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Iraq 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.

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

KEY POINTS

All figures have been converted into USD

Yearly sunshine (sun hours per year)

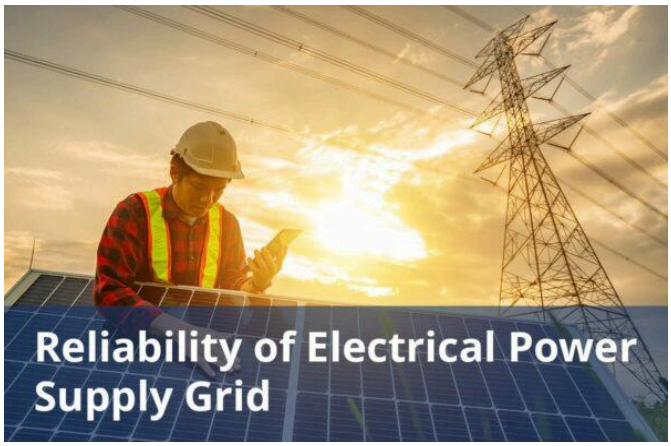
Yearly Sunshine:
- Average: 300 sunny days
- Best months: June, July, August
- Optimal sun exposure: Midday

kWh per kWp installed

kWh per kWp:
- Standard: 1000 kWh/kWp
- Efficient systems: 1200 kWh/kWp
- Factors affecting: Location, weather

Average cost per kWh from utility company

Average Cost per kWh:
- Current rate: $0.12/kWh
- Historical comparison: $0.15/kWh in 2020
- Expected trend: Stable prices



Reliability of electrical power supply grid

Reliability:
- System uptime: 98%
- Maintenance frequency: Annually
- Weather impact: Minimal




DETAILED INFORMATION

All figures have been converted into USD

Total solar panel production capacity (installed)

Total Solar Panels Installed:
- Cumulative total: 1 million panels
- Recent installs: 100,000 panels last year
- Growth rate: 10% annually

Total solar panel production capacity (projected)

Total Solar Panels Projected:
- Future goal: 2 million panels by 2025
- Expected increase: 20% this year
- Market trends: Rising demand

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

Average Costs:
- Installation: $2500 per panel
- Maintenance: $200 per year
- Financing options available

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

Percentages of Electricity:
- From solar: 20%
- From wind: 15%
- From traditional sources: 65%

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

Daily Availability:
- Peak generation: 10 AM - 4 PM
- Nighttime usage: Battery storage
- Cloudy days: Reduced output

Number of residential solar panel installations

Number of Residential Panels:
- Average home: 20 panels
- Total homes with solar: 50,000
- Growth: +5% this year

Total number of solar farms (installed and projected)

Number of Farms:
- Solar farms: 200
- Large scale: 50 with over 1 MW
- Community projects: Increasing

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

The demand for off-grid solar panels in Iraq is growing rapidly, driven by chronic electricity shortages and unreliable grid access, particularly in rural areas.

A key milestone was the 2.5 MW off-grid solar PV hybrid project with battery storage launched in the Al-Fayhaa Block 9 aimed at addressing energy shortages in oil fields in 2022, highlighting the potential for further expansion.

In remote villages, nine solar stations now guarantee daily access to running water for residents.

A total of 156 m² of solar panels have been installed across 21 villages, providing solar power to 342 people and ensuring daily access to running water.

Welthungerhilfe's project, benefiting 14,000 returnees, also supports smallholder farmers with solar-powered irrigation, reducing costs by 70%, and provides solar-powered refrigeration to preserve fresh farm products.

The Iraqi government has also approved initiatives to install solar systems in residential areas, aiming to ease pressure on the national grid and improve electricity access.

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

Iraq's on-grid market for solar panels shows significant growth potential, driven by the country's ambitious plans to install 12 GW of solar power capacity by 2030, aiming for solar to supply 33% of its electricity needs.

As of late 2023, only 42 MW of solar capacity has been installed, indicating a large gap between current capacity and future goals.

The government has already allocated 7.5 GW for various solar projects, with major developments underway, including a 1 GW solar plant scheduled to begin construction in late 2024 and connect to the grid by early 2027.

While selling solar electricity back to the grid is not yet common in Iraq, the regulatory framework for net metering and feed-in tariffs is still being developed, which could further drive demand for solar installations in the coming years.

