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The DESERT company

Spain 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 Spain

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

Annual Sunshine Hours:
- Total annual sunshine hours: 2500 hours
- Average daily sunshine hours: 6.85 hours

kWh per kWp installed

kWh Production per kWp:
- Typical systems produce around 1200-1500 kWh per installed kWp per year
- This varies based on location, orientation, and shading

Average cost per kWh from utility company

Average Cost of Electricity:

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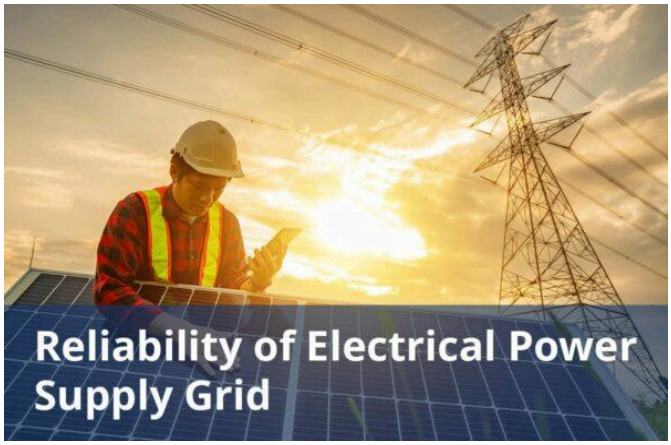
- Residential electricity cost averages around $0.130/kWh
- Commercial electricity cost averages around $0.115/kWh



Reliability of electrical power supply grid

System Reliability:
- Average system downtime: 1-2 days per year
- Normal operational lifespan of solar panels: 25-30 years




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:
- Total panels installed as of 2023: 2.2 million panels

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- Total installed capacity: 14.5 GW

Total solar panel production capacity (projected)

Projected Solar Panel Growth:
- Expected additional capacity by 2030: 20 GW
- Total projected installations: 4 million panels

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

Average Installation Costs:
- Average cost for residential installation: $3.00/watt
- Average cost for commercial installation: $2.50/watt

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

Electricity Generation from Solar:
- Percentage of total electricity from solar: 5%
- Target for 2030: 20%

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

Daily Availability of Solar:
- Average peak sunlight hours: 5-6 hours/day
- Dependable availability during summer months

Number of residential solar panel installations

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Number of Residential Solar Panels:
- Estimated number of residential systems: 1.5 million
- Average panels per system: 20 panels

Total number of solar farms (installed and projected)

Total Number of Solar Farms:
- Total solar farms in operation: 150 farms
- Combined capacity of farms: 10 GW

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

Off-grid market demand for solar panels (current and projected)
- No data was found.

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

On-grid market demand for solar panels (current and projected)
- Mordor Intelligence estimates that Spain's solar energy market will expand from 34.49 gigawatts in 2024 to 72.32 gigawatts by 2029, exhibiting a compound annual growth rate of 15.96%.

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

Average monthly income of workers in solar industry (labor cost)
- Solar photovoltaic Engineer Salary: $4669/month.
- Solar photovoltaic Installer Salary: $3502/month.

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Population of the country

Population of the country
- The current population of Spain is 47471576 as of Sunday, July 14, 2024.

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

Average overhead costs of solar panel production (with a brief breakdown)
- Rent for Factory: $19.785/meter-square/month.
- Rent for Office Space: $36.967/meter-square/month.
- Industrial Electricity Rates: $0.144/kWh in December 2023
- Water Costs: $1.00/m3 for industrial use and $2.14/m3 for domestic use.

A summary of the energy infrastructure

A summary of the energy infrastructure
- Total installed electricity generation capacity: 124.7 GW
- Total generation: 266.8 TWh
- Total demand: 244 TWh
- Per capita generation: 5677kWh
- Generation mix: Spain produces its electricity from various sources: natural gas (23.77%), wind power (23.44%), nuclear energy (21.06%), solar power (16.71%), hydroelectric power (7.42%), oil (3.98%), bioenergy (2.17%), and coal (1.45%).

