



Bangladesh 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 Bangladesh

KEY POINTS

All figures have been converted into USD



Yearly sunshine (sun hours per year)

Annual Sunshine Hours:

- City A: 2200 hours
- City B: 2400 hours
- City C: 2100 hours



kWh per kWp installed

kWh per kWp:

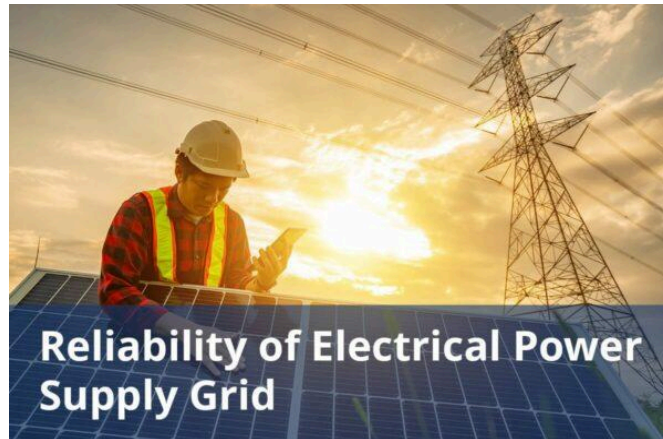
- Standard Panel: 1200 kWh/kWp
- High Efficiency Panel: 1400 kWh/kWp



Average cost per kWh from utility company

Average Cost Per kWh:

- Residential: \$0.122/kWh
- Commercial: \$0.096/kWh



Reliability of electrical power supply grid

System Reliability:

- Solar: 95%
- Wind: 90%



DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:

- 2 million panels

Total solar panel production capacity (projected)

Projected Solar Panels by 2030:

- 5 million panels

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

Average Costs of Installation:

- \$3000/panel
- Installation: \$1000

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

Percentage of Electricity from Renewable Sources:

- 2020: 18%
- 2021: 22%
- 2022: 25%

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

Daily Availability of Solar Energy:

- Average: 4 hours
- Best Locations: 6 hours

Number of residential solar panel installations

Number of Residential Solar Panels:

- 1 million panels installed
- 500,000 projected by 2025

Total number of solar farms (installed and projected)

Number of Solar Farms:

- 250 operational
- 50 under construction

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

The Solar Home System (SHS) program is an off grid program in Bangladesh.

By 2018, the Solar Home System (SHS) program in Bangladesh had achieved significant milestones, including:

- The sale of over 4.1 million units, extending electricity services to approximately 20 million people.
- Financial benefits to SHS households amounting to \$745 million.
- Government earnings of \$474 million from taxes on SHS products, coupled with the avoidance of kerosene subsidies.

Furthermore, market projections indicate that the solar energy market in Bangladesh is poised for substantial growth, with a projected compound annual growth rate (CAGR) of 7.63% from 2024 to 2028. This growth is expected to result in a market volume of 0.51 billion kilowatt-hours by 2028, underscoring the country's increasing adoption of solar energy solutions.

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

In 2023, Bangladesh took significant steps to address its growing energy demand by approving a total of 2.19 gigawatts (GW) of large-scale photovoltaic (PV) projects.

Notably, in December 2023, the Cabinet Committee on Government Purchase (CCGP) approved tariffs for seven solar power plants, totaling 630 megawatts (MW).

The country has also seen the successful commissioning of several solar projects, including:

- The 200 MW solar park in Sundarganj, Gaibandha, which achieved commercial operations in January 2023 and is currently the largest solar project in Bangladesh.
- The 100 MW solar park in Mongla Upazila, Bagerhat, which became operational in 2021.
- In addition to these larger projects, several smaller-scale initiatives are also underway.
- The state-run financier, Infrastructure Development Company Ltd (IDCOL), has approved 41 rooftop solar projects, expected to generate a total of 50 MW of electricity.
- Furthermore, approximately 15 more projects are awaiting approval, which could collectively add 52 MW of generation capacity, further contributing to Bangladesh's growing solar energy landscape.

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

While specific data for the solar industry is limited, wages in the broader renewable energy sector are generally slightly higher than the manufacturing sector average. According to industry estimates, entry-level technicians and workers in the renewable energy sector can expect wages approx. USD 135-170 per month.

Population of the country

As of 2024, the population of Bangladesh stands at approximately 174.7 million people.

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

Some industry estimates suggest that overhead costs for solar panel manufacturing in Bangladesh could be around 15-20% of the total production cost. This is lower than the typical overhead costs in more developed countries, which can range from 25-35%.

