

Global wind and solar 2025: The G7 gap

Global prospective wind and solar reaches almost 5 TW, but the wealthiest nations account for one-tenth of the capacity

- **The global clean power pipeline surged in 2025.** Announced and in-progress wind and utility-scale solar projects expanded by 11%, increasing from 4.4 terawatts (TW) to almost 5 TW worldwide.
- **Globally, utility-scale solar led the expansion of the pipeline.** The utility-scale solar pipeline grew by 17% and passed 2.2 TW, while the wind pipeline grew by 7%.
- **The world's richest economies are not driving that growth.** The G7 countries, despite controlling roughly half of global wealth, account for 11% of the world's prospective wind and utility-scale solar capacity additions. The center of gravity for new clean power has shifted decisively toward emerging and developing economies.
- **China crossed a historic threshold.** Its combined operating wind, utility-scale solar, and distributed solar capacity surpassed 1.6 TW in 2025, triple the combined capacity of its closest peers, the United States and India.
- **Distributed solar is a pillar of the clean energy transition, but it's not evenly spread.** While it represents about 42% of all existing and prospective

solar capacity worldwide, deployment remains heavily concentrated in a small number of countries, leaving significant room to expand.

Prospective wind and utility-scale solar pipeline reached almost 5 TW in 2025

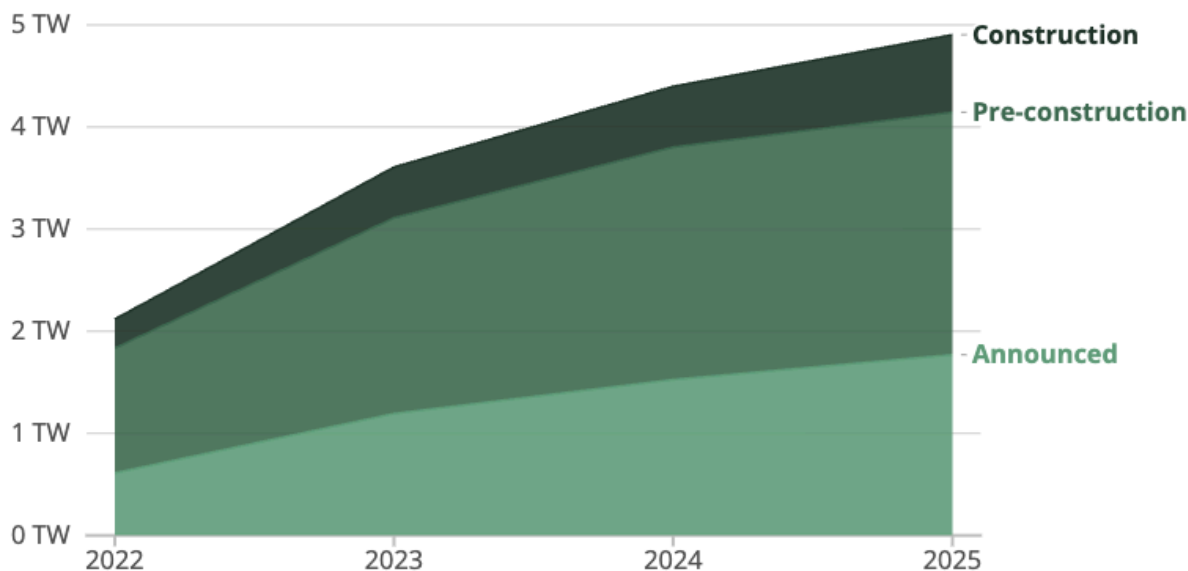
In 2025, the global total capacity of planned wind and utility-scale solar projects grew by 11%, from 4.4 terawatts (TW) to 4.9 TW, according to new data from Global Energy Monitor (GEM)¹. This marks a significant milestone toward achieving global targets to triple renewable energy capacity, since wind and solar are [expected](#) to comprise 94% of renewable additions towards the tripling goal.

Within the global 4.9 TW pipeline, wind and utility-scale solar account for comparable portions, at 2.7 TW and 2.2 TW, respectively. Globally, 758 gigawatts (GW) of these projects are currently under construction, with three-quarters concentrated in China and India. China hosts more than half of these under-construction wind and utility-scale solar projects, totaling 448 GW. India follows with 125 GW currently under construction, advancing toward its [2030 target](#) of 500 GW non-fossil capacity.