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Some of the government regulations surrounding solar panel production

Some of the government regulations surrounding solar panel production

- Certification for solar panels
- Like other European countries, Spain requires a CE “Conformité Européenne” seal for solar panels.
- Quality Standards & Testing
- The following IEC, International Electrotechnical Commission certificates are also required for solar panels in Spain:
- IEC 61215: Evaluates electrical, mechanical, and weather-related tests.
- IEC 61701: Measures salt corrosion resistance, crucial for coastal areas.
- IEC 62716: Assesses ammonia corrosion resistance, important near livestock farms.
- IEC 61730: Checks panel construction quality and safety.

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

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

- Approximately $12.44 billion has been invested by different sources in solar energy development in Spain until 2020.
- The first initiative implemented in Spain was Royal Decree RD 661/2007, which in 2007 established a remuneration framework to promote the use of renewable energies, especially photovoltaics.

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Notable solar projects in the country (installed and projected)

Notable solar projects in the country (installed and projected)
- Escatrón-Chiprana-Samper Solar Park
Location: Aragon region, towns of Escatrón, Chiprana, and Samper de Calanda
Capacity: 850 MW across 17 plants
- Núñez de Balboa Photovoltaic Plant
Location: Extremadura region
Capacity: 500 MW
- Mula Photovoltaic Power Plant
Location: Mula, Murcia
Capacity: 493.92 MW
- Talasol Plant
Location: Extremadura
Capacity: 300 MW
- Don Rodrigo
Location: Near Seville
Capacity: 175 MW

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

Some of the notable solar companies (plus brief details on what they do)
- Acciona: Acciona is a major player in the Spanish solar industry, with a significant focus on developing large-scale photovoltaic plants.
- Iberdrola: Iberdrola is a leading global energy company heavily invested in renewable energy, including solar power in Spain.

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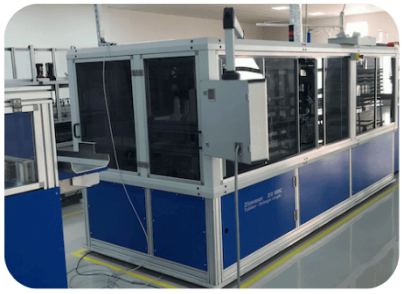
- The Red Electrica Group: The Red Electrica Group, is responsible for the transmission and operation of the electricity grid in Spain.
- Gransolar: The company is involved in numerous solar projects in Spain, contributing to the growth of the solar industry through its expertise and technology.



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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. <https://solarlinerenovables.com/en/annual-solar-hours-in-spain-by-province/>, s., “Sunshine Duration in Spain”, 14 July 2024.

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2. <https://www.spain.info/en/weather/> , s., “Sunshine hours in Spain” Retrieved on 14 July 2016.
3. <https://robinsun.com/blogs/news/spains-solar-supremacy-a-radiant-revolution-in-renewable-energy>, s., “Solar Radiation in Spain”, Retrieved on 14 July 2024.
4. <https://www.researchgate.net/publication/283211424%5FMonitoring%5F30000%5FPV%5Fsystems%5Fin%5FEurope%5FPerformance%5FFaults%5Fand%5FState%5Fof%5Fthe%5FArt#pf4>, r., “kWh per kWp” Retrieved on 14 July 2024.
5. <https://www.globalpetrolprices.com/Spain/electricity%5Fprices/> , g., “Average cost per kWh”, Retrieved on 14 July 2024.
6. <https://www.sistemaelectrico-ree.es/en/spanish-electricity-system/transmision/availability-rate-of-the-transmission-grid>, s., “Availability of Solar in Spain”, Retrieved on 16 July, 2024.
7. <https://globalenergymonitor.org/report/spain-maintains-solar-leadership-but-needs-to-accelerate-pace-to-meet-2030-renewables-goals/>, g., “Solar Energy in Spain”, Retrieved on 15 July 2024.
8. <https://www.enerdata.net/publications/daily-energy-news/spain-added-56-gw-solar-pv-power-capacity-2023.html>, e., “Solar Production Capacity”, Retrieved on 14 July 2024.
9. <https://en.wikipedia.org/wiki/Solar%5Fpower%5Fin%5FSpain>, w., “Solar production in Spain in 2022” Retrieved on 14 July 2024.
10. <https://ember-climate.org/app/uploads/2022/02/Briefing%5FSpanish-Electricity-Prices.pdf>, e., “Gas electricity price” Retrieved on 17 July 2024.

