute nearly 7 GW of installed capacity and approximately \$8 billion in investment over the study period. While this engagement has accelerated Kazakhstan's capacity expansion and introduced advanced technologies including battery energy storage systems, concerns persist regarding local value creation, technology dependency, and energy sovereignty. The paper concludes that Kazakhstan must strengthen localization requirements and technology transfer mechanisms to ensure that Chinese investment generates durable developmental benefits rather than deepening structural dependency.

Introduction

Kazakhstan is actively expanding its power generation capacity in response to rising domestic electricity demand and recurring deficits. Kazakhstan's energy consumption reached 120.5 billion kWh in 2024, while production was only around 118 billion kWh, creating a deficit of 2.4 billion kWh.¹ In recent years, the country has been importing electricity from Russia at high cost, especially during winter peak periods, with imports reaching 4.7 billion kWh in 2023, a 3.6-fold increase since 2017.² Although electricity trade was previously governed by the 2009 "Parallel Operation" agreement, following the 2022 invasion of Ukraine and subsequent sanctions these imports became subject to a revised intergovernmental framework, with stricter regulation, and centralized purchasing.³ To address this challenge, Kazakhstan's Ministry of Energy introduced a roadmap until 2035.⁴ It outlines plans to reduce import dependency by developing new, modernizing existing power plants, and diversifying the energy mix with renewables and traditional generation.

China's energy cooperation with Kazakhstan began in oil and gas in the early 2000s but has since diversified into traditional and renewable energy. The shift toward cleaner energy has been especially pronounced since President Xi Jinping's 2021 pledge at the UN General Assembly that China would "not build new coal-fired power projects abroad".⁵ While this prohibits outbound coal financing, Chinese firms can still participate in coal-related contracts without financing, which allows continued engagement in Kazakhstan's legacy infrastructure modernization.

The dominant investment model used by Chinese companies in Kazakhstan today is EPC+F (Engineering, Procurement, and Construction plus Financing), particularly in renewable energy projects.⁶ This approach is consistent with China's evolving Belt and Road Initiative (BRI) strategy, which now promotes low-carbon investments backed by concessional loans or partnerships with multilateral lenders such as the Asian Infrastructure Investment Bank (AIIB) and the European Bank for Reconstruction and Development (EBRD).⁷

This report investigates China's role in Kazakhstan's energy sector with a comparative focus on traditional and renewable energy (only solar and wind) projects. It looks into what types of power plants China invests in, how these deals are structured, and how they align with Kazakhstan's goals for energy independence and carbon neutrality by 2060.⁸ By analyzing project structures, ownership models, and project-level case studies, the report provides insight into the risks and opportunities of China-Kazakhstan energy cooperation in the context of Central Asia's low-carbon transition.

Literature Review

Theoretical Frameworks

The literature on China-Kazakhstan cooperation draws from several theoretical frameworks to understand the complex dynamics of bilateral relationships.

O'Neil analyzes the relationship through political economy, showing how Chinese State-Owned Enterprises (SOEs) such as CNPC embed investments in Kazakhstan's elite networks and joint ventures (JVs) with KazMunaiGas to mitigate political risks and secure resource access.⁹ In other words, China isn't just investing money, it's building protective, long-lasting frameworks that help safeguard its political interests and ensure reliable access to Kazakhstan's energy resources.¹⁰

More recent academic work by Mat & Khalid brings in international relations theories, specifically Energy Securitization and Complex Interdependence Theory.¹¹ Their approach shows how China's BRI has become a vital tool for the country's energy security, but it also makes China and Central Asian countries like Kazakhstan more connected, in ways that bring both new opportunities and new

risks. For Kazakhstan, these risks include dependency on Chinese financing, exposure to sudden changes in Chinese policy, and domestic concerns over limited community participation. Darke & Karatayev add a quantitative dimension by constructing a Sustainable Energy Security (SES) index, which finds that Kazakhstan has expanded its energy access and diversification partly with Chinese support, yet lags behind China in affordability and resilience, underscoring the need for long-term domestic reforms.¹²

Critical Dependency Assessments

Bohnenberger-Rich adopts a skeptical view, arguing that China uses its financial and economic weight to secure political as well as economic influence, creating dependency that advances Beijing's strategic interests.¹³ Rousseau provides a nuanced assessment, acknowledging the significant opportunities that China-Kazakhstan economic cooperation, particularly in the energy sector, brings for Kazakhstan's growth and modernization.¹⁴ Yet, he emphasizes that excessive reliance on China creates potential pitfalls; such dependence may restrict Kazakhstan's policy autonomy and complicate its long-term development. Thus, the author characterizes the bilateral relationship as a delicate balancing act, where Kazakhstan must strive to harness the advantages of Chinese investment while mindfully avoiding over-dependence that could hinder strategic flexibility. Noroozi & Askari¹⁵ and Rathore¹⁶ similarly note that China promotes Kazakhstan's multilateral diplomacy to safeguard both economic and security interests. However, Rachel et al. warns that deepening China-Kazakhstan economic ties may result in unintended consequences, such as increased competition between major powers in Central Asia and possible anti-Chinese sentiment within Kazakhstan if perceptions of dependency grow.¹⁷

Evolution of China-Kazakhstan Energy Relations

Traditional Energy Cooperation Phase (1990s-2018)

Early cooperation was dominated by large-scale oil and gas investments. Nabyeva shows that under the BRI, fossil fuels continued to prevail, often with weak transparency and environmental oversight.¹⁸ The Global Investment Tracker¹⁹ data shows that between 2013-2020, over half of China's \$18.69 billion investment in Kazakhstan was allocated to the energy sector, with \$9.53 billion specifically directed toward fossil fuel projects.

Chalgynabayeva & Bai²⁰ provide quantitative evidence for this relationship using Vector Autoregression (VAR) modeling to analyze the drivers of China's energy investments. Their findings demonstrate that China's trade openness and market size are key drivers of Kazakh energy exports, while Kazakhstan's GDP per capita and institutional environment significantly shape inbound Chinese Foreign Direct Investment. Critically, they conclude that Kazakhstan offers a favorable legal and

economic environment for Chinese capital, though more domestic financing for renewables is needed to avoid dependency.

The scale of traditional fossil-based energy cooperation is substantial. According to official data, over 150 million tons of oil have been transported through the Kazakhstan-China pipeline since its inception, and more than 44 billion cubic meters of gas have been delivered via the Sarybulak-Zimunai and Kazakhstan-China gas pipelines since 2013.²¹ Thus, CNPC alone accounts for 16% of all oil production in Kazakhstan.

Renewable Energy Transition Phase (2018-Present)

Since 2018, there has been a notable shift toward renewable energy investments, driven by multiple factors including Kazakhstan's energy security concerns and China's evolving BRI strategy. Nabiyeva²² identifies this gradual pivot toward renewable energy, citing emerging partnerships in solar (SPP) and wind (WPP) power plant projects, particularly involving PowerChina and Risen Energy. However, the author notes that most of these initiatives rely heavily on multilateral co-financing from institutions such as European Bank for Reconstruction and Development (EBRD) and the Green Climate Fund (GCF), suggesting that Chinese renewables investments remain secondary to broader geopolitical and resource access interests. Their perspective suggest that Chinese green energy cooperation may be more symbolic than substantive. This paper finds that in recent years Chinese companies have become more active in Kazakhstan's renewable energy sector, making growing commitments to renewable projects that mark a tangible shift in their perspective.

