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Hungary 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.

Disclaimer: This document represents an independent market and manufacturing analysis. It is provided for informational and educational purposes only and does not constitute a commercial offer, binding proposal, or contractual commitment.

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

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

Average yearly sunshine in the region:
- 2500 hours annually
- Ideal for solar energy generation

kWh per kWp installed

Energy output per installed kWp of solar:
- Approximately 1200 kWh/kWp per year

Average cost per kWh from utility company

Average cost of electricity:

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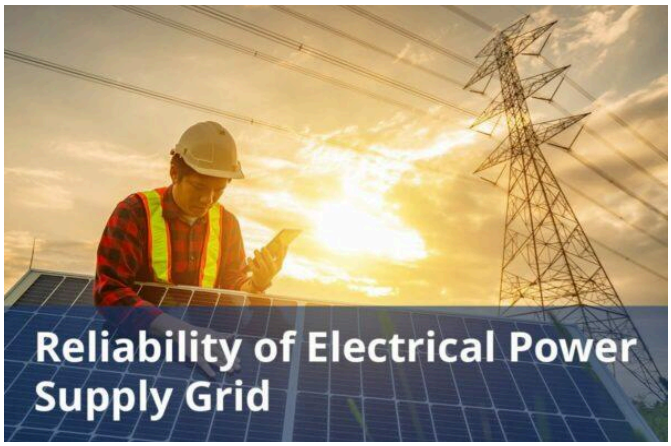
- Residential: $0.135/kWh
- Commercial: $0.115/kWh
- Industrial: $0.100/kWh



Reliability of electrical power supply grid

Reliability of solar energy systems:
- High reliability with proper maintenance
- Generally operational 90% of the time

DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

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Total installed solar panels:
- Over 2 million panels across the region

Total solar panel production capacity (projected)

Projected installations in the next five years:
- Estimated at 1.5 million additional panels

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

Average costs of solar panels:
- Average price: $2.50/watt
- Installation costs vary by provider

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

Percentages of electricity generated from solar:
- Currently at 10%
- Expected to rise to 20% by 2025

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

Daily availability of solar energy:

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- Peak production hours: 5-6 hours
- Varies with seasons and weather conditions

Number of residential solar panel installations

Number of residential solar panels:
- Approximately 500,000 residential systems installed

Total number of solar farms (installed and projected)

Number of solar farms in the region:
- Over 50 operational farms
- Covering varied geographical locations

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

In October 2022, Hungary introduced regulations allowing sub-50 kW grid-connected household solar systems.

This suggests the off-grid market for small residential systems may be limited.

While Hungary has seen rapid growth in its overall solar capacity, the market appears to be focused more on grid-tied systems at this stage rather than rural off-grid applications.

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

Hungary's total capacity of grid-connected solar installations has reached over 5.6 GW as of 2023.

This includes approximately 3.3 GW from industrial solar power plants and around 2.3 GW from residential systems.

In 2023 alone, Hungary deployed a record 1.6 GW of new solar capacity, over 1.5 times more than the previous record year of 2022.

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

Salaries can vary based on factors such as experience, skills, gender, and location within Hungary.

The average monthly salary is estimated to be between $706 and $988 before taxation.

Solar Energy System Installer: the average monthly salary is approximately $1,464.

Solar Engineer: the average monthly salary is approximately $1,149.

Solar Energy Systems Engineer: the average monthly salary is approximately $1,132.

Population of the country

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The current population of Hungary is 9,669,709.

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

Estimate for Factory Rent
- The average rent for industrial-logistics properties in Hungary typically ranges from $4.89 to $5.50 per square meter per month.

Industrial Electricity Rates
- The industrial electricity rate in Hungary for non-household consumers is around $0.33/kWh for those with an annual consumption between 500 to 2000 megawatt-hours.

Water Costs
- The cost of water for businesses in Hungary is around $0.63/m³ for water supply.

Salaries and Wages
- Worker of solar industry in Hungary earn between from $1,132 and $1,464 monthly, depending on the position.

A summary of the energy infrastructure

Hungary's energy mix is characterized by a significant reliance on nuclear and natural gas.

The country aims for a low-carbon electricity mix of 90% by 2030, with plans to phase out coal power generation by 2025 or 2030.

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Renewables are expected to play a crucial role in this transition, with Hungary targeting a 23-25% share of renewables in final consumption by 2030.

Hungary has developed a robust energy infrastructure, including:
- Electricity Grid: The national grid comprises high-voltage transmission lines facilitating connections with neighboring countries.
- Natural Gas Pipelines: The country has around 65000 kilometers of gas lines.
- Storage Facilities: Hungary has significant underground gas storage capacity, with approximately 3.2 billion cubic meters available.

Some of the government regulations surrounding solar panel production

The primary legislation governing the installation of solar panels is Act LXXXVI of 2007 on electricity, along with relevant building regulations and urban planning ordinances specific to municipalities.

Solar panels with a capacity of less than 50 kW can be installed by private individuals and companies.

However, larger installations face significant administrative hurdles.

If solar installations exceed 2 hectares an environmental impact assessment is required.

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

Solar Energy Plus Programme: Launched in December 2023, this program supports families in installing modern solar systems by providing non-refundable financial assistance.

Investment in Energy Storage: The government is allocating $180 million to encourage domestic companies to establish and operate energy storage facilities.

Support for Contractors: The Solar Energy Plus Programme simplifies the application process for contractors.

Removal of Grid Connection Ban: Starting January 1, 2024, the government lifted a temporary ban on residential solar panel systems feeding excess electricity back into the national grid.

Notable solar projects in the country (installed and projected)

Mezőcsát Solar Power Plant: This is Hungary's largest solar power plant, covering 440 hectares and consisting of 466000 solar panels.

Kaba Solar Park: Kaba Solar Park is one of Hungary's largest solar power installations, covering 70 hectares with 97000 solar panels.

Kapuvár Solar Park: Kapuvár Solar Park spans 220000 square meters and consists of 100000 solar panels.

Paks Solar Park: Located near the Paks Nuclear Plant, this solar park covers 51 hectares and consists of 74000 solar panels.

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Mátra Solar Power Plant (Bükkábrány): This plant is part of the Mátra complex and covers 60 hectares with 86000 solar panels.

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

Alteo Nyrt.
- Headquarters: Budapest, Hungary
- Website: https://www.alteo.hu/
- Details: Alteo is a key player in Hungary's energy sector, specializing in renewable energy solutions.

MVM Group
- Headquarters: Budapest, Hungary
- Website: https://www.mvm.hu/
- Details: One of Hungary's largest energy companies, MVM Group is heavily invested in solar power projects.

Solar Markt Kft.
- Headquarters: Budapest, Hungary
- Website: https://www.solarmarkt.hu/
- Details: A leading distributor of solar equipment in Hungary, offering a wide range of solar panels and inverters.

Manitu Solar
- Headquarters: Debrecen, Hungary
- Website: https://napelemnagyker.hu/
- Details: Manitu Solar provides comprehensive solar energy solutions, from system design to installation.

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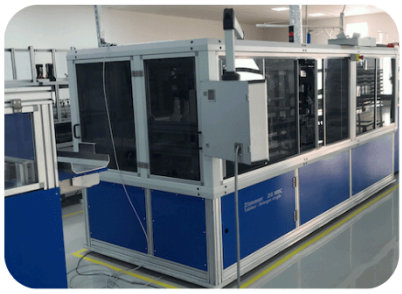

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All market data, analysis, and conclusions follow JvG's internal consulting standards and international PV market research practices.

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