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11.
<https://ourworldindata.org/grapher/levelized-cost-of-energy?facet=none&country=~ESP>, o., “Electricity Price”, Retrieved on 17 July 2024.
12. <https://ourworldindata.org/electricity-mix>, o., “Energy Mix in Spain” Retrieved on 18 July 2024.
13.
<https://ember-climate.org/data/data-tools/global-renewable-power-target-tracker-2030/>, e., “Energy Projection in Spain”, Retrieved on 15 July 2024.
14.
<https://www.reuters.com/sustainability/climate-energy/rooftop-solar-fever-cools-sunny-spain-2024-02-21/> , r., “Roof top Solar in Spain”, Retrieved on 15 July 2024.
15.
<https://www.mercomindia.com/spain-rooftop-solar-capacity-2022>, m., “Roof top solar in Spain”, Retrieved on 15 July 2024.
16. <https://list.solar/plants/largest-plants/spain/>, l., “Solar Farms in Spain”, Retrieved on 15 July 2024.
17. <https://openinframap.org/stats/area/Spain/plants?source=solar>, o., “Solar farms in Spain”, Retrieved on 16 July 2024.
18. <https://openinframap.org/stats/area/Spain/plants/construction>, o., “Projected solar farms”, Retrieved on 17 July 2024.
19.
<https://www.mordorintelligence.com/industry-reports/spain-solar-energy-market>, m., “On grid solar market in Spain” Retrieved on 17 July 2024.
20.
<https://www.salaryexpert.com/salary/job/solar-photovoltaic-engineer/spain>, s., “Soalr Engineer Salary” Retrieved on 17 July 2024.
21.
<https://www.salaryexpert.com/salary/job/solar-photovoltaic-installer/spain>, s., “Solar installer salary”, Retrieved on 17 July 2024.

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22.
<https://www.worldometers.info/world-population/spain-population/>, w., “Spain population” Retrieved on 15 July 2024.
23. <https://www.spainhouses.net/en/rent-industrial-units-spain>, s., “Factory Rent”, Retrieved on 16 July 2024.
24. <https://www.thinkspain.com/property-to-rent-long-term/offices>, t., “Office Rent in Spain” Retrieved on 16 July 2024.
25.
<https://enviro2.doe.gov.my/ekmc/wp-content/plugins/download-attachments/includes/download.php?id=86484>, e., “Industrial water tariff”, Retrieved on 16 July 2024.
26.
<https://smartwatermagazine.com/news/smart-water-magazine/spains-water-getting-more-expensive-challenge-cost-recovery>, s., “Domestic Water Tariff”, Retrieved on 16 July 2024.
27.
<https://www.statista.com/outlook/fmo/insurances/non-life-insurances/property-insurance/spain>, s., “Insurance”, Retrieved on 17 July 2024
28.
<https://www.statista.com/topics/10711/electricity-in-spain/#editorsPicks>, s., “Total Electricity capacity in Spain”, Retrieved on 15 July 2024.
29.
<https://ourworldindata.org/energy/country/spain#what-sources-does-the-country-get-its-energy-from>, o., “Energy Infrastructure”, Retrieved on 15 July 2024.
30.
<https://www.mordorintelligence.com/industry-reports/spain-power-market>, m., “Leading Players”, Retrieved on 17 July 2024.
31. <https://www.ree.es/en>, r., “official website”, Retrieved on 17 July 2024.
32. <https://www.endesa.com/es>, e., “official website”, Retrieved on 18 July 2024.

