



Renewables



SOLAR PHOTOVOLTAIC POWER CAPACITY

Areas and Aggregates

The World Top 10

Countries

WIND POWER CAPACITY

Areas and Aggregates

The World Top 10

Countries

Executive summary

Renewable installations (solar and wind) have been growing exponentially in recent years reaching 2,429 GW in 2023, the share of solar and wind in the electricity generation mix has risen over 10%, compared with over 60% generated by fossil fuels. Only a decade ago this share was close to 3%.

In 2023, the **solar photovoltaic** sector is confirmed to be the driving force behind the renewables industry, thanks to a capacity growth of +346 GW (+32%) compared to 2022. Strong impetus for this increase comes mainly from China (+217 GW, or +55% vs the previous year) and, to a lesser extent, the United States (+25 GW, +22% vs the previous year). Its total cumulative capacity at the end of 2023 is about 1,412 GW, China and the United States achieve for 43% and 10% of the world's capacity, respectively.

Less significant than photovoltaics, albeit important within renewables, is the growth of the **wind** power sector whose capacity increased in 2023 by 116 GW compared to 2022 to a level of 1,017 GW at the end of the year. China and the U.S. are also confirmed as the world's major players in this sector with a share of 43% and 15% of the world, respectively; in addition, China contributed the most to the growth with an increase of 76 GW y/y.

Solar Photovoltaic Power Capacity

Areas and Aggregates^(*)

(MW)

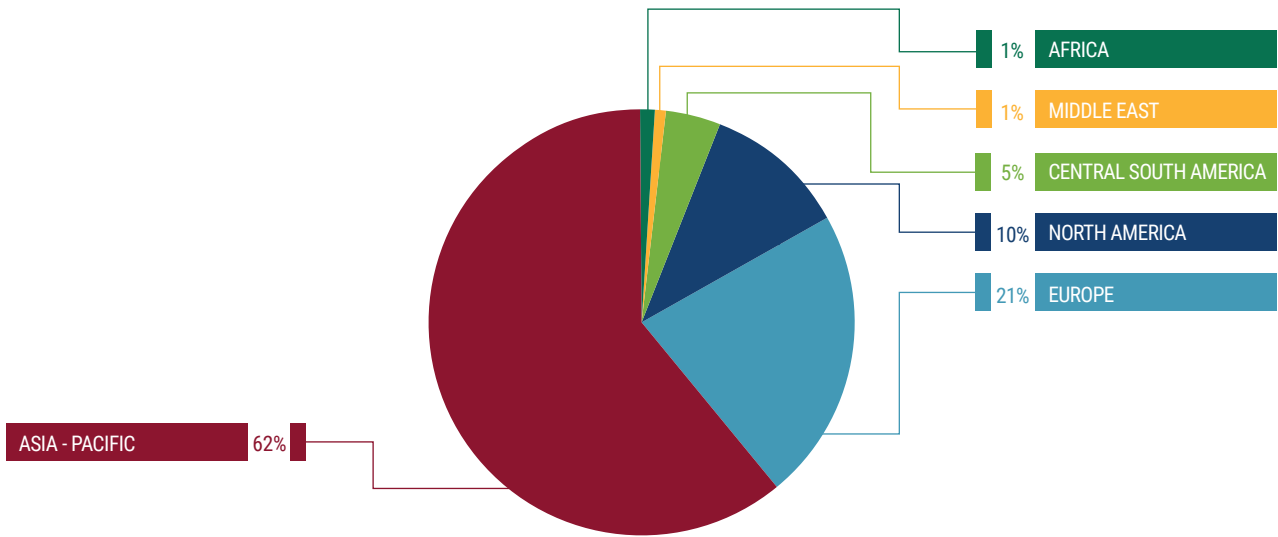
	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Europe	30,125	97,541	124,322	146,013	167,142	196,423	240,925	297,093	23.3%	19.3%
Russia and Central Asia	0	124	801	1,879	2,433	3,015	3,525	4,470	26.8%	108.9%
Middle East	85	1,046	3,377	5,627	7,363	9,817	13,340	17,599	31.9%	50.7%
Africa	172	1,846	7,038	8,327	9,671	10,550	11,617	12,394	6.7%	38.9%
Asia - Pacific	6,629	96,457	287,868	348,302	434,198	516,458	631,259	872,665	38.2%	45.6%
Americas	3,300	27,192	63,422	78,966	101,183	131,219	165,894	207,871	25.3%	37.5%
- North America	3,158	24,998	53,324	63,156	78,302	98,465	118,193	143,483	21.4%	34.1%
- Central South America	142	2,194	10,098	15,810	22,880	32,754	47,701	64,389	35.0%	60.1%
World	40,311	224,207	486,828	589,114	721,989	867,482	1,066,559	1,412,093	32.4%	31.5%
European Union 27	29,884	85,389	101,729	117,865	136,100	162,341	203,257	254,227	25.1%	17.9%
MENA	119	1,138	4,685	7,792	9,544	12,038	15,795	20,578	30.3%	48.7%
OECD	38,704	164,704	255,468	301,685	357,395	424,874	503,661	597,426	18.6%	23.4%
NON OECD	1,607	59,503	231,360	287,429	364,594	442,608	562,898	814,666	44.7%	61.5%
OPEC	18	159	1,264	2,697	3,195	4,244	5,133	9,109	77.5%	61.4%
NON OPEC	40,293	224,048	485,564	586,417	718,794	863,238	1,061,426	1,402,984	32.2%	31.4%

^(*) Data source: Eni's calculations on [©]IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.

