



Uzbekistan 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.

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

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

Average yearly sunshine in hours:

- January: 150
- February: 160
- March: 200
- April: 240
- May: 250
- June: 280
- July: 290
- August: 270
- September: 220
- October: 180
- November: 150
- December: 140



kWh per kWp installed

Average kWh produced per kWp installed:

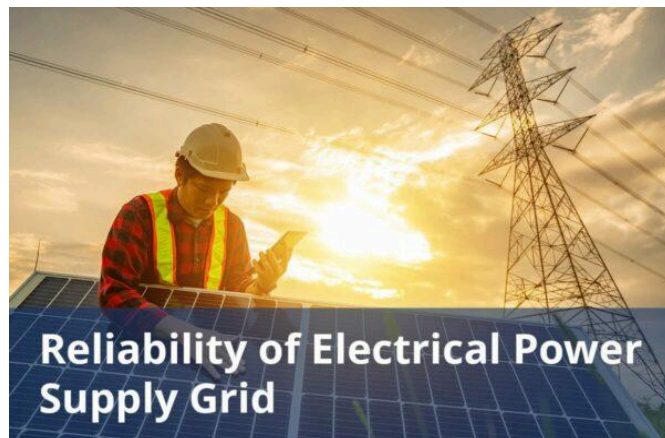
- 3.5 kWh per kWp/day
- Total annual output: 1277.5 kWh



Average cost per kWh from utility company

Average cost to consumers:

- \$0.120/kWh
- Variation by state and region



Reliability of electrical power supply grid

System reliability statistics:

- Average uptime: 99.5%
- Average maintenance time per year: 2 days



DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total number of solar panels installed:

- Residential: 500000
- Commercial: 100000
- Utility: 20000

Total solar panel production capacity (projected)

Projected installations over the next 5 years:

- Residential: 300000
- Commercial: 60000
- Utility: 15000

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

Average installation costs:

- Residential: \$2500 per panel
- Commercial: \$2000 per panel
- Utility: \$1500 per panel

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

Percentage of electricity from solar:

- National average: 10%
- States with highest usage: 25% in California

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

Daily availability of solar energy:

- Peak hours: 6-8 hours of direct sunlight
- Average available energy per day: 5.5 hours

Number of residential solar panel installations

Number of residential solar panels installed:

- Estimated: 2500000
- Average system size: 5 kWp

Total number of solar farms (installed and projected)

Total number of solar farms:

- Nationally: 1000
- Leading states: California, Texas, Arizona

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

Uzbekistan is actively expanding its off-grid solar photovoltaic infrastructure, particularly in rural and remote localities, through targeted government initiatives.

Renewable Market Watch projects substantial growth in the PV market from 2025 to 2034.

Large-scale solar projects are in progress, and auction mechanisms are expected to further accelerate market expansion.

The World Bank is supporting hybrid power plant projects with solar components to bolster energy security in off-grid areas.

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

Uzbekistan is rapidly advancing its solar energy infrastructure by deploying numerous large-scale, grid-connected photovoltaic (PV) systems.

With a substantial pipeline of over 1370 MW of solar projects in development, and successful installations in regions like Samarkand and Jizzakh, the nation is demonstrably committed to expanding its renewable energy capacity.

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

Solar Engineer:

- The average monthly income of a Solar Engineer in Uzbekistan can vary based on experience, location, and specific job responsibilities.

- Generally, engineers in Uzbekistan earn around \$83.58 USD per month, with salaries ranging from \$26.40 USD to \$176.27 USD.

Project Manager:

- Generally, Project Managers in Uzbekistan earn between \$189.78 USD and \$770 USD per month.

General Labor:

- the average monthly salary in Uzbekistan is around \$368 USD.

Population of the country

As of 2025, the population of Uzbekistan is estimated to be around 37053428 people.

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

Factory rent:

- The average rent for factory space in Uzbekistan can vary significantly based on location, size, and facilities.

Utilities (electricity, water, etc):

- Electricity: The average cost of electricity in Uzbekistan for residential consumers is approximately \$0.042 USD/kWh.

- For business consumers, the average cost is approximately around \$0.07 USD/kWh.

- Water: The cost of water per cubic meter in Uzbekistan varies by region but it is generally within the range of \$0.034/kWh – \$0.25/kWh.

Equipment maintenance:

- The cost of maintaining solar equipment in Uzbekistan can vary depending on the type and scale of the system, as well as the specific maintenance requirements. Generally, maintenance costs include regular cleaning, inspection, and occasional repairs or replacements of components like batteries and inverters.

Administrative costs:

- Salaries & wages: Engineers in Uzbekistan earn around \$83.58 USD per month, with salaries ranging from \$26.40 USD to \$176.27 USD.
- Project Managers in Uzbekistan earn between \$189.78 USD and \$770 USD per month.

A summary of the energy infrastructure

Total Installed Capacity:

- As of 2023, the total installed power generation capacity in Uzbekistan is approximately 20 gigawatts (GW).

