- **Country Assessment Report**

Country/Region name: Republic of Kazakhstan

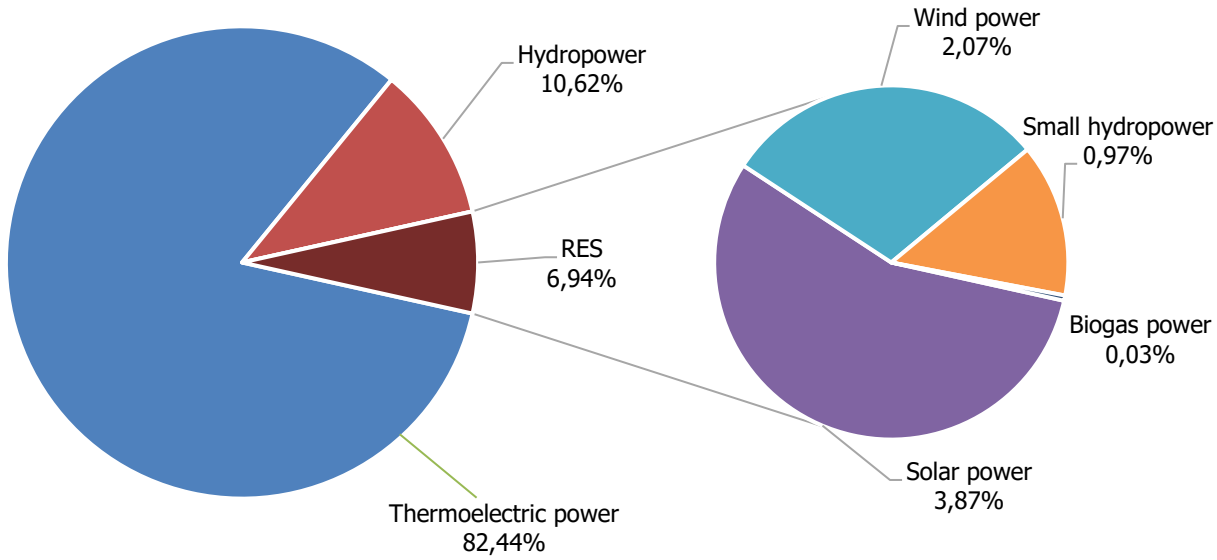
The Republic of Kazakhstan (Kazakhstan) lies in northern Central Asia and is bordered by the Russian Federation (Russia) to the north, China to the east, Kyrgyzstan, and Uzbekistan to the south, and the Caspian Sea and Turkmenistan to the west. Kazakhstan's land area is 2 724 000 square kilometres (km2). The country has the ninth largest territory in the world. The capital is Nur-Sultan (previously called Astana) and the country is home to 18,7 million people. Kazakhstan has significant oil and gas resources and holds the 11th place in the world in proven oil reserves, most of which are in the western regions. In addition, the country's uranium and coal deposits are the 1st and the 10th largest in the world respectively.

https://www.akorda.kz/en/republic_of_kazakhstan/kazakhstan

Generation and demand: (type, MW, TWh)