Solar Photovoltaic Power Capacity

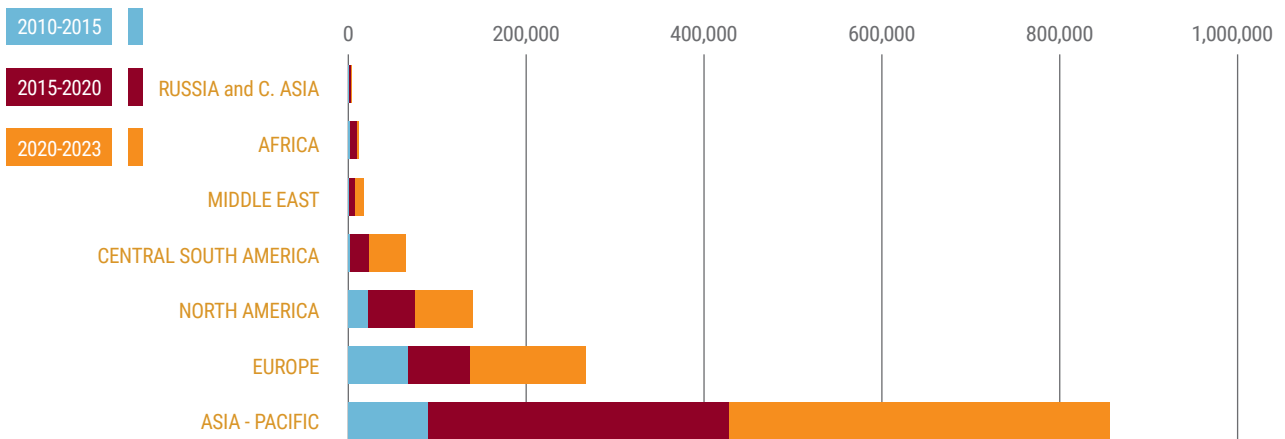
World Solar Photovoltaic Power Capacity (2023)

1,412,093 MW



World Solar Photovoltaic Power Capacity Growth (2010-2023)

