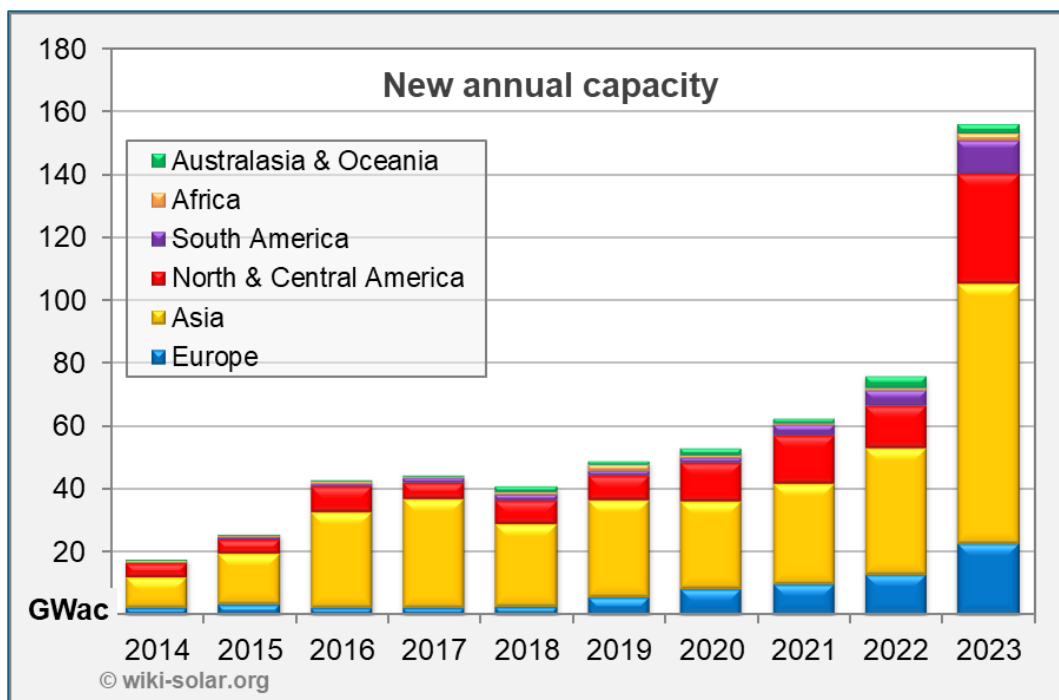


Let's face it – COP28 said little that hasn't been said before, while stubbornly refusing to phase out fossil fuels. So was the pledge to triple renewable energy by 2030 equally vapid? Perhaps not says renewables veteran Philip Wolfe, founder of utility-scale solar experts Wiki-Solar.

## Utility-scale solar on track to triple by 2030

While world leaders were talking the talk in Abu Dhabi, some at least, of their home countries were backing this up with action. Provisional figures show that 2023 set a new and massive record for utility-scale solar, doubling the previous best.

Large scale solar installations have increased in almost every year of this century reaching a record 75 GWac of new capacity on 2022. Wiki-Solar's preliminary data suggest this has leapt to some 150 GWac in 2023, taking cumulative operational capacity over 600 GWac. If annual installs grow by a mere 7% per annum from here to 2030, this sector will treble, thereby meeting its COP28 target.



While Europe led the world in the first decade of this century, Asia has been the dominant continent since, spearheaded by China and India. One of the highlights of last year's results is the way other regions are starting to 'pull their weight'. North America showed the highest year-on-year growth around 150%, compared to about 100% for Asia. South America's 120% increase makes it a serious contributor exceeding 6% of global new capacity in 2023.

### National achievement – leaders and laggards

While the 'heavy lifting' continues to be done by the three top markets – China, USA and India – several other countries are now showing dynamic growth. Spain added 6 GWac of new capacity to rocket to an uncontested #4 in the world ranking.



Rank	Country [a,c]	Operating		Change since 01-Jan-23			
		Plants	GWac [b]	Plants	GWac [b]	Rank	
1	China	<a href="#">Map</a>	4,024	218.2	91	56.8	1
2	United States	<a href="#">Map</a>	2,935	106.1	435	33.8	2
3	India	<a href="#">Map</a>	1,491	70.8	124	15.7	3
4	Spain	<a href="#">Map</a>	618	24.1	95	5.9	4
5	Germany	<a href="#">Map</a>	1,839	16.5	221	3.8	6
6	Japan	<a href="#">Map</a>	691	14.5	30	1.3	12
7	Australia	<a href="#">Map</a>	179	13.1	38	2.9	8
8	Brazil	<a href="#">Map</a>	108	12.1	33	5.3	5
9	Chile	<a href="#">Map</a>	335	10.0	94	3.5	7
10	Vietnam	<a href="#">Map</a>	140	9.9	2	0.4	32
11	United Kingdom	<a href="#">Map</a>	1,095	9.7	132	1.7	11
12	France	<a href="#">Map</a>	1,084	8.7	175	0.7	23
13	Mexico		77	8.5	4	0.5	30
14	United Arab Emirates		12	6.3	4	2.4	9
15	Netherlands	<a href="#">Map</a>	467	5.4	138	1.7	10
16	South Africa		56	3.5	4	0.8	20
17	Canada	<a href="#">Map</a>	172	3.4	14	0.5	27
18	Turkiye	<a href="#">Map</a>	271	3.4	2	0.8	19
19	Italy	<a href="#">Map</a>	294	3.3	31	0.7	21
20	Ukraine		93	2.6	0	0.0	
21	Philippines	<a href="#">Map</a>	96	2.4	22	0.4	34
22	Russia	<a href="#">Map</a>	116	2.3	6	0.1	39
23	South Korea		69	2.3	4	0.6	24
24	Greece	<a href="#">Map</a>	108	2.3	36	1.1	16
25	Portugal	<a href="#">Map</a>	80	2.1	14	0.7	22
26	Saudi Arabia		14	1.9	4	1.1	13
27	Argentina		39	1.9	9	0.4	31
28	Denmark		44	1.8	6	0.5	28
29	Thailand	<a href="#">Map</a>	144	1.7	3	0.1	42
30	Bulgaria		58	1.7	10	1.0	18
fTopGC_3303		Totals listed above:	16,749	570.5	1,781	145.4	