Sharifli²³ demonstrates that China's approach to renewable energy collaboration differs markedly between Kazakhstan and Uzbekistan, showcasing adaptable strategies within Central Asia. In Kazakhstan, Chinese companies primarily act as project developers driven by government-to-government (G2G) green agenda initiatives, while they adopt different roles as EPC contractors and input suppliers in more competitive markets such as Uzbekistan.²⁴ Since 2020, Beijing has reoriented its domestic energy policy under the "dual-carbon" targets and 14th Five-Year Plan, scaling renewables, grids, energy storages, and supporting industries through its national Emissions Trading System (ETS) and green industrial policies.²⁵ Externally, this has been framed as a "Green BRI," with long-term strategy focusing on exporting energy technologies to embed its supply chains and standards in partner countries.²⁶

Investment Models and Financing Mechanisms

The EPC+F model is widely recognized as the dominant mode of Chinese energy investment in Kazakhstan. **Leutert**²⁷ argues that the EPC+F approach represents

a key Chinese institutional innovation in international project finance. The author explains that Chinese contractors “bundle turnkey delivery with supplier credit to secure overseas orders, while multilateral co-lending reduces sovereign risk for host governments”. The author links this bundled method to larger project pipelines and heightened confidence among both host-country governments and their lenders.

Nabiyeva²⁸ shows that while Privately Owned Enterprises (POEs) account for 65% of cross-border renewables investment, they face greater administrative barriers than SOEs, which are supported by state finance and policy to deliver large strategic projects. **Ullah et al.**²⁹ further stress the importance of ownership structure: POEs tend to be more flexible but less protected, while SOEs are risk-averse and align with state backing. Sarybayev’s mapping of BRI projects across multiple sectors shows how Chinese capital has reshaped these investment patterns and reinforced financing models in Kazakhstan’s economy.³⁰

The literature highlights that the differential treatment of Chinese SOEs and POEs in Kazakhstan reflects deeper institutional preferences embedded in the country’s state-centric economic model. With Samruk-Kazyna alone controlling around 14% of GDP, Kazakhstan’s economy is structurally dominated by SOEs, creating institutional comfort with SOE-to-SOE interactions.³¹ This reflects that SOEs are favored as more predictable partners backed by sovereign guarantees, while POEs are treated with caution and subjected to filtering mechanisms that limit their role.

Despite the breadth of existing scholarship, several gaps remain in understanding the China-Kazakhstan energy partnership. Much of the existing research has concentrated on macro-level dynamics such as dependency, geopolitical influence, or energy security frameworks. Other studies have documented the historical dominance of fossil fuel projects, while more recent work has noted the gradual diversification into renewables. However, these accounts remain largely descriptive and often stop short of analyzing how specific project structures, financing mechanisms, and contractual arrangements shape outcomes on the ground.

Few studies provide a systematic comparison of investment models such as Developer-led, EPC+F, EPC-only, and OEM supply within Kazakhstan. Nor do they sufficiently connect these modalities to the country’s evolving regulatory frameworks, including the introduction of auction-based PPAs, or to its broader strategic objectives of reducing import dependency. This report addresses that gap by conducting a case study of project-level of Chinese participation across renewable and traditional energy sectors.

Methodology

Project Classification Framework

A central component of this report is the classification of Chinese energy investments in Kazakhstan according to the role of participating entities and the organizational structure of each project. Both SOEs and POEs are active as developers, contractors, and equipment suppliers, with their positions determining financing models, ownership arrangements, and risk allocation. Building on existing literature, this report applies a fourfold typology.

- **Category 1: Developer (EPC+F).**

In this model, Chinese firms are project owners, and they combine project origination with turnkey Engineering, Procurement, and Construction plus Finance delivery, frequently retaining majority equity stakes and assuming Operations and Maintenance (O&M) responsibilities after commissioning. They typically identify investment opportunities, and secure long-term Power Purchase Agreements (PPAs), while bundling financing through loans from Chinese policy banks and commercial lenders. This approach enables developers to maintain strategic control by linking equity participation with operational oversight.³² Separation of EPC and investment functions is unusual, as integrated EPC+F delivery is generally considered a core strategic advantage.

- **Category B: EPC-F Contractor.**

Projects are initiated by third-party developer such as SOEs/POEs, or consortiums, while Chinese companies secure the EPC contract and facilitate concessional financing.³³ Equity involvement may be partial, but project financing often hinges on Chinese participation, sometimes requiring majority ownership or the introduction of a third-party Chinese investor. This hybrid model is especially common in renewable energy and gas-fired generation, where local sponsors benefit from Chinese technical expertise and access to low-cost credit but prefer to retain operational control.³⁴

- **Category C: EPC Contractor.**

Chinese companies provide EPC services without supplying finance.³⁵ Third-party project developer arrange financing independently, drawing on domestic resources or multilateral development institutions. Chinese contractors compete primarily on cost, technical capacity, and delivery reliability.³⁶ This model is typical

for traditional energy projects, such as coal-fired plants, where Chinese companies cannot invest. Strategic involvement usually concludes at the point of project handover.³⁷

- **Category D: OEM Supply Contracts.**

In a distinct form of participation, Chinese companies may engage in Kazakhstan's energy sector solely as Original Equipment Manufacturers (OEMs) supplying critical equipment such as Wind Turbines Generators (WTGs), PV modules, inverters, Battery Energy Storage Systems (BESS), etc. While such arrangements do not constitute foreign direct investment in the narrow sense, they represent a significant mode of industrial penetration. Through the provision of critical equipment, Chinese firms influence project engineering, technological configuration, performance standards, and long-term maintenance practices. This influence can extend into operations through warranties, proprietary digital systems, and after-sales services.³⁸ In recent years, Chinese OEMs have consolidated their position at the top of global renewable energy supply chains, with companies such as Goldwind, Envision, and Mingyang collectively sweeping the global wind industry podium for the first time, while Trina Solar, LONGi, and Sungrow dominate international solar markets.³⁹

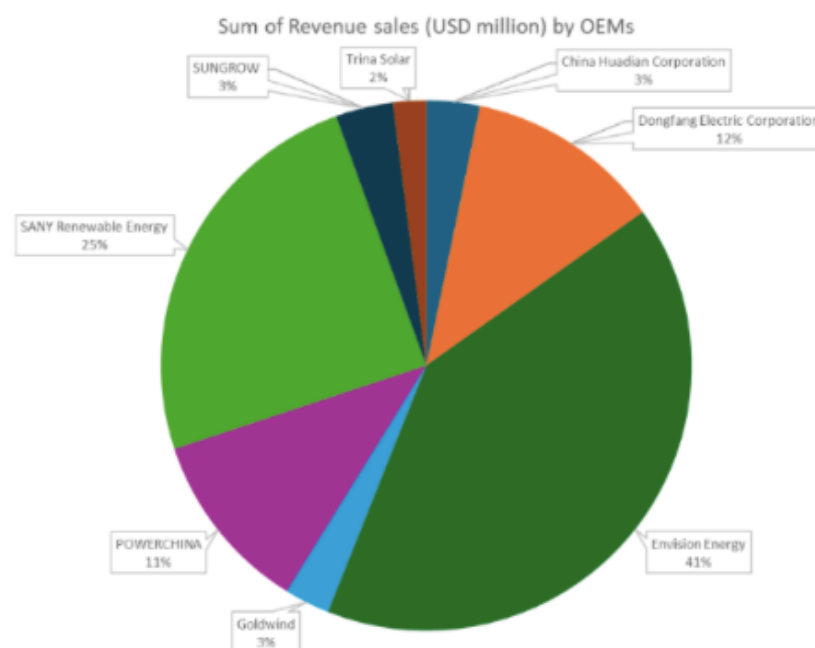


Figure 1. Revenue Share of Chinese OEMs in Kazakhstan's Energy Projects between 2018-2027

