



Renewables



WORLD POWER MIX



SOLAR PHOTOVOLTAIC POWER CAPACITY

Areas and Aggregates

The World Top 10

Countries



WIND POWER CAPACITY

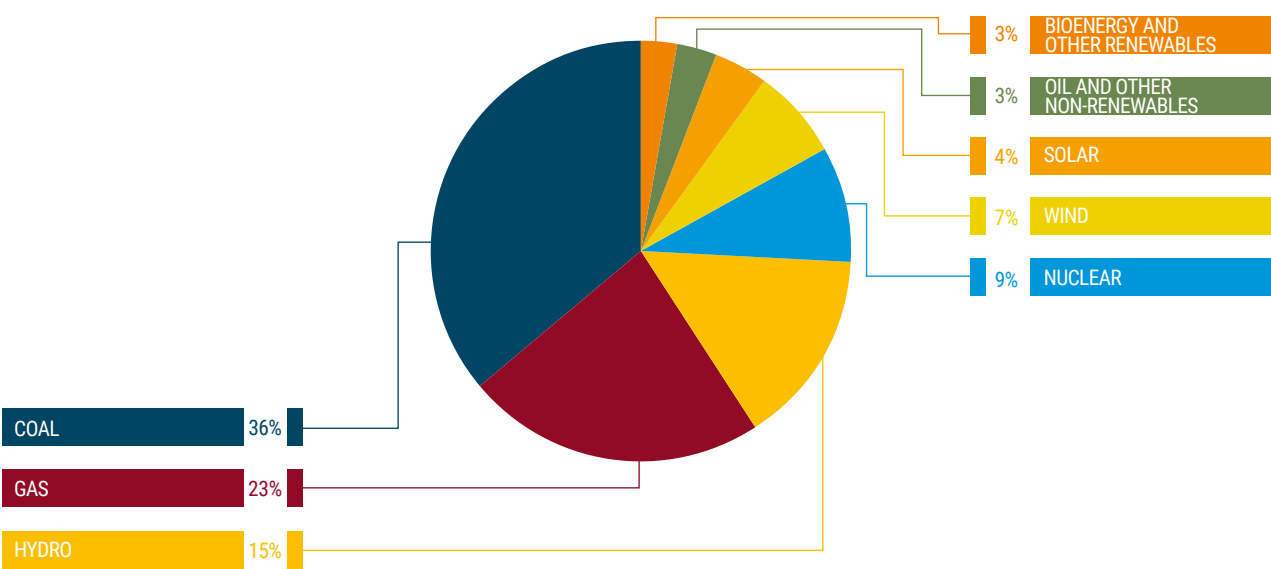
Areas and Aggregates

The World Top 10

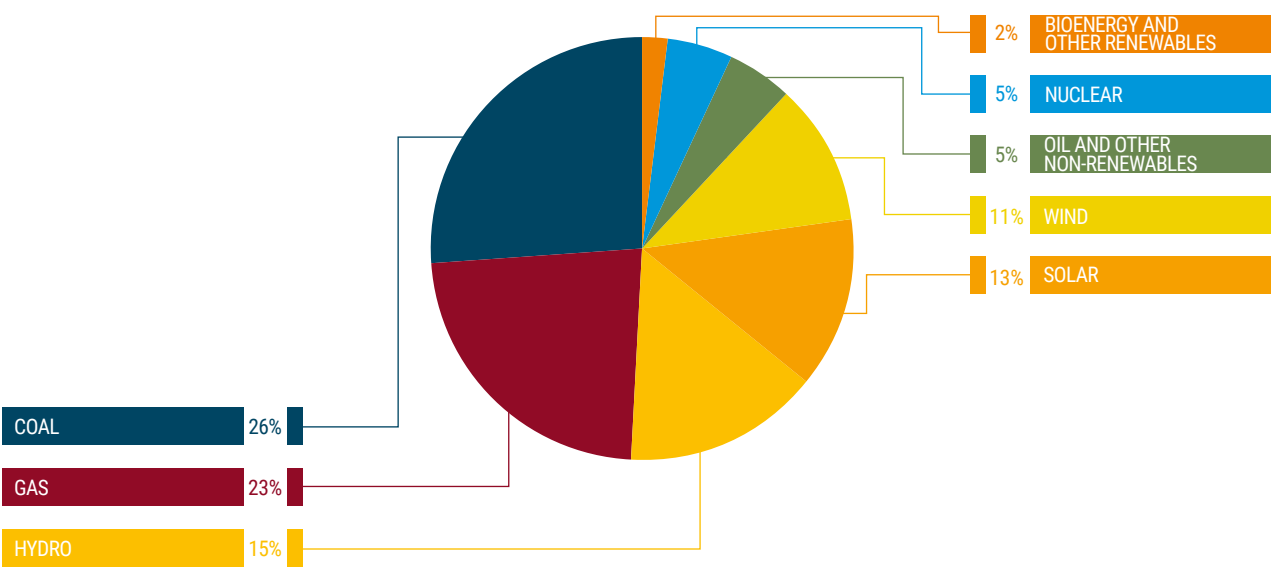
Countries

World Power Mix

World Power Generation Mix 2022(*)
(~28500 TWh)



World Power Capacity Mix 2022(**)
(~8300 GW)



(*) Data source: Eni's elaborations on IEA data.
(**) Data source: Eni's elaborations on IEA and IRENA data.

Solar Photovoltaic Power Capacity

Areas and Aggregates^(*)

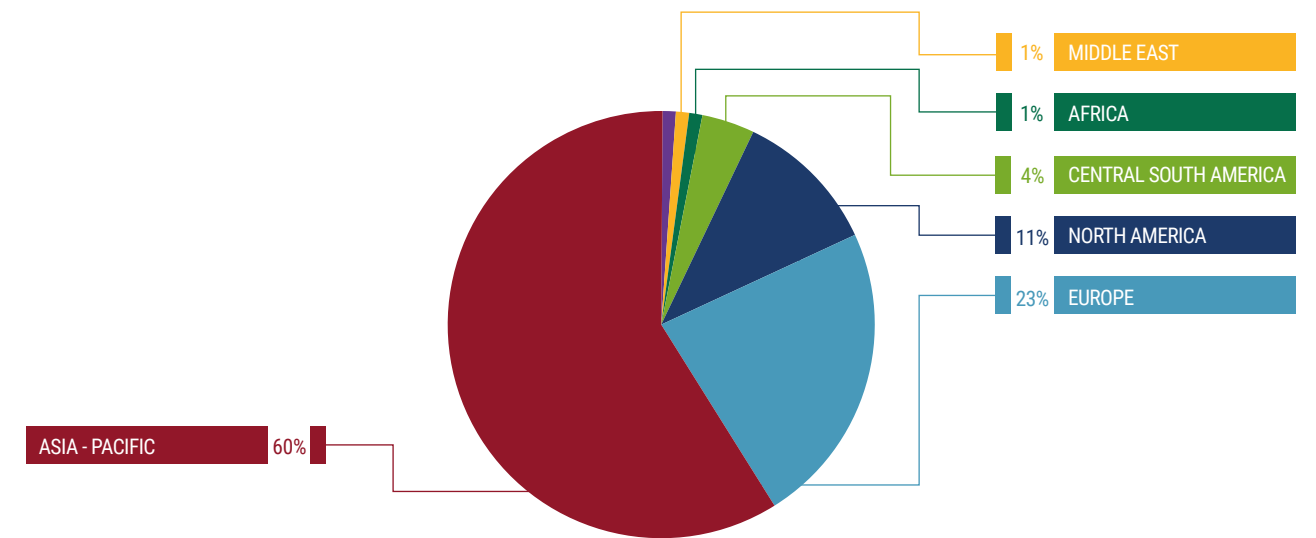
(MW)