¹ GEM's Global Solar Power Tracker and Global Wind Power Tracker include all projects that have been announced, entered pre-construction, or are currently under construction for solar capacity over 1 megawatt (MW) and utility-scale wind capacity over 10 MW.

Global wind and utility-scale solar pipeline reached 4.9 TW

Prospective wind and utility-scale solar capacity globally by year and status, in terawatts (TW)



Source: Global Solar Power Tracker, Global Wind Power Tracker

Note: Data include only solar project phases with a capacity of 1 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more. All solar capacities are reported in MWac.



Figure 1

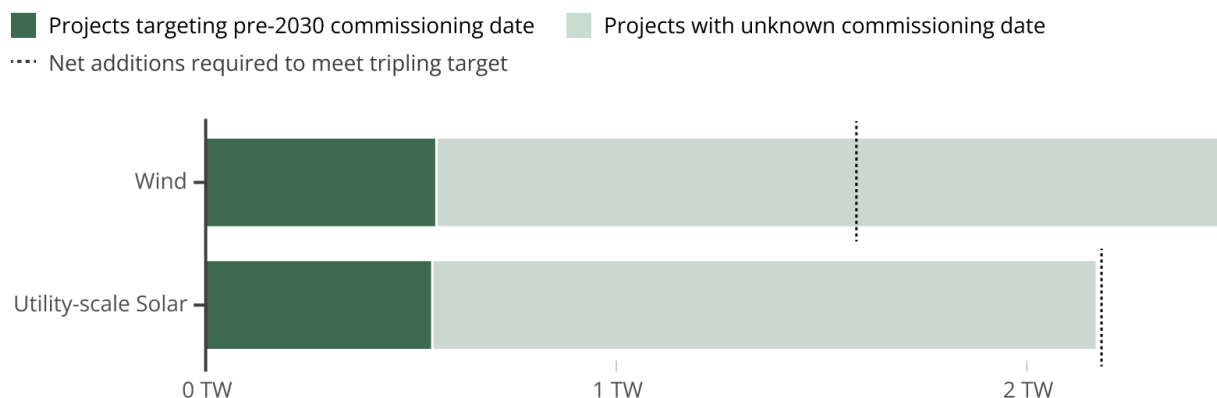
Year-on-year growth in the wind and utility-scale solar pipeline has slowed from 22% in 2024 to 11% in 2025. GEM's data reveal that this trend is more pronounced for wind projects, with a 13% drop from 2024, compared to a 7% drop for solar projects. In 2025, wind developers [experienced](#) political barriers and a streak of failed wind power auctions. Decline in planned wind development could have an outsized impact on future power generation, given wind's [higher](#) capacity factor over solar.

The growth trend of the prospective wind and utility-scale solar pipeline is critical for meeting the COP28 commitment to triple renewable energy capacity by 2030, as the world enters the final five years of the implementation period. The International Renewable Energy Agency (IRENA) [estimates](#) that an average annual addition of 317

GW of wind capacity and 735 GW of solar capacity is required by 2030. Utility-scale solar additions must reach 2.2 TW over the next 5 years, assuming this segment [accounts for](#) 58% of all solar installations.

Solar and wind projects committed for 2030 miss tripling target by 2.6 TW

Prospective wind and utility-scale solar capacity by 2030 targets, in terawatts (TW)



Source: Global Wind Power Tracker, Global Solar Power Tracker

Note: Data include only solar project phases with a capacity of 1 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more. All solar capacities are reported in MWac.