1,371,781 MW



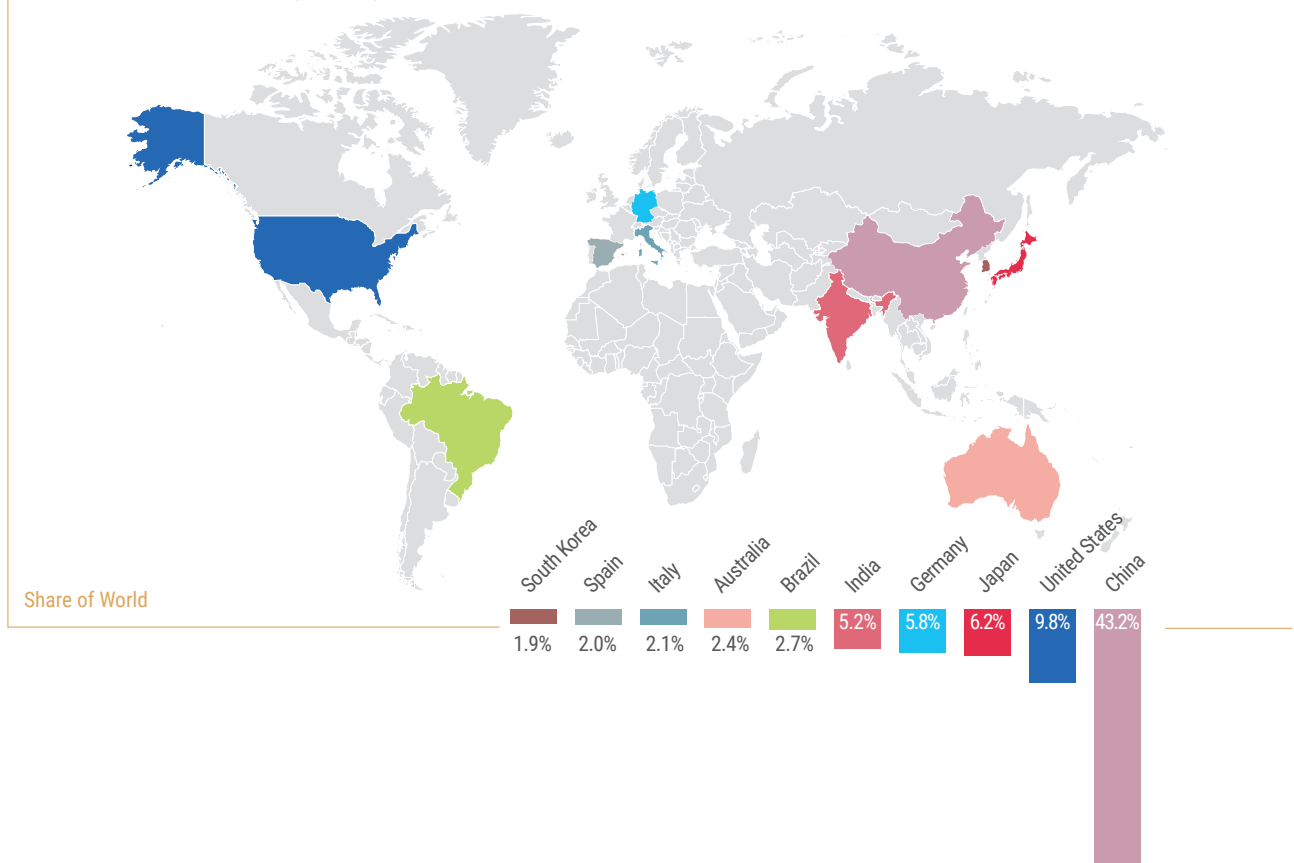
Solar Photovoltaic Power Capacity

The World Top 10^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
China	1,022	43,538	175,016	204,575	253,414	306,403	392,462	609,351	55.3%	63.5%
United States	2,909	22,479	50,229	59,829	74,693	93,911	112,881	137,725	22.0%	34.5%
Japan	3,618	34,150	56,162	63,192	71,868	78,413	83,057	87,068	4.8%	27.7%
Germany	18,004	39,222	45,156	48,912	53,669	60,036	67,477	81,737	21.1%	12.3%
India	69	5,368	27,156	34,908	39,363	49,607	63,048	72,767	15.4%	70.9%
Brazil	1	46	2,453	4,698	8,452	14,499	25,520	37,449	46.7%	129.0%
Australia	1,088	5,943	11,362	16,144	20,835	25,754	29,955	33,680	12.4%	30.2%
Italy	3,592	18,901	20,108	20,865	21,650	22,594	24,555	29,789	21.3%	17.7%
Spain	3,873	4,704	4,764	8,807	10,136	13,715	23,311	28,712	23.2%	16.7%
South Korea	650	3,845	8,921	12,717	17,323	21,264	24,078	27,046	12.3%	33.2%
The World Top 10	34,825	178,196	401,326	474,648	571,402	686,197	846,345	1,145,325	35.3%	30.8%
Rest of the World	5,486	46,011	85,503	114,466	150,587	181,285	220,214	266,768	21.1%	34.8%
World	40,311	224,207	486,828	589,114	721,989	867,482	1,066,559	1,412,093	32.4%	31.5%

The World Top 10 (2023)



^(*) Data source: ©IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Europe	30,125	97,541	124,322	146,013	167,142	196,423	240,925	297,093	23.3%	19.3%
Albania	0	1	1	14	21	23	23	163	608.7%	58.8%
Austria	89	937	1,455	1,702	2,043	2,783	3,792	6,832	80.2%	39.7%
Belarus		6	154	154	160	163	273	273	0.1%	
Belgium	1,007	3,132	4,000	4,637	5,573	6,012	6,756	8,549	26.5%	17.9%
Bosnia Herzegovina	0	8	18	22	35	57	102	132	29.4%	59.7%
Bulgaria	25	1,028	1,033	1,044	1,100	1,275	1,737	2,937	69.1%	44.3%
Croatia	0	48	68	85	109	138	222	461	107.5%	75.8%
Cyprus	7	76	118	151	229	315	424	606	42.9%	40.9%
Czech Republic	1,727	2,075	2,081	2,111	2,172	2,246	2,420	2,499	3.3%	2.9%
Denmark	7	782	998	1,080	1,304	1,704	3,070	3,529	15.0%	61.4%
Estonia	0	7	32	121	208	395	520	690	32.7%	97.4%
Finland	7	17	140	222	318	425	664	900	35.5%	45.3%
France	1,044	7,138	9,629	10,729	11,917	14,603	17,341	20,542	18.5%	25.8%
Germany	18,004	39,222	45,156	48,912	53,669	60,036	67,477	81,737	21.1%	12.3%
Greece	202	2,604	2,651	2,834	3,288	4,277	5,430	7,030	29.5%	31.4%
Hungary	2	172	728	1,400	2,131	2,968	4,235	5,835	37.8%	84.7%
Iceland		3	5	7	7	7	7	7	0.0%	
Ireland	1	5	53	96	152	228	289	738	155.4%	63.4%
Italy	3,592	18,901	20,108	20,865	21,650	22,594	24,555	29,789	21.3%	17.7%
Kosovo		0	7	10	10	14	14	20	38.2%	
Latvia			2	3	5	7	113	353	212.4%	
Lithuania	0	69	82	103	164	255	572	1,165	103.7%	105.5%
Luxembourg	29	116	131	160	187	277	317	432	36.3%	22.9%
Malta	1	75	132	155	188	205	222	231	3.8%	54.6%
Moldova		1	3	5	4	14	60	87	44.7%	
Montenegro					3	3	22	42	88.4%	
Netherlands	90	1,526	4,608	7,228	11,110	14,823	19,600	23,904	22.0%	53.6%
North Macedonia		17	17	17	85	91	190	535	181.6%	
Norway	9	15	68	120	160	205	358	616	72.0%	38.3%
Poland		108	562	1,539	3,955	7,416	12,170	15,809	29.9%	
Portugal	134	447	667	901	1,100	1,646	2,646	3,876	46.5%	29.5%
Romania	0	1,326	1,386	1,398	1,383	1,394	1,809	1,917	6.0%	113.5%
Serbia	3	16	21	23	31	52	137	137	0.0%	33.2%
Slovakia	19	533	471	590	535	537	549	631	15.0%	30.9%
Slovenia	12	239	247	278	370	461	626	1,034	65.2%	40.9%
Spain	3,873	4,704	4,764	8,807	10,136	13,715	23,311	28,712	23.2%	16.7%
Sweden	11	104	428	714	1,107	1,606	2,388	3,488	46.1%	55.7%
Switzerland	125	1,394	2,173	2,498	2,973	3,655	4,340	5,840	34.6%	34.4%
Türkiye	6	249	5,063	5,995	6,667	7,816	9,425	11,292	19.8%	79.3%
Ukraine	3	841	2,003	5,936	7,331	8,062	8,062	8,062	0.0%	86.2%
United Kingdom	95	9,601	13,060	13,345	13,551	13,915	14,651	15,657	6.9%	48.1%
Others Europe	0	0	1	2	3	5	5	5	0.0%	