	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Europe	30,125	97,541	104,694	113,408	124,354	145,946	167,141	195,638	234,903	20.1%	18.7%
Russia and Central Asia	2	211	262	435	1,082	2,515	3,296	3,971	4,475	12.7%	94.0%
Middle East	85	996	1,504	2,130	3,305	5,813	6,990	9,239	12,440	34.6%	51.5%
Africa	188	1,917	3,030	4,675	7,165	8,408	9,734	10,543	11,556	9.6%	41.0%
Asia - Pacific	6,625	96,167	146,822	218,883	284,212	344,248	426,065	505,809	621,642	22.9%	46.0%
Americas	3,303	27,237	39,800	51,347	63,378	78,938	100,690	129,964	161,597	24.3%	38.3%
- North America	3,158	24,998	36,341	44,944	53,324	63,156	78,035	97,541	115,936	18.9%	35.0%
- Central South America	145	2,239	3,460	6,403	10,054	15,782	22,655	32,423	45,661	40.8%	61.5%
World	40,327	224,070	296,112	390,878	483,496	585,868	713,918	855,163	1,046,614	22.4%	31.2%
European Union 27	29,883	85,386	89,195	93,927	101,753	117,904	136,176	161,879	197,847	22.2%	17.1%
MENA	119	1,131	1,913	2,765	4,735	8,142	9,371	11,720	15,101	28.8%	49.7%
OECD	38,709	164,515	193,305	221,052	251,768	297,641	349,389	412,945	484,618	17.4%	23.4%
NON OECD	1,619	59,555	102,807	169,826	231,728	288,227	364,529	442,217	561,996	27.1%	62.8%
OPEC	28	214	523	985	1,367	2,781	3,008	4,042	4,737	17.2%	53.6%
NON OPEC	40,300	223,855	295,589	389,893	482,129	583,086	710,909	851,121	1,041,876	22.4%	31.1%

Solar Photovoltaic Power Capacity

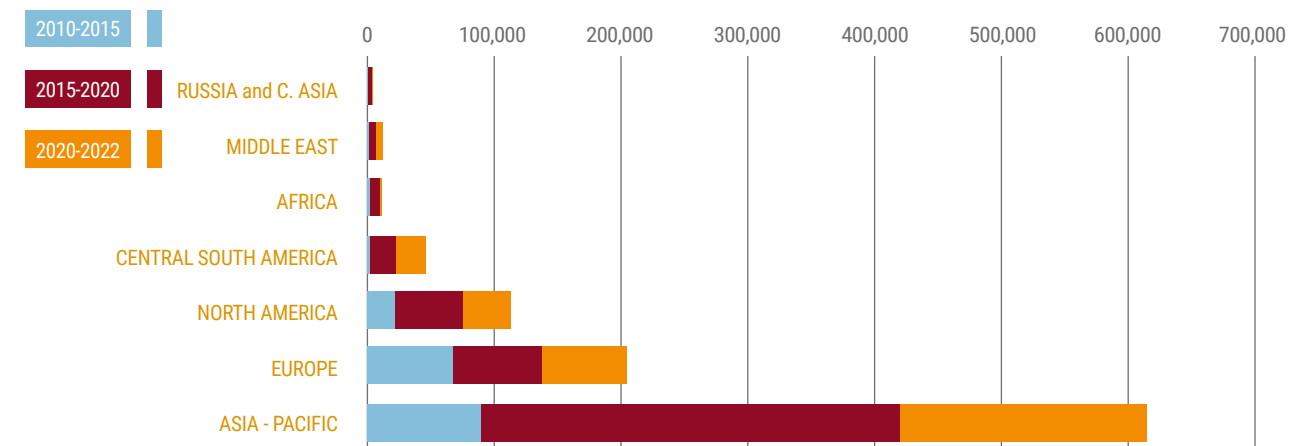
World Solar Photovoltaic Power Capacity (2022)

1,046,614 MW



World Solar Photovoltaic Power Capacity Growth (2010-2022)

1,006,287 MW



^(*) Data source: Eni's calculations on IRENA (2023), *Renewable Energy Statistics 2023*, The International Renewable Energy Agency, Abu Dhabi, data.

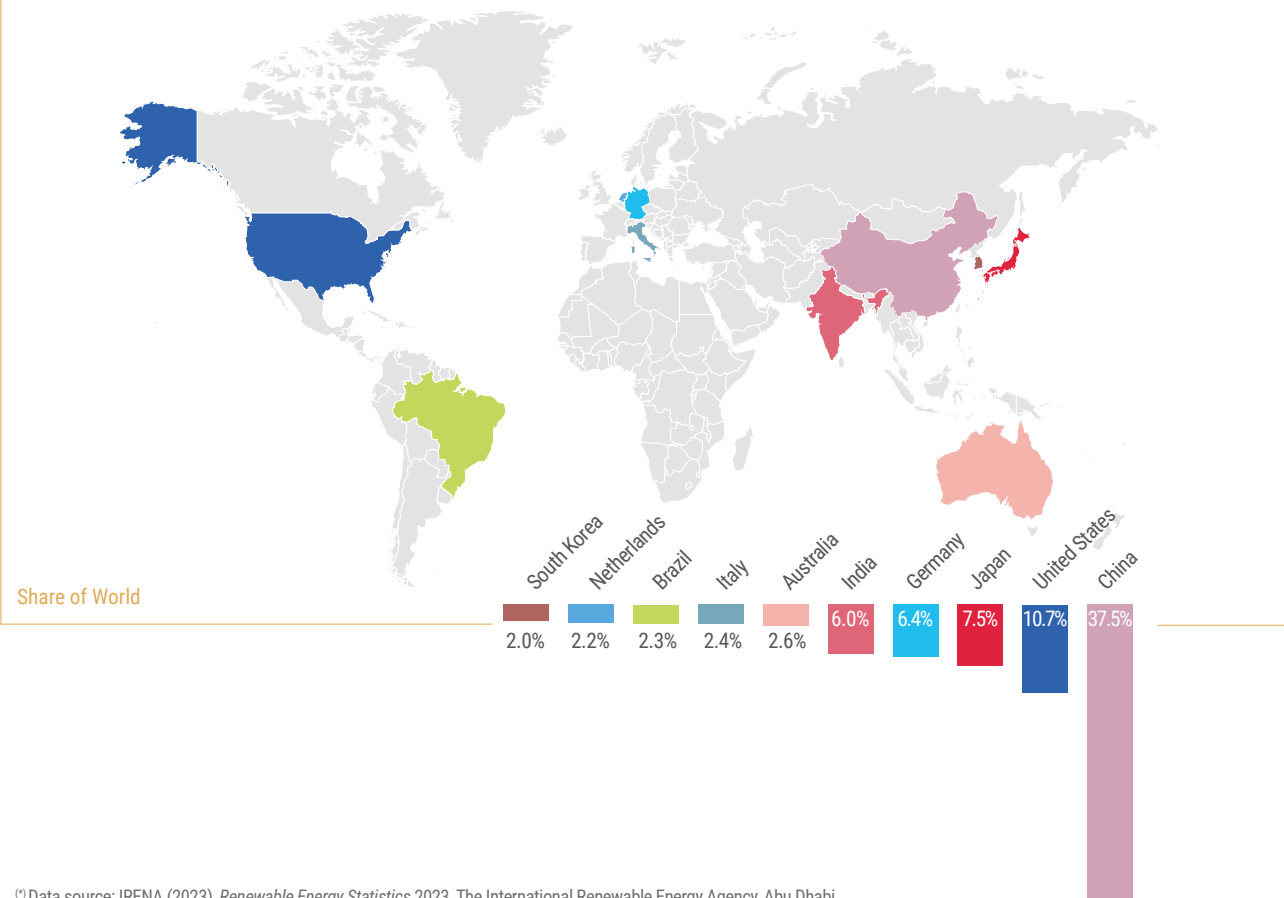
Solar Photovoltaic Power Capacity

The World Top 10^(*)