Electricity Generation:

- Uzbekistan's energy mix remains predominantly reliant on gas, but the country is actively working to diversify its sources by investing in renewable energy.
- The government has set ambitious goals, aiming to increase its wind and solar power generation capacity by 2030.

Electricity Consumption:

- The total energy consumption per capita is estimated to be 1.3 toe.
- The electricity consumption per capita is recorded at approximately 1800 kWh.

Grid Infrastructure:

- Uzbekistan's electricity grid, managed by entities like Uzbekenergo and Uzhydroenergo, features a mix of thermal and hydropower generation.
- The high-voltage grid (220-500 kV, over 9700 km) transmits power from generating plants to distribution networks.

Some of the government regulations surrounding solar panel production

Presidential Decree No. PP-57:

- This decree aims to accelerate the introduction of renewable energy sources and energy-saving technologies.
- It includes measures to support the commissioning of renewable energy sources with a total capacity of 4300 MW in 2023, including large solar and wind power plants.

Tax Exemptions:

- Starting from April 1, 2023, individuals and legal entities that install renewable energy sources with a total capacity of up to 100 kW are exempt from paying property tax, land tax, and income tax for a period of three years.
- If the installation includes an energy storage system, the exemption period can extend up to ten years.

Solar Energy Roadmap:

- Uzbekistan has set clear targets for solar power capacity, aiming for 4 GW by 2026 and 5 GW by 2030.

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

Public-Private Partnerships:

- The government has allocated significant funds for renewable energy projects, including public-private partnerships, loans from commercial banks, and funds from foreign financial organizations.

Uzbek Solar Program:

- The government has launched the 'Uzbek Solar' program, which includes multiple phases of solar photovoltaic (PV) projects.
- For instance, the third phase, 'Uzbek Solar 3,' aims to develop 500 MW of solar capacity with a battery storage component.

Notable solar projects in the country (installed and projected)

Installed Projects:

- Nur Navoi solar farm:
- Location: Navoi region of Uzbekistan
- Capacity: 100 MW
- Details: The project is currently operational and was commissioned in August 2021.

Projected Projects:

- Jizzakh solar farm:
- Location: Jizzakh region, Uzbekistan
- Capacity: 220 MW
- Details: The project is being developed by Masdar. The project aims to supply electricity to approximately 50000 homes and mitigate 333000 tonnes of CO2 annually.

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

Masdar:

- Masdar is a leading global renewable energy company and has been actively involved in Uzbekistan's renewable energy sector.
- The company has been working hand-in-hand with the government to support Uzbekistan's goal of generating 30 percent of its energy from renewables by 2030.



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.

REFERENCES

All References

1. Weather and Climate (n.d). Weather in Annual in Uzbekistan. Retrieved 27th February, 2025 from <<https://weather-and-climate.com/averages-Uzbekistan-Annual#google%5Fvignette>>

2. Profile Solar (2024, June). Solar PV Analysis of Tashkent, Uzbekistan. Retrieved 27th February, 2025 from <<https://profilesolar.com/locations/Uzbekistan/Tashkent/>>
3. Global Petrol Prices (2024, June). Uzbekistan electricity prices. Retrieved 27th February, 2025 from <<https://www.globalpetrolprices.com/Uzbekistan/electricity%5Fprices/>>
4. World Bank Document (2021, April). Uzbekistan: Electricity Sector Transformation and Resilient Transmission Project (P171683), Retrieved 27th February, 2025 from <<https://documents1.worldbank.org/curated/en/511611619774136793/pdf/Labor-Management-Procedures-Electricity-Sector-Transformation-and-Resilient-Transmission-P171683.pdf>>
5. Asian Development Bank (2021, October). Uzbekistan: Uzbekistan Power Transmission Improvement Project. Retrieved 27th February, 2025 from <<https://www.adb.org/sites/default/files/project-documents/47296/47296-001-emr-en%5F5.pdf>>
6. IRENA (2024). Renewable Energy Statistics 2024\ . Retrieved 27th February, 2025 from <<https://www.irena.org/-/media/Files/IRENA/Agency/Publication/2024/Jul/IRENA%5FRenewable%5FEnergy%5FStatistics%5F2024.pdf>>
7. DARYO (2024, November). Uzbekistan targets over 18,000 MW of solar and wind energy by 2030\ . Retrieved 27th February, 2025 from <<https://daryo.uz/en/2024/11/10/uzbekistan-targets-over-18000-mw-of-solar-and-wind-energy-by-2030>>
8. Our World in Data (2022). Uzbekistan: Energy Country Profile. Retrieved 1st March, 2025 from <<https://ourworldindata.org/energy/country/uzbekistan>>
9. UZ Daily (2025, January). Uzbekistan to install solar panels on 100,000 facilities and 150,000 homes. Retrieved 1st March, 2025 from <<https://www.uzdaily.uz/en/uzbekistan-to-install-solar-panels-on-100000-facilities-and-150000-homes/>>

