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Kazakhstan Solar Report

Prepared by J.v.G. Technology GmbH

J.v.G. Technology GmbH is a German engineering company specializing in turnkey solar module production lines and manufacturing consulting, with project experience ranging from 20 MW to 500 MW per production line, including multi-line and gigafactory projects exceeding this scale.

This Solar Report is part of the **PVKnowHow** Knowledge Network.
The data, analysis, and conclusions in this document are based on real research, consulting insights, and international solar market data.

Gain comprehensive insights into the statistics and metrics surrounding the solar production industry in Kazakhstan

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

Average yearly sunshine: 2760 hours

State with the most sunshine: Arizona

Average sunlight required for solar energy production: 4-5 hours/day

kWh per kWp installed

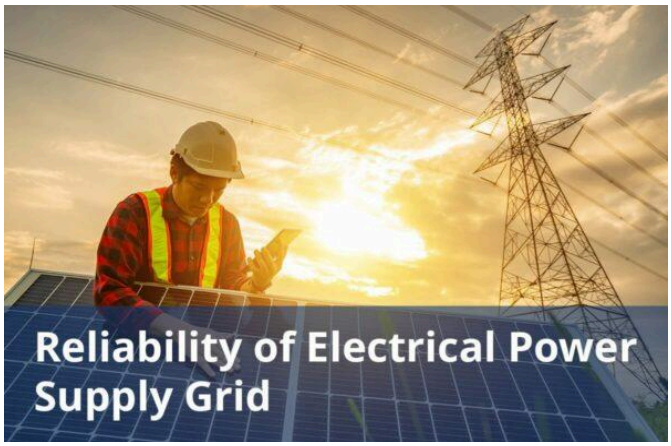
Average kWh produced per kWp: 1200-1500 kWh

Factors affecting kWh per kWp: location, weather, and system orientation

Average cost per kWh from utility company

Average cost of electricity: $0.132/kWh

Cost variations by state: different energy markets



Reliability of electrical power supply grid

Solar energy reliability: high in sunny regions

Backup systems are recommended for cloudy days




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total solar panels installed: 2 million

Total capacity from installed panels: 20 GW

Total solar panel production capacity (projected)

Projected installations by 2030: 10 million

Projected total capacity: 100 GW

Average costs of various electricity generation sources (coal, natural gas, solar, etc)

Average cost of solar panels: $2500/kW

Descent in cost over the last decade: around 70% decrease

Percentages of various electricity generation sources (coal, natural gas, solar, etc)

Solar energy contributions: 3% of total electricity

Expected rise in contributions: up to 15% by 2030

Average daily availability of electricity from the national grid (measured in hours)

Average daily solar energy production: 4-6 hours

Variability based on geography and weather conditions

Number of residential solar panel installations

Estimated number of residential solar panels: 1.5 million

Panels contributing to home energy needs

Total number of solar farms (installed and projected)

Number of solar farms in the country: 500

Average size of solar farms: 100 acres

Off-grid market demand for solar panels (current and projected)

Although precise sales figures for off-grid solar panels in Kazakhstan are difficult to obtain due to limited publicly available data.

Kazakhstan's off-grid solar panel market is anticipated to experience sustained growth, driven by the country's pursuit of renewable energy goals and the increasing demand for dependable and eco-friendly energy solutions in rural and remote areas.

Off-grid solar, powers rural Kazakhstan, bridging the electricity gap in remote areas beyond the national grid.

On-grid market demand for solar panels (current and projected)

Current Capacity: As of now, Kazakhstan has around 1.3 GW of installed solar PV capacity.

Projected Demand: Kazakhstan's on-grid solar panel market is poised for sustained growth, driven by government initiatives, technological innovations, and the global shift towards renewable energy.

2030 Target: The country aims to significantly increase this capacity, with projections indicating that solar PV capacity could reach around 5 GW.

Average monthly income of workers in solar industry (labor cost)

The average salary for a solar power plant technician in Astana, Kazakhstan, is approximately $7836.56 USD per year, or $3.77 USD per hour.

Astana, Kazakhstan solar fabrication technicians earn an average gross salary of $8544.05 per annum (hourly: $4.11), 1% lower than the national average.

The salary for a solar engineer in Kazakhstan varies depending on experience, location, and employer. Here are some approximate figures:

- Average Annual Salary: Around $810.68 USD
- Average Hourly Rate: Approximately $8.16 USD

Population of the country

As of 2024, Kazakhstan's population is approximately 19.8 million people.

Average overhead costs of solar panel production (with a brief breakdown)

The overhead costs for solar panel production in Ivory Coast typically range from 20% to 25% of the total production cost.

In the Republic of Kazakhstan, the average monthly salary stood at $813 USD.

The median monthly wage, based on estimates for the first quarter of 2024, was $536 USD.

Additionally, as of January 1, 2024, the minimum monthly wage has been established at $181 USD.

Electricity: around $0.076 USD per kWh)

Water (Industrial Use): Generally ranging from $0.21 USD – $0.32 USD per cubic meter, depending on various factors.

A summary of the energy infrastructure

As of January 1, 2024, Kazakhstan’s power generation infrastructure comprises 222 power plants with diverse ownership structures, boasting a total installed capacity of 24641.9 MW and an available capacity of 20428.4 MW.

Nationally significant power plants are large thermal facilities that produce and distribute electricity to consumers via Kazakhstan’s wholesale market.

Some of the government regulations surrounding solar panel production

Kazakhstan's renewable energy policy framework includes:

- The 2009 law supporting renewable energy
- Auction mechanisms
- 20-year power purchase agreements
- Tax incentives and investment preferences
- The recently signed strategy for achieving carbon neutrality, outlining a roadmap for the country's green transition, sector-specific targets, and international commitments.

Government initiatives in solar panel production (includes investments and subsidies)

In 2014, Kazakhstan introduced a special tariff for renewable energy sources, which were still a novel concept in the country at the time.

This meant that investors building solar, wind, biogas, or hydroelectric power plants were guaranteed a fixed tariff for 15 years, providing long-term stability and attracting both foreign and domestic companies to the green energy sector.

Notable solar projects in the country (installed and projected)

SES Saran Solar PV Park:
- Capacity: 100MW solar PV power project
- Developed by Goldbeck Solar and commissioned in 2019.

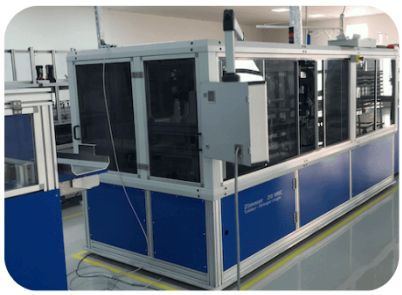
M-KAT Solar PV Park:

- Capacity: 100MW solar PV power project
- Developed by Total Eren and operational in 2019.

Some of the notable solar companies (plus brief details on what they do)

Carer Group: The carer group of companies is a pioneering leader in Kazakhstan's renewable energy sector, with 8 years of expertise in developing, building, launching, and maintaining solar power plants across the country.

EcoNRG: Founded in 2011, ECONRG specializes in the supply and installation of high-quality solar thermal and PV systems in Kazakhstan and the CIS region, offering effective solutions at competitive prices.



ABOUT THIS REPORT

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All market data, analysis, and conclusions follow JvG's internal

consulting standards and international PV market research practices.

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About J.v.G. Technology GmbH

J.v.G. Technology GmbH is a European engineering and advisory specialist for solar production lines and manufacturing equipment, supporting investors and operators with market, location and production-focused decision frameworks.
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