

KAZAKHSTAN – CENTRAL ASIAN RENEWABLES PIONEER

KAZAKHSTAN IS A VAST COUNTRY, THE NINTH LARGEST IN THE WORLD. ITS SIZE, LOCATION, VERY LOW POPULATION DENSITY, AGEING INFRASTRUCTURE AND EXTREME CLIMATE ALL PRESENT SIGNIFICANT CHALLENGES FOR THE GENERATION, TRANSMISSION AND DISTRIBUTION OF ELECTRICITY. DESPITE THESE CHALLENGES, KAZAKHSTAN HAS SLOWLY BEEN PUTTING IN PLACE THE BUILDING BLOCKS FOR A SUCCESSFUL PROGRAMME OF RENEWABLE ENERGY GENERATION. BY **ALISTAIR WISHART, NABIL KHODADAD AND AFZAAL ABIDI, VINSON & ELKINS RLLP**.¹

Kazakhstan is the 63rd most populous country in the world, yet the 19th largest emitter of greenhouse gases.² It is rich in natural resources, and oil exports have been driving Kazakhstan's economic development for almost three decades.

Its energy sector accounts for a whopping 80% or more of the country's carbon emissions.³ This is largely attributable to the domination of the power generation sector by ageing coal-fired power plants, which produce around 80% of Kazakhstan's electricity,⁴ served by large volumes of cheap local coal in the north-east of the country.

Yet these circumstances have also presented opportunities for the development of renewable power generation in Kazakhstan. Slowly but surely, Kazakhstan is growing a renewables sector and its experiences and successes can provide an example for other Central Asian countries as they look to their own energy transitions.

Low base

For a long time, Kazakhstan's renewable generation assets were limited to a few Soviet-era hydropower plants that contributed around 13% of the country's electricity generation. Over the last decade this picture has slowly changed. As of October 2019, Kazakhstan had 65 active renewable energy facilities – 33 hydroelectric power plants, 19 solar power stations, 12 wind power stations and one biogas facility.⁵ By the end of May 2020, the total number had risen to 97.⁶

Kazakhstan's steppe geography means the country is well suited to the development of wind energy. However, its geography also presents challenges. The size and location of the country, landlocked and with limited internal transport links, result in significant logistical challenges.

The country's transport infrastructure also represents an obstacle to wind projects, which entail moving large items, such as wind towers and turbine blades, over long distances. Manufacturers must deliver equipment that will function in extreme temperatures ranging from –50 to +50 Celsius (–58 F to +122 F).

Development of renewable power generation facilities sits alongside the need for reform in the electricity sector generally. Rapid economic growth has meant a sharp rise in demand for electricity; Kazakhstan's extreme climate has meant electricity shortages, which in turn hampers economic development.

Transmission from generation facilities in the north of the country to the south through inefficient transmission networks leads to high losses of energy. In 2012, losses of electricity produced during transmission and distribution were over 7TWh, equivalent to the total electricity consumption of Latvia.⁷

A decade of groundwork

Back in 2009, Kazakhstan adopted a law "On Supporting the Use of Renewable Energy Sources".⁸ The law incentivised investment by obliging energy transmission companies to connect renewable energy sources to the grid, and to purchase electricity generated from renewable sources.

The law also reserved plots of land for the development of renewable energy projects, and provided a mechanism for concluding power purchase agreements for renewable energy at prices and with payback periods developed in feasibility studies.⁹

While the law was a positive first step towards the creation of a favourable investment climate, the absence of a regulatory component resulted in uncertainty for investors; this, coupled with the fact that tariffs were project-based – ie tariffs had to be negotiated for each project, rather than on the basis of a currency-indexed feed-in tariff system – meant that renewable energy projects failed to take off.

Fortunately, a new law passed in 2013 introduced some welcome amendments, notably the implementation of Kazakhstan's feed-in tariff scheme, which succeeded in attracting investment from both domestic and international investors.¹⁰

That same year, Kazakhstan adopted an ambitious "Concept on Transition towards Green Economy until 2050". This long-term strategy aims to bring the share of solar and wind energy sources in electricity production

from 0% to 3% by 2020, and then raise the share of alternative sources in electricity production to 30 per cent by 2030, and 50% by 2050.¹¹

Kazakhstan is also a signatory to the Paris Agreement, and has committed to reducing emissions by between 15% and 25% compared with 1990 levels by 2030.

Regulatory framework

Compared with many of its Central Asian neighbours, the regulatory environment for renewable energy projects is relatively well developed. In 2017/2018, Kazakhstan moved from feed-in tariffs to an auction mechanism designed to allow competitive market pricing.