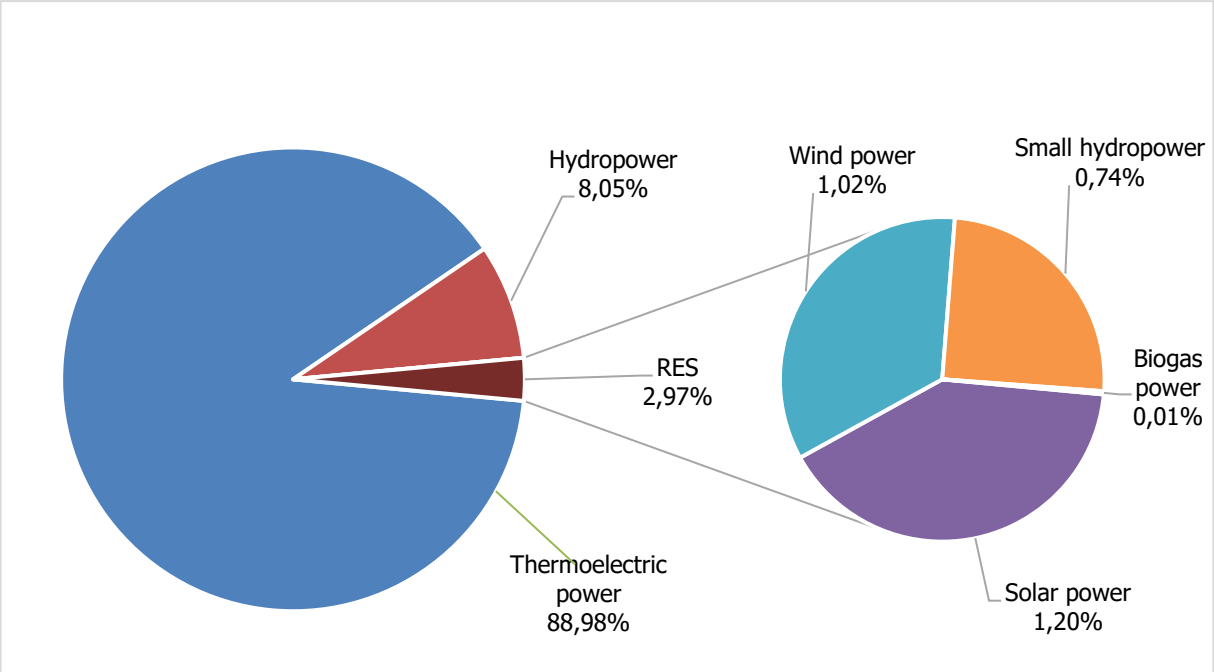
Electricity in Kazakhstan is generated by 179 power plants. Installed capacity of power plants is 23,621.6 MW and mainly represented by thermal power plants (82%). The installed capacity of renewable energy sources (RES) on 1 January 2021 is 1,634.7 MW, including: solar power – 911.6 MW, wind power – 486.3 MW, small hydropower – 229.04 MW, biogas power – 7.82 MW. Thus, the share of RES in Kazakhstan installed capacity is 7%.

Figure 1. Kazakhstan installed capacity structure on 1 January 2021



Electricity generation of the Republic of Kazakhstan on 1 January 2021 amounted to 108.1 TWh, renewable energy sources have generated 3.2 TWh or 3% (including solar power – 1.3 TWh, wind power – 1.1 TWh, small hydropower – 0.8 TWh, biogas power – 0.01 TWh).

