

## European Solar and Energy Storage Solutions

# Solar power generation ranking future forecast



## Overview

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As a result of new solar projects coming on line this year, we forecast that U.S. solar power generation will grow 75% from 163 billion kilowatthours (kWh) in 2023 to 286 billion kWh in 2025. We expect that wind power generation will grow 11% from 430 billion kWh in 2023 to 476 billion kWh in 2025.

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In the main case forecast in this report, almost 3 700 GW of new renewable capacity comes online over the 2023-2028 period, driven by supportive policies in more than 130 countries. Solar PV and wind will account for 95% of global renewable expansion, benefiting from lower generation costs than both fossil and non-fossil fuel alternatives.

Solar PV and wind additions are forecast to more than double by 2028 compared with 2022, continuously breaking records over the forecast period to reach almost 710 GW. At the same time, hydropower and bioenergy capacity additions will be lower than during the last five years as development in emerging economies decelerates, especially in China.

Power generation from solar PV increased by a record 270 TWh in 2022, up by 26% on 2021. Solar PV accounted for 4.5% of total global electricity generation, and it remains the third largest renewable electricity technology behind hydropower and wind.

We expect solar electric generation will be the leading source of growth in the U.S. electric power sector. In our January Short-Term Energy Outlook (STEO), which contains new forecast data through December 2025, we forecast new capacity will boost the solar share of total generation to 5.6% in 2024 and 7.0% in 2025, up from 4.0% in 2023. Which countries grew the most solar power in 2022?

China was responsible for about 38% of solar PV generation growth in 2022,

thanks to large capacity additions in 2021 and 2022. The second largest generation growth (a 17% share of the total) was recorded in the European Union, followed by the United States (15%).

Will solar power increase in 2028 compared to 2022?

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How will solar PV & wind impact global electricity generation?

The share of solar PV and wind in global electricity generation is forecast to double to 25% in 2028 in our main case. This rapid expansion in the next five years will have implications for power systems worldwide.

Will solar power increase global renewable power capacity by 2030?

Globally, solar PV alone accounted for three-quarters of renewable capacity additions worldwide. Prior to the COP28 climate change conference in Dubai, the International Energy Agency (IEA) urged governments to support five pillars for action by 2030, among them the goal of tripling global renewable power capacity.

How does new solar power capacity affect generation growth?

Wind and solar developers often bring their projects on line at the end of the calendar year. So, the new capacity tends to affect generation growth trends for the following year. Solar is the fastest-growing renewable source because of the larger capacity additions and favorable tax credits policies.

Why is solar the fastest growing renewable source?

Solar is the fastest-growing renewable source because of the larger capacity additions and favorable tax credits policies. Planned solar projects increase solar capacity operated by the electric power sector 38% from 95 gigawatts (GW) at the end of 2023 to 131 GW by the end of 2024.

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### 2024 power and utilities industry outlook , Deloitte ...

US power production has been becoming less water-intensive, with the amount of water required to produce power falling from 14,928 gallons per megawatt hour (gal/MWh) in 2015 to 11,595 gal/MWh in 2021. 61 This is largely due to a shift ...

### U.S. solar power generation forecast to grow 75

EIA expects solar generation to grow 75% from 2023 to 2025. In 2023, the U.S. generated about 163 billion kWh, and EIA expects this to reach 286 billion kWh in 2025. PV Intel data indicates that from January to October ...



### Solar Futures Study , Energy Analysis , NREL

The Solar Futures Study considers three future scenarios, two of which assume deep decarbonization of the electric grid and examines the role solar energy could play. The report contains the key findings from all the supporting ...

### 2024 power and utilities industry outlook , Deloitte Insights

US power production has been becoming less water-intensive, with the amount of water required to produce power falling from 14,928 gallons per megawatt hour (gal/MWh) in 2015 to 11,595 ...



## 2024 renewable energy industry outlook , Deloitte ...

It can also suggest the best solar panel layout to maximize generation and design the most efficient blades with peak aerodynamics for wind. In 2024, more developers are expected to use generative AI tools to inform and accelerate ...

## German Net Power Generation in First Half of 2024: Record Generation ...

Future Hydrogen Infrastructure: From early islands of hydrogen to a networked hydrogen economy PV Electricity Shall Increase Efficiency of Solar Thermal Power Plants; ...

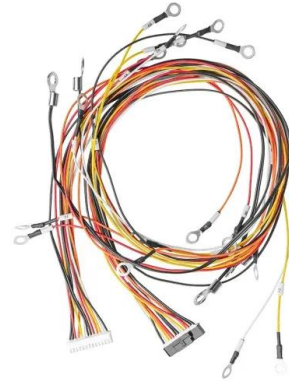


## Electricity - Renewables 2023 - Analysis

Solar PV and wind additions are forecast to more than double by 2028 compared with 2022, continuously breaking records over the forecast period to reach almost 710 GW. At the same time, hydropower and bioenergy capacity additions will ...

## Solar power in Germany - output, business

Quick facts (Figures for 2023; Sources: BSW Solar, UBA, AGEB) Number of solar arrays installed: 3.7 million Total capacity installed: 81 GWp Output: 61 TWh Projected expansion: 215 GWp in 2030 Share in gross power production: 11.9 ...

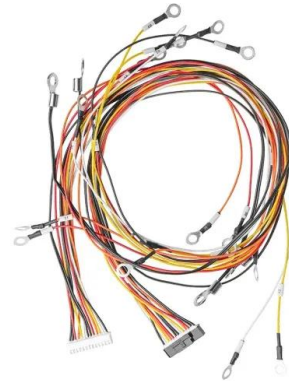


## India's Renewable Energy Growth: Solar Power & More , IBEF

India was ranked fourth in wind power capacity and solar power capacity, and fourth in renewable energy installed capacity, as of 2023. Installed renewable power generation capacity has ...

## Executive summary - Electricity 2024 - Analysis

Asia remains the main driver of growth in nuclear power, with the region's share of global nuclear generation forecast to reach 30% in 2026. Asia is set to surpass North America as the region ...



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