



China 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 China

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

Annual Average Sunshine:

- Location A: 2500 hours/year
- Location B: 2700 hours/year
- Location C: 3000 hours/year



kWh per kWp installed

kWh Production per kWp:

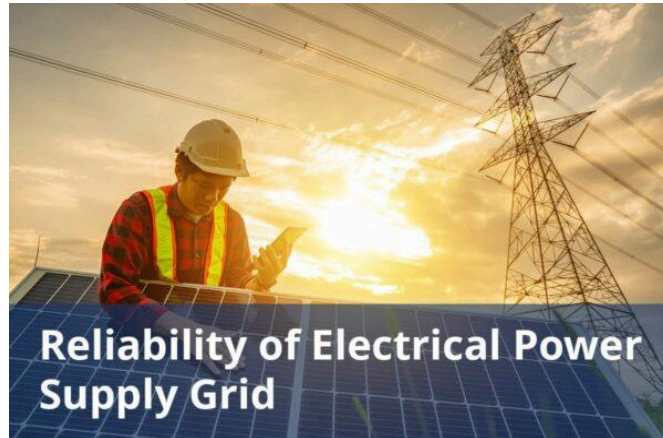
- In sunny areas: 1200 kWh/kWp
- In moderate areas: 1000 kWh/kWp
- In cloudy areas: 800 kWh/kWp



Average cost per kWh from utility company

Average Cost of Electricity:

- Residential: \$0.130/kWh
- Commercial: \$0.120/kWh
- Industrial: \$0.110/kWh



Reliability of electrical power supply grid

System Reliability:

- Expected uptime: 97%
- Maintenance frequency: 1 time/year
- Emergency repair time: 24 hours



DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:

- Residential: 50000 panels
- Commercial: 15000 panels
- Industrial: 2000 panels

Total solar panel production capacity (projected)

Projected Solar Panels by 2030:

- Residential: 70000 panels
- Commercial: 20000 panels
- Industrial: 3000 panels

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

Average Installation Costs:

- Residential: \$2000/panel
- Commercial: \$1500/panel
- Industrial: \$1200/panel

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

Percentage of Electricity from Solar:

- National: 15%
- State A: 25%
- State B: 10%

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

Daily Solar Energy Availability:

- Average: 6 hours/day
- Minimum: 4 hours/day
- Maximum: 8 hours/day

Number of residential solar panel installations

Number of Residential Solar Panels:

- Total: 100000 panels
- Active: 80000 panels
- Decommissioned: 20000 panels

Total number of solar farms (installed and projected)

Number of Solar Farms:

- Total: 120 farms
- Operating: 100 farms
- Planned: 20 farms

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

The Chinese government has implemented policies prioritizing decentralized solar photovoltaic (PV) systems over utility-scale solar power farms.

This strategic shift is evident in the growth of distributed solar, which contributed 15.5 GW to the 48.2 GW of new PV installations in 2020.

Projections indicate that distributed solar could account for 25 GW of new capacity in 2021 as market penetration continues to expand.

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

Current Demand:

- As of the end of March 2024, China's cumulative installed solar PV capacity reached around 660 GW.

Projected Demand:

- The Chinese solar energy market is expected to record a compound annual growth rate (CAGR) of more than 15% between 2024 and 2029.

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

Solar engineer:

- A person working as a solar engineer in China typically earns around \$3682.55 USD.
- Salaries range from \$1696.46 USD (lowest) to \$5830.61 USD (highest).

Solar PV Installer:

- The average salary range for a Solar PV Installer in China is between \$17114.25 USD and \$28818.57 USD per year and \$11.45 USD an hour.

Project manager:

- The average salary for a Project Manager in the solar PV industry in China typically ranges from \$18000 to \$25000 USD annually, depending on factors like skills, experience, and education.

Population of the country

As of July 2024, the current population of China is 1425140904.

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

Factory rent/mortgage:

- The average rent for factory buildings in China varies based on region and size.
- The average factory rent ranges between \$25-85 USD per square meter.

Utilities (electricity, water, etc):

- Electricity:
 - As of December 2023, the electricity price for businesses is \$0.087 USD per kWh.
- Water:
 - As of 2023, the average cost of industrial tap water in China amounted to \$0.3389 USD per cubic meter.

Equipment maintenance:

- This includes costs for regular maintenance, repairs, and replacements of parts over the lifespan of the solar equipment.