[a] These top 30 countries account for 570-GWac, ~94% of the world total.

[b] GWac total for projects over 4MWac; GWp figures typically ~25% higher

[c] Blue underlined 'Map' entries are hyperlinks to Wiki-Solar map

**North and Central America + 150%:** The USA leapt back with a vengeance after its installs dipped in 2022. It commissioned over 30 GWac of new utility-scale solar capacity, comfortably more than double its previous record. Texas alone contributed over 7.5 GWac.

Relatively little support came from other nations in the continent. Canada was once in the top-10, when Ontario was actively promoting renewables, but had fallen to #20 two years ago. New projects, mainly in Alberta have led to a slight resurgence. Mexico too reached the top-10 between 2018-2020 after commissioning several large projects, but is now slipping back down the table.

**South America + 120%:** Brazil installed 5 GWac of new capacity – 40% of its cumulative total – in 2023, lifting it into the top-10 at #8. It still has a pipeline of 20 GWac of approved projects in construction and development, so plenty of scope for further growth. Co-leader of South America's surge, Chile has an even larger pipeline of 40 GWac, though it has to date completed only one-third of the 20 GWac pipeline it had four years ago. Utility-scale solar in Chile seems, like the T-shirt slogan, 'destined for greatness – but pacing itself'.

**Asia + 100%:** China's impressive total may yet prove to be understated, if the as-yet-unpublished fourth quarter matches a massive Q3. India too accelerated progress in both its installed capacity and pipeline. These Asian solar superpowers are steadfastly supported by Japan, continuing solid if undramatic progress – though its preliminary figures often prove to be understated. Vietnamese installs have declined since its 2019 boom, while South Korea and Thailand are also slipping down the table. The Philippines by contrast is enjoying something of a resurgence.

Asia's figures are also bolstered by parts of the Middle East. The UAE has been climbing steadily for some years and Türkiye has been consistently in the top-20. They are joined by Saudi Arabia, which has now climbed into the top-30 for the first time thanks to a handful of mega-projects. But a number of sunny, spacious middle-eastern nations are notable by their absence.

**Europe + 75%:** Spain is the only European country which has seen a step-change in growth rate, and this should continue at least in the near term thanks to a 10 GWac pipeline.

One time top nation, Germany, has accelerated progress recently, arresting its decline down the table by installing 3-4 GWac of new plants last year. The UK too is showing signs of rising from the doldrums, but is still below its 2015 peak. France trundles along looking as if it is trying to stay under the radar.

The Netherlands has recently been one of the continent's best performers, at least relative to its size, and had another strong year in 2023. Portugal, too, is making good progress. Italy and Greece have been relative underperformers, probably due in part to regulatory difficulties, though both seem to have shown some recent growth.

**Rest of the World + 20%:** Africa and Australasia account for less than 4% of the global utility-scale solar market, and aren't currently threatening to increase that.

A 'late-starter', Australia began climbing up the table five years ago, but seems to have showed only modest growth last year. However it has a pipeline of some 30 GWac, so can be expected to resume an upwards trajectory. New Zealand achieved its first plants recently, but remains a minor league player.

Africa's only representative in the top-30, South Africa has disappointed of late, having broken into the top-10 back in 2016. However it has a pipeline of some 5 GWac, which could help arrest its decline. On the bright side, there are three other African countries in the top-50, led by Egypt; and several other nations on the continent have recently installed their first utility-scale plants.

## Prospects for 2024-2030

Utility-scale solar may prove to have been the leading technology for new power generation plant globally in 2023, and there is no reason to believe that this was a flash in the pan. At current cost levels, large-scale PV offers levelised electricity costs lower than any other source in many parts of the world.

The pipeline of projects in construction and development is, as indicated above, extensive. Completions scheduled for 2024 already top the 2023 figure, even with incomplete data for China, so another record year is indicated.

Can this progress continue to 2030? Only a fool makes predictions that far ahead in a volatile and accident-prone world... But, barring accidents, the answer is Yes!

## Preliminary figures

2023 has barely ended, and most data sources have yet to publish their year-end results. These figures are therefore subject to a margin of error. Overall and continental totals should prove to be reasonably accurate but more granular national data may be less so, especially as noted herein.

The figures above include both photovoltaics and concentrated solar power. For the purposes of analysis and comparison, 'utility-scale' is taken to be plants of 4 MWac and over (equivalent to about 5 MWp for PV plants).

Wiki-Solar stresses that the figures will change as final data comes in. These provisional capacity numbers include roughly 2,500 new projects, some of which may turn out not to have been commissioned as expected; while other early or unpublicised new plants may have been left out. Historically, however, we have found that these two variances often approximately cancel each other out.