(MW)

	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
China	1,022	43,538	77,788	130,801	175,016	204,575	253,418	306,403	392,436	28.1%	64.2%
United States	2,909	22,479	33,676	42,012	50,229	59,829	74,693	93,911	111,535	18.8%	35.5%
Japan	3,618	34,150	42,040	49,500	56,162	63,192	69,764	74,191	78,833	6.3%	29.3%
Germany	18,004	39,222	40,677	42,291	45,156	48,912	53,669	59,371	66,552	12.1%	11.5%
India	65	5,365	9,651	17,923	27,125	34,861	39,043	49,342	62,804	27.3%	77.2%
Australia	1,088	5,943	6,686	7,352	8,623	12,967	17,983	22,867	26,789	17.2%	30.6%
Italy	3,592	18,901	19,283	19,682	20,108	20,865	21,650	22,594	25,077	11.0%	17.6%
Brazil	1	46	128	1,207	2,435	4,635	8,291	14,197	24,079	69.6%	134.9%
Netherlands	90	1,526	2,135	2,911	4,608	7,226	11,108	14,911	22,590	51.5%	58.5%
South Korea	650	3,615	4,502	5,835	8,099	11,952	14,575	18,161	20,975	15.5%	33.6%
The World Top 10	31,039	174,785	236,565	319,514	397,560	469,014	564,193	675,947	831,668	23.0%	31.5%
Rest of the World	9,288	49,285	59,547	71,363	85,935	116,853	149,724	179,216	214,946	19.9%	29.9%
World	40,327	224,070	296,112	390,878	483,496	585,868	713,918	855,163	1,046,614	22.4%	31.2%

The World Top 10 (2022)



^(*) Data source: IRENA (2023), *Renewable Energy Statistics 2023*, The International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Europe	30,125	97,541	104,694	113,408	124,354	145,946	167,141	195,638	234,903	20.1%	18.7%
Albania	0	1	1	1	1	14	21	23	29	24.3%	42.7%
Austria	89	937	1,096	1,269	1,455	1,702	2,043	2,783	3,548	27.5%	36.0%
Belarus		6	47	80	154	154	160	160	269	68.1%	
Belgium	1,007	3,132	3,329	3,621	4,000	4,637	5,573	6,012	6,898	14.7%	17.4%
Bosnia Herzegovina	0	8	14	16	18	22	35	57	107	90.2%	63.2%
Bulgaria	25	1,028	1,030	1,031	1,033	1,044	1,100	1,275	1,948	52.8%	43.8%
Croatia	0	48	56	60	68	85	109	138	182	31.8%	70.6%
Cyprus	7	76	84	110	118	151	229	315	464	47.7%	41.8%
Czech Republic	1,727	2,075	2,068	2,075	2,081	2,111	2,172	2,246	2,627	17.0%	3.6%
Denmark	7	782	851	906	998	1,080	1,304	1,704	2,490	46.1%	63.2%
Estonia	0	7	10	15	32	121	208	395	535	35.5%	104.5%
Finland	7	17	39	82	140	222	318	425	591	39.0%	44.7%
France	1,044	7,138	7,702	8,610	9,672	10,808	12,056	14,810	17,410	17.6%	26.4%
Germany	18,004	39,222	40,677	42,291	45,156	48,912	53,669	59,371	66,552	12.1%	11.5%
Greece	202	2,604	2,604	2,606	2,652	2,834	3,288	4,277	5,557	29.9%	31.8%
Hungary	2	172	235	344	728	1,400	2,131	2,968	2,988	0.7%	83.9%
Iceland		3	4	4	5	7	7	7	7	0.0%	
Ireland	1	2	6	17	32	58	90	135	135	0.0%	55.2%
Italy	3,592	18,901	19,283	19,682	20,108	20,865	21,650	22,594	25,077	11.0%	17.6%
Kosovo		0	2	7	7	10	10	10	10	0.0%	
Latvia			1	1	2	3	5	7	56	684.8%	
Lithuania	0	69	70	74	82	103	164	255	568	122.7%	105.5%
Luxembourg	29	116	122	128	131	160	187	277	319	15.2%	22.0%
Malta	1	75	94	112	132	155	188	206	206	0.0%	58.8%
Moldova		1	2	2	3	5	4	14	19	30.2%	
Montenegro	1	3	3	3	4	5	6	7	26	300.7%	37.3%
Netherlands	90	1,526	2,135	2,911	4,608	7,226	11,108	14,911	22,590	51.5%	58.5%
North Macedonia	0	17	17	17	21	26	94	94	94	0.0%	114.4%
Norway	9	15	27	45	68	120	160	205	321	56.5%	34.6%
Poland		108	187	287	562	1,539	3,955	7,416	11,167	50.6%	
Portugal	134	447	513	579	667	901	1,100	1,646	2,536	54.1%	27.8%
Romania	0	1,326	1,372	1,374	1,386	1,398	1,383	1,394	1,414	1.4%	121.8%
Serbia	3	16	17	18	21	23	31	52	137	164.3%	36.4%
Slovakia	19	533	533	528	472	590	535	537	537	0.0%	32.1%
Slovenia	12	238	233	247	247	278	370	461	632	37.1%	39.1%
Spain	3,873	4,704	4,713	4,723	4,764	8,807	10,136	13,715	18,214	32.8%	13.8%
Sweden	11	104	153	244	428	714	1,107	1,606	2,606	62.3%	57.7%
Switzerland	125	1,394	1,664	1,906	2,173	2,498	2,973	3,449	4,134	19.9%	33.9%
Türkiye	6	249	833	3,421	5,063	5,995	6,667	7,816	9,425	20.6%	85.4%
Ukraine	3	841	955	1,200	2,003	5,936	7,331	8,062	8,062	0.0%	96.1%
United Kingdom	95	9,601	11,914	12,760	13,059	13,224	13,462	13,799	14,412	4.4%	52.0%
Others Europe	0	0	0	0	1	2	3	4	4	2.3%	75.0%