The Figure 1 illustrates the estimated distribution of revenues among Chinese OEMs active in Kazakhstan's energy sector between 2018 and 2027. Envision Energy, Goldwind and SANY Renewable Energy hold the largest shares due to their dominance in WTGs supply, while Sungrow, and Trina Solar demonstrate the breadth of Chinese penetration in solar technologies. POWERCHINA, Dongfang

Electric Corporation, and China Huadian Corporation account for smaller shares, primarily supplying equipment for traditional power generation (Appendix 1). Although gaps remain in project-level data, suggesting actual totals may be higher, the available evidence underscores the concentration of Chinese OEM activity in renewables alongside a continuing, though more limited, role in traditional energy projects.

Power Purchase Agreements (PPAs) in Kazakhstan

PPAs are essential to the bankability of energy projects, as their structure and enforceability determine the security of future revenues. In Kazakhstan, where Chinese firms often operate under the developer-led model, the design of PPAs is central to assessing investment viability. The country employs three principal mechanisms: auction-based PPAs, corporate PPAs, and intergovernmental agreements.

Auction-based PPAs

Auction-based PPAs form the backbone of renewable procurement. Established under the 2009 Law on Support of Renewable Energy Sources, Kazakhstan operates a single-buyer system through the Financial Settlement Center (FSC).⁴⁰ Since 2018, tariffs have been determined by competitive auctions organized by JSC "Kazakhstan electricity and power market operator" (KOREM). These auctions cover renewables and maneuverable generation, particularly CCGT plants, which are compensated through both energy tariffs (tenge per kWh) and capacity payments (tenge per MW monthly).⁴¹ Winning bidders sign standardized PPAs with the FSC, 20 years for renewable projects and 15 years for CCGT, offering guaranteed PPA offtake, indexation to Consumer Price Index (CPI) or the U.S. dollar.

Corporate PPAs

Corporate PPAs allow direct agreements between energy producer and private off-taker (buyer). In practice, these are used mainly by large domestic corporations such as the Eurasian Resources Group (ERG), which consume substantial amounts of electricity for their industrial operations. For instance, ERG is developing a 150 MW wind project in Khromtau to integrate renewable energy into its production processes, thereby reducing its carbon footprint and mitigating exposure to the EU's Carbon Border Adjustment Mechanism (CBAM) in line with broader ESG commitments.⁴² While corporate PPAs lack sovereign guarantees and involve more complex credit risk assessments, they can be bankable when backed by financially robust buyers.

Intergovernmental/Investment PPAs

Intergovernmental agreements (IGAs) represent the third pathway and are generally used for strategic, large-scale projects negotiated directly with the state

or quasi-state entities such as Samruk-Energy(subsidiary of Samruk-Kazyna), which controls 36 percent of national generation capacity.⁴³ IGAs sit outside the auction process and provide enhanced protections: longer PPA, higher tariffs (more than 4 cents per kWh), indexation in U.S. dollars, and preferential treatment in land allocation and permitting. These agreements, however, require parliamentary ratification and lengthy negotiations, limiting their use to politically significant projects. Compared to auction-based PPAs, which guarantee 20-year terms, IGAs usually provide 25-year contracts with higher tariffs.

Project Selection and Data Collection

The empirical scope of this report covers Chinese participation in Kazakhstan's energy infrastructure projects between 2018 and 2027, a period marked by Kazakhstan's transition to auction-based PPAs, as well as China's pledge to halt overseas coal financing. These developments created distinct investment conditions that shaped the research design.

Project selection followed a purposive, criterion-based strategy. A project was included if it met three conditions:

- (1) it was located in Kazakhstan;
- (2) it involved at least one Chinese entity acting as Developer, EPC+F, or EPC contractor;
- (3) it had available data on capacity, ownership, financing, or PPA structure. Both renewable energy (only wind and solar) and traditional energy projects (only coal and gas) were incorporated in order to allow cross-sectoral comparison.

Data collection relied on triangulation of multiple sources. Open-source materials, such as corporate websites, press releases, and project announcements, were cross-verified with databases maintained by international institutions and disclosures from Kazakh regulators. Policy documents, bilateral agreements, and regulatory acts were reviewed to situate project-level evidence within the institutional context. Expert consultations and the researcher's professional experience in Central Asian energy development provided practitioner insights.

The analysis combined quantitative and qualitative methods. Project-level data were catalogued in a structured dataset (Appendix 1) and coded by year, technology, project type, Chinese partner role, investment structure, and PPA mechanism. This enabled aggregation of installed capacity, financial contributions, and distribution across investment models and technologies. Qualitative case studies examined contractual arrangements, financing mechanisms, and institutional dynamics. Projects with insufficient or unverifiable data were excluded from systematic comparison to ensure analytical consistency.

Several methodological limitations remain. Financial data are often undisclosed, especially for privately negotiated contracts and intergovernmental agreements, reducing precision in investment estimates. Reliance on open-source materials carries risks of gaps or outdated information. Practitioner insights, while valuable,

introduce a degree of subjectivity. These constraints do not undermine the overall validity of findings but highlight the need for cautious interpretation and the value of further research using primary data.

Results

Chinese firms have demonstrated adaptability in structuring participation across diverse technologies and project scales, from pilot initiatives to gigawatt-level developments that are reshaping Kazakhstan's energy landscape. The dataset compiled for this study (Appendix 1) indicates that between 2018 and 2027, Chinese companies are expected to add nearly 7 GW of installed capacity out of Kazakhstan's 20.4 GW total and commit around \$8 billion in energy investments.⁴⁴ The following section presents case studies illustrating the modalities and implications of this evolving engagement.

Renewable Energy Projects by Developer/EPC+F

Auction-based PPA

The case of Universal Energy, a POE, illustrates a distinct foreign-led development model in Kazakhstan's renewable sector. Projects are structured through locally incorporated SPVs, allowing the company to manage land acquisition, permitting, EPC, and O&M directly. Unlike many SOEs, Universal Energy develops projects without sovereign guarantees or equity participation from Kazakh counterparts, relying instead on the auction-based PPA framework.

The 30 MW Zhangiztobe Solar Power Plant (SPP) was financed through a KZT 4.4 billion local-currency loan from the EBRD, supplemented by a \$5 million concessional loan from the GCF, demonstrating a blended finance strategy that mitigates foreign exchange risk.⁴⁵ The company has also worked with domestic banks, as seen in the 100 MW Nurgisa SPP financed by the Development Bank of Kazakhstan.⁴⁶ In 2025, Universal Energy secured an auction award for a 1 GW Wind Power Plant (WPP) project with a 600 MWh BESS, the largest renewable facility planned under the auction system, which now requires prior developer experience and grid-scale storage for projects above 500 MW.⁴⁷

Intergovernmental/Investment PPAs

In contrast to POEs operating within Kazakhstan's competitive auction framework, Chinese SOEs often adopt an alternative model based on IGAs, and JV with Kazakh

SOEs such as Samruk-Energy. This approach bypasses competitive bidding while securing long-term contractual stability and sovereign guarantees.