Figure 2

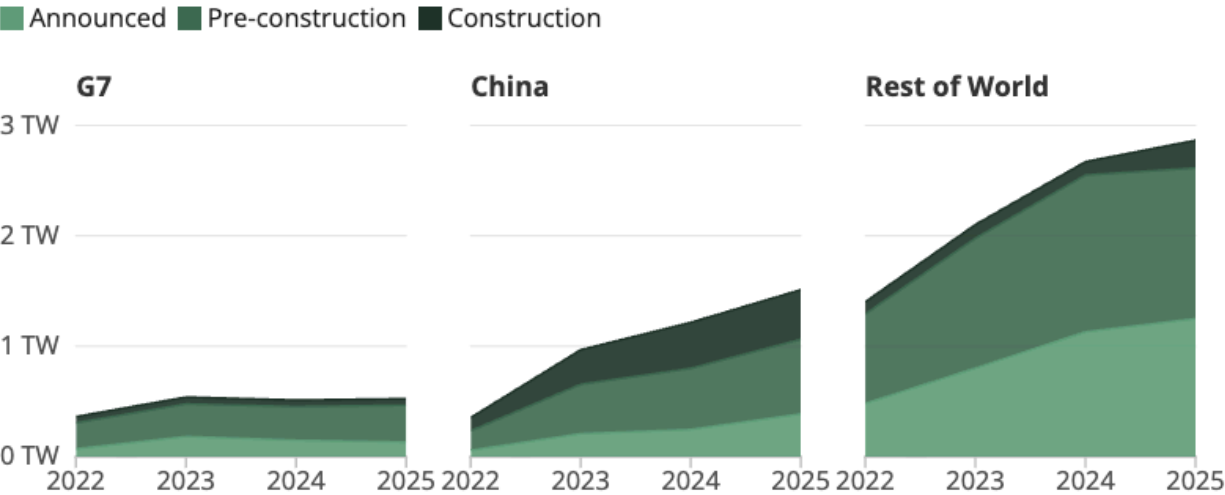
Even if every wind and utility-scale solar project with a planned start year by 2030 came online, the tripling goal would be short by 1 TW of wind and 1.6 TW of utility-scale solar. In addition, GEM's [previous analysis](#) revealed that almost 40% of all planned projects are either late to come online or end up shelved or cancelled. While prospective wind and utility-scale solar projects with unknown commissioning dates could compensate for the deficit, political barriers and implementation disincentives could delay their deployment. Moreover, the slowdown in the growth of the wind and utility-scale pipeline observed in GEM data broadly aligns with projections from the [International Energy Agency](#) (IEA) and [BloombergNEF](#), indicating that wind and utility-scale solar growth could plateau through 2030.

The wealthiest nations' wind and solar pipeline remains unchanged

The clean energy transition is progressing unevenly around the world. China accounts for more than 1.5 TW of prospective wind and utility-scale solar capacity — roughly matching the combined total of the next six countries: Brazil (401 GW), Australia (368 GW), India (234 GW), the United States (226 GW), Spain (165 GW), and the Philippines (146 GW). G7 countries, despite their wealth, fall notably behind China and the rest of the world in year-over-year prospective capacity growth.

G7's wind and utility-scale solar pipeline remains mostly unchanged

Prospective wind & utility-scale solar capacity globally by year and status, in terawatts (TW)




Source: Global Solar Power Tracker, Global Wind Power Tracker
 Note: Data include only solar project phases with a capacity of 1 megawatt (MW) or more and wind project phases with a capacity of 10 MW or more. All solar capacities are reported in MWac. 

Figure 3

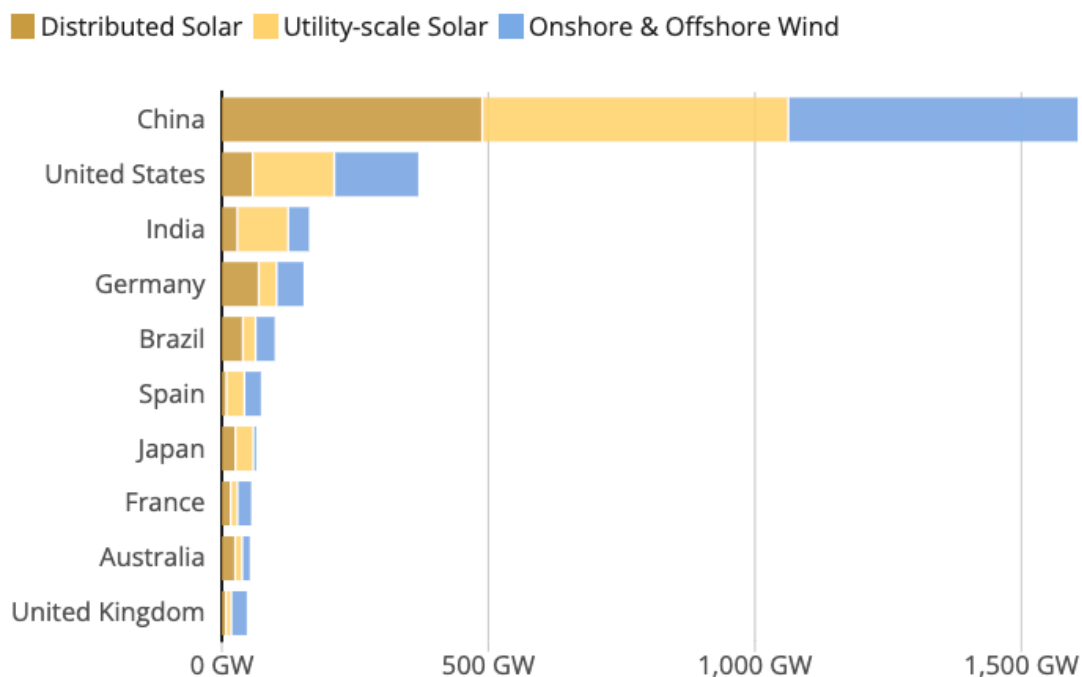
The most recent release of the [Global Solar Power Tracker](#) and the [Global Wind Power Tracker](#) shows that the wind and solar pipeline in China grew from 1.2 TW to 1.5 TW in 2025. Countries outside the G7 and China also achieved a growth from 2.7 TW to 2.9 TW. The G7's wind and utility-scale solar pipeline remained mostly unchanged at around 520 GW since 2023, despite IRENA's [calls](#) on G7 countries to more than double their annual renewable energy capacity additions through 2030. Over the next five years, the IEA [estimates](#) that roughly 70% of all renewable additions in G7 countries are projected to come from wind and utility-scale solar — emphasizing the misalignment between current pipelines and required progress.