Here are some insights into overhead costs for solar panel manufacturing in Bangladesh:

- **Rent/Facility Costs:** Bangladesh generally has lower rental and facility costs compared to many other countries. Industrial rental rates in major cities like Dhaka can range from \$2-5 per square meter per month.
- **Utilities:** Electricity and other utility costs in Bangladesh are relatively low. The industrial electricity tariff is around \$0.08-0.10 per kWh.
- **Labor Overhead:** Labor costs in Bangladesh's manufacturing sector are relatively low, which can help keep overhead costs related to administrative, supervisory, and support staff lower.
- **Taxation:** One can import machinery and raw materials for solar panel production duty-free. Manufacturers may receive cash incentives for exporting solar panels, typically ranging from 10-20% of the export value.

A summary of the energy infrastructure

Here's a summary of the energy infrastructure in Bangladesh:

Electricity Generation:

- Total installed electricity generation capacity: around 27162 MW (as of 2024)
- Primary sources: Natural gas (56%), furnace oil (27%), coal (6%), hydro (0.87%), renewable energy (0.38%).
- Major power plants: Siddhirganj, Haripur, Ghorasal, Barapukuria coal power plant.
- Significant dependence on natural gas, with domestic gas reserves depleting.
- Increasing focus on coal-fired and renewable energy sources to meet growing demand.

Transmission & Distribution:

- Bangladesh's electricity transmission infrastructure is owned and operated by the Power Grid Company of Bangladesh (PGCB), which comprises an extensive network of over 11,000 circuit-kilometers of transmission lines with voltage levels of 132kV, 230kV, and 400kV.
- In contrast, the distribution network is managed by a diverse range of entities, including Dhaka Electric Supply Company (DESCO), Dhaka Power Distribution Company (DPDC), and rural electric cooperatives. Despite these efforts, distribution losses remain a significant challenge, with levels ranging from 10-12%.

Renewable Energy:

- Solar home systems: Over 6 million installations, primarily in rural areas.
- Grid-connected solar: Around 39 MW of utility-scale solar parks.
- Wind energy: Limited capacity, with a few small wind farms.
- Hydropower: Around 230 MW of hydroelectric capacity.

Energy Access:

- Electrification rate: Around 98% of the population has access to electricity (as of 2020)
- Off-grid rural areas still rely on solar home systems and other decentralized solutions.

Energy Imports:

- Bangladesh imports a significant portion of its energy needs, including coal, furnace oil, and LNG.
- Increasing reliance on imported LNG due to declining domestic gas reserves.

Some of the government regulations surrounding solar panel production

Here's a summary of the key regulations surrounding solar panel production in Bangladesh:

Renewable Energy Policy: Bangladesh has established a comprehensive Renewable Energy Policy in 2008, providing a framework for promoting renewable energy sources, including solar energy. The policy's primary objectives are to facilitate private sector participation, offer fiscal incentives, and create a conducive environment for the development and implementation of renewable energy projects. By providing a supportive policy framework, Bangladesh aims to harness the potential of renewable energy sources, including solar energy, to contribute to the country's energy mix and mitigate climate change.

Incentives and Tax Benefits:

- Solar panel manufacturers in Bangladesh can enjoy tax holidays for a specified period (often 5-10 years).
- They can import machinery and raw materials for solar panel production duty-free.

- Manufacturers may receive cash incentives for exporting solar panels, typically ranging from 10-20% of the export value.

Renewable Energy Targets: Bangladesh has set a target to generate 40% of its electricity from renewable sources by 2041, which includes a significant contribution from solar power. This target drives policies and regulations to support the domestic solar industry.

Net Metering: Bangladesh has a net metering policy that allows residential, commercial, and industrial consumers to install grid-connected solar systems and sell excess electricity back to the grid. This policy aims to promote decentralized solar power generation.

Quality Standards: The Bangladesh Standards and Testing Institution (BSTI) has established quality standards for solar panels and related components. Manufacturers must comply with these standards to ensure product quality and safety.

Renewable Energy Development Authority: The Sustainable and Renewable Energy Development Authority (SREDA) is the primary regulatory body responsible for overseeing and promoting renewable energy projects, including solar power, in Bangladesh.

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

Here's a summary of some government initiatives in solar panel production:

Financial Support and Subsidies: The Infrastructure Development Company Limited (IDCOL), a government-owned financial institution, provides low-interest loans and subsidies for renewable energy projects, including solar panel manufacturing facilities. IDCOL receives

USD 128 million from the World Bank for its Renewable Energy Project.

