



Policy Brief

Renewable Energy Investment Ecosystem in Central Asia

-Kyrgyzstan

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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).

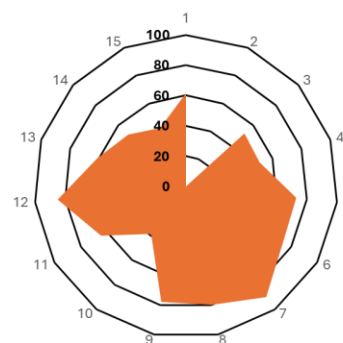
The study has recommended measures for improving the ecosystem for foreign investment into renewable energy in Central Asia, focusing on wind, solar, small-scale hydroelectric and biomass.

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.

Kyrgyzstan is the country with the highest number of non-compliant ecosystem elements, counting 132 out of 202. But due to the difference in element weighting, its overall ecosystem conformance score of 58,45% is still higher than lowest-scoring Turkmenistan's at 47,05%. For the "Regulatory Framework & Policy Environment" category, Kyrgyzstan meets none of the criteria defined.

The country is in the top quintile for the key determining factors "Market Access" and "Public-Private Partnerships", having frameworks in place for investors to enter the renewable energy market and to establish cooperation with public and private players.

The remaining thirteen factors are spread across the middle quintiles, with seven in the fourth and four in the third. The second quintile placement of "In-country Skilled Workforce" shows that considerably more efforts are required to reach the level investors are seeking. This is illustrated in the figure to the right, showing score against maximum achievable per category.¹



Developing a robust investment ecosystem is crucial for Kyrgyzstan to attract FDI in the RE sector. With significant untapped renewable energy potential and a heavy reliance on hydropower, it faces energy security challenges due to seasonal fluctuations and outdated infrastructure. A well-structured ecosystem can contribute to diversifying the energy mix, reducing dependence on imports, and modernising the grid. This is particularly important given Kyrgyzstan's ambitious target of increasing renewables to 10% of the energy mix by 2035, which requires substantial foreign investment and expertise. An optimal renewable energy investment ecosystem can achieve:

- Increased FDI inflows into the renewable energy sector
- Diversification of the energy mix, reducing reliance on hydropower and imports
- Improved energy security and grid stability
- Development of local expertise and job creation in renewable technologies
- Acceleration of rural electrification through decentralised renewable solutions
- Enhanced regional cooperation in energy trade and resource management

¹ Numbers on the outer perimeter correspond to the numbers of the Key Determining Factors in the attachment.

- Progress towards meeting national climate commitments and carbon neutrality goals

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

Key Climate and Renewable Energy Facts

- Carbon neutrality target: 2050
- RE target: 10% of energy mix by 2035 (excl. large hydropower), equivalent to 1,750 MW
- Hydropower dominance: Up to 90% of electricity generated from hydropower
- Renewable energy annual potential: 5-8 TWh for small hydropower, 0,05 TWh for wind, 0,49 TWh for solar, and 1.3 TWh for biomass

Kyrgyzstan has significant untapped renewable energy potential but faces challenges in developing the sector. Since 2018, Kyrgyzstan has implemented several small-scale solar PV pilot projects with donor support. In recent years, various larger solar PV and wind projects have entered different stages of implementation, funded by both donors and private investors.

The government has established clear priorities for energy sector development through its Sustainable Development Strategy (2018-2040), National Development Program (until 2026), and Green Economy Development Programme (2019-2023, being updated until 2028). In 2024, the National Energy Program (until 2035) was approved, setting specific goals to increase the share of renewables in the energy mix to 10% by 2035.

- Currently, renewables account for less than 2% of the energy mix, with large hydropower providing 85.9% of electricity.
- Relies heavily on local and imported coal, and imports of natural gas and electricity during low water periods, highlighting energy security concerns, particularly due to outdated infrastructure and hydropower fluctuations.
- Recent investments and agreements with international partners reflect increasing interest in RE projects. Several solar, wind, and small hydro projects are in various stages of progress.
- Key challenges include outdated grid not ready for large-scale renewable energy, statutes and regulations not adapted to renewables, uncompetitive electricity tariffs, lack of guarantees, issues with land allocation, tendering, lack of experience with implementation of large FDI, limited funding and investment, and environmental challenges.
- The Green Energy Fund and Climate Finance Center have been established to enhance investments from the Green Climate Fund and other climate funds and international organisations, as well as assistance in promoting investments and implementation of programs and projects.
- National Investment Agency is established to cultivate a favourable investment climate.
- Recent policy changes include tax benefits, increased grace periods for renewable energy power plants (except hydro), PPA improvements, guaranteed purchase of renewable electricity and annual indexation of tariffs due to currency fluctuations.
- Regional cooperation initiatives, like CASA-1000 and Kambarata-1 hydropower project with Kazakhstan and Uzbekistan, are expected to boost the energy sector.