A summary of the energy infrastructure

Total Installed Capacity:

- In 2023, China's installed electric generation capacity totaled 2.92 terawatts.

- Renewable energy sources comprised 1.26 terawatts of this capacity, with wind power contributing 376 gigawatts and solar power generating 425 gigawatts.

Electricity Generation:

- China's electricity generation is predominantly reliant on fossil fuels, with coal comprising 63% of the energy mix in 2022.

Electricity Consumption:

- China has a total consumption of 6.875 trillion kWh of electric energy per year.
- Per capita this is an average of 4873 kWh.

Some of the government regulations surrounding solar panel production

China's industry ministry has unveiled draft regulations tightening investment requirements in an effort to curtail overcapacity within the solar photovoltaic sector.

The draft regulations establish minimum efficiency benchmarks for various solar panel technologies.

In an effort to maintain its industry leadership, China has introduced proposed export controls for solar technologies.

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

Since 2011, China has undertaken significant investments in expanding its solar photovoltaic supply capacity, allocating over \$50 billion.

The Chinese government has implemented favorable feed-in tariffs to stimulate solar energy adoption.

The Chinese government's unwavering support for its solar industry is evident in the \$130 billion investment made in 2023 alone.

Notable solar projects in the country (installed and projected)

Installed Projects:

- Huanghe Hydropower Hainan Solar Park:
- Location: Remote Qinghai province
- Capacity: 2.2GW
- Details: It is the largest solar facility in the country and the second-largest in the world.

Projected Projects:

- Golmud Solar CSP Power Plant:
- Location: Golmud, Qinghai, China.
- Capacity: 3,300MW
- Details: Construction work started in the first quarter of the year 2021 and is expected to be completed 2024.

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

Jinko solar:

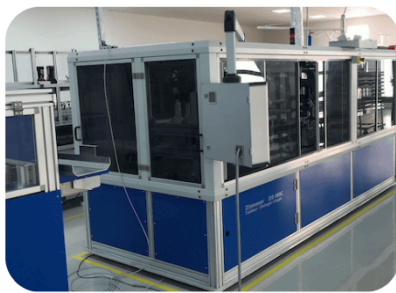
- The company is an integrated photovoltaic enterprise specializing in the research, development, and production of solar products.

Zhejiang Chint Electrics Co Ltd:

- The company specializes in the research, development, manufacturing, and distribution of low-voltage electrical products.

JA SOLAR TECHNOLOGY:

- The company manufactures solar power products that convert sunlight into electricity.



ABOUT THIS REPORT

This Solar Report is part of the PVKnowHow Knowledge Network, developed by J.v.G. Technology GmbH - a German engineering company, specializing in turnkey solar module production lines (ranging from 20 MW to 500 MW per production line, including multi-line and gigafactory projects exceeding this scale).

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

REFERENCES

All References

1. Wikipedia. The free encyclopedia. "Climate of China" updated June 12, 2024\ . Retrieved July 8, 2024 from [https://en.wikipedia.org/wiki/Climate_of_China](https://en.wikipedia.o

8. PEI (Power Engineering International). Renewables – Published Jun 09, 2023\ . Retrieved July 10, 2024 from <<https://www.powerengineeringint.com/renewables/lcoe-for-offshore-wind-now-on-par-with-coal-bnef/>>
9. SP Global. “China’s electricity price from gas drops, but still over 30% higher than coal: NEA”. Published November 06, 2019\ . Retrieved July 10, 2024 from [<https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/coal/110619-chinas-electricity-price-from-gas-drops-but-still-over-30-higher-than-coal-nea>](<https://www.spglobal.com/commodityinsights/en/market-insights/latest-news/coal/110619-chinas-electricity-price-from-gas-drops-but-still-over-30-higher-than-coal-nea#:~:text=The%20energy%20watchdog%20said%20the,in%202018%2C%20up%200.95%25%20on>)
10. Statista. “LCOE in China 2010-2024, by source” Published by Daniel Slotta, Jan 3, 2024\ . Retrieved July 10, 2024 from [<https://www.statista.com/statistics/1327637/levelized-cost-of-energy-in-china/>](<https://www.statista.com/statistics/1327637/levelized-cost-of-energy-in-china/#:~:text=LCOE%20in%20China%202010%2D2024%2C%20by%20source&text=This%20cost%20is%20expected%20to,to%20notably%20increase%20until%202024>)
11. EIA. U.S. Energy Information Administration | 2023 China Country Analysis Brief. Last Updated: November 2023\ . Retrieved July 10, 2024 from <<https://www.eia.gov/international/content/analysis/countries%5Flong/China/pdf/china-2023.pdf>>
12. CHINADAILY. “Restrictions on electricity use expected to be eased”- Updated September 2021\ . Retrieved July 28, 2024 from <<https://chinadaily.com.cn/a/202109/28/WS61525701a310cdd39bc6beb1.html>>
13. PV Magazine. “The evolution of residential PV in China”. Published October, 2021. Retrieved July 28, 2024 from [<https://www.pv-magazine.com/2021/10/14/the-evolution-of-residential->