^(*) Data source: IRENA (2023), *Renewable Energy Statistics 2023*, The International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Russia and Central Asia	2	211	262	435	1,082	2,515	3,296	3,971	4,475	12.7%	94.0%
Russia	0	61	76	225	535	1,276	1,428	1,661	1,816	9.3%	174.3%
Armenia			1	2	17	50	106	217	306	41.1%	
Azerbaijan	0	5	25	28	35	33	35	48	51	6.3%	53.4%
Georgia			0	1	1	3	5	18	18	0.0%	
Kazakhstan	1	144	157	175	490	1,150	1,719	1,923	2,031	5.6%	85.0%
Tajikistan							0	0	0	0.0%	
Uzbekistan		1	2	3	4	4	4	104	253	144.0%	
	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Middle East	85	996	1.504	2.130	3.305	5.813	6.990	9.239	12.440	34.6%	51.5%
Bahrain	0	5	6	6	6	9	10	11	12	3.1%	94.4%
Iran	0	9	43	184	286	346	430	456	539	18.3%	82.7%
Iraq		37	37	37	37	37	37	37	42	12.1%	
Israel	70	790	900	1.000	1.340	1.890	2.410	3.349	4.169	24.5%	40.6%
Jordan	0	6	287	397	700	1.186	1.448	1.521	1.914	25.9%	166.4%
Kuwait		3	31	32	43	43	43	43	43	0.0%	
Lebanon	0	11	24	37	55	76	90	190	440	131.7%	82.0%
Oman		2	2	8	8	9	112	138	638	363.4%	
Qatar		4	5	5	5	5	5	5	805	15686.3%	
Saudi Arabia	2	24	24	34	34	59	59	389	390	0.1%	53.1%
Syria				0	1	2	12	33	60	81.8%	
United Arab Emirates	11	33	40	255	498	1.818	1.961	2.632	2.940	11.7%	59.5%
Yemen	1	60	80	100	250	250	257	257	257	0.0%	58.7%
Others Middle East	0	12	25	35	40	82	117	178	192	7.9%	

(*) Data source: IRENA (2023), Renewable Energy Statistics 2023, The International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Africa	188	1,917	3,030	4,675	7,165	8,408	9,734	10,543	11,556	9.6%	41.0%
Algeria		66	305	398	423	423	423	423	435	2.8%	
Angola	7	13	13	13	13	13	13	13	297	2123.0%	36.5%
Benin		1	3	3	3	3	3	3	28	850.3%	
Cameroon	1	7	9	12	14	14	14	14	14	0.0%	24.8%
Chad	0	0	0	0	0	0	1	1	1	0.0%	63.4%
Congo		0	0	1	1	1	1	1	1	0.0%	
Côte d'Ivoire	2	5	5	8	13	13	13	13	13	0.0%	19.5%
Dem. Rep. Congo		1	3	5	20	20	20	20	20	0.0%	
Egypt	15	16	39	160	744	1,627	1,623	1,643	1,704	3.7%	48.3%
Equatorial Guinea			0	0	0	0	0	0	0	0.0%	
Ethiopia	0	10	14	12	12	12	20	21	21	0.0%	73.7%
Gabon	1	1	1	1	1	1	1	1	1	0.0%	0.0%
Ghana		30	34	39	66	72	95	98	98	0.0%	
Kenya	0	31	36	46	107	127	147	218	307	41.1%	84.6%
Libya	4	5	5	5	5	5	5	6	6	0.0%	4.6%
Madagascar	2	9	11	13	33	33	33	33	33	0.0%	29.4%
Mauritania		18	35	35	87	88	88	88	89	1.7%	
Morocco	14	20	22	24	194	194	234	314	318	1.3%	30.1%
Mozambique		10	13	15	56	56	61	64	108	68.8%	
Namibia	4	21	36	75	99	151	151	151	176	16.5%	36.5%
Niger	2	7	8	9	27	27	27	27	62	129.4%	32.6%
Nigeria		17	18	19	19	28	28	33	37	12.1%	
Rwanda	0	11	12	17	22	25	25	25	25	0.0%	46.9%
Senegal	3	9	38	109	150	173	173	240	263	9.6%	44.0%
Sierra Leone	0	0	0	4	4	4	4	4	9	113.3%	46.8%
Somalia		0	5	7	7	7	16	24	47	99.8%	
South Africa	2	1,253	1,976	3,151	4,405	4,408	5,494	5,816	5,826	0.2%	94.6%
South Sudan		0	0	0	1	1	1	1	14	1000.2%	
Sudan	2	20	26	36	59	80	117	136	190	39.7%	44.6%
Tanzania	0	13	12	13	17	15	15	15	15	0.0%	67.6%
Tunisia	2	28	38	47	64	80	95	95	197	107.7%	47.8%
Uganda	15	22	24	44	67	78	88	90	94	3.4%	16.5%
Zambia		0	0	0	1	96	96	96	96	0.0%	
Zimbabwe	0	3	3	5	9	12	14	28	41	47.6%	128.8%
Others Africa	112	269	282	346	420	517	591	786	967	22.9%	19.7%

(*) Data source: IRENA (2023), Renewable Energy Statistics 2023, The International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Asia - Pacific	6,625	96,167	146,822	218,883	284,212	344,248	426,065	505,809	621,642	22.9%	46.0%
Afghanistan	0	19	20	22	22	31	31	31	33	6.6%	61.7%
Australia	1,088	5,943	6,686	7,352	8,623	12,967	17,983	22,867	26,789	17.2%	30.6%
Bangladesh	32	147	164	196	218	269	317	480	537	11.9%	26.4%
Bhutan	0	0	0	0	0	0	0	0	0	0.0%	4.3%
Brunei	1	1	1	1	1	1	1	5	5	0.6%	12.4%
China	1,022	43,538	77,788	130,801	175,016	204,575	253,418	306,403	392,436	28.1%	64.2%
East Timor	0	1	1	0	0	0	0	0	0	27.4%	10.4%
Hong Kong				1	1	89	91	95	95	0.0%	
India	65	5,365	9,651	17,923	27,125	34,861	39,043	49,342	62,804	27.3%	77.2%
Indonesia	15	79	88	98	65	155	185	225	291	29.2%	28.3%
Japan	3,618	34,150	42,040	49,500	56,162	63,192	69,764	74,191	78,833	6.3%	29.3%
Malaysia	1	266	344	394	545	894	1,483	1,787	1,933	8.2%	97.6%
Mongolia	5	5	15	48	64	89	95	95	95	0.0%	28.7%
Myanmar	0	21	32	44	48	88	84	80	103	28.5%	58.9%
Nepal	4	13	14	55	55	54	70	97	117	20.9%	31.7%
New Zealand	3	37	53	70	91	117	144	237	303	27.7%	46.9%
North Korea	1	23	32	35	38	42	42	52	52	0.0%	39.5%
Pakistan	9	266	590	655	680	755	854	1,077	1,243	15.4%	50.4%
Papua New Guinea	0	1	1	1	1	3	3	4	4	6.6%	22.5%
Philippines	2	173	784	908	917	982	1,058	1,377	1,625	18.0%	74.6%
Singapore	3	46	97	116	161	272	333	487	572	17.4%	54.9%
South Korea	650	3,615	4,502	5,835	8,099	11,952	14,575	18,161	20,975	15.5%	33.6%
Sri Lanka	7	37	80	156	231	351	431	624	714	14.4%	47.1%
Taiwan	35	884	1,245	1,768	2,738	4,150	5,817	7,700	9,724	26.3%	60.0%
Thailand	49	1,420	2,446	2,697	2,962	2,983	2,983	3,060	3,060	0.0%	41.2%
Vietnam	5	5	5	8	105	4,993	16,660	16,660	18,474	10.9%	100.0%
Others Asia - Pacific	10	114	144	199	243	382	600	672	826	23.0%	44.0%