Research and Development: The government has established the Renewable Energy Research Center (RERC) to conduct research and development activities related to renewable energy technologies, including solar panels. Funding and support are provided for research projects and collaborations with local and international institutions.

Skill Development Programs: The government, in collaboration with industry partners and educational institutions, has launched training programs to develop skilled technicians and workers for the solar panel manufacturing industry.

Net Metering and Rooftop Solar Programs: Bangladesh has implemented a net metering policy, allowing households and businesses to install rooftop solar systems and sell excess electricity to the grid. This initiative aims to create domestic demand for solar panels and support the local manufacturing industry.

Notable solar projects in the country (installed and projected)

Here are some notable solar power projects, both current and planned, in Bangladesh:

Current Solar Projects:

- Sundarganj Solar Power Plant (32.4 MW): Located in Gaibandha district, this is currently the largest operational solar power plant in Bangladesh.
- Panchagarh Solar Park (8.8 MW): Located in Panchagarh district, this solar park was completed in 2018.

- Kaharole Solar Power Plant (7.4 MW): Located in Dinajpur district, this plant was commissioned in 2019.
- Teknaf Solar Power Plant (3.5 MW): Located in Cox's Bazar district, this plant was completed in 2019.

Solar Home Systems (SHS) Program: Bangladesh has installed over 6.2 million solar home systems in rural off-grid areas, primarily through the Infrastructure Development Company Limited (IDCOL) program.

Notable solar projects in the country (Projected):

- Purbachal Solar Park (100 MW): Planned to be developed near Dhaka, this would be one of the largest solar parks in the country. The project is still in the planning and land acquisition phase.
- Feni Solar Park (60 MW): A large-scale solar park planned in Feni district. The project is in the early development stage.

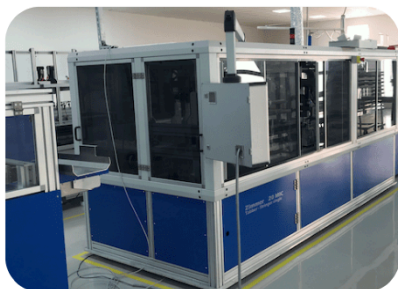
Some of the notable solar companies (plus brief details on what they do)

Here's a summary of some local companies:

Solarland Bangladesh Co. Ltd.: A leading supplier and distributor of solar panels and system components for the Asian market. Manufacture high quality, state of the art off-grid solar panels ranging from 1.5W – 340W, in 6V, 12V and 24V configurations.

SOLShare: SOLshare is a climate-tech company, founded in 2014~2015, consisting of a team of tech pioneers fully based out of Dhaka. The SOL bazaar, has grown to 4 business lines.

Alfanar Group: Alfanar is primarily engaged in manufacturing electrical construction products, EPC solutions for conventional and renewable power plants, allied engineering services and design engineering.



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. Fayeen, S. K., Ovy, E. G., & Hossainy, T. A. (2011). Closed environment design of solar collector trough using lenses and reflectors. Presented at the World Renewable Energy Congress – Sweden, Linköping, Sweden. Retrieved May 7, 2024, from <<https://doi.org/10.3384/ecp110573852>>
2. Wikipedia contributors. (2024). List of cities by sunshine duration. _Wikipedia, The Free Encyclopedia._ Retrieved May 7, 2024, from <<https://en.wikipedia.org/wiki/List%5Fof%5Fcities%5Fby%5Fsunshine%5Fduration>>

3. Shishir, J. A., & Abdullah, S. (2024). Electricity price hiked Tk0.75 unit from February. *The Business Standard*. Retrieved May 7, 2024, from <https://www.tbsnews.net/bangladesh/energy/electricity-price-hiked-tk075-unit-from-february-801278>
4. Bangladesh Power Development Board. Power generation units (fuel type wise). Retrieved May 8, 2024, from https://bd.bpdb.gov.bd/bpdb/power_generation_unit
5. Koons, E. (2023). Solar energy in Bangladesh: Current status and future. *Energy Tracker Asia*. Retrieved May 7, 2024, from <https://energytracker.asia/solar-energy-in-bangladesh-current-status-and-future/>
6. Varadhan, S., & Fang, A. (2024). Bangladesh's 2023 coal-fired power output tripled, easing shortages. Retrieved May 7, 2024, from <https://www.reuters.com/article/bangladesh-power-coal-idUSKBN2FZ1Z2>
7. Alam, S. (2023). Bangladesh needs up to US\$1.71 billion annually until 2041 for 40% renewable energy capacity. *Institute for Energy Economics and Financial Analysis (IEEFA)*. Retrieved May 7, 2024, from <https://ieefa.org/articles/bangladesh-needs-us171-billion-annually-until-2041-40-renewable-energy-capacity>
8. Alam, S. (2023). Charting an electricity sector transition pathway for Bangladesh. *Institute for Energy Economics and Financial Analysis (IEEFA)*. Retrieved May 7, 2024, from <https://ieefa.org/resources/charting-electricity-sector-transition-pathway-bangladesh>
9. Hydrocarbon Unit, Energy and Mineral Resources Division, Ministry of Power, Energy and Mineral Resources. (2023). Energy scenario of Bangladesh 2021-22. Retrieved May 7, 2024, from <https://hcu.portal.gov.bd/sites/default/files/files/hcu.portal.gov.bd/publications/ae775b7e%5Fb63d%5F491d%5F81e4%5Fb317ff8e11ca/2024-07-15-09-11-d13a3451b969fb9a3c5c74e9130c9f6c.pdf>