pv-in-china/](https://www.pv-magazine.com/2021/10/14/the-evolution-of-residential-pv-in-china/#:~:text=China%20is%20the%20largest%20residential%20PV%20market%20in,1.864%20million%20residential%20units%20hosting%20solar%20PV%20systems)

14. Global Energy Monitor (GEM) Wiki. "Solar Farms in China".

Retrieved July 28, 2024 from

<<https://www.gem.wiki/Category:Solar%5Ffarms%5Fin%5FChina>>

15. Mordor Intelligence. "China Solar Energy Market Size & Share Analysis". Retrieved July 28, 2024 from

<<https://mordorintelligence.com/industry-reports/china-solar-energy-market>>

16. SalaryExplorer. "Solar Engineer Average Salary in China 2024".

Retrieved July 28, 2024 from

<<https://www.salaryexplorer.com/average-salary-wage-comparison-china-solar-engineer-c44j11250#google%5Fvignette>>

17. Economic Research Institute (ERI). "Solar Energy System Installer Salary in China". Retrieved July 28, 2024 from

<<https://www.erieri.com/salary/job/solar-energy-system-installer/china>>

18. Worldometers. "China Population (LIVE)". Retrieved July 28, 2024 from

[<https://www.worldometers.info/world-population/china-population/>](<https://www.worldometers.info/world-population/china-population/#:~:text=The%20current%20population%20of%20China,1%2C425%2C671%2C352%20people%20at%20mid%20year>)

19. GlobalPetrolPrices. "China electricity prices". Retrieved July 28, 2024 from

<<https://www.globalpetrolprices.com/China/electricity%5Fprices/>>

20. Statista. "Average industrial water price in China 2023"-Published by [C.

Textor](<https://www.statista.com/aboutus/our-research-commitment>), Nov 15, 2023\ . Retrieved July 28, 2024 from

<<https://www.statista.com/statistics/1423849/china-average-water-price/>>

21. Made-In-China. "Factory Building rent". Retrieved July 29, 2024 from
<<https://www.made-in-china.com/products-search/hot-china-products/Factory%5FBuilding%5FRent.html>>
22. Wikipedia. The free encyclopedia. "Electricity sector in China" updated July 2, 2024\ . Retrieved July 29, 2024 from
<<https://en.wikipedia.org/wiki/Electricity%5Fsector%5Fin%5FChina>>
23. Statista. "Power production breakdown in China 2022, by source"- Published by Daniel Slotta May 14, 2024\ . Retrieved July 29, 2024 from
<<https://www.statista.com/statistics/1235176/china-distribution-of-electricity-production-by-source/>>
24. WorldData.info. "Energy consumption in China" Modified July, 2024\ . Retrieved July 29, 2024 from
<<https://www.worlddata.info/asia/china/energy-consumption.php#google%5Fvignette>>
25. Asia Business Outlook. "China Introduces Slew Of Regulations For Solar Project Investment"- Published July 11, 2024\ . Retrieved July 29, 2024 from
<<https://www.asiabusinessoutlook.com/news/china-introduces-slew-of-regulations-for-solar-project-investment-nwid-6885.html>>
26. THE CHINA PROJECT. "China drafts new export controls to shore up solar dominance". Published February 2023\ . Retrieved July 31, 2024 from
<<https://thechinaproject.com/2023/02/01/china-drafts-new-export-controls-to-shore-up-solar-dominance/>>
27. IEA. "Solar PV Global Supply Chains". Published 2022\ . Retrieved July 31, 2024 from
<<https://www.iea.org/reports/solar-pv-global-supply-chains/executive-summary>>
28. SOLARCTRL. "Why Is China, And Not The US, The Leader In Solar Power?"-By Debby Cao Published April 24, 2024\ . Retrieved July