The initial pilot auction, completed in early June 2018, resulted in 194MW of renewable energy capacity being awarded. In October 2018, the second round of auctions resulted in the award of 664MW of renewable energy capacity.¹² The country's renewable energy auctions have generally been oversubscribed and have seen significant reductions in levelised energy costs.

Each year, the Ministry of Energy publishes a schedule of auctions, giving an indication of the auctioned capacity, and in the case of projects under 30MW, relevant connection points and reserved land plots.

Having demonstrated compliance with the Ministry of Energy's qualification requirements, investors may bid at auction and, if successful, may enter into a 15-year power purchase agreement (PPA) with Kazakhstan's common off-taker, the Financial Settlement Center of Renewable Energy.

Since January 1 2019, Kazakhstan has been operating under a single buyer model; the Center, a 100% subsidiary of the national grid operator Kazakhstan Electricity Grid Operating Company (KEGOC), is now the country's sole buyer of renewable electricity.

In February of this year, the Ministry of Energy, together with the UNDP and a number of private firms in Kazakhstan, arranged the auction of a 100 hectare land plot for the purposes of developing a solar photovoltaic plant. The project has the potential to generate 50MW, which would satisfy the needs of 40,000 households for a year.

The auction garnered interest from investors across Italy, Germany, Russia, China, the Netherlands and Kazakhstan. Following a bidding session that saw the submission of 95 bids, the price of electricity was driven down to US\$0.032/KWh. The successful bid was submitted by Eni's Kazakhstan subsidiary.¹³

Emissions trading scheme

Another notable component of Kazakhstan's regulatory environment is its emissions trading scheme (ETS), the "National Allocation Plan of Kazakhstan", the first phase of which was launched in 2013 as the first emissions trading scheme in Central Asia, and still the only active scheme in the region.

The cap-and-trade scheme, which applies to major companies working in energy, industry and oil and gas with greenhouse gas emissions in excess of 20,000 tons per year of CO₂ equivalent (Major Emitters), was facilitated by Kazakhstan's Ecological Code "On Amendments to Certain Legislative Acts of the Republic of Kazakhstan Relating to Environmental Issues".

The Code prohibits Major Emitters from carrying out economic activities unless they have obtained the requisite allowances from Kazakhstan's Ministry of Environmental Protection (the Allowances). These Allowances take the form of tradable certificates.¹⁴

At the end of each phase of the scheme, Major Emitters must publish reports detailing the volume of their emissions, their emissions monitoring procedures, and their Allowance trading activities during the closing phase.

On the basis of these reports, the Ministry of Environmental Protection formulates a National Allocation Plan for the coming phase, setting a cap on the volume of CO₂ equivalent emissions, and allocating Allowances among the Major Emitters.¹⁵

After experiencing a number of operational issues during its first three years, the system was suspended between 2016 and 2017, during which time the scheme's procedures and allocation rules were reformed.

Amendments to the Environmental Code in 2016 improved the ETS regulation and reporting and verification framework by (i) extending the industry areas where quotes for CO₂ emissions are mandatory, (ii) introducing third-party verification of the reports on emissions, and (iii) allowing reports to be submitted electronically.

In 2017, a benchmark allocation was introduced. The scheme recommenced in 2018, entering a third phase covering three years (2018 to 2020). Some 225 installations belonging to 129 operators are involved in the current phase, with the energy sector accounting for 75% of emissions. The current cap, 485.9 Mt CO₂ equivalent for the overall compliance period, is aimed at achieving a 5% reduction in greenhouse gas emissions from 1990 levels by 2020.¹⁶

The scheme allows emission reductions to be monetised; renewable energy projects that successfully register as domestic carbon credit projects under the scheme may sell carbon credits to Major Emitters, who can in turn use these credits to offset their own emissions.¹⁷ This provides yet another incentive for developers of renewable energy projects in Kazakhstan.



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EBRD support

One of the key factors in the development of Kazakhstan's renewable energy sector is the significant amount of activity of the European Bank for Reconstruction & Development (EBRD).

In 2014, the EBRD, together with the Clean Technology Fund, agreed to finance a 50MW wind power plant in Ereymentau. The EBRD provided a €59.2m loan to Wind Power Yereymentau, also a subsidiary of Samruk Energy, with €18m of concessional financing coming from the Fund. This was the first wind farm project to be financed under the feed-in tariff scheme, although it seems the project is not yet in operation.¹⁸

The EBRD is also supporting the development of renewables through the EBRD Kazakhstan Renewables Framework, which has seen the EBRD invest in a large number of Kazakhstan's green energy projects across two phases.

The first phase, approved in 2016, saw the EBRD provide €200m of debt finance to promote the development of renewable energy projects in Kazakhstan.

This commitment, which has now been almost fully utilised, was a success; it supported the creation of 262MW of renewable power-generation capacity across Kazakhstan, attracted international investment, and went towards strengthening and improving Kazakhstan's electricity grid.