Figure 2. Kazakhstan electric generation structure on 1 January 2021



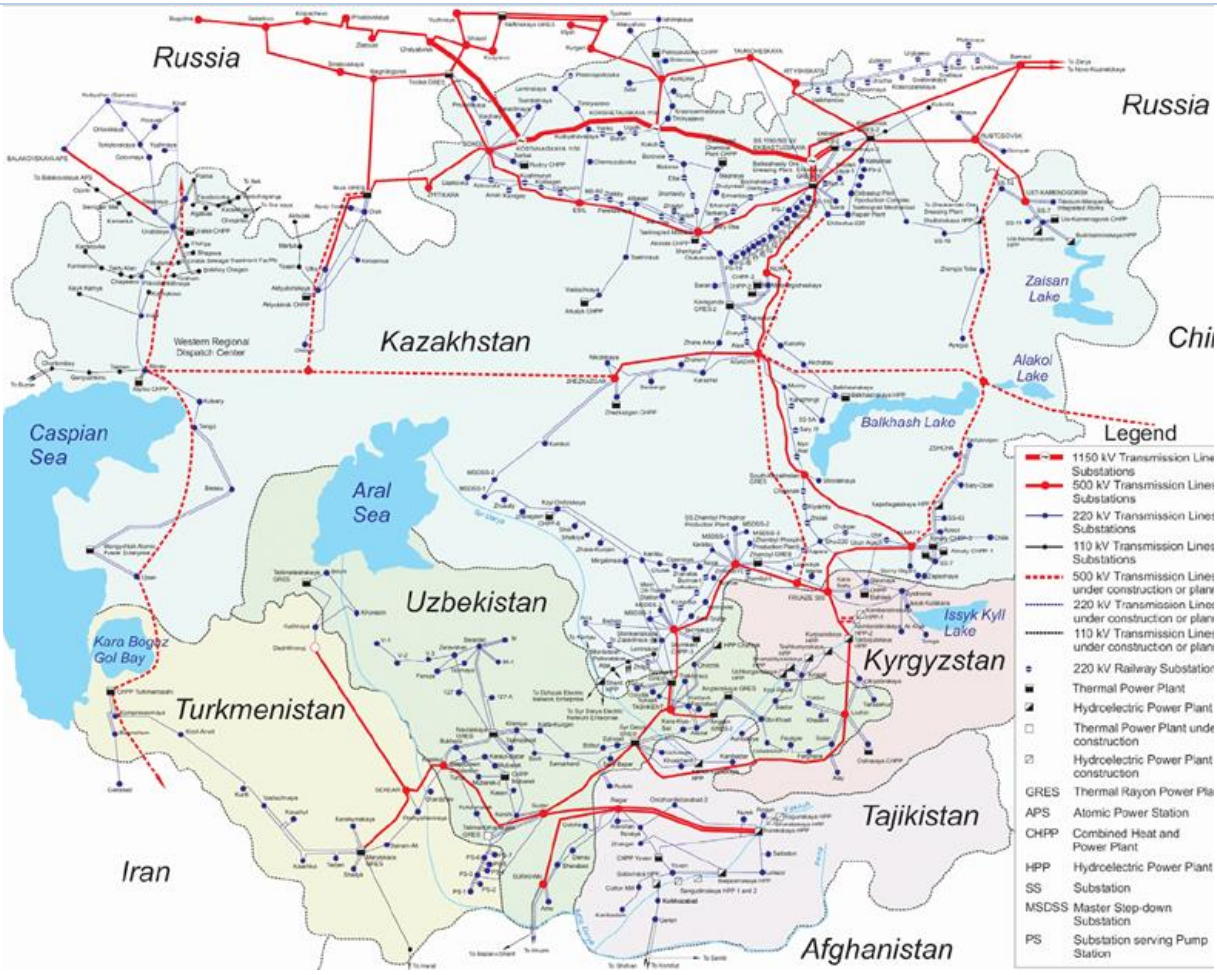
(Source: Ministry of Energy of the Republic of Kazakhstan (2021). URL: https://www.gov.kz/memleket/entities/energo?lang=en

Electrical interconnection and import/export:

The Unified Electric Power System (UES) of the Republic of Kazakhstan is a set of power plants, power transmission lines and substations that provide reliable and high-quality power supply to consumers in the Republic of Kazakhstan. Conventionally, the Kazakhstan energy complex can be divided into three large regions: North and Central region, South region, Western region. Electrical connections between republic regions is provided by the National Power Grid (NPG). It helps to deliver electricity from the power plants to consumers and to neighbouring countries.

Currently, the UES of Kazakhstan operates in parallel with the UES of Russia and the UES of Central Asia, which includes the energy system of Kyrgyzstan and Uzbekistan. This cooperation is based on intergovernmental agreements, according to which the parties may provide the interstate electricity supply and services (transit, power regulation). The interconnections with Turkmenistan and with China are planned/ongoing.

In 2020, the balance-flow of electricity from Russian Federation was 0.1 TWh (the export of electricity to Russia – 1.1 TWh, the import – 1.2 TWh). The balance-flow to Central Asia amounted to 0.9 TWh (the export to Central Asia was 1.2 TWh, the import – 0.3 TWh.