A prominent case is China Datang Corporation's planned 1 000 MW SPP with a 500 MW BESS, supported by 180 kilometers of transmission lines and five substations.⁴⁸ China Power International Holding is developing two 500 MW WPPs, each with 150 MW/300 MWh BESS at a tariff of 4.25 US¢/kWh. Similarly, China Energy Overseas Investment is constructing a 300 MW SPP in Turkestan, combined with a 90 MW/360 MWh BESS at a tariff of 5.63 US¢/kWh.⁴⁹

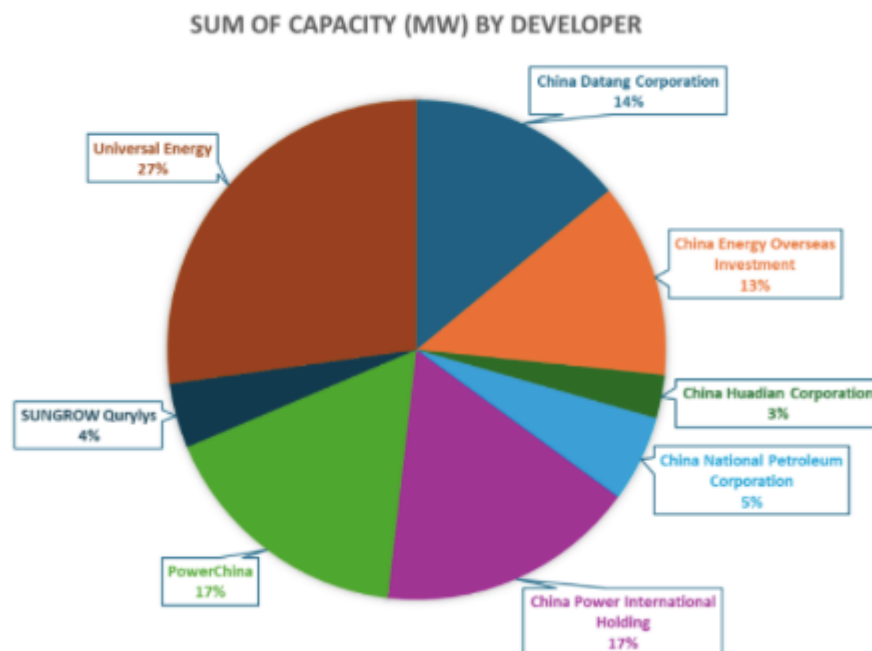


Figure 2. Distribution of Installed Capacity in Kazakhstan by Chinese Developer Companies

Figure 2 highlights two distinct pathways. POEs (Universal Energy and SUNGROW Qurylys) rely on competitive auctions, reflecting market responsiveness and the capacity to mobilize blended international and domestic finance. SOEs (China Datang, China Energy, China Huadian, CNPC, China Power and PowerChina) dominate through IGAs, underscoring the importance of concessional finance, sovereign guarantees, and political alignment. POEs focus on renewables and SOEs engage in both renewables and traditional generation. The overall pattern demonstrates the adaptive and multi-layered nature of Chinese participation, combining market-led investment with strategically embedded state-backed projects. Chinese companies are strong as project developers in the renewable sector, where their scale and access to blended finance give them a competitive edge.

Traditional Energy Projects by Developer/EPC+F and EPC Contractor

CCGT by Developer/EPC+F

China Huadian Corporation is developing a 160 MW combined-cycle gas turbine (CCGT) plant in Aktau, Mangistau region, to alleviate chronic electricity shortages that have caused rolling blackouts. With an investment of \$190 million, the project is structured as a JV between China Huadian (70 percent) and MAEK LLP (30 percent) under the newly established Aktau Energy Company LLP.⁵⁰

The plant incorporates hybrid energy concepts, with a second phase envisioning the addition of a WPP to enhance grid stability and enable greater renewable penetration. Financing is provided through long-term concessional loans from a Chinese policy bank, with maturities of 15–25 years at interest rates below 5 percent. This structure underlines the competitive advantage of Chinese SOEs in securing favorable finance and illustrates a replicable template for future gas power investments in Central Asia, reinforcing long-term China–Kazakhstan energy cooperation.

Coal-to-Gas Conversion and CHP by EPC Contractor

PowerChina's leadership of the Almaty CHP-2 modernization represents the largest clean energy infrastructure transformation in Kazakhstan. The coal-to-gas conversion highlights Chinese EPC capacity in complex thermal modernization. Implementation is managed by a consortium of three specialized Chinese firms: Dongfang Electric International Corporation providing equipment manufacturing, PowerChina Sepco1 contributing EPC project experience, and PowerChina Hebei Electric Power Engineering Co., Ltd. delivering engineering services. This configuration demonstrates the advantages of Chinese supply chain integration and comprehensive technical capacity.⁵¹ Financing illustrates international confidence in Chinese EPC contractors. The \$900 million investment is supported by the EBRD, Asian Development Bank, and the Development Bank of Kazakhstan, reflecting the adaptability of Chinese firms to multilateral financing standards.⁵²

A second initiative, the Kokshetau Combined Heat and Power (CHP) plant, underscores Kazakhstan's reliance on Chinese EPC expertise. It will deliver 240 MW of electricity and 520 Gcal/h of thermal output. The 356 billion tenge (\$655 million) project employs a 75/25 debt-to-equity structure combining Samruk-Kazyna equity. Long-term capacity payments under Kazakhstan's regulated tariff framework provide security for lenders. Project implementation is divided among the Shandong Yangguang Engineering Design Institute (Engineering), PowerChina SEPCO1 (Procurement), and Henan Province Installation Group (Construction). Initially considered for Russian contractors, the project shifted to Chinese leadership after financing obstacles, reflecting Kazakhstan's strategic

reorientation toward Chinese partners.⁵³ While Chinese firms refrain from direct investment in coal-related projects in line with Beijing's overseas coal policy, the equity share will be covered by Samruk-Energy, ensuring the project's financial viability.

Comparative Analysis of Investment Models and Strategic Implications

Roles of Chinese Companies in Project Delivery

The evidence shows that Developer/EPC+F models dominate in Kazakhstan's renewable sector for both POEs and SOEs, while EPC contracting remains more common in traditional energy projects (CHP). Each model presents distinct advantages and limitations. The EPC approach, as seen in the Kokshetau CHP, allows Chinese firms to apply EPC expertise. This model is particularly effective as Chinese companies cannot finance coal-related projects.

Developer-led approaches, illustrated by Universal Energy and China Datang, require higher capital commitments and risk tolerance but allow companies to capture value across the full project life cycle. Success depends on navigating Kazakhstan's regulatory framework and blending international, local, and Chinese financing sources.