^(*) Data source: ©IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Russia and Central Asia	0	124	801	1,879	2,433	3,015	3,525	4,470	26.8%	108.9%
Russia	0	61	535	1,276	1,428	1,661	1,816	2,170	19.5%	157.3%
Armenia			17	21	51	146	235	402	70.8%	
Azerbaijan	0	5	35	33	35	48	51	282	450.4%	69.3%
Georgia			1	3	5	18	23	58	146.8%	
Kazakhstan		57	209	542	912	1,038	1,146	1,306	13.9%	
Uzbekistan		1	4	4	4	104	253	253	0.0%	
Middle East	85	1,046	3,377	5,627	7,363	9,817	13,340	17,599	31.9%	50.7%
Bahrain		5	6	10	10	21	46	57	24.2%	
Iran	0	9	286	346	430	456	539	595	10.3%	75.8%
Iraq		37	37	37	37	37	42	42	0.0%	
Israel	70	790	1,340	1,890	2,410	3,349	4,169	4,282	2.7%	37.2%
Jordan	0	57	760	971	1,541	1,811	1,966	1,990	1.2%	147.8%
Kuwait		3	32	33	33	33	50	50	0.0%	
Lebanon	0	11	55	76	90	190	875	1,005	14.9%	85.3%
Oman		2	26	26	129	155	655	672	2.6%	
Qatar		4	5	5	5	5	805	805	0.0%	
Saudi Arabia	2	24	34	59	59	389	390	2,235	473.3%	69.5%
Syria			1	2	12	33	60	60	0.0%	
United Arab Emirates	11	31	500	1,835	2,232	2,902	3,288	5,325	62.0%	61.1%
Yemen	1	60	253	254	258	258	264	290	10.0%	54.6%
Others Middle East		12	40	82	117	178	192	192	0.0%	

(*) Data source: ©IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Africa	172	1,846	7,038	8,327	9,671	10,550	11,617	12,394	6.7%	38.9%
Algeria		36	341	341	341	341	426	426	0.0%	
Angola		0	0	1	1	1	285	310	8.8%	
Benin		1	3	3	3	3	28	28	0.0%	
Cameroon	1	7	14	14	14	14	14	50	253.1%	35.2%
Chad	0	0	1	1	1	1	2	2	0.0%	67.2%
Congo		0	0	0	1	1	1	1	0.0%	
Côte d'Ivoire		0	2	4	6	8	9	46	416.7%	
Dem. Rep. Congo		1	22	22	22	22	25	25	0.0%	
Egypt	15	16	744	1,627	1,623	1,643	1,704	1,836	7.7%	44.7%
Equatorial Guinea			0	0	0	0	0	0	0.0%	
Ethiopia	0	10	12	12	20	21	21	21	0.0%	66.5%
Gabon		0	0	0	0	1	1	1	0.0%	
Ghana		32	72	83	108	165	169	169	0.0%	
Kenya	0	30	105	126	146	216	318	358	12.6%	78.2%
Libya	4	5	5	5	5	6	6	8	31.6%	6.4%
Madagascar	2	9	33	33	33	33	59	59	0.0%	32.5%
Mauritania		18	87	88	88	88	89	123	38.2%	
Morocco	14	20	194	194	234	314	314	394	25.5%	29.6%
Mozambique		1	2	41	42	42	83	83	0.0%	
Namibia	4	21	99	151	151	151	176	176	0.0%	33.3%
Niger	2	7	27	27	27	27	62	92	48.4%	33.7%
Nigeria	0	11	25	37	53	73	102	112	9.8%	57.6%
Rwanda	0	11	22	25	25	25	25	25	0.0%	42.7%
Senegal	3	9	150	173	173	240	263	263	0.0%	40.1%
Sierra Leone	0	0	4	4	4	4	9	9	0.0%	42.5%
Somalia		0	7	7	16	24	47	51	7.4%	
South Africa	2	1,253	4,405	4,408	5,494	5,816	5,826	5,664	-2.8%	84.5%
South Sudan		0	1	1	1	1	15	28	84.0%	
Sudan	2	20	59	80	117	136	190	190	0.0%	40.6%
Tanzania	0	13	17	16	16	16	16	16	0.0%	64.6%
Tunisia	2	28	64	80	95	95	197	506	156.8%	54.2%
Uganda	15	22	67	78	88	90	95	95	0.2%	15.3%
Zambia		0	1	89	89	89	89	124	39.2%	
Zimbabwe	0	2	9	12	14	28	41	41	0.0%	114.6%
Others Africa	106	261	442	542	618	815	910	1,061	16.7%	19.4%