Historical support or development of renewables in the country/region:

In 1995, the Republic of Kazakhstan became a party to the UN Framework Convention on Climate Change. In 2009, Kazakhstan ratified the Kyoto Protocol and committed to reduce greenhouse gas emissions, which became an impetus for the development of renewable energy in the country. Already in 2009, the first legislative initiatives appeared. The law "On Supporting the Use of Renewable Energy Sources" was adopted, aimed at supporting the use of renewable sources in the production of heat and electricity. In 2012, the Government of the Republic of Kazakhstan adopted the Kazakhstan 2050 Strategy, which specifies the directions for long-term economic development in the country.

In May 2013, the Concept for the Republic of Kazakhstan's Transition to a Green Economy (Green Economy Concept) was adopted with the ambitious goal of a 2050 generation mix comprising 50% alternative energy sources, including gas, nuclear and renewable energy. The government plans to achieve this through a gradual decommissioning of aging infrastructure, broader use of alternative fuels, installation of energy-efficient equipment, and compliance with strict environmental standards.

The Green Economy Concept defines the following goals for the development of renewable energy in Kazakhstan:

- A 3% share of RE in total electricity production by 2020,
- A 15% share of RE in total electricity production by 2030 (newly declared target in May 2021),
- A 50% share of low-carbon alternative and RES by 2050.

For the successful functioning of the renewable energy sector and achievement of the set goals, the Financial Settlement Center of RE (FSC) began operating in 2013. The FSC carries out centralized purchase and sale of electric energy produced by RE facilities and supplied to the Kazakhstan unified power system in accordance with the procedure provided for in the Law on the Support of RES. Later, the Decree of the Government of the Republic of Kazakhstan, appointed the FSC as the financial settlement center for the support of RE sources.

In 2014, another measure to support renewable energy sector was introduced - feed-in tariffs for a period of 15 years.

In November 2016, the Minister of Energy of the Republic of Kazakhstan set a target for RE sector development by 2020, with the overall goal of increasing the total installed capacity of RE facilities to 1,700 MW by 2020 (3%) (Table 1).

Table 1. Kazakhstan Renewable Energy Sector Development Targets

Indicator	Target
Share of electric energy produced by renewable energy facilities in the total volume of 2020 electricity production	3%
Total installed capacity of renewable energy facilities by 2020, including: Wind power Solar power, using solar PV energy converters Hydro Power Biogas Power	1700 MW 933 MW 467 MW 290 MW 10 MW

In 2017, the mechanism for RE auctions was introduced. The ceiling auction prices were set at the feed-in tariff level.

In February 2018, the 2025 Republic of Kazakhstan Strategic Development Plan, approved by Decree of the President of the Republic of Kazakhstan, sets an intermediate target of a 6% share of renewable energy in total electricity production by 2025.

(https://rfc.kegoc.kz/en)

Electricity market structure:

The electricity market has two levels - wholesale and retail.

The wholesale electricity market in Kazakhstan includes:

- Market of decentralized purchase and sale of electricity (bilateral contracts of electricity purchase and sale),

- Centralized electricity market, which is based on purchase and sale of electricity for short-term (spot-trade), mid-term (week, month) and long-term (quarter, year) period,
- Real-time balancing market,
- System and ancillary service market,
- Capacity market (launching on 01 January 2019).

On the wholesale electricity market of Kazakhstan, there are 6 main groups of participants:

- Electricity producers,
- Kazakhstan operator of the electricity and capacity market,
- System operator,
- Regional Electric Network Companies (REC),
- Power transmission companies,
- Power supply organizations.

Electricity produces in Kazakhstan is represented by 179 power plants, mainly by thermal power plants. The power plants are branched into power plants of national importance, power plants of industrial importance and those of regional importance.

Kazakhstan operator of the electricity and capacity market - the main task of the company is ensuring and maintaining constant readiness of trading systems for conducting centralized trading electricity on the wholesale market.

System operator, which is represented by Kazakhstan Electricity Grid Operating Company JSC (KEGOC), carries out centralized operational dispatch control, maintains the balance in the energy system, provides system services, as well as the transmission of electricity through the NPG.