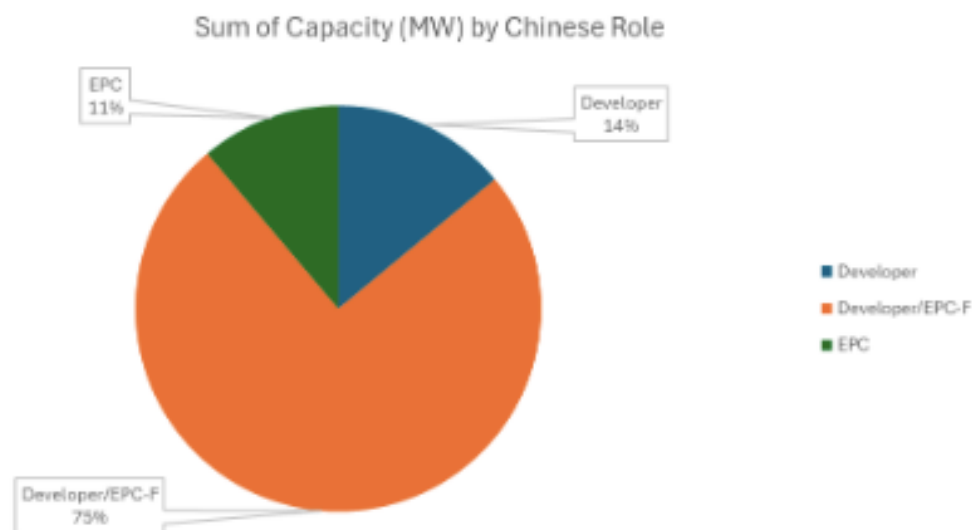


Figure 3. Distribution of Installed Capacity in Kazakhstan by Chinese Company Role

The Figure 3 shows that most capacity is delivered through Developer/EPC+F models, reflecting the competitiveness of Chinese firms when construction capabilities are coupled with finance. EPC-only delivery remains concentrated in traditional energy projects, confirming Chinese indispensability in technically complex modernization and regulatory commitment. Large-scale renewables planned by TotalEnergies, ACWA Power, and Masdar are also likely to depend on Chinese EPC contractors due to project scale and complexity (they are not presented in the current distribution as EPC tender is ongoing). Auction-based

and IGAs PPAs remain most attractive to Chinese developers because they ensure bankability and tariff indexation. Gas-fired projects, by contrast, historically lacked such provisions, though new regulations in 2025 will introduce CPI- or USD-based indexation during construction, expected to enhance investor interest.⁵⁴

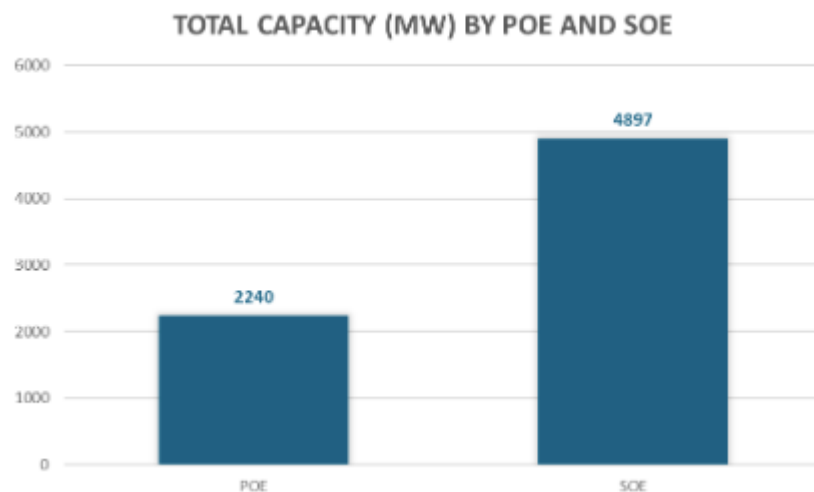


Figure 4. Distribution of Installed Capacity in Kazakhstan by Chinese Private (POE) and State-Owned Enterprises (SOE)

The Figure 4 indicates that SOEs account for most installed capacity, leveraging sovereign guarantees and IGAs to mobilize large-scale finance. POEs, though representing a smaller share, are increasingly important in auction-based renewables projects. This division of roles highlights a complementary dynamic: SOEs dominate through scale and political alignment, while POEs contribute to the diversification of Kazakhstan's renewable portfolio.

Technology Transfer

Chinese energy investments in Kazakhstan have catalyzed significant technology transfer and local capacity building initiatives, particularly in the manufacturing of energy components and workforce development. In 2024, Sany Renewable Energy commenced construction of a wind turbine component factory in the Jambyl Region, with an estimated investment of USD 114 million and operations expected to begin by late 2025.⁵⁵ Similarly, in early 2025, Envision Energy, in partnership with Kazakhstan Utility Systems, launched the development of a manufacturing complex designed to produce up to 2 GW of wind turbines and 1 GWh of BESS annually.⁵⁶ With operations planned for 2026, the facility will serve both Kazakhstan's domestic market and regional exports to Central Asia and the Caucasus.

Capacity building extends to human capital. Chinese developers have implemented training initiatives across multiple projects; Universal Energy alone has trained more than 500 workers and created permanent O&M positions at facilities such as the Kapshagai and Zhangiz-Tobe SPPs.⁵⁷

Nonetheless, systemic limitations persist. Localization remains focused on low- to medium-value assembly, while high-value elements such as control systems and

digital software continue to be imported from China. Training programs are largely confined to construction and O&M, with limited transfer of advanced design or integration skills. Moreover, supply chain initiatives are driven primarily by Chinese firms' commercial priorities rather than Kazakhstan's industrial policy, reinforcing dependence on Chinese technology. Greater regulatory incentives, transparent local content requirements, and investment in domestic R&D are needed to translate current initiatives into durable technological capabilities.

3.3.3. Financial Innovation and Risk Management

Chinese firms in Kazakhstan's energy sector employ financial structures tailored to project scale and institutional context. SOEs benefit from concessional finance provided by policy banks such as the China Development Bank (CDB) and the Export-Import Bank of China, which gives them a distinct competitive edge. These funds are frequently channeled through affiliated contractors and suppliers, particularly in Developer/EPC+F models where vertically integrated consortia internalize much of the value chain. While formally allocated to projects in Kazakhstan, a significant share of capital circulates within China, as procurement remains tied to Chinese manufacturers and banking institutions. This limits direct inflows into Kazakhstan's financial sector and constrains the development of local capital markets and tenge-denominated lending.

POEs adopt more diversified instruments, including commercial loans, supplier credits, and equity-backed project finance, but face obstacles within Kazakhstan's banking system. Domestic lenders rarely extend long-term finance to Chinese firms due to high interest rates, limited familiarity with corporate governance practices, and elevated risk perceptions. The sector's inability to provide low-cost, long-tenor credit further discourages engagement with local banks, restricting integration into Kazakhstan's financial system and reducing opportunities for local-currency financing.

Chinese firms are also shaped by outbound investment regulations introduced by the National Development and Reform Commission (NDRC) in 2017.⁵⁸ The Administrative Measures for Outbound Investment require central-level review of projects exceeding USD 300 million, while the Catalogue of Sensitive Industries restricts investments in real estate, entertainment, and coal.⁵⁹ Combined with capital controls from the State Administration of Foreign Exchange, these measures channel overseas investment into BRI-aligned sectors and low-carbon projects.⁶⁰

For Kazakhstan, the effect is a concentration of Chinese capital in renewables and gas-fired plants, often backed by concessional lending and sovereign agreements. While this supports the energy transition, it narrows project diversity and reinforces dependence on models shaped by China's domestic policy priorities.