^(*) Data source: ©IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Asia - Pacific	6,629	96,457	287,868	348,302	434,198	516,458	631,259	872,665	38.2%	45.6%
Afghanistan	0	19	22	32	31	31	33	33	0.0%	56.1%
Australia	1,088	5,943	11,362	16,144	20,835	25,754	29,955	33,680	12.4%	30.2%
Bangladesh	32	196	240	280	343	506	524	767	46.5%	27.6%
Brunei	1	1	1	1	1	5	5	5	2.8%	11.7%
China	1,022	43,538	175,016	204,575	253,414	306,403	392,462	609,351	55.3%	63.5%
East Timor	0	1	1	1	0	0	0	0	4.1%	8.5%
Hong Kong			1	89	91	95	185	191	3.4%	
India	69	5,368	27,156	34,908	39,363	49,607	63,048	72,767	15.4%	70.9%
Indonesia	15	79	65	155	185	225	313	574	83.4%	32.6%
Japan	3,618	34,150	56,162	63,192	71,868	78,413	83,057	87,068	4.8%	27.7%
Malaysia	1	266	545	894	1,483	1,787	1,933	1,933	0.0%	87.6%
Mongolia	5	5	64	89	95	95	95	95	0.0%	26.2%
Myanmar	0	21	48	88	84	110	181	181	0.0%	60.1%
Nepal	4	13	56	55	66	90	110	115	5.0%	28.8%
New Zealand	3	37	91	115	144	191	269	372	38.3%	44.9%
North Korea	1	23	50	65	79	102	116	129	11.8%	45.9%
Pakistan	9	265	680	756	855	1,078	1,244	1,244	0.0%	45.8%
Papua New Guinea	0	1	1	3	3	4	4	4	0.0%	20.6%
Philippines	2	172	919	982	1,058	1,378	1,625	1,675	3.0%	67.7%
Singapore	3	46	162	272	332	487	633	774	22.3%	53.3%
South Korea	650	3,845	8,921	12,717	17,323	21,264	24,078	27,046	12.3%	33.2%
Sri Lanka	7	37	228	350	436	624	800	966	20.8%	46.2%
Taiwan	35	884	2,738	4,150	5,817	7,700	9,724	12,418	27.7%	57.2%
Thailand	49	1,420	2,962	2,983	2,979	3,060	3,180	3,181	0.0%	37.9%
Vietnam	5	5	105	4,994	16,661	16,661	16,698	17,077	2.3%	88.4%
Others Asia - Pacific	11	121	270	414	650	787	988	1,018	3.1%	41.7%

^(*) Data source: ©IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi.