Regional power networks provide electrical connections within regions and power transmission to retail consumers. Electric networks of regional level belong to and are being operated by the *Regional Electric Network Companies (REC).*

Power transmission companies provide contract-based electricity transmission services using their own or managed (rent, lease, trust management and other types of use) electric networks for the wholesale and retail consumers or power supplying companies.

Power supply organizations (ESOs) - purchase electricity directly from power generators or at the centralized auctions and further sell it to the end retail consumers. Some of power supply organizations have a role of the 'guaranteed power supplier'.

(https://www.kegoc.kz/en)

Description of renewables support mechanism:

Renewables support mechanism in The Republic of Kazakhstan includes the following measures:

- The FSC created under the Kazakhstan Electricity Grid Operating Company JSC (KEGOC) as a single buyer of RE,

- 20-year power purchase agreements at auction prices with the FSC for all RE,
- Annual indexation of auction prices, beginning in the second year of generation, with 70% based on the national currency exchange rate to convertible currencies and 30% based on the consumer price index,
- RE generators are exempt from payment for electricity transmission services,
- Financial settlement of imbalances due to RES is carried out by the FSC,
- Priority dispatch for RE generators,
- The transmission company has no right to refuse to connect the RE facility due to lack of network availability,
- The transmission company bears the expenses for the network's reconstruction and expansion,
- Land plots and connection points are reserved for RE auctions,
- Legislation identifies investment preferences.

The auction system and other supporting measures made it possible to achieve a significant reduction in prices for "green" energy. The maximum reduction in tariffs for individual projects was 64% for solar power plants, 30% for wind power plants and 19% for hydroelectric power plants. Now, the issue of introducing additional support mechanisms is discussed. Such as - stimulation of small-scale renewable energy projects, extension the term of PPA contracts by 20 years, introduction of additional investment and tax preferences.

Responsible government department: (include key contacts)

State administration in the field of energy sector (RE as well) is carried out by the Ministry of Energy (executive body of the Government of Kazakhstan). It was created during the reorganization of the government on 6 August 2014. The Ministry carries out the formation and implementation of state policy, coordinates the management process in electricity sector. The competence of the Ministry includes the issues of approving the tariffs for the production of electricity by energy producing organizations.

[redacted] the Minister of Energy of the Republic of Kazakhstan (reception phone number: [redacted], e-mail: [redacted] The director of RE Department [redacted] (phone number: [redacted]; e-mail: [redacted]).

The newly founded Ministry of Ecology, Geology and Natural Resources (in 2019) is responsible for environmental protection policy, green economy" development, waste management (excluding municipal, medical and radioactive waste), etc.

Existing/Planned energy legislation:

The main law regulating the entire legislative framework of the Kazakhstan electricity sector is the law of the Republic of Kazakhstan dated July 9, 2004 No. 588-II "On the electric power industry". The law No. 165-IV "On Supporting the Use of Renewable Energy Sources" dated July 4, 2009 is aimed at supporting and developing renewable sources in the country. The wholesale

electric power and capacity market is regulated by the Order of the Minister of Energy of the Republic of Kazakhstan dated February 20, 2015 No. 106 "On approval of the Rules for the organization and functioning of the wholesale electricity market". The issues of main participants operation in the wholesale electricity market, as well as their interaction, is represented in the following laws:

- Order of the Minister of Energy of the Republic of Kazakhstan dated October 17, 2014 No. 61 "On the determination of the system operator",
- Order of the Minister of Energy of the Republic of Kazakhstan dated December 18, 2014 No. 210 "On Approval of Electric Grid Rules",
- Order of the Minister of Energy of the Republic of Kazakhstan dated December 3, 2015 No. 691 "On approval of the Rules for the provision of services by a system operator, organization and functioning of the market for system and auxiliary services".

The basis for the implementation of energy conservation policy is the laws of the Republic of Kazakhstan "On energy conservation and improving energy efficiency" and "On introducing amendments and additions to some legislative acts on issues of energy conservation and improving energy efficiency".

Environmental legislation for RE:

In accordance with the Clause 7 para 3 article 65 of newly adopted Ecological code an environmental impact assessment (EIA) is mandatory for defined types of economic and other activities that may have a direct or indirect impact on the environment and public health.