33. <https://www.iberdrola.com/>, i., “official website” Retrieved on 17 July 2024.
34. <https://www.bloomberg.com/profile/company/NTGY:SM>, b., “Company profile” Retrieved on 18 July 2024.
35. <https://totalenergies.com/>, t., “official website”, Retrieved on 18 July 2024.
36. <https://www.nordex-online.com/en/> , n., “official website”, Retrieved on 18 July 2024.
37. <https://www.iea.org/articles/spain-electricity-security-policy>, i., “Transmission and Distribution”, Retrieved on 16 July 2024.
38. <https://www.power-technology.com/data-insights/top-five-thermal-power-plants-in-operation-in-spain/?utm%5Fsource=lgp5-thermal-projects&utm%5Fmedium=21-335314&utm%5Fcampaign=recommended-articles-pi>. p, “Thermal Power Plants”, Retrieved on 18 July 2024.
39. <https://www.foronuclear.org/en/nuclear-power/nuclear-power-in-spain/>, f., “Nuclear Power Plants”, Retrieved on 18 July 2024.
40. <https://renewables.digital/list-of-the-3-largest-wind-farms-in-spain-2023/>, r., “Wind Farms”, Retrieved on 18 July 2024.
41. <https://en.wikipedia.org/wiki/List%5Fof%5Fpower%5Fstations%5Fin%5FSpain>, w., “Hydropower” Retrieved on 18 July 2024.
42. <https://elalmacenfotovoltaico-com.translate.goog/es/blog/detail/el-marcado-ce-y-las-certificaciones-de-calidad-en-los-paneles-solares.html?%5Fx%5Ftr%5Fsl=auto&%5Fx%5Ftr%5Ftl=en&%5Fx%5Ftr%5Fhl=en>, el, “Certifcations for Solar Panels”, Retrieved on 17 July 2024.
43. <https://www.cambioenergetico.com/blog/certificaciones-calidad-placas-solares/>, c., “Solar Panel Certifcations”, Retrieved on 17 July 2024.

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44.
<https://esfccompany.com/en/articles/solar-energy/solar-investments-spanish-companies-and-funds/>, e., “Investments in Solar Energy”, Retrieved on 17 July 2024.
45. <https://europepmc.org/article/MED/38961969>, e., “Government Initiatives”, Retrieved on 17 July 2024.
46. <https://www.sunhero.com/en/subsidies/>, s., “Tax Rebates”, Retrieved on 16 July 2024.
47. <https://ratedpower.com/blog/largest-pv-plants-spain/>, r., “Solar Farms in Spain”, Retrieved on 15 July 2024.
48.
<https://www.power-technology.com/data-insights/power-plant-profile-bruc-energy-aragon-solar-pv-park-spain/>, p., “Solar farm”, Retrieved on 17 July 2024.
49.
<https://www.power-technology.com/data-insights/power-plant-profile-erasmo-solar-pv-park-spain/>, p., “Solar farm”, 17 July 2024.
50.
<https://www.power-technology.com/marketdata/power-plant-profile-hive-h2-albamed-project-phase-1-spain/>, p., “Solar Farm”, Retrieved on 17 July 2024.
51.
<https://www.power-technology.com/marketdata/power-plant-profile-endesa-spain-solar-pv-park-spain/>, p., “Solar Farm”, Retrieved on 17 July 2024.
52.
<https://www.power-technology.com/marketdata/power-plant-profile-alcoa-san-ciprian-solar-pv-park-spain/>, p., “Solar Farm”, Retrieved on 17 July 2024.
53. <https://www.acciona-energia.com/>, a., “official website”, Retrieved on 17 July 2024.
54. <https://gransolar.com/>, g., “official website”, Retrieved on 17 July 2024.

55. <https://www.exiomsolution.com/>, e., “official website”, Retrieved on 17 July 2024.
56. <https://zytechsolar.com/>, z., “official website”, Retrieved on 17 July 2024.
57. <https://www.x-elio.com/>, x., “official website”, Retrieved on 17 July 2024.

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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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