



Policy Brief

Renewable Energy Investment Ecosystem in Central Asia -Kazakhstan

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POLICY BRIEF - Kazakhstan

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¹ Note: This policy brief summarizes key findings extracted from the primary report accessed online <https://www.carecinstitute.org/publications/carec-institute-releases-report-on-renewable-energy-investment-in-central-asia/>

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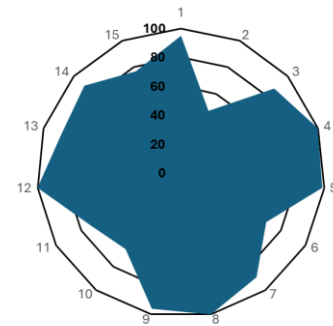
Central Asian economies face significant climate-related challenges due to their geographical vulnerabilities and historical dependence on fossil fuels. To address these issues, a study has examined the factors influencing renewable energy investments in Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan).

The study has recommended measures for improving the ecosystem for foreign investment into renewable energy in Central Asia, focusing on wind, solar, small-scale hydroelectric and biomass.

The research has identified constraints, challenges, and opportunities across the region through extensive data collection, assessing the capacities and potential for renewable energy investments and has recommended 15 key determining factors (see attachment) for a joint FDI ecosystem in Central Asia, comprising in total 202 distinct elements with different weightings.

Kazakhstan is the country in Central Asia meeting most of the ecosystem criteria with an overall alignment at 84,77%, but out of the 202 elements, it is still non-compliant on 36. When measured against max achievable score per category, “Regulatory Framework & Policy Environment” is the weakest area (47% conformity), with issues related to (i) consistency, robustness and completeness, (i) the ease with which foreign investors can navigate, (iii) bureaucratic structure and (iv) coordination between Government bodies.

Although ranking high compared with its neighbours, Kazakhstan also does not reach the top quintile for the (i) condition of its grid infrastructure, (ii) skills of its in-country workforce, (iii) domestic project developers & EPC companies, and (iv) the overall progress and quality of its regional cooperation. This is illustrated in the figure to the right, showing score against max achievable per category.²



Developing a robust renewable energy investment ecosystem is crucial for Kazakhstan to attract foreign direct investment, diversify its energy mix, and meet its ambitious climate goals. A well-structured ecosystem can address key challenges in grid integration, regulatory consistency, and market barriers, ultimately accelerating the country's transition to clean energy and enhancing its energy security. In accordance with the challenges outlined above, the core objectives identified for Kazakhstan in this study have been to:

- Streamline and enhance the regulatory framework for renewable energy investments
- Improve grid infrastructure to better integrate variable renewable energy sources
- Develop local expertise and manufacturing capabilities in renewable technologies
- Expand financial incentives and support mechanisms for both large and small-scale projects
- Strengthen regional cooperation in energy trade and infrastructure development

Below, key findings and takeaways and key recommendations for Kazakhstan are summarised.

² Numbers on the outer perimeter correspond to the numbers of the Key Determining Factors in the attachment.

Key Climate and Renewable Energy Facts

- Total attracted investments by Kazakh Invest: 2.8 billion US dollars, 43 RE projects (2024)
- Renewable energy targets: 6% by 2025, 15% by 2030, 50% by 2050
- Carbon neutrality target: 2060
- Total installed renewable capacity: 2,903.7 MW (2024)³
- Renewable energy share: 6.67% of total electricity generation (first 3 trimesters of 2024)

Kazakhstan has made significant progress in developing its renewable energy sector, in line with government targets. It has established clear and predictable policies supporting renewable energy development, including long-term strategies and specific targets. Key points:

- As of 2024, there are 148 renewable energy facilities operating with a total installed capacity of 2,903.7 MW.
- Renewable energy reached 6.67% of total electricity generation in the first three trimesters of 2024, exceeding the 6% target set for 2025.
- The government has implemented a structured auction mechanism and approved an auction schedule to add 6.7 GW of renewable capacity by 2027.
- Major international companies like Total Energies, Masdar, China Power International Holding and ACWA Power have signed agreements to develop large-scale wind projects with BESS.
- Key challenges include grid integration and lack of public awareness about small-scale RE.
- The investment environment is supported by agencies like the Investment Committee and Kazakh-Invest.
- Financing typically involves 70% debt and 30% equity, with blended finance common for large projects.
- Small-scales renewables have net metering (netto-consumer) mechanism up to 200 kW.
- Large-scale renewables may include 20 years PPA agreement through auction and, in addition, there is an incentive in the form of tax exemptions, and investors facilitation.