Solar Photovoltaic Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Americas	3,300	27,192	63,422	78,966	101,183	131,219	165,894	207,871	25.3%	37.5%
Argentina	5	16	198	447	769	1,080	1,116	1,408	26.2%	54.6%
Barbados	1	3	17	33	49	64	69	69	0.0%	38.6%
Belize	0	0	1	7	7	7	7	7	0.0%	96.6%
Bolivia	3	5	5	5	121	170	171	172	0.8%	36.6%
Brazil	1	46	2,453	4,698	8,452	14,499	25,520	37,449	46.7%	129.0%
Canada	249	2,519	3,095	3,327	3,609	4,554	5,312	5,757	8.4%	27.3%
Chile		545	2,294	2,673	3,229	4,408	6,417	8,366	30.4%	
Colombia	1	1	13	26	83	181	480	676	40.8%	62.0%
Costa Rica	1	9	33	48	57	74	74	74	0.0%	45.0%
Cuba		24	74	159	233	258	258	280	8.5%	
Curaçao	0	10	12	12	13	13	13	13	1.0%	62.1%
Dominican Republic		22	188	331	382	580	732	1,073	46.7%	
Ecuador	0	26	28	28	28	28	29	31	9.9%	76.2%
El Salvador	0	11	167	410	479	543	571	586	2.6%	107.6%
Guatemala	1	93	101	101	101	101	105	110	4.6%	49.2%
Guyana	0	4	6	8	8	8	8	8	0.0%	34.8%
Haiti	1	2	3	3	3	3	3	4	21.7%	16.1%
Honduras	4	396	515	518	525	529	529	529	0.0%	46.4%
Jamaica	1	7	56	107	107	107	107	110	2.4%	43.5%
Mexico	30	287	2,567	4,727	6,695	8,163	9,347	10,893	16.5%	57.4%
Nicaragua		1	14	16	16	16	17	18	6.4%	
Panama	2	46	203	225	235	498	529	570	7.7%	55.3%
Paraguay	0	0	0	0	0	0	1	1	0.0%	72.1%
Peru	13	135	324	335	335	332	332	332	0.0%	28.7%
Suriname	0	6	8	8	9	9	12	12	0.0%	39.4%
Trinidad and Tobago	3	4	4	4	4	4	4	4	0.0%	2.9%
United States	2,909	22,479	50,229	59,829	74,693	93,911	112,881	137,725	22.0%	34.5%
Uruguay	0	64	248	254	258	266	280	297	5.8%	79.9%
Venezuela	0	2	2	2	2	4	4	4	14.8%	19.0%
Others Americas	76	427	566	623	682	807	966	1,292	33.8%	24.3%

(*) Data source: ©IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi.

Wind Power Capacity

Areas and Aggregates^(*)

(MW)

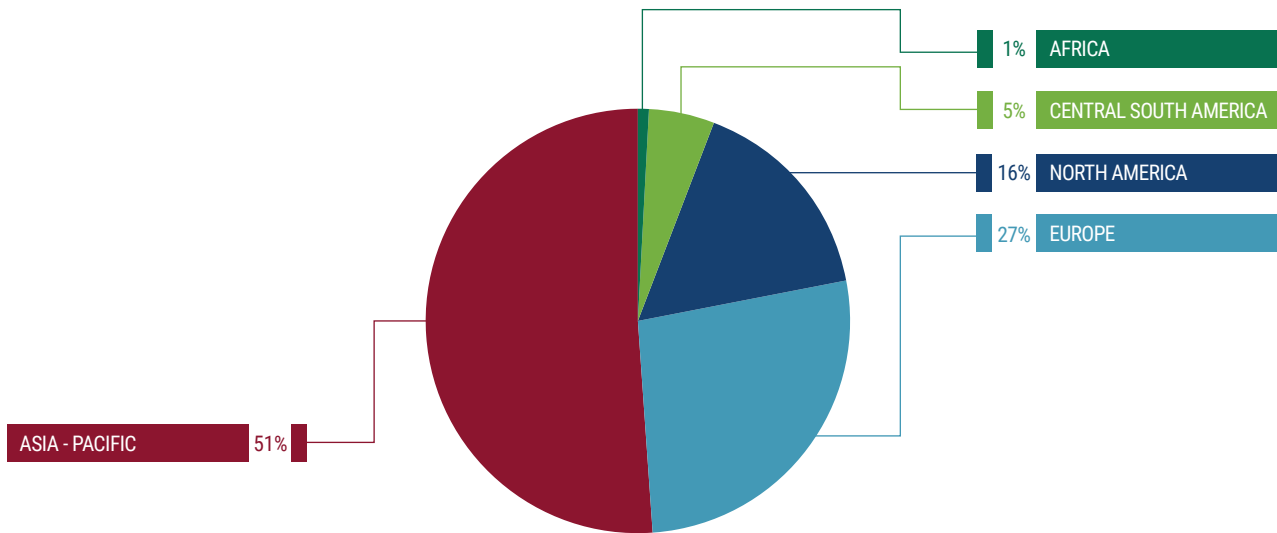
	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Europe	86,240	147,518	188,793	203,701	216,729	232,124	251,674	268,809	6.8%	9.1%
Russia and Central Asia	15	93	263	476	1,522	2,730	3,414	4,049	18.6%	54.1%
Middle East	104	286	623	786	934	1,040	1,564	1,871	19.6%	24.9%
Africa	865	3,320	5,471	5,528	6,514	6,909	7,745	8,654	11.7%	19.4%
Asia - Pacific	48,538	166,656	236,124	266,011	342,406	395,594	436,848	519,472	18.9%	20.0%
Americas	45,314	98,462	132,566	146,272	165,615	186,205	199,985	214,345	7.2%	12.7%
- North America	43,317	83,981	107,482	117,056	132,399	147,278	156,939	165,009	5.1%	10.8%
- Central South America	1,998	14,480	25,083	29,216	33,216	38,927	43,046	49,336	14.6%	28.0%
World	181,076	416,335	563,840	622,773	733,719	824,602	901,231	1,017,199	12.9%	14.2%
European Union 27	78,937	127,174	157,211	167,140	177,072	187,947	203,554	218,684	7.4%	8.2%
MENA	933	2,088	3,233	3,398	4,004	4,406	5,020	5,874	17.0%	15.2%
OECD	134,330	239,495	308,791	336,755	368,642	400,036	430,462	458,025	6.4%	9.9%
NON OECD	46,746	176,840	255,048	286,018	365,077	424,566	470,769	559,174	18.8%	21.0%
OPEC	95	211	350	374	377	379	811	937	15.6%	19.3%
NON OPEC	180,981	416,124	563,489	622,400	733,342	824,223	900,420	1,016,262	12.9%	14.2%

^(*) Data source: Eni's calculations on IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.