10. The World Bank. (2021). A game-changer in Bangladesh's growth story: Solar home systems. Retrieved May 7, 2024, from <<https://www.worldbank.org/en/news/feature/2021/04/08/a-game-changer-in-bangladesh-growth-story-solar-home-systems>>
11. Islam, S. (2024). Bangladesh's solar project approvals hit 2.1 GW in 2023_. _PV Magazine._ Retrieved May 7, 2024, from <<https://www.pv-magazine.com/2024/01/03/bangladeshs-solar-project-approvals-hit-2-1-gw-in-2023/>>
12. Press Express. (2023). Floating solar power plant: Bangladesh's innovative approach to green energy. Retrieved May 8, 2024, from <<https://pressxpress.org/2023/11/01/floating-solar-power-plant-bangladeshs-innovative-approach-to-green-energy/>>
13. Statista. Solar energy – Bangladesh. Retrieved May 7, 2024, from <<https://www.statista.com/outlook/io/energy/renewable-energy/solar-energy/bangladesh>>
14. Islam, S. (2021). Bangladesh's rooftop solar sector gains momentum. _PV Magazine._ Retrieved May 7, 2024, from <<https://www.pv-magazine.com/2021/12/31/bangladeshs-rooftop-solar-sector-gains-momentum/>>
15. Aurni, A. D. (2023). Alternative energy & power 2023_. _Practice Guide._ Retrieved May 7, 2024, from <<https://practiceguides.chambers.com/practice-guides/alternative-energy-power-2023/bangladesh/trends-and-developments>>
16. Worldometer. Bangladesh population. Retrieved May 7, 2024, from <<https://www.worldometers.info/world-population/bangladesh-population/>>
17. Asia-Pacific Energy Policy and Planning Network. Renewable energy policy of Bangladesh. Retrieved May 7, 2024, from <<https://policy.asiapacificenergy.org/node/208>>
18. Bangladesh Investment Development Authority (BIDA). General incentives. Retrieved May 7, 2024, from <<https://bida.gov.bd/incentives>>

19. Infrastructure Development Company Limited (IDCOL). Archive 2018\ . Retrieved May 7, 2024, from <<https://idcol.org/home/archive/2018>>
20. IEA/IRENA Policy and Measures Database. (2018). Import duty exemptions for solar and wind of Bangladesh (Statutory Regulatory Order). Retrieved May 7, 2024, from <<https://www.iea.org/policies/6128-import-duty-exemptions-for-solar-and-wind-of-bangladesh-statutory-regulatory-order>>
21. Solar Land Company. LinkedIn page. Retrieved May 7, 2024, from <<https://www.linkedin.com/company/solarland-engineering-development-co-ltd/?originalSubdomain=bd>>
22. Solar Land Company. Official website. Retrieved May 7, 2024, from <<https://solarland.com.bd/>>
23. Solshare. Official website. Retrieved May 7, 2024, from <<https://solshare.com/>>
24. Solshare. LinkedIn page. Retrieved May 7, 2024, from <<https://www.linkedin.com/company/me-solshare/?viewAsMember=true>>
25. Alfancar Group. LinkedIn page. Retrieved May 7, 2024, from <<https://www.linkedin.com/company/alfancar/>>
26. Alfancar Group. Official website. Retrieved May 7, 2024, from <<https://www.alfancar.com/index>>
27. Dhaka Tribune. (2024). Bangladesh's largest solar park in Gaibandha ready for inauguration. Retrieved May 7, 2024, from <<https://www.dhakatribune.com/bangladesh/nation/308620/bangladesh%E2%80%99s-largest-solar-park-in-gaibandha-ready>>

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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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