China has passed 1.6 TW of operating wind and solar projects

China leads globally in combined wind and total solar capacity, with at least 1.6 TW in operation, based on data through December 2025, including 489 GW of distributed solar. The United States follows, having surpassed 368 GW of operating wind and solar capacity. In 2025, the U.S. added 4.9 GW of wind, 25.6 GW of utility-scale solar, and 5.5 GW of distributed solar. India ranks third globally, with more than 163 GW of operating wind and solar capacity.

China hosts three times more operating wind & solar than the United States and India combined

Total operating solar & wind power capacity by country/area, in gigawatts (GW)



Source: Global Wind Power Tracker, Global Solar Power Tracker

Note: Data include only wind project phases with a capacity of 10 MW or more. All solar capacities are reported in MWac.



Figure 4

Distributed solar plays a significant role in the clean energy transition. In addition to monitoring utility-scale solar projects at the asset level, GEM's Global Solar Power Tracker has begun collecting nationally aggregated distributed solar installations² in select countries. The IEA [estimates](#) that approximately 42% of all existing and prospective solar capacity is distributed, highlighting its significant role in meeting tripling targets. Beyond its sizable share, distributed solar [can also enhance](#) health,

² The Global Solar Power Tracker defines distributed solar as projects with capacities below 1 MW. In the case of China, the classification more closely follows the National Energy Administration's threshold of projects below 6 MW.

education, and working conditions by providing reliable access to electricity in least developed countries.

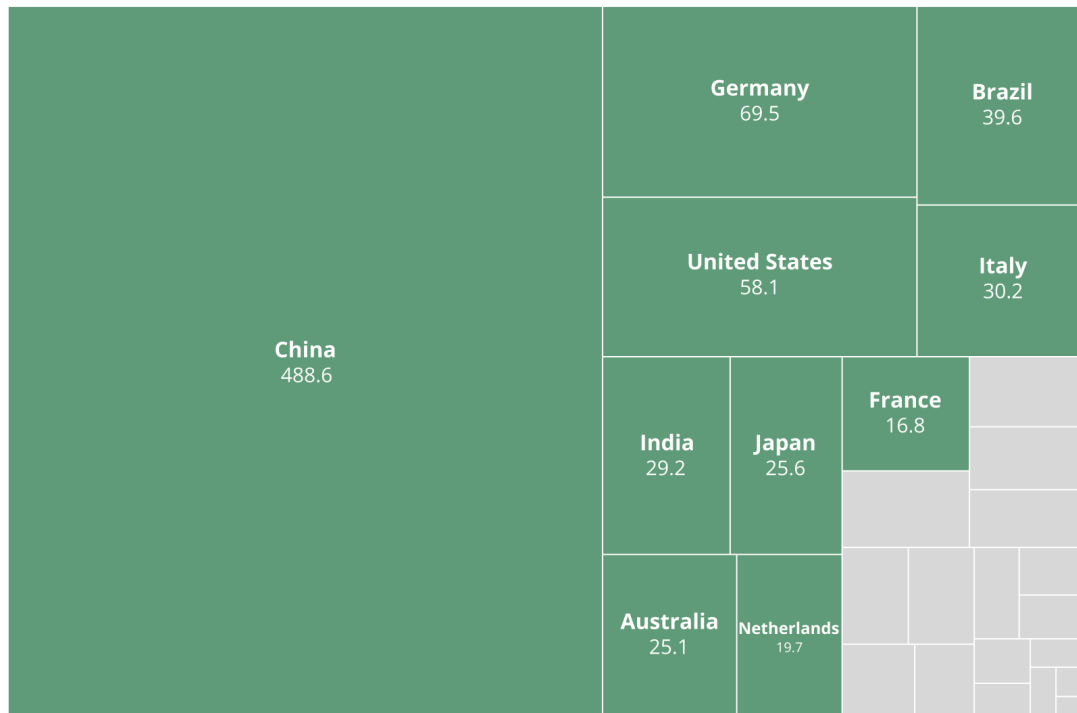
Operating distributed solar capacity is concentrated in a few countries