Wind Power Capacity

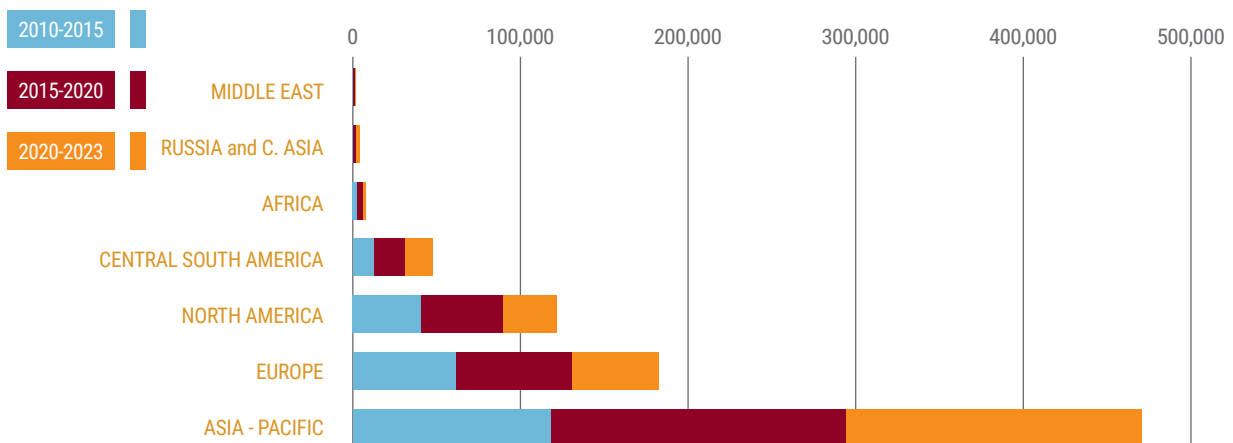
World Wind Power Capacity (2023)

1,017,199 MW



World Wind Power Capacity Growth (2010-2023)