^(*) Data source: IRENA (2023), *Renewable Energy Statistics* 2023, The International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Americas	3,303	27,237	39,800	51,347	63,378	78,938	100,690	129,964	161,597	24.3%	38.3%
Argentina	0	9	9	9	191	442	764	1,071	1,104	3.0%	143.0%
Barbados	1	3	15	16	17	33	49	64	69	7.8%	42.3%
Belize	0	0	0	1	1	7	7	7	7	0.0%	108.0%
Bolivia	3	6	6	8	70	120	120	170	170	0.0%	40.1%
Brazil	1	46	128	1,207	2,435	4,635	8,291	14,197	24,079	69.6%	134.9%
Canada	249	2,519	2,665	2,932	3,095	3,327	3,342	3,630	4,401	21.3%	27.0%
Chile		576	1,125	1,809	2,137	2,654	3,205	4,360	6,142	40.9%	
Colombia	1	1	2	11	13	26	86	184	457	148.6%	63.3%
Costa Rica	6	22	24	28	28	48	57	74	74	0.0%	22.9%
Cuba		24	37	65	128	159	217	246	258	4.9%	
Curacao	0	10	11	11	12	15	16	16	16	0.0%	71.4%
Dominican Republic		25	73	106	205	315	386	594	742	24.9%	
Ecuador	0	26	26	26	27	28	28	28	29	3.6%	83.2%
El Salvador	0	24	25	121	198	403	478	643	664	3.3%	123.0%
Guatemala	1	93	93	99	101	101	101	101	105	3.5%	53.7%
Guyana	0	2	2	3	6	8	8	8	8	0.0%	38.1%
Haiti	1	2	2	3	3	3	3	3	3	0.0%	13.7%
Honduras	4	396	417	454	514	518	525	529	529	0.0%	51.1%
Jamaica	1	7	28	56	56	93	93	93	93	0.1%	45.8%
Mexico	30	287	633	1,126	2,566	4,725	6,692	8,154	9,009	10.5%	61.0%
Nicaragua		1	1	14	14	16	16	16	16	0.0%	
Panama	2	49	93	147	188	219	229	462	522	13.0%	59.9%
Paraguay	0	0	0	0	0	0	0	0	0	0.0%	40.1%
Peru	13	135	146	298	324	335	335	332	332	0.0%	31.4%
Suriname	0	6	7	8	9	9	9	9	12	24.4%	43.5%
Trinidad and Tobago	3	4	4	4	4	4	4	4	4	0.0%	2.9%
United States	2,909	22,479	33,676	42,012	50,229	59,829	74,693	93,911	111,535	18.8%	35.5%
Uruguay	0	64	89	243	248	253	258	266	270	1.6%	87.5%
Venezuela	2	5	5	5	4	5	5	5	5	0.0%	9.5%
Others Americas	77	416	461	527	555	608	674	786	942	19.8%	23.1%

^(*) Data source: IRENA (2023), *Renewable Energy Statistics* 2023, The International Renewable Energy Agency, Abu Dhabi.

Wind Power Capacity

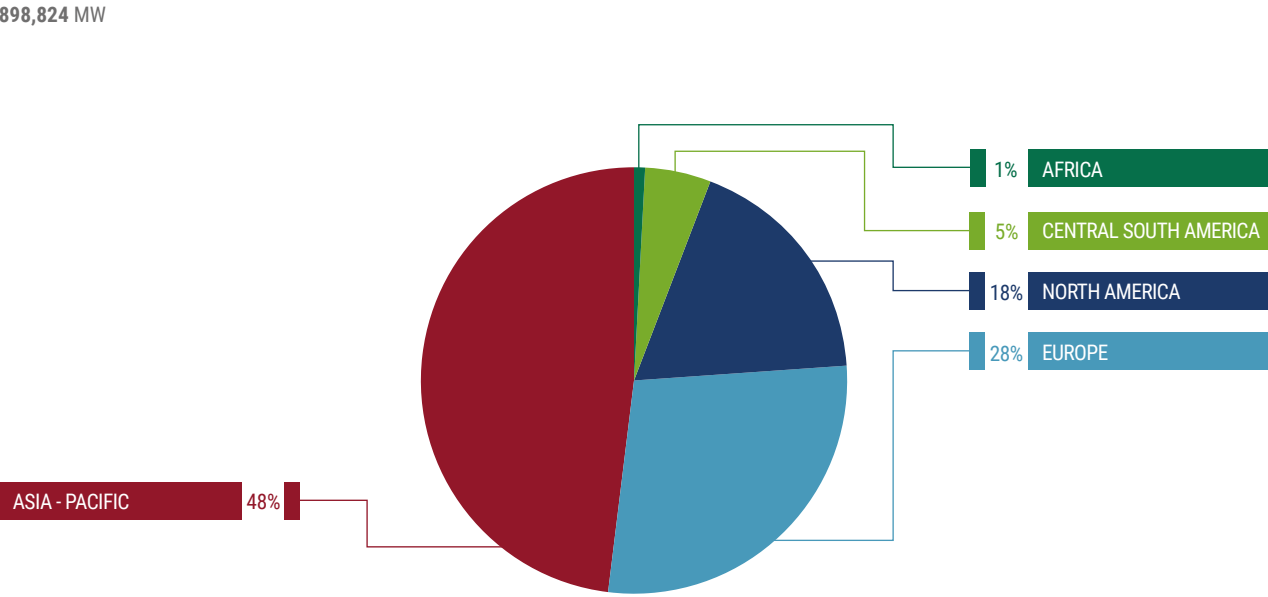
Areas and Aggregates^(*)

	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Europe	86,240	147,518	161,478	177,132	188,792	203,695	218,517	232,641	252,020	8.3%	9.3%
Russia and Central Asia	15	93	148	163	263	476	2,532	2,730	3,424	25.5%	57.6%
Middle East	104	286	423	504	609	775	923	1,029	1,053	2.4%	21.3%
Africa	865	3,320	3,831	4,578	5,472	5,529	6,515	7,370	7,685	4.3%	20.0%
Asia - Pacific	48,537	166,653	189,153	210,456	235,156	264,409	341,158	394,177	435,666	10.5%	20.1%
Americas	45,322	98,476	111,995	121,589	134,221	145,957	164,795	186,224	198,976	6.8%	13.1%
- North America	43,317	83,981	93,475	100,081	107,482	117,249	132,291	147,323	156,157	6.0%	11.3%
- Central South America	2,005	14,495	18,520	21,509	26,739	28,709	32,504	38,901	42,819	10.1%	29.1%
World	181,083	416,347	467,028	514,423	564,512	620,841	734,440	824,171	898,824	9.1%	14.3%
European Union 27	78,937	127,174	137,975	148,912	157,211	167,139	177,059	188,371	204,040	8.3%	8.2%
MENA	933	2,088	2,330	2,531	3,219	3,387	3,993	4,395	4,507	2.5%	14.0%
OECD	134,324	239,490	264,751	288,024	309,530	334,873	368,273	399,073	429,527	7.6%	10.2%
NON OECD	46,758	176,857	202,277	226,399	254,983	285,968	366,167	425,098	469,297	10.4%	21.2%
OPEC	95	239	275	356	378	402	405	407	439	7.8%	13.6%
NON OPEC	180,988	416,108	466,754	514,067	564,134	620,439	734,035	823,764	898,385	9.1%	14.3%