PPA Policy Framework Development

Chinese investments have played a formative role in shaping Kazakhstan's regulatory frameworks and energy policy priorities. The adoption of multiple investment models has created precedents for continued foreign participation while also demonstrating the benefits of technology transfer and capacity building. Intergovernmental cooperation under the BRI has further anchored strategic projects, shifting engagement from purely commercial transactions toward long-term partnerships aligned with shared energy security goals.

The Figure 5 shows that auction-based PPAs have mobilized around USD 2.5 billion to deliver approximately 2,480 MW of capacity. These projects are typically small to medium scale (often under 100 MW), spread across solar and wind plants, and financed through blended packages involving the EBRD, GCF, and local banks. This structure distributes risk but generates modest inflows per project.

By contrast, IGAs account for about USD 4.56 billion in investment and 3,600 MW of capacity. These large-scale projects, frequently exceeding 500 MW, are negotiated bilaterally and backed by sovereign guarantees, tariff indexation in USD, and long-term offtake commitments. While this model offers strong investor protection, it concentrates financial risk on the host state. Tariff levels further highlight the divergence: auctions clear at 2–3 US¢/kWh for 20 years, whereas IGAs secure over 5 US¢/kWh for 25 years.

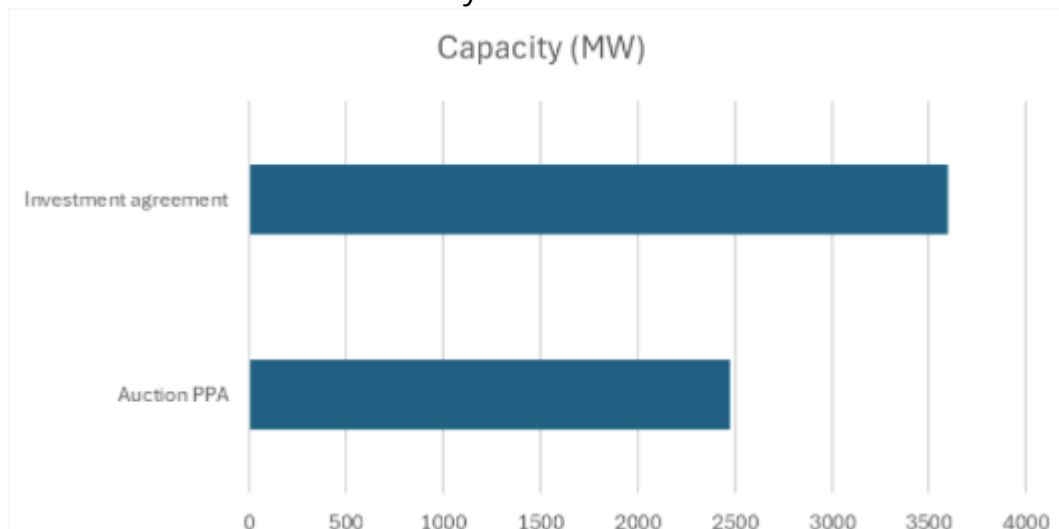


Figure 5. Comparison of Installed Capacity by Auction PPA and Investment Agreement (IGAs)

Note: Corporate PPAs are not included in this analysis, as their presence in Kazakhstan remains limited and the market for such agreements is still in an early stage of development.

This two-tier system disadvantages domestic developers competing in auctions while granting foreign SOEs premium terms under state-backed agreements. As many IGAs are already in place, future policy is expected to prioritize grid stability

and maneuverable generation particularly gas-fired capacity over additional gigawatt-scale renewables.

Discussion and Policy considerations

Since independence, Chinese investment in Kazakhstan's energy sector has been extensive, initially concentrated in oil and gas but now shifting toward renewables and traditional power plants. This change reflects both Kazakhstan's evolving energy priorities and China's overseas investment strategies.

The analysis of investment models reveals a multi-layered pattern shaped by geopolitical relations and pragmatic commercial strategies. Chinese firms adopt diverse roles as Developers, EPC+F contractors, OEM suppliers, and EPC subcontractors. This adaptability allows them to operate flexibly within Kazakhstan's institutional environment, with varying degrees of financial exposure and strategic influence.

This flexibility is particularly relevant as Kazakhstan restructures its power sector. Expansion of renewables and gas-fired generation, together with future nuclear development, creates opportunities for Chinese firms to leverage their technological capacity, financing mechanisms, and vertically integrated supply chains. By securing auction-based contracts, negotiating IGAs, and supplying equipment even to projects led by Western developers, Chinese companies have embedded themselves in Kazakhstan's energy trajectory.

A central finding is the close alignment between Chinese EPC capabilities and the procurement strategies of international developers. Major investors such as TotalEnergies, Masdar, ACWA Power, and UCC consistently favor turnkey EPC delivery, and Chinese contractors like PowerChina and CEEC are competitive because of their proven ability to execute complex infrastructure at scale. Masdar, for example, has repeatedly partnered with PowerChina in the Middle East.⁶¹

The contrast between Masdar and TotalEnergies' 1 GW WPPs in Kazakhstan illustrates the implications of procurement choice. Although both projects include 600 MWh of BESS, Masdar's⁶² project is estimated at USD 1.4 billion compared with USD 1.9 billion for TotalEnergies.⁶³ The difference likely reflects Masdar's reliance on Chinese EPC contractors with integrated supply chains, while TotalEnergies engages European technology providers which may be more expensive. This divergence suggests that project cost structures are strongly influenced by procurement strategies and contractor networks.

The absence of domestic EPC firms with utility-scale expertise further entrenches the role of Chinese contractors. Even in projects initiated by Western or regional developers, Chinese companies remain involved through EPC contracts, OEM supply, underscoring their indispensability. IGAs strengthen this position by offering favorable terms such as currency indexation, regulatory certainty, and diplomatic support without requiring any local content.

New trends in project development, including hybrid schemes (WPP + SPP + CCGT) and integrated BESS, reinforce Chinese competitiveness, given their dominance in WTG, gas turbines, and BESS supply chains. As a result, Chinese influence often extends beyond formal investment statistics, with OEM participation embedding Chinese technology into Kazakhstan's energy infrastructure.

However, concerns remain regarding domestic value creation and strategic autonomy. Developer-led projects by Chinese firms, such as those of Universal Energy, rely on vertically integrated structures that limit opportunities for local industry. Kazakhstan's dependence on external supply chains raises questions about sovereignty and resilience. Recent incidents in the US, such as the discovery of undocumented communication devices in imported solar inverters, underscore potential security vulnerabilities.⁶⁴

For Kazakhstan to maximize national benefit, policymakers will need to manage this engagement strategically. Chinese participation provides speed, scale, and concessional finance, but these advantages should be aligned with domestic priorities. Industrial localization, particularly in software and control systems, could reduce vulnerabilities. Stronger local content requirements and structured technology transfer mechanisms are also needed to broaden developmental benefits. Without such measures, Kazakhstan risks deepening dependency and missing opportunities to build durable domestic capacity.