Key findings and takeaways from the study:

Major elements considered non-compliant with the joint ecosystem in Central Asia are:

1. Zero compliance for the “Regulatory Framework & Policy Environment” category
Mitigation: Develop a comprehensive regulatory framework specifically for RE investments.
2. The existing power system struggles to integrate large-scale variable RE sources.
Mitigation: Prioritise grid modernisation and expansion to accommodate variable RE.
3. Low electricity tariffs hamper the financial viability and sustainability of RE projects.
Mitigation: Implement a gradual tariff reform to improve project financial viability while considering social impacts.
4. Low institutional stability and lack of a dedicated RE unit within National Investment Agency.
Mitigation: Establish a specialised RE entity within the National Investment Agency with sufficient expertise, resources and mandate.
5. Limited local expertise in renewable energy technologies.
Mitigation: Create partnerships with international industry and institutions for knowledge exchange and capacity building.

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

Strengths:

1. Vast untapped potential in solar PV, wind, and small hydropower. And a very strong foundation in larger-scale hydropower generation.
2. Growing interest by Government and international investors & donors in RE development.
3. Government improving policy framework for RE, incl. feed-in tariffs and other incentives.
4. Creation of a National Investment Agency and designation of RE as a key sector in the Investment Attraction Program signals national priority.
5. Green Energy Fund and Climate Finance Centre have improved investment attractiveness.
6. Collaborations with international entities bringing investment and expertise to the RE sector.
7. Small-scale, donor-supported pilot projects demonstrate the feasibility of RE technologies.
8. Non-discriminatory legal environment for foreign investors
9. Participation in regional energy projects (e.g., CASA-1000 and Kambarata-1).

Weaknesses:

1. Major gaps in the regulatory framework for renewables.
2. Existing power system faces difficulties integrating large-scale variable RE sources.
3. Low electricity tariffs pose challenges to financial viability and sustainability of RE projects.
4. Institutional and political instability.
5. Limited skilled workforce in renewable energy technologies.
6. Limited experience in attracting large-scale FDI to RE projects compared with neighbours.
7. Lack of clear investment guidelines specific to the RE sector and limited information dissemination from government bodies.
8. Absence of dedicated RE department and expertise within the National Investment Agency.
9. Underdeveloped domestic financial sector.
10. Seasonal electricity supply fluctuations and vulnerabilities.
11. Limited experience of domestic EPC companies in large-scale RE projects.
12. Need for stronger standards and practices for ESIA and mitigating measures.

Opportunities:

1. Potential for significant expansion in small hydropower
2. Build on growing interest from international investors and donors in RE development
3. Decentralised renewable energy technologies for rural areas
4. International support for RE projects and capacity building
5. Potential for regional electricity trade through projects like CASA-1000
6. Development of green taxonomy and investment zones

Threats:

1. Climate change impacts on hydropower generation
2. Economic constraints limiting investment in renewable infrastructure
3. Potential conflicts in regional water resource management
4. Brain drain of skilled workers

5. Geopolitical tensions affecting regional energy cooperation

Implications for Policy Areas:

1. **Regulatory Framework:** Consider improving the Renewable Energy Law, clearly outlining investment procedures, incentives, and FDI guarantees. Implement a streamlined, one-stop-shop process for RE projects and full digitalisation in tendering and permitting.
2. **Grid Modernisation:** Develop a comprehensive grid upgrade plan with clear timelines and funding mechanisms. Introduce smart grid technologies and BESS to improve the integration of variable renewable sources.
3. **Tariff Reform:** Implement a phased approach to electricity tariff increases, balancing financial viability and sustainability of RE projects with social protection measures.
4. **Institutional Capacity:** Establish a dedicated RE department within the National Investment Agency, staffed with sector experts. Implement measures to enhance coordination among government bodies to advance institutional stability and reduce bureaucratic inefficiencies.
5. **Skills Development:** Launch a national renewable energy training program in partnership with international industry and institutions. Consider offering tax incentives for companies investing in local workforce training for renewable energy projects.
6. **PPP Expansion:** Develop specific PPP models for different RE technologies. Create a risk-sharing mechanism to encourage private sector participation in large-scale projects.
7. **Green Taxonomy:** Finalise and implement the "Green Taxonomy" to provide clear classification and benefits for RE projects. Create targeted incentives and guarantees for foreign investors, e.g. introducing Green Bonds to attract international green finance. Establish pre-approved zones for RE development with simplified land acquisition.
8. **Regional Cooperation:** Strengthen partnerships with neighbouring countries for knowledge sharing, energy trade, water resource management and potential cross-border RE projects. Leverage strong regional interconnections.
9. **Finalise and implement the National Adaptation Plan and NDC Implementation Plan** for the energy sector, ensuring the allocation of financial resources to support its effective execution and address climate change impacts.
10. **Information Dissemination:** Conduct a comprehensive renewable resource assessment and make data publicly available through centralised platform for sharing up-to-date information on RE policies, projects, and investment opportunities.
11. **Climate Adaptation:** Develop a comprehensive strategy for climate change adaptation in the energy sector to ensure long-term sustainability of renewable energy investments.

12. Environmental and Social Standards: Implement mandatory ESIA for all large-scale renewable projects. Develop community benefit schemes for areas hosting RE installations.

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