Under the second phase, approved in September 2019, the EBRD granted a €300m extension to the Kazakhstan Renewables Framework to further support the construction and operation of renewable energy projects

in Kazakhstan, and to support the nation in its efforts to reach its 2020 renewable energy target of solar and wind accounting for 3% of generation capacity.¹⁹

As of September 2019, the EBRD had invested approximately US\$2.2bn linked to the EBRD's Green Economy Transition strategy,²⁰ which seeks to invest in green projects such as energy efficiency, waste minimisation or sustainable transport to help countries build low carbon and resilient economies.

The Kazakhstan Renewables Framework is also being supported by the Green Climate Fund, the largest climate fund in the world, which will provide concessional finance and a comprehensive technical cooperation programme.

This strong support from the EBRD looks set to continue. In September 2019, in order to address the implications of climate change for Kazakhstan, the country's Ministry of Energy and the EBRD signed a Memorandum of Understanding reaffirming the EBRD's commitment to supporting renewables projects in Kazakhstan, focusing on financing competitively tendered renewables projects.

Project pipeline

Despite the uncertainty arising from the Covid-19 pandemic, the coming months look promising. As the auction system favours projects under 30MW, a continuing stream of new generation capacity is being added in the form of smaller projects; as of May 2020, there were 19 renewable energy projects worth US\$1.1bn on Kazakhstan's docket, which the Ministry of Energy hopes will add 3bn KWh to the energy mix.



Wind power plants in Kazakhstan. Renewable energy on the windy steppe close to Almaty. © Isak Wiklund | Dreamstime.com

This comes off the back of another busy year: in 2019, 21 renewable energy projects attracted US\$613m in investment from companies such as ENI, UniversalEnergy and Dera.²¹

Larger projects are also in the works. On October 31 2019, the Eurasian Development Bank (EDB) announced that it had agreed to lend US\$59.6m to Ereymentau Wind Power, a subsidiary of state-owned Samruk Energy JSC (Samruk Energy), towards the construction of a 50MW wind project near the town of Ereymentau. The project is expected to significantly enhance the sufficiency and reliability of electricity in the Akmola Region.²²

We will be interested to see how this project plays out; according to Samruk Energy, the project's generation capacity has the potential to be expanded to 300MW.²³ Samruk Energy sold 75% of this project to Hydrochina Corporation (50%), Powerchina Chegdu Engineering Corporation (15%) and Powerchina Resources Ltd (10%).²⁴ The project is now being developed by Hydrochina Corporation.

This is not the first time the EDB has partnered with Samruk Energy for the development of a renewable energy facility in Kazakhstan. In 2013, the EDB agreed to finance the construction of a 45MW wind farm by First Wind Power Plant, a subsidiary of Samruk Energy. The project, which is also in the Akmola Region, was commissioned in 2015.²⁵

Lessons for neighbours

As other countries in Central Asia trumpet ambitious renewable energy strategies, a lot can be learned from Kazakhstan's slow and steady decade of renewable power growth.

Kazakhstan has tended not to be the subject of grand announcements of renewables mega-projects that we are starting to see in other Central Asian countries. Instead, a greater number of smaller projects have slowly built capacity in parallel with the developing legal and regulatory framework.

Having an Emissions Trading System sitting alongside the renewable energy programme has also provided additional incentives for investment in green energy and is evidence of more holistic thinking when it comes to achieving climate targets.

Regulatory reform is continuing, and Kazakhstan's auction system and single buyer model are bearing fruit. As renewable generation costs continue to fall, particularly solar but also wind, it seems inevitable that renewable energy will eventually displace coal power generation in Kazakhstan. ■

Footnotes

- 1 – We gratefully acknowledge the input of KPMG in Kazakhstan in preparing this article.
- 2 – <https://www.forbes.com/sites/arielcohen/2019/10/18/oil-rich-kazakhstan-begins-the-long-march-towards-renewables/#7b493cb35c6b>

- 3 – <https://www.ebrd.com/documents/ict/renewable-energy-in-kazakhstan.pdf>
- 4 – <https://www.worldbank.org/en/news/press-release/2018/02/05/kazakhstan-launched-online-platform-for-ghg-reporting#:~:text=Kazakhstan%20ratified%20the%20Paris%20Agreement,temperatures%20below%202%20degrees%20Celsius>
- 5 – <https://astanatimes.com/2019/02/kazakhstan-increases-solar-power-electricity-by-9-percent/>
- 6 – <https://astanatimes.com/2020/05/nine-renewable-energy-projects-to-be-launched-in-kazakhstan-by-december/>
- 7 – <https://www.ebrd.com/documents/ict/renewable-energy-in-kazakhstan.pdf>
- 8 – □ 165-IV ZRK
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