The authorized environmental protection body is the Ministry of Ecology, Geology and Natural Resources of the Republic of Kazakhstan.

https://www.gov.kz/memleket/entities/ecogeo?lang=en

Existing/Planned energy certificate systems: (purpose, extent)

Currently there is no EAC system operating in the Country.

Extent of engagement with government:

The project team has been involved in the RE field for more than 12 years providing inputs for further RE policy enhancements, for example: preparing recommendations on developing policy regulations for Ministry of Energy, RE support mechanisms, rooftop solar projects among householders / farmers, bilateral contracts (B2B) mechanism implementation and so on. RE Department is keen to develop I-REC certification in the country. Moreover, the project team has a close cooperation with the Ministries of Ecology, Geology and the Natural resources on discussion country's low carbon development strategy.

Response from Government in relation to attribute tracking systems:

The project team had a preliminary meeting with the Ministries of Energy and Ecology on I-REC certificate issuance topic and received formal support from them. The mentioned Ministries have no formal mandate to maintain such platform, yet they understand the importance of creating RE certification system by NGOs and private sector in the light of the upcoming international carbon trade and ecologic reporting, as well as withing the context of reaching declared NDC goals.

Demand-side market potential or strategic nature of market development:

At the end of 2020, the global RE100 initiative comprised over 300 companies from Europe, Asia, North and South America and Australia. So far local companies are absent among the RE100 members. However, around 12 out of 300 RE100 companies are reporting on energy consumption in Kazakhstan.

All RE100 companies have to go through a transition towards renewable electric power globally, including Kazakhstan. **According to the RE 100 Annual progress and Insights report 2020 the reported companies consume about 16,388 MWh a year. As of December 2020, total renewable production reached 3% i.e. 3,2 billion kWh.** Thus, current production of «green» electricity is enough to satisfy potential demand of the first customer from RE 100 list. A part of RE 100 companies and other foreign companies which have an operation activity in Kazakhstan will be targeted. The secondary goal is to engage local corporations/medium and small businesses. Thus, RECs market potential in Kazakhstan is conservatively estimated at 320 000 MWh a year by 2025 (10% of current production) and 1 500 000 MWh a year by 2030.

https://www.there100.org/re100-members

Analysis of political disruptions or market risks:

No political disruptions or market risks for introduction of I-REC standard in Kazakhstan have been identified. The overall mechanism goes in line with the governmental policy to reach RES and carbon neutrality targets,

Analysis of regulatory risks including linkages with carbon markets and support systems:

No regulatory risks for introduction of I-REC standard in Kazakhstan have been identified

Current environmental reporting in energy:

Currently all emitters in energy sector should report on their emissions in the frame of environmental legislation, the emissions should be verified by the independent consultant and put into the state cadaster of emissions for further accounting.

Local ETS was created in 2013 and plan to be relaunch in 2022; trading should rise significantly in a short-term perspective as Kazakhstan has a voluntary obligation to decrease GHG emission by 15% till 2030 from the base year 1990.

Moreover, in line with the newly adopted Ecological code the monitoring mechanism will be set, the main CO2 emitter (mainly energy sector as 70% of total electricity produced from coal) should install automatic system to monitor emissions.
Mechanisms in place to support the reliable verification and issuance of I-RECs: No mechanism exists either private or national, which means a greenfield for the I-REC platform to fill the demand.
Local organizations of importance and their opinion on local I-REC market development: I-REC certification is a next step of the local RE market development. Local organizations of importance understand well trends on global climate agenda and now start to develop a corporate strategy focusing on reaching carbon neutrality/decreasing carbon footprint and etc. I-REC certification is an instrument allows to achieve corporate target in decreasing carbon footprint in day-to-day operation thus we see a strong potential implementing the system locally.
Any other relevant information:

Report Prepared by	Dairbekov, Erlan
Contributors	Baiseitov Diaz, ECOJER team
Preparation Date	10/10/2021