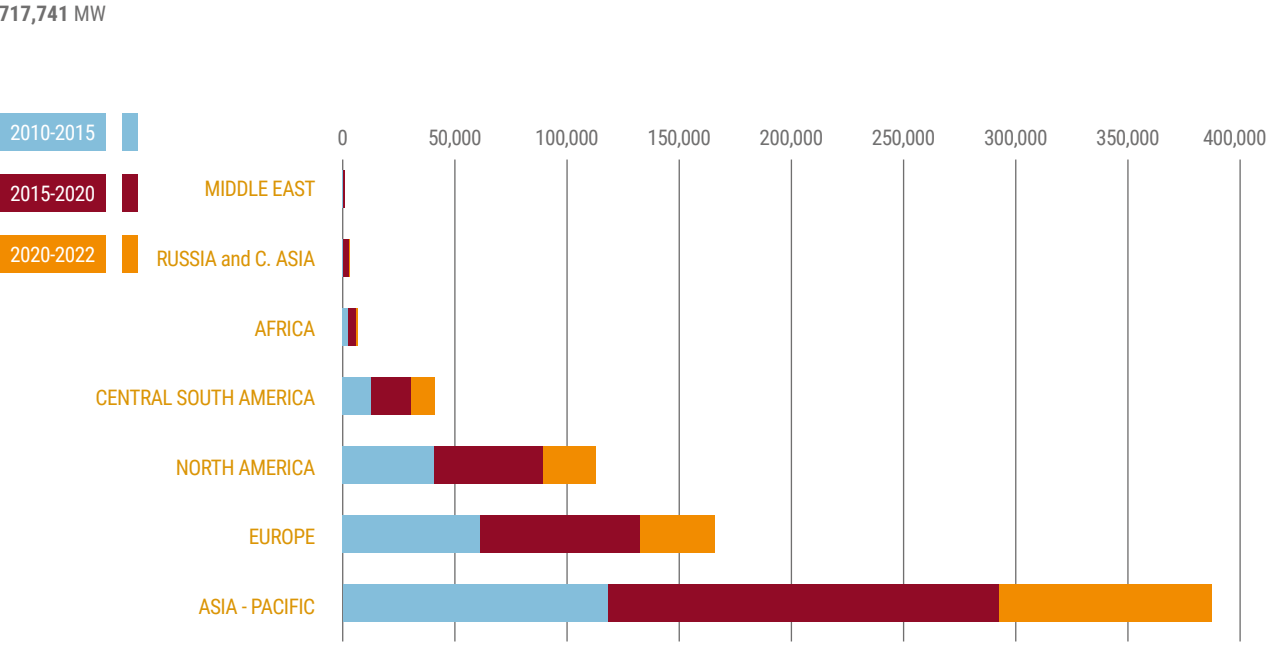
^(*) Data source: Eni's calculations on IRENA (2023), Renewable Energy Statistics 2023, The International Renewable Energy Agency, Abu Dhabi, data.

Wind Power Capacity

World Wind Power Capacity (2022)



World Wind Power Capacity Growth (2010-2022)

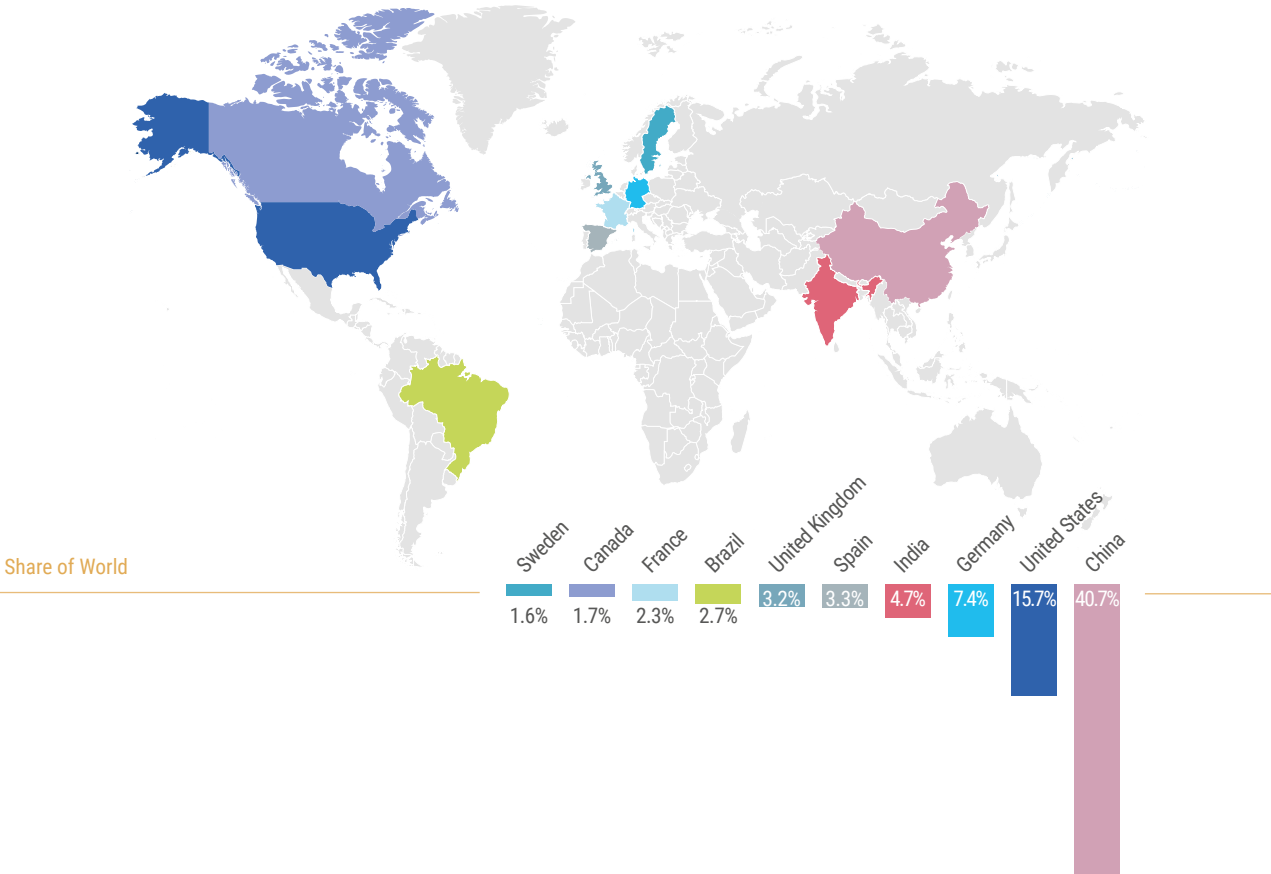


Wind Power Capacity

The World Top 10^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
China	29,633	131,048	148,517	164,374	184,665	209,582	282,113	328,973	365,964	11.2%	23.3%
United States	39,350	72,767	81,502	87,831	94,666	103,836	118,664	133,019	140,862	5.9%	11.2%
Germany	26,903	44,580	49,435	55,580	58,721	60,742	62,201	63,833	66,315	3.9%	7.8%
India	13,184	25,088	28,700	32,848	35,288	37,505	38,559	40,067	41,930	4.6%	10.1%
Spain	20,693	22,943	22,990	23,124	23,405	25,590	26,819	27,908	29,308	5.0%	2.9%
United Kingdom	5,421	14,306	16,126	19,585	21,605	23,882	24,485	25,730	28,537	10.9%	14.8%
Brazil	927	7,633	10,129	12,304	14,843	15,438	17,198	21,161	24,163	14.2%	31.2%
France	5,912	10,298	11,567	13,499	14,900	16,427	17,514	18,740	21,120	12.7%	11.2%
Canada	3,967	11,214	11,973	12,250	12,816	13,413	13,627	14,304	15,295	6.9%	11.9%
Sweden	2,017	5,819	6,435	6,611	7,300	8,681	9,976	12,116	14,557	20.1%	17.9%
The World Top 10	148,007	345,696	387,374	428,008	468,210	515,096	611,155	685,852	748,051	9.1%	14.5%
Rest of the World	33,075	70,651	79,654	86,415	96,303	105,745	123,285	138,319	150,773	9.0%	13.5%
World	181,083	416,347	467,028	514,423	564,512	620,841	734,440	824,171	898,824	9.1%	14.3%

The World Top 10 (2022)



^(*) Data source: IRENA (2023), Renewable Energy Statistics 2023, The International Renewable Energy Agency, Abu Dhabi.