Conclusion

This study shows that Chinese energy investments in Kazakhstan are adaptive rather than uniform, shaped by host-country institutions and Chinese strategic imperatives. Firms operate across multiple roles—developers, EPC+F contractors, EPC subcontractors, and OEM suppliers—establishing a durable presence in both renewable and traditional generation.

The analysis highlights a dual structure of engagement. POEs enter mainly through auction-based PPAs, demonstrating that Kazakhstan's regulatory framework can attract competitive foreign investment. SOEs, by contrast, dominate large-scale projects embedded in IGAs, leveraging policy-bank finance, sovereign guarantees, and political alignment to secure long-term influence.

Chinese participation has accelerated Kazakhstan's capacity expansion, mobilized concessional and blended finance, and introduced advanced technologies such as BESS. Yet reliance on vertically integrated Chinese supply chains and concessional finance raises concerns about energy sovereignty, local industrial upgrading, and long-term dependency. These tensions emphasize the importance of Kazakh policy design in ensuring that foreign investment generates broader developmental spillovers.

This report contributes to the literature by showing that Chinese energy investment abroad is highly adaptive, varying by policy regime and project context.

Future research should compare Chinese and non-Chinese investments in Kazakhstan to assess whether China's role is disproportionately large or reflective of wider global patterns. Such comparative analysis will be critical for evaluating the long-term implications of Kazakhstan's energy partnership strategies.

Bibliography

- Adilet. (2025). On electric power industry. <https://adilet.zan.kz/eng/docs/Z040000588>
- BBC. (2021). China pledges to stop building new coal energy plants abroad. <https://www.bbc.com/news/world-asia-china-58647481>
- Bian, L., Dikau, S., Miller, H., Pierfederici, R., Stern, N., & Ward, B. (2024). *China's role in accelerating the global energy transition through green supply chains and trade*. www.efchina.org/Front-Page-eAbout
- Bingham, D., Juman, J., Khamzayeva, A. V., Xuan, Z., & Al-Farabi. (2024). Energy cooperation between Kazakhstan and China under 'One Belt and One Road': Current state, challenges and perspectives. *Buketov Business Review*, 11429(2), 7–18. <https://doi.org/10.31489/2024EC2/7-18>
- Bohnenberger-Rich, S. (2015). *China and Kazakhstan: Economic hierarchy, dependency and political power?*
- Carbon Brief. (2021). China briefing, 23 September 2021: Xi's 'no overseas coal' pledge; more orders on domestic coal. <https://www.carbonbrief.org/china-briefing-23-september-2021-xis-no-overseas-coal-pledge-more-orders-on-domestic-coal-ball-in-chinas-court/>
- Chalgynabayeva, A., & Bai, A. (2021). The most relevant factors and trends in energy cooperation between Kazakhstan and China, focused on renewable energy sources (RES). *Applied Studies in Agribusiness and Commerce*, 15(3–4). <https://doi.org/10.19041/APSTRACT/2021/3-4/8>
- Chinadaily. (2024). White paper: China world's largest investor in energy transition. <https://www.chinadailyhk.com/hk/article/591755>
- Climate Cooperation China. (2022). China released its 14th five-year plan for renewable energy with quantitative targets for 2025. <https://climatecooperation.cn/climate/china-released-its-14th-five-year-plan-for-renewable-energy-with-quantitative-targets-for-2025/>
- Darke, W., & Karatayev, M. (2025). Evaluating sustainable energy security in China and Kazakhstan: A comprehensive data-driven approach. *Environmental*

- Decree of the President of the Republic of Kazakhstan. (2023). *Strategy of the Republic of Kazakhstan on achieving carbon neutrality by 2060*.
- Development Bank of Kazakhstan. (2020). Solar power plant 'Nurgisa 100 MW' prevented 153 thousand tons of carbon oxide emissions. <https://kdb.kz/en/pc/news/news/8609/>
- Ding, J., Wang, N., & Hu, L. (2018). Framework for designing project delivery and contract strategy in Chinese construction industry based on value-added analysis. *Advances in Civil Engineering*, 2018, 5810357. <https://doi.org/10.1155/2018/5810357>
- EBRD. (2019). EBRD and Green Climate Fund provide US\$16.7 million to finance Kazakh solar power plant. <https://www.ebrd.com/home/news-and-events/news/2019/ebrd-and-green-climate-fund-provide-us-167-million-to-finance-kazakh-solar-power-plant.html>
- ERG. (2024). *ERG Kazakhstan decarbonization strategy*.
- Fergana.news. (2025). Astana brings in Chinese firms to build Kokshetau CHP plant after Russia's exit from project. <https://en.fergana.news/news/139396/>
- Foster, V., Butterfield, W., Chen, C., & Pushak, N. (2009). *Building bridges: China's growing role as infrastructure financier for Sub-Saharan Africa*.
- gov.kz. (2024). Order 'on approval of the action plan for the development of the electric power industry until 2035.' <https://www.gov.kz/memleket/entities/energo/documents/details/611688?lang=ru>
- Green Finance & Development Center. (2021). *China third-party market cooperation for infrastructure projects: Financing mechanism handbook*. <https://greenfdc.org/china-third-party-market-cooperation-for-infrastructure-projects-financing-mechanism-handbook/>
- Huang, J. (2024). Strategic evolution and adaptive responses of Chinese international general contractors under the Belt and Road Initiative: Insights from social network analysis. <https://doi.org/10.1145/3705618.3705624>
- Interfax. (2023). Chinese consortium wins tender to convert Almaty CHP-2 plant from coal to gas. <https://interfax.com/newsroom/top-stories/91028/>
- Kazakh Invest. (2024). Chinese company to implement a solar project in Kazakhstan. <https://invest.gov.kz/media-center/press-releases/chinese-company-to-implement-a-solar-project-in-kazakhstan/>
- Kazakhstan Utility Systems. (2025). Kazakhstan and China launch a plant for wind turbines and energy storage systems. <https://kus.kz/en/nemnogo-onas/news/761/>
- Kazinform. (2024). Kazakhstan, China to build power plant in Mangistau region.

<https://qazinform.com/news/kazakhstan-china-to-build-power-plant-in-mangistau-region-9b9eb1>