31, 2024 from

<<https://www.solarctrl.com/news/why-china-the-leader-in-solar-power/>>

29. IGCC BLOG. “How Solar Developed from the Bottom-Up in China”
Published March 14, 2023 By Jonas Nahm. Retrieved July 31, 2024
from

<<https://ucigcc.org/blog/how-solar-developed-from-the-bottom-up-in-china/#:~:text=The%20incentives%20for%20government%20officials,to%20draw%20on%20financial%20support>>

30. CPA. “China’s Solar Firms Are Surviving On CCP Subsidies”
Published by ANDREW RECHENBERG April,2024\ . Retrieved July 31,
2024 from

<<https://prosperousamerica.org/chinas-solar-firms-are-surviving-on-ccp-subsidies/>>

31. NS Energy. “Profiling the five largest solar power plants in China”
Uploaded March 2021\ . Retrieved July 31, 2024 from

<<https://www.nsenerybusiness.com/analysis/largest-solar-plants-china/?cf-view&cf-closed>>

32. Power Technology. “Top five solar energy construction projects that
commenced in China in Q3 2021” Uploaded December 6, 2021\
Retrieved July 31, 2024 from

<<https://www.power-technology.com/marketdata/top-five-solar-energy-construction-projects-china-q3-2021/?cf-view&cf-closed>>

33. World Construction Network. “Top five largest solar energy
construction projects in China commencing in Q2 2023” Updated
August 10, 2023\
Retrieved July 31, 2024 from

<<https://www.worldconstructionnetwork.com/data-insights/five-largest-solar-energy-construction-projects-china/?cf-view>>

34. PitchBook. “JinkoSolar Holding” Retrieved July 31, 2024 from
<<https://pitchbook.com/profiles/company/43060-87#overview>>

35. EnergiesPartnersChaft. “Economics of Urban Distributed PV in
China” – July 2021\
Retrieved July 31, 2024 from

https://transition-china.org/wp-content/uploads/2021/09/Economics_of_Urban_Distributed_PV_in_China_EN1.pdf

36. Yale Environment 360\ “China Sees Rooftop Solar Take Off as New Policies Bolster Growth” Published July, 2022\ Retrieved August 2, 2024 from <<https://e360.yale.edu/digest/china-rooftop-solar-growth>>
37. GSDR prototype briefs 2014\ “Solar PV policies and their impacts in China and India” Retrieved August 2, 2024 from <<https://sustainabledevelopment.un.org/content/documents/5590Solar%20PV%20in%20China%20and%20India.pdf>>
38. Asia Manufacturing Review. “China Introduces Investment Regulations for Solar Industry” July, 2024\ Retrieved August 2, 2024 from <<https://www.asiamanufacturingreview.com/news/china-introduces-investment-regulations-for-solar-industry-nwid-1050.html>>
39. PV Magazine. “China mandates energy storage as it sets 16.5% solar and wind target for 2025”. Published April, 2021.Retrieved August 2, 2024 from <<https://pv-magazine.com/2021/04/29/china-mandates-energy-storage-as-it-sets-16-5-solar-and-wind-target-for-2025/>>
40. PitchBook. “Zhejiang Chint Electrics Company” Retrieved July 31, 2024 from <<https://pitchbook.com/profiles/company/151576-66#overview>>
41. PitchBook. “JA Solar Technology Company” Retrieved July 31, 2024 from <<https://pitchbook.com/profiles/company/42087-25#overview>>
42. PitchBook. “Trina Solar” Retrieved July 31, 2024 from <<https://pitchbook.com/profiles/company/42085-27#overview>>
43. PitchBook. “Yingli Green Energy Holding Company” Retrieved July 31, 2024 from <<https://pitchbook.com/profiles/company/41638-33#overview>>
44. PitchBook. “LONGi Green Energy Technology” Retrieved July 31, 2024 from <<https://pitchbook.com/profiles/company/153986-32#overview>>
45. JinkoSolar.com. Retrieved July 31, 2024 from <<https://www.jinkosolar.com/en/site/aboutus>>

For a detailed list of references and additional information, please visit our website with the current report at:

<https://www.pvknowhow.com/solar-report/china/>

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.

www.jvg-thoma.com

Contact & Further Information

For further discussion or clarification of manufacturing-related aspects, please contact:

J.v.G. Technology GmbH

www.jvg-thoma.com

info@jvg-thoma.com