Wind Power Capacity

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Europe	86,240	147,518	161,478	177,132	188,792	203,695	218,517	232,641	252,020	8.3%	9.3%
Austria	1,016	2,489	2,730	2,887	3,133	3,224	3,226	3,408	3,736	9.6%	11.5%
Belarus	2	22	62	84	92	112	112	112	112	0.0%	40.4%
Belgium	912	2,181	2,334	2,779	3,305	3,864	4,673	4,948	5,251	6.1%	15.7%
Bosnia Herzegovina		0	0	0	51	87	87	135	135	0.0%	
Bulgaria	488	699	699	698	699	703	703	704	704	0.0%	3.1%
Croatia	79	418	483	576	586	646	801	987	1,043	5.7%	24.0%
Cyprus	82	158	158	158	158	158	158	158	158	0.0%	5.6%
Czech Republic	213	281	282	308	316	339	339	339	339	0.0%	4.0%
Denmark	3,802	5,077	5,245	5,489	6,123	6,111	6,267	7,021	7,088	1.0%	5.3%
Estonia	108	300	310	312	310	316	317	315	315	0.0%	9.3%
Finland	197	1,005	1,565	2,044	2,041	2,284	2,586	3,257	5,614	72.4%	32.2%
France	5,912	10,298	11,567	13,499	14,900	16,427	17,514	18,740	21,120	12.7%	11.2%
Germany	26,903	44,580	49,435	55,580	58,721	60,742	62,201	63,833	66,315	3.9%	7.8%
Greece	1,298	2,091	2,370	2,624	2,877	3,589	4,119	4,649	4,879	4.9%	11.7%
Hungary	293	329	329	329	329	323	323	324	324	0.0%	0.8%
Iceland		3	3	2	2	2	2	2	2	0.0%	
Ireland	1,390	2,451	2,802	3,319	3,674	4,126	4,307	4,339	4,619	6.5%	10.5%
Italy	5,794	9,137	9,384	9,737	10,230	10,679	10,871	11,254	11,780	4.7%	6.1%
Kosovo	1	1	1	34	34	34	34	139	139	0.0%	50.8%
Latvia	30	68	70	77	78	78	78	77	136	76.5%	13.4%
Lithuania	133	436	509	518	533	534	540	671	814	21.3%	16.3%
Luxembourg	44	64	120	120	123	136	153	136	165	21.3%	11.7%
Malta		0	0	0	0	0	0	0	0	0.0%	
Moldova		1	2	9	33	35	41	73	102	38.4%	
Montenegro				72	72	118	118	118	118	0.0%	
Netherlands	2,237	3,391	4,257	4,202	4,393	4,484	6,648	7,769	9,309	19.8%	12.6%
North Macedonia		37	37	37	37	37	37	37	37	0.0%	
Norway	425	867	883	1,207	1,710	2,914	4,030	5,049	5,134	1.7%	23.1%
Poland	1,108	4,886	5,747	5,759	5,766	5,837	6,298	6,967	7,987	14.6%	17.9%
Portugal	3,796	4,937	5,124	5,124	5,172	5,223	5,122	5,427	5,455	0.5%	3.1%
Romania	389	3,130	3,025	3,030	3,032	3,038	3,013	3,015	3,015	0.0%	18.6%
Serbia		10	17	25	227	398	398	398	398	0.0%	
Slovakia	3	3	3	4	3	4	4	4	4	0.0%	2.4%
Slovenia		3	3	3	3	3	3	3	3	0.0%	
Spain	20,693	22,943	22,990	23,124	23,405	25,590	26,819	27,908	29,308	5.0%	2.9%
Sweden	2,017	5,819	6,435	6,611	7,300	8,681	9,976	12,116	14,557	20.1%	17.9%
Switzerland	42	60	75	75	75	75	87	87	87	0.0%	6.3%
Türkiye	1,320	4,503	5,751	6,516	7,005	7,591	10,607	10,607	11,396	7.4%	19.7%
Ukraine	88	514	526	553	621	1,258	1,402	1,761	1,761	0.0%	28.4%
United Kingdom	5,421	14,306	16,126	19,585	21,605	23,882	24,485	25,730	28,537	10.9%	14.8%
Others Europe	4	20	20	20	16	13	19	23	23	0.0%	15.2%

^(*) Data source: IRENA (2023), Renewable Energy Statistics 2023, The International Renewable Energy Agency, Abu Dhabi.

Wind Power Capacity

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Russia and Central Asia	15	93	148	163	263	476	2,532	2,730	3,424	25.5%	57.6%
Russia	10	11	11	11	52	102	1,955	1,955	2,218	13.5%	56.9%
Armenia	3	3	3	3	3	3	3	3	3	0.0%	0.9%
Azerbaijan	2	8	16	16	66	66	66	66	66	0.0%	33.8%
Georgia			20	20	20	21	21	21	29	38.1%	
Kazakhstan		72	98	112	121	284	486	684	1,108	62.0%	
Uzbekistan				1	1	1	1	1	1	0.0%	
	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Middle East	104	286	423	504	609	775	923	1,029	1,053	2.4%	21.3%
Bahrain	1	1	1	1	1	1	1	1	1	8.8%	0.7%
Iran	95	153	191	259	282	305	308	310	342	10.3%	11.3%
Israel	6	6	27	27	27	27	27	27	27	0.0%	13.4%
Jordan	1	118	198	198	280	373	518	622	614	-1.2%	66.0%
Kuwait		2	2	12	12	12	12	12	12	0.0%	
Lebanon		3	3	3	3	3	3	3	3	0.0%	
Oman						50	50	50	50	0.0%	
Saudi Arabia				3	3	3	3	3	3	0.0%	
Syria	1	1	1	1	1	1	1	1	1	0.0%	0.0%
United Arab Emirates		2									
	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Africa	865	3,320	3,831	4,578	5,472	5,529	6,515	7,370	7,685	4.3%	20.0%
Algeria		10	10	10	10	10	10	10	10	0.0%	
Chad			1	1	1	1	1	1	1	0.0%	
Egypt	555	755	755	755	1,130	1,132	1,380	1,640	1,643	0.2%	9.5%
Ethiopia		324	324	324	324	324	324	324	404	24.7%	
Ghana		0	0	0	0	0	0	0	0	0.0%	
Kenya	6	26	26	26	336	336	336	436	436	0.0%	43.6%
Madagascar	0	0	0	0	0	0	0	0	0	0.0%	0.2%
Mauritania		34	34	34	34	34	34	34	34	0.0%	
Morocco	221	797	902	1,022	1,225	1,225	1,435	1,471	1,556	5.8%	17.7%
Namibia	0	0	0	5	5	5	5	5	5	0.0%	30.2%
Senegal						55	159	159	159	0.0%	
Somalia		3	3	4	4	4	4	4	4	0.0%	
South Africa	10	1,079	1,473	2,094	2,094	2,094	2,516	2,956	3,103	5.0%	61.1%
Tanzania							2	2	2	0.0%	
Tunisia	54	240	240	240	245	245	245	245	245	0.0%	13.5%
Others Africa	19	51	62	62	63	63	63	83	83	0.0%	13.1%