GEM's Global Solar Power Tracker now reports nearly 900 GW of operating distributed solar³ capacity across 31 countries/areas. Of the reported total, distributed solar capacity is highly concentrated, with the top ten countries representing 90% of the reported distributed solar total. China contributes roughly 489 GW, more than seven times Germany's 69 GW. Several G7 countries, including Germany, the United States, Italy, Japan, and France, appear among the largest reported totals.

³ Distributed solar projects are not systematically reported by authorities, mainly due to different licensing requirements in each country/area. Moreover, the definition of distributed solar varies by customer segment, end use, and system size, making it difficult to track progress consistently. GEM's Global Solar Power Tracker addresses this issue by applying a capacity-based definition (<1 MW), which allows consistent tracking of countries' progress toward tripling targets.

Top 10 countries account for 90% of reported operating distributed solar capacity

Total operating distributed solar capacity by country/area, in gigawatts (GW)



Source: Global Solar Power Tracker

Note: Data include solar projects with a capacity of less than 1 megawatt (MW). All capacities are reported in MWac.



Figure 5

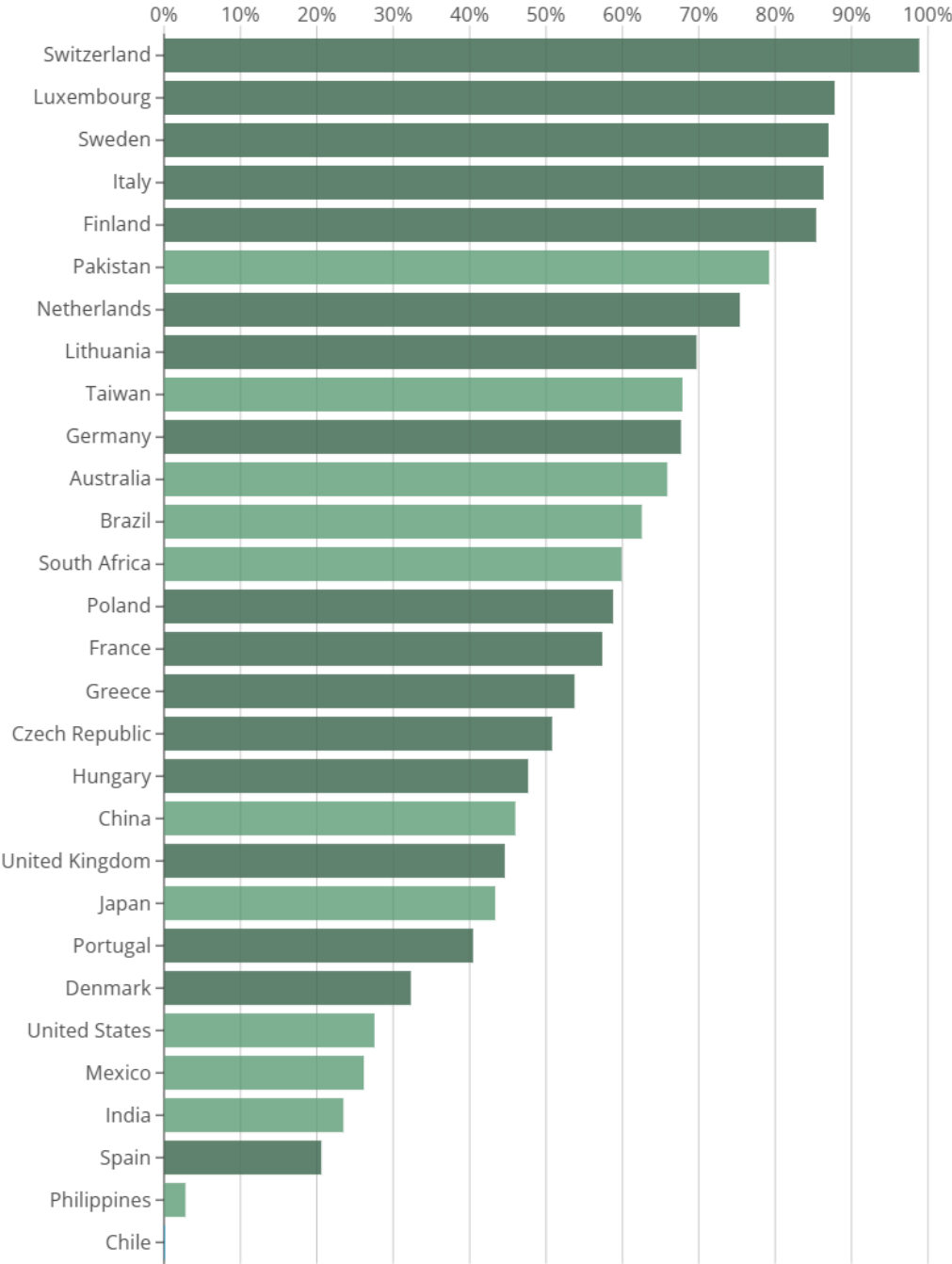
Beyond the top countries, Europe has a broad mid-tier of multi-GW countries, while reported totals across Latin America, Asia, and Africa are more dispersed and generally smaller. Within these regions, Taiwan and South Africa stand out as the largest reported distributed solar total, supported by strong policy incentives (e.g., [feed-in tariffs](#) and [frameworks](#) for small-scale generation). Overall, GEM's Global Solar Power Tracker data show that reported distributed solar remains highly concentrated, leaving substantial room for expansion.