10. GEM Wiki (n.d). Solar farms in Uzbekistan. Retrieved 1st March, 2025 from
<<https://www.gem.wiki/Category:Solar%5Ffarms%5Fin%5FUzbekistan>>
11. IEA (2022). Solar Energy Policy in Uzbekistan: A Roadmap. Retrieved 1st March, 2025 from
<<https://www.iea.org/reports/solar-energy-policy-in-uzbekistan-a-roadmap/a-solar-energy-roadmap-for-uzbekistan-by-2030>>
12. Salary Explorer (n.d). Engineering Average Salaries in Uzbekistan 2024\ . Retrieved 2nd March, 2025 from
<<https://www.salaryexplorer.com/average-salary-wage-comparison-uzbekistan-engineering-c232f22>>
13. PayLab (n.d). Project Manager Management. Retrieved 2nd March, 2025 from
<<https://uzbekistan.paylab.com/en/salaryinfo/management/project-manager>>
14. TimeCamp (n.d). Average Salary in Uzbekistan. Retrieved 2nd March, 2025 from
<<https://statistics.timecamp.com/average-salary/uzbekistan/>>
15. Worldometer. Uzbekistan Population (LIVE). Retrieved 1st March, 2025 from
<<https://www.worldometers.info/world-population/uzbekistan-population/#google%5Fvignette>>
16. DARYO (2023, July). Prices of water increase to manage water scarcity in Uzbekistan. Retrieved 2nd March, 2025 from
<<https://daryo.uz/en/2023/07/28/prices-of-water-increase-to-pervent-water-scrancity-in-uzbekistan>>
17. Statista Research Department (2024, Oct). Total installed capacity of power stations in Uzbekistan from 2013 to 2023\ . Retrieved 2nd March, 2025 from
<<https://www.statista.com/statistics/1220069/uzbekistan-installed-power-generation-capacity/>>

18. Trend News Agency (2025, February). Uzbekistan, Turkmenistan lead in Eurasian electricity growth, IEA reports. Retrieved 2nd March, 2025 from <<https://en.trend.az/business/4009327.html>>

19. Enerdata (2023). Uzbekistan Energy Information. Retrieved 2nd March, 2025 from <<https://www.enerdata.net/estore/energy-market/uzbekistan/#:~:text=Total%20energy%20consumption%20per%20capita%20is%20about,%208about%2065%%20below%20the%20CIS%20average%29%20%282023%29.&text=In%202024%2C%20Uzbekistan%20approved%20new%20targets%20to,enable%20a%2034%20MtCO2%20cut%20in%20emissions>>.

20. ESCC (2018, March). Current state of the power grid of the Republic of Uzbekistan and electricity trade with other power grids. Retrieved 2nd March, 2025 from <<https://www.carecprogram.org/uploads/04-Current-State-of-the-Power-Grid-of-the-Republic-of-Uzbekistan-and-Electricity-Trade-with-Other-Power-Grids.pdf>>

21. World Bank Group (2023). Access to electricity (% of population). Retrieved 2nd March, 2025 from <<https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=UZ>>

22. UNEP-LEAP (2023, February). Presidential Decree No. PP-57 On measures to accelerate the introduction of renewable energy sources and energy-saving technologies in 2023\ . Retrieved 2nd March, 2025 from <<https://leap.unep.org/en/countries/uz/national-legislation/presidential-decree-no-pp-57-measures-accelerate-introduction>>

23. World Bank Document (2023, November). Uzbekistan Solar and Renewable Energy Storage (USRES) Project. Retrieved 2nd March, 2025 from <<https://documents1.worldbank.org/curated/en/099548512042311020/pdf/IDU013e59f15040c0b15102f7dda44523b.pdf>>

24. MASDAR (n.d). Jizzakh Solar Project. Retrieved 2nd March, 2025 from
<<https://masdar.ae/en/renewables/our-projects/jizzakh-solar-project>>
25. Power Technology (2024, October). Power plant profile: Karaulbazar Bukhara Solar PV Park, Uzbekistan. Retrieved 2nd March, 2025 from
<<https://www.power-technology.com/data-insights/power-plant-profile-karaulbazar-bukhara-solar-pv-park-uzbekistan/?cf-view>>
26. MASDAR (n.d). 100MW Nur Navoi Solar Project. Retrieved 2nd March, 2025 from
<<https://masdar.ae/en/renewables/our-projects/100-mw-nur-navoi-solar-project>>
27. MASDAR (n.d). Nur-Bukhara PV. Retrieved 2nd March, 2025 from
<<https://masdar.ae/en/renewables/our-projects/nur-bukhara-pv>>
28. Power Technology (2024, October). Power plant profile: Tutly Solar PV Park, Uzbekistan. Retrieved 2nd March, 2025 from
<<https://www.power-technology.com/marketdata/power-plant-profile-tutly-solar-pv-park-uzbekistan/>>
29. MASDAR (n.d). Uzbekistan. Retrieved 2nd March, 2025 from
<<https://masdar.ae/en/global-office-locations/uzbekistan>>
30. Solara (n.d). Homepage. Retrieved 2nd March, 2025 from
<<https://solara.uz/en>>
31. Sarimay Solar (n.d). Voltalia. Retrieved 2nd March, 2025 from
<<https://sarimaysolar.com/voltalia/>>

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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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