Wind Power Capacity

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Asia-Pacific	48,537	166,653	189,153	210,456	235,156	264,409	341,158	394,177	435,666	10.5%	20.1%
Afghanistan		0	0	0	0	0	0	0	0	0.0%	
Australia	1,864	4,181	4,324	4,812	5,442	6,279	8,603	8,951	10,134	13.2%	15.2%
Bangladesh	2	3	3	3	3	3	3	3	3	0.0%	3.6%
Bhutan		1	1	1	1	1	1	1	1	0.0%	
China	29,633	131,048	148,517	164,374	184,665	209,582	282,113	328,973	365,964	11.2%	23.3%
Hong Kong				1	1	1	1	1	1	0.0%	
India	13,184	25,088	28,700	32,848	35,288	37,505	38,559	40,067	41,930	4.6%	10.1%
Indonesia	0	1	1	1	144	154	154	154	154	0.0%	66.5%
Japan	2,294	2,808	3,247	3,483	3,498	3,954	4,367	4,467	4,577	2.5%	5.9%
Mongolia	1	51	51	101	156	156	156	156	156	0.0%	57.4%
Myanmar		0	0	0	0	0	0	0	0	0.0%	
Nepal		0	0	0	0	0	0	0	0	0.0%	
New Zealand	539	688	689	689	689	689	689	912	912	0.0%	4.5%
North Korea	0	0	0	1	1	1	1	1	1	0.0%	9.6%
Pakistan	6	308	591	789	1,186	1,236	1,236	1,335	1,435	7.5%	57.8%
Philippines	33	427	427	427	427	443	443	443	443	0.0%	24.2%
Singapore				0	0	0	0	0	0	0.0%	
South Korea	382	847	1,067	1,215	1,420	1,494	1,636	1,708	1,893	10.8%	14.3%
Sri Lanka	34	131	131	131	128	128	179	252	252	0.0%	18.2%
Taiwan	476	647	682	692	713	845	937	1,033	1,581	53.0%	10.5%
Thailand	6	234	507	628	1,103	1,507	1,507	1,545	1,545	0.0%	59.7%
Vietnam	31	136	160	205	237	375	518	4,118	4,628	12.4%	51.8%
Others Asia - Pacific	52	54	54	54	55	56	56	56	56	0.0%	0.6%

^(*) Data source: IRENA (2023), Renewable Energy Statistics 2023, The International Renewable Energy Agency, Abu Dhabi.

Wind Power Capacity

Wind Power Capacity

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Americas	45,322	98,476	111,995	121,589	134,221	145,957	164,795	186,224	198,976	6.8%	13.1%
Argentina	28	187	187	227	750	1,609	2,624	3,292	3,309	0.5%	48.9%
Barbados	0	0	0	0	0	0	0	0	1	1833.3%	32.4%
Belize	0	0	0	0	0	0	0	0	0	0.0%	0.0%
Bolivia	0	3	27	27	27	27	27	128	131	2.8%	81.9%
Brazil	927	7,633	10,129	12,304	14,843	15,438	17,198	21,161	24,163	14.2%	31.2%
Canada	3,967	11,214	11,973	12,250	12,816	13,413	13,627	14,304	15,295	6.9%	11.9%
Chile	163	910	1,039	1,305	1,524	1,620	2,149	3,137	3,830	22.1%	30.1%
Colombia	18	18	18	18	18	18	18	18	18	0.0%	0.0%
Costa Rica	116	272	365	378	408	411	394	394	390	-0.8%	10.7%
Cuba	7	12	12	12	12	12	12	12	12	0.0%	4.1%
Curacao	12	30	30	47	47	47	47	47	47	0.0%	12.1%
Dominican Republic		85	135	135	183	370	370	370	417	12.6%	
Ecuador	2	21	21	21	21	21	21	21	21	0.0%	19.9%
El Salvador							36	54	54	0.0%	
Guatemala		76	76	76	107	107	107	107	107	0.0%	
Guyana	0	0	0	0	0	0	0	0	0	0.0%	18.9%
Haiti					0	0	0	0	0	0.0%	
Honduras		156	179	229	229	239	239	239	239	0.0%	
Jamaica	39	39	99	99	99	99	99	99	99	0.0%	8.1%
Mexico	519	3,271	4,051	4,180	5,887	6,073	6,504	7,154	7,312	2.2%	24.7%
Nicaragua	63	186	186	186	186	186	186	186	186	0.0%	9.5%
Panama		253	270	270	270	270	270	270	270	0.0%	
Peru	1	240	240	240	372	372	409	409	409	0.0%	70.0%
Trinidad and Tobago		0	0	0	0	0	0	0	0	0.0%	
United States	39,350	72,767	81,502	87,831	94,666	103,836	118,664	133,019	140,862	5.9%	11.2%
Uruguay	41	857	1,211	1,511	1,511	1,514	1,514	1,514	1,514	0.0%	35.2%
Venezuela		71	71	71	71	71	71	71	71	0.0%	
Other Americas	70	174	172	172	172	202	208	217	217	0.0%	9.9%

Countries^(*)

(MW)	2010	2015	2016	2017	2018	2019	2020	2021	2022	Δ y/y (2022-2021)	CAGR (2022-2010)
Americas	45,322	98,476	111,995	121,589	134,221	145,957	164,795	186,224	198,976	6.8%	13.1%
Argentina	28	187	187	227	750	1,609	2,624	3,292	3,309	0.5%	48.9%
Barbados	0	0	0	0	0	0	0	0	1	1833.3%	32.4%
Belize	0	0	0	0	0	0	0	0	0	0.0%	0.0%
Bolivia	0	3	27	27	27	27	27	128	131	2.8%	81.9%
Brazil	927	7,633	10,129	12,304	14,843	15,438	17,198	21,161	24,163	14.2%	31.2%
Canada	3,967	11,214	11,973	12,250	12,816	13,413	13,627	14,304	15,295	6.9%	11.9%
Chile	163	910	1,039	1,305	1,524	1,620	2,149	3,137	3,830	22.1%	30.1%
Colombia	18	18	18	18	18	18	18	18	18	0.0%	0.0%
Costa Rica	116	272	365	378	408	411	394	394	390	-0.8%	10.7%
Cuba	7	12	12	12	12	12	12	12	12	0.0%	4.1%
Curacao	12	30	30	47	47	47	47	47	47	0.0%	12.1%
Dominican Republic		85	135	135	183	370	370	370	417	12.6%	
Ecuador	2	21	21	21	21	21	21	21	21	0.0%	19.9%
El Salvador							36	54	54	0.0%	
Guatemala		76	76	76	107	107	107	107	107	0.0%	
Guyana	0	0	0	0	0	0	0	0	0	0.0%	18.9%
Haiti					0	0	0	0	0	0.0%	
Honduras		156	179	229	229	239	239	239	239	0.0%	
Jamaica	39	39	99	99	99	99	99	99	99	0.0%	8.1%
Mexico	519	3,271	4,051	4,180	5,887	6,073	6,504	7,154	7,312	2.2%	24.7%
Nicaragua	63	186	186	186	186	186	186	186	186	0.0%	9.5%
Panama		253	270	270	270	270	270	270	270	0.0%	
Peru	1	240	240	240	372	372	409	409	409	0.0%	70.0%
Trinidad and Tobago		0	0	0	0	0	0	0	0	0.0%	
United States	39,350	72,767	81,502	87,831	94,666	103,836	118,664	133,019	140,862	5.9%	11.2%
Uruguay	41	857	1,211	1,511	1,511	1,514	1,514	1,514	1,514	0.0%	35.2%
Venezuela		71	71	71	71	71	71	71	71	0.0%	
Other Americas	70	174	172	172	172	202	208	217	217	0.0%	9.9%

^(*) Data source: IRENA (2023), *Renewable Energy Statistics 2023*, The International Renewable Energy Agency, Abu Dhabi.

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