- KOREM. (2023). *Renewable energy auctions in Kazakhstan*. RE Auctions report 2018-2022_May 18 _2023_ENG_final.pdf <https://vie.korem.kz/uploads/KZ>
- Leutert, W. (2024). Building the road ahead. *[Journal Title]*, 16(1). <https://doi.org/10.1142/S1793930524000035>
- Mamyshev, Z. (2023). Russia proposes Kazakhstan to change agreement on parallel operation of unified energy systems. <https://kz.kursiv.media/en/2023-09-28/russia-proposes-kazakhstan-to-change-agreement-on-parallel-operation-of-unified-energy-systems/>
- Masdar. (2024). Major milestone reached for 1GW wind farm in Kazakhstan. <https://masdar.ae/en/news/newsroom/major-milestone-reached-for-1gw-wind-farm-in-kazakhstan>
- Mat, B., & Khalid, A. (2024). China's energy security strategy in Central Asia: A BRI and green energy perspective (2019–2024). *China Quarterly of International Strategic Studies*, 10(2), 155–185. <https://doi.org/10.1142/S2377740024500076>
- Mcfarlane, S. (2025). Rogue communication devices found in Chinese solar power inverters. *Reuters*. <https://www.reuters.com/sustainability/climate-energy/ghost-machine-rogue-communication-devices-found-chinese-inverters-2025-05-14/>
- Nabiyeva, K. (2019). *Win-win or win-lose? China-Kazakhstan energy cooperation within the Belt and Road Initiative*. <https://doi.org/https://d-nb.info/1221371495/34>
- NDRC. (2017). *Administrative measures for outbound investment by enterprises (企业境外投资管理办法)*. National Development and Reform Commission. <https://www.ndrc.gov.cn/xxgk/zcfb/fzggwl/201712/W020190905495109740626.pdf>
- . (2018). *Catalogue of sensitive industries for outbound investment (境外投资敏感行业目录)*. <https://www.ndrc.gov.cn/xxgk/zcfb/tz/201802/W020190905503710038460.pdf>
- Noroozi, H., & Askari, E. (2023). China-Kazakhstan collaboration for bilateral and inter-regional coherence. <https://doi.org/10.22059/JICES.2023.95144>
- O'Neill, D. C. (2014). Risky business: The political economy of Chinese investment in Kazakhstan. *Journal of Eurasian Studies*, 5(2), 145–156. <https://doi.org/10.1016/J.EURAS.2014.05.007>
- ORDA. (2025). Planned thermal power plant projects with Russia at risk, analyst says there's nothing positive about it. <https://en.orda.kz/planned-thermal-power-plant-projects-with-russia-at-risk-analyst-says-theres-nothing-positive-about-it-6700/>

- Özcan, G. B. (2021). Chinese business in Central Asia: How crony capitalism is eroding justice. *Foreign Policy Research Institute*. <https://www.fpri.org/article/2021/03/chinese-business-in-central-asia-how-crony-capitalism-is-eroding-justice/>
- PowerChina. (2024). Construction begins on largest clean energy power plant in Kazakhstan. https://en.powerchina.cn/2024-07/04/c_828730.htm
- . (2025). POWERCHINA's PV3 solar project showcased in UAE during Boao Forum 2025. https://en.powerchina.cn/2025-05/26/c_828947.htm
- QazaqGreen. (2024). Kazakhstan's electricity consumption to reach 120 billion kWh in 2024. <https://qazaqgreen.com/en/news/kazakhstan/2145/>
- Rachel, V., Joireman, S. F., & Tulepbayeva, R. (2020). Between the bear and the dragon: Multivectorism in Kazakhstan as a model strategy for secondary powers. *International Affairs*, 96(4), 975–993. <https://doi.org/10.1093/IA/IIAA061>
- Rathore, J. (2024). *Integration role of BRI in Kazakhstan*. www.prccsf.com
- RFC. (2025). Settlement and financial center for renewable energy support. <https://rfc.kz/en/power-market/functioning-of-the-capacity-market/description-of-the-capacity-market/>
- Rousseau, R. (2013). Kazakhstan: Continuous improvement or stalemate in its relations with China? *Strategic Analysis*, 37(1), 40–51. <https://doi.org/10.1080/09700161.2013.737599>
- SAFE. (2018). *Circulars on further improving the management of outbound investment and foreign exchange*. State Administration of Foreign Exchange.
- Samruk-Energy. (2024). 2024 key events as part of the implementation of 'Samruk-Energy' JSC group investment projects. <https://www.samruk-energy.kz/en/press-center/news/2017-2024-key-events-as-part-of-the-implementation-of-samruk-energy-jsc-group-investment-projects>
- . (2025). Samruk-Energy and China Energy to jointly build solar and wind power plants in Kazakhstan. <https://www.samruk-energy.kz/en/press-center/news/2097-samruk-energy-and-china-energy-to-jointly-build-solar-and-wind-power-plants-in-kazakhstan>
- SANY. (2024). Milestone! SANY RE unveils new manufacturing base in Kazakhstan. https://www.sanyglobal.com/press_releases/4184/
- Sarybayev, M. (2024). Assessing China's current investment projects in Kazakhstan: Opportunities and challenges. <https://journal.apa.kz/index.php/path/article/download/1172/918/6199>
- Sharifli, Y. (2024a). Green new wave: How China adapts to Central Asia's renewable energy landscape. <https://qafsam.org/en/2024/05/01/green-new-wave-how-china-adapts-to-central-asias-renewable-energy-landscape/>
- . (2024b). Kazakhstan & Uzbekistan: China's growing renewable energy investment accelerates green transition, but could increase dependence on

- Chinese resources. *Business & Human Rights Resource Centre*.
<https://www.business-humanrights.org/en/latest-news/kazakhstan-uzbekistan-chinas-growing-renewable-energy-investment-speeds-green-transition-but-could-increase-reliance-on-chinese-resources/>
- Sun, H., Tang, W., Duffield, C. F., Zhang, L., & Hui, F. K. P. (2022). How to get international construction projects delivered on time: From Chinese contractors' perspective. *Journal of Civil Engineering and Management*, 28(2), 134–149. <https://doi.org/10.3846/JCEM.2022.16381>
- Taliga, H. (2021). *Belt and Road Initiative in Central Asia: Desk study*.
- The Astana Times. (2019). 100 MW capacity solar power plant launches near Kapshagai. <https://astanatimes.com/2019/09/100-mw-capacity-solar-power-plant-of-launches-near-kapshagai/>
- . (2024). Chinese global leader in clean energy signs multimillion-dollar agreements for new Kazakh projects. <https://astanatimes.com/2024/07/chinese-global-leader-in-clean-energy-signs-multimillion-dollar-agreements-for-new-kazakh-projects/>
- . (2025). Zhambyl region to build 2 GW wind power plants. <https://astanatimes.com/2025/04/zhambyl-region-to-build-2-gw-wind-power-plants/>
- TotalEnergies. (2023). Kazakhstan: TotalEnergies signs a 25-year PPA for a 1 GW wind project. <https://totalenergies.com/news/press-releases/kazakhstan-totalenergies-signs-25-year-ppa-1-gw-wind-project>
- Ullah, S., Wang, Z., Stokes, P., & Xiao, W. (2019). Risk perceptions and risk management approaches of Chinese overseas investors: An empirical investigation. *Research in International Business and Finance*, 47, 470–486. <https://doi.org/10.1016/j.ribaf.2018.09.008>
- Universal Energy. (2025). Universal Energy wins bid for 1GW wind power + 600MWh energy storage in Kazakhstan. <https://www.universalenergy.com/en/news/1075>
- Wood Mackenzie. (2025). Chinese OEMs sweep the global wind podium for the first time. <https://www.woodmac.com/press-releases/2024-press-releases/chinese-oems-sweep-the-global-wind-podium-for-the-first-time/>
- Zaki, Z., Tian, G., & Amini, M. Y. (2023). Literature review on Belt and Road Initiative's integration for trade connectivity of Afghanistan. *Open Journal of Business and Management*, 11(6), 3287–3312. <https://doi.org/10.4236/OJBM.2023.116179>
- Zhang, H. (2023). From contractors to investors? Evolving engagement of Chinese state capital in global infrastructure development and the case of the Lekki Port in Nigeria. <http://www.sais-cari.org/publications-policy-briefs>