Key findings and takeaways from the study:

Major elements that are considered non-compliant with the joint ecosystem in Central Asia, with the recommended mitigating measures are:

1. Regulatory complexity and potential inconsistencies across government bodies
Mitigation: Establish a dedicated renewable energy regulatory body to streamline processes

³ Qazaq Green (2024), "Kazakhstan's renewable energy contribution reaches 6.67% in first nine months of 2024", Retrieved from: <https://qazaqgreen.com/en/news/kazakhstan/2347/>

2. Grid integration challenges due to aging infrastructure
Mitigation: Invest in grid modernisation and implement energy storage solutions (BESS)
3. High dependence on fossil fuels, particularly coal
Mitigation: Implement policies to accelerate diversification away from fossil fuels, including phased reduction of subsidies
4. Limited incentives for small-scale renewable projects
Mitigation: Expand financial incentives for small-scale projects and introduce a standalone PPP framework for renewables
5. Shortage of specialised expertise in certain renewable energy technologies
Mitigation: Develop targeted education and training programs in partnership with international institutions

The study has identified several factors affecting the environment for foreign investment into renewable energy in Kazakhstan, both positive and more challenging.

Strengths:

1. Strong government commitment and clear renewable energy targets.
2. Well-established regulatory framework and legal protections for investors.
3. Abundant renewable resources, particularly wind and solar.
4. Positive track record with foreign investors.
5. Well-established Investment Promotion Agency - KAZAKH INVEST.
6. Effective auction mechanism for large-scale projects.
7. Relatively well-developed financial sector.
8. Ongoing upgrades to grid aimed at integrating renewable energy.
9. Relatively well-developed technical workforce, although lacking in specialised technologies.
10. Government investment in local skills development and industry capacity.

Weaknesses:

1. Regulatory complexity and potential inconsistencies in implementation.
2. Aging grid infrastructure not optimised for variable renewable energy.
3. High dependence on fossil fuels (coal constitutes about 60% of power generation). The entrenched fossil fuel industry can create inertia against rapid renewable adoption.
4. Low energy tariffs make it challenging for renewable projects to compete economically.

5. Skills gap in specialised renewable energy expertise.
6. Limited incentives for small-scale projects.
7. Limited experience in large-scale RE financing and reliance on IFIs.
8. Local content requirements potentially hampering foreign investment.
9. Need for stronger standards for ESIA and mitigating measures.

Opportunities:

1. Potential for rapid growth in wind and solar sectors
2. Development of local renewable energy supply chains
3. Expansion of grid infrastructure to support renewable integration
4. Implementation of energy storage solutions (BESS)
5. Increased regional energy cooperation and trade
6. Green bond market development
7. I-Rec certificates

Threats:

1. Economic volatility due to dependence on global energy prices
2. Competition from traditional fossil fuel industries
3. Climate change impacts on renewable energy infrastructure
4. Potential regulatory changes affecting investor confidence
5. Regional geopolitical tensions

Implications for Policy Areas:

1. Regulatory Streamlining: Simplify the regulatory environment to make it more consistent, robust, and easier to navigate for foreign investors. This could include establishing a dedicated RE regulatory body to ensure consistent policy implementation across government entities.

2. **Grid Modernisation:** Invest in upgrading transmission capacity and implementing smart grid technologies to better integrate renewable energy sources, and implement energy storage solutions (BESS), including their regulatory and technical specifications.
3. **Financial Incentives:** Expand support mechanisms for renewable energy projects, particularly for small-scale projects, including improved net metering policies and targeted subsidies. Develop a green bond market to attract sustainable finance.
4. **Skill Development:** Develop targeted education and training programs to address skills gaps in the renewable energy sector. Create partnerships with international institutions and industry leaders to offer specialised renewable energy training programs. Increase support for R&D in renewable technologies and establish a national renewable energy laboratory.
5. **Local Content and Supply Chain:** Review and refine local content policies to balance domestic industry promotion with foreign investment attraction. Support the development of a local renewable energy manufacturing sector.
6. **Market Reform:** Continue reforms to establish a more efficient and competitive energy market, including phased reduction of fossil fuel subsidies and gradual adjustments to energy tariffs to reflect real costs. Consider introducing PPAs for small-scale renewables with Virtual Net Metering for energy community development.
7. **Regional Cooperation:** Enhance cross-border energy trade and joint infrastructure development to maximise Kazakhstan's renewable resource potential.
8. **Climate Adaptation:** Develop a comprehensive strategy for climate change adaptation in the energy sector to ensure long-term sustainability of renewable energy investments.
9. **Environmental and Social Standards:** Develop and implement stronger standards for environmental impact assessments and mitigating measures specific to RE projects.
10. **Public-Private Partnerships:** Develop a standalone PPP framework specifically for renewable energy projects.
11. **Investment Protection:** Strengthen the enforcement of investor protection laws and ensure consistent application across all regions and sectors.
12. **Data Accessibility:** Improve the accessibility and transparency of data related to renewable energy resources and grid infrastructure.

Attachment

Key Determining Factors of Ecosystem for Investment into Renewable Energy in Central Asia

1. Government Commitment & Institutional Support
2. Regulatory Framework & Policy Environment
3. Market Conditions & Potential
4. Investment Promotion Agencies
5. Resource Availability & Transparency
6. Grid Infrastructure
7. Market Access
8. Investment protection
9. Financial Environment
10. In-country Skilled Workforce
11. Project Developers & EPC Companies
12. Public-Private Partnerships (PPPs)
13. Environmental & Social Factors, Stakeholder Engagement
14. Technology & Innovation
15. Regional Cooperation