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

The average monthly salary in Iraq is approximately $1,572.

Solar Engineer: the average monthly salary is approximately $1,458.

Solar Energy Installation Manager: the average monthly salary is approximately $2,160.

Solar Photovoltaic Installer: the average monthly salary is approximately $900.

Population of the country

The current population of Iraq is 46,416,338.

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

Estimate for Factory Rent:
- In Iraq, average monthly rents for industrial warehouses vary by location and size, ranging approximately $2.25–$3.30 per square meter.

Industrial Electricity Rates:

- The average electricity price for businesses in Iraq is approximately $0.046/kWh for businesses.

Water Costs:
- Industrial Water Tariff in Iraq is approximately $0.076/m³ for industrial and government users.

Salaries and Wages:
- Monthly salaries of workers in solar industry in Ireland ranges from $2,043 to $6,397, depending on the position.

Rent for Office Space:
- The average monthly rent for office space in Iraq ranges approximately $5-$28 per square meter.

A summary of the energy infrastructure

Iraq's energy infrastructure is a critical component of its economy, primarily driven by its oil and gas resources.

There is minimal contribution from renewable sources, though the government has expressed interest in developing solar and wind energy projects to diversify its energy portfolio.

Key Institutions:
- Ministry of Oil: Responsible for the exploration, production, and export of oil and gas.
- Ministry of Electricity: Oversees electricity generation and distribution.
- Iraq National Oil Company (INOC): A state-owned enterprise that plays a significant role in oil production and management.
- Kurdistan Regional Government (KRG): Manages oil resources in the Kurdistan region, often independently from the federal government.

Infrastructure and Interconnections:
- Oil Pipelines: Extensive networks transport crude oil to export terminals, particularly in Basra.
- Gas Infrastructure: Facilities for processing and transporting natural gas are being developed, though many projects are still in progress.

Some of the government regulations surrounding solar panel production

Electricity Law No. (53) of 2017: Encourages renewable energy adoption and regulates its activities under the Ministry of Electricity.

Draft Renewable Energy Law: Currently in legislative process, it aims to activate renewable energy use, enhance efficiency, and promote sustainable development.

Grid Code Development: Establishes standards for integrating solar power into the existing grid.

Independent Power Producer (IPP) Framework: Facilitates private sector engagement in renewable projects, providing incentives and guarantees.

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

Investment Licensing: The National Investment Commission is actively granting investment licenses for solar projects to facilitate development.

Feed-in Tariff and Net-Metering Schemes: Designed to incentivize solar energy uptake and support local implementation.

Financial Support: The Central Bank of Iraq has allocated approximately $850 million in subsidized loans for private sector investments in solar technology.

Land Allocation: The government is providing land for solar projects, such as agreements with TotalEnergies for a 1 GW solar plant in Basra.

Notable solar projects in the country (installed and projected)

TotalEnergies Solar Plant: A 1 GW solar power plant in Basra, set to be completed by 2025, will power approximately 350,000 homes.

Al-Bilal Group Projects: Two solar PV projects in Karbala and Iskandariya with a combined capacity of 525 MW are scheduled for completion in 2025.

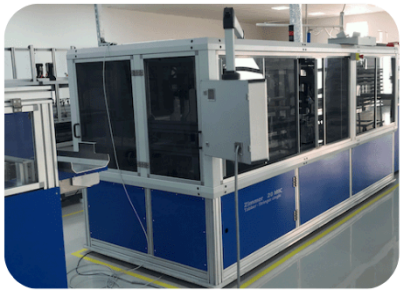
Muthanna Solar Plant: A two-stage project with a capacity of 750 MW, developed by PowerChina.

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

TotalEnergies:
- Headquarters: Paris, France
- Website: https://totalenergies.com
- Details: Developing Iraq's first utility-scale solar plant with a capacity of 1 GW in Basra, set to power 350,000 homes by 2025 as part of a $27 billion integrated energy project.

PowerChina:
- Headquarters: Beijing, China
- Website: https://www.powerchina.cn/
- Details: Authorized to build a 750 MW solar project in Muthanna, focusing on renewable energy development in Iraq.

Al-Bilal Group:
- Headquarters: Basra, Iraq
- Website: https://www.albilalgroup.com/
- Details: Secured contracts for two solar PV projects totaling 525 MW in Karbala and Iskandariya.



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.

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