Given the large role of distributed solar in recent growth, progress toward the 2030 tripling target cannot be assessed from utility-scale solar projects alone. In some G7

countries, distributed systems already represent a larger share of all operating solar, at around 57% in France, 68% in Germany, and 86% in Italy. Since 2020, operating distributed solar has significantly increased in developed countries. This trend can partially be attributed to the growing residential segment and the increasing comparative advantage of small-scale systems in offsetting electricity costs in [Europe](#) and the [United States](#).

Distributed solar makes up a larger share of total solar capacity in Europe than in rest of world

Share of distributed solar in all solar capacity among countries/areas covered in GEM's Global Solar Power Tracker



Source: Global Solar Power Tracker



Figure 6

Globally, distributed solar expanded more than threefold between [2020](#) and [2024](#). These findings underscore why utility-scale pipelines alone cannot paint the full picture of solar expansion in the G7 or elsewhere. Echoing earlier results on wind and utility-scale solar, wealthy nations would need to invest in grids and storage to support distributed solar and limit solar curtailment. With only five years remaining, accelerating wind and solar deployment — including distributed solar — is essential to meet the tripling goals set at COP28, and G7 countries have a significant opportunity to pick up the pace.

About the Global Solar and Wind Trackers

The Global Solar Power Tracker is a worldwide dataset of utility-scale solar photovoltaic (PV) and solar thermal facilities. It covers all operating solar farm phases with capacities of one megawatt (MW) or more and all announced, pre-construction, construction, and shelved projects with capacities greater than 20 MW. Distributed (<1 MW) solar data, aggregated at the national level, has been included for select countries/areas. The Global Wind Power Tracker is a worldwide dataset of utility-scale, on- and offshore wind facilities. It includes wind farm phases with capacities of 10 MW or more.

About Global Energy Monitor

Global Energy Monitor (GEM) develops and shares information in support of the worldwide movement for clean energy. By studying the evolving international energy landscape and creating databases, reports, and interactive tools that enhance understanding, GEM seeks to build an open guide to the world's energy system.

GEM data serve as a vital international reference point being used by agencies including: Intergovernmental Panel on Climate Change (IPCC), International Energy Agency (IEA), United Nations Environment Programme (UNEP), U.S. Treasury Department, and the World Bank. Furthermore, industry data providers such as Bloomberg Terminals and the Economist, and academic institutions like University of Oxford and Harvard University draw on these data.

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