836,123 MW



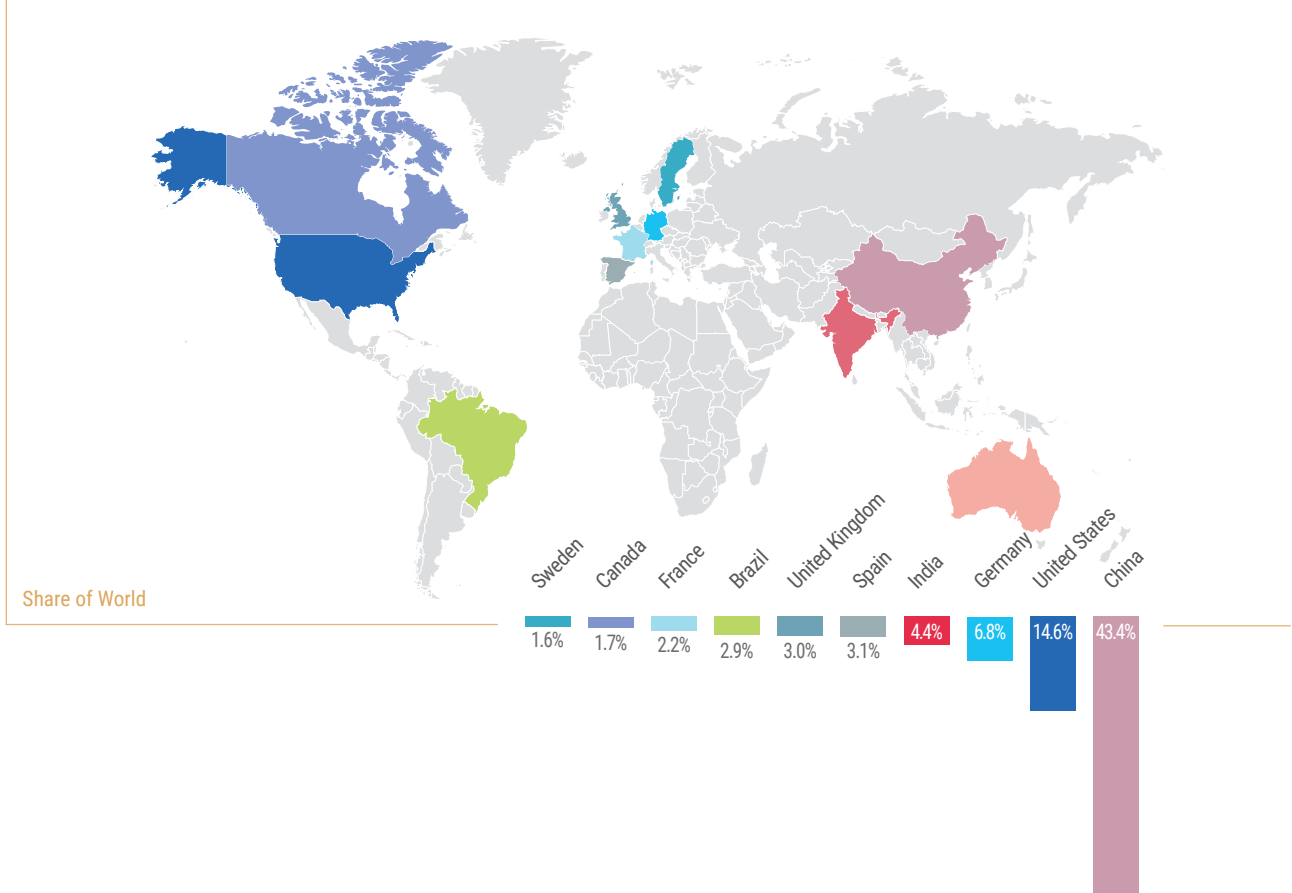
Wind Power Capacity

The World Top 10^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
China	29,633	131,048	184,665	209,582	281,993	328,973	365,964	441,895	20.7%	23.1%
United States	39,350	72,767	94,666	103,836	118,664	133,019	141,674	148,020	4.5%	10.7%
Germany	26,903	44,580	58,721	60,742	62,201	63,711	66,163	69,459	5.0%	7.6%
India	13,184	25,088	35,288	37,505	38,559	40,067	41,930	44,736	6.7%	9.9%
Spain	20,693	22,943	23,405	25,590	26,819	27,908	30,114	31,028	3.0%	3.2%
United Kingdom	5,421	14,305	21,606	23,887	24,458	25,748	28,762	30,215	5.1%	14.1%
Brazil	927	7,633	14,843	15,438	17,198	21,161	24,163	29,135	20.6%	30.4%
France	5,912	10,298	14,900	16,427	17,535	18,551	20,811	22,196	6.7%	10.7%
Canada	3,967	11,214	12,816	13,220	13,735	14,259	15,265	16,989	11.3%	11.8%
Sweden	2,017	5,819	7,300	8,681	9,976	12,116	14,279	16,252	13.8%	17.4%
The World Top 10	148,007	345,695	468,210	514,908	611,138	685,514	749,125	849,925	13.5%	14.4%
Rest of the World	33,069	70,639	95,630	107,866	122,581	139,088	152,106	167,274	10.0%	13.3%
World	181,076	416,335	563,840	622,773	733,719	824,602	901,231	1,017,199	12.9%	14.2%

The World Top 10 (2023)



^(*) Data source: Eni's calculations on IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.

Wind Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Europe	86,240	147,518	188,793	203,701	216,729	232,124	251,674	268,809	6.8%	9.1%
Austria	1,016	2,489	3,133	3,224	3,226	3,408	3,579	3,977	11.1%	11.1%
Belarus	2	22	92	112	112	112	120	122	1.7%	37.7%
Belgium	912	2,181	3,305	3,864	4,673	4,948	5,303	5,504	3.8%	14.8%
Bosnia Herzegovina		0	51	87	87	135	135	135	0.0%	
Bulgaria	488	699	699	703	703	704	702	702	0.0%	2.8%
Croatia	79	418	586	646	801	987	987	1,143	15.8%	22.8%
Cyprus	82	158	158	158	158	158	158	158	0.3%	5.2%
Czech Republic	213	281	316	339	339	339	339	343	1.3%	3.7%
Denmark	3,802	5,077	6,123	6,111	6,259	7,004	7,084	7,482	5.6%	5.3%
Estonia	108	300	310	316	317	315	316	408	29.1%	10.8%
Finland	197	1,005	2,041	2,284	2,586	3,257	5,677	6,957	22.5%	31.5%
France	5,912	10,298	14,900	16,427	17,535	18,551	20,811	22,196	6.7%	10.7%
Germany	26,903	44,580	58,721	60,742	62,201	63,711	66,163	69,459	5.0%	7.6%
Greece	1,298	2,091	2,877	3,589	4,119	4,649	4,702	5,220	11.0%	11.3%
Hungary	293	329	329	323	323	324	324	324	0.0%	0.8%
Iceland		3	2	2	2	2	2	2	0.0%	
Ireland	1,390	2,451	3,674	4,126	4,307	4,339	4,536	4,807	6.0%	10.0%
Italy	5,794	9,137	10,230	10,679	10,871	11,254	11,821	12,308	4.1%	6.0%
Kosovo	1	1	34	34	34	34	68	137	101.1%	46.0%
Latvia	30	68	78	78	78	77	82	141	71.3%	12.7%
Lithuania	133	436	533	534	540	671	946	1,287	36.0%	19.1%
Luxembourg	44	64	123	136	153	136	165	221	33.9%	13.3%
Malta		0	0	0	0	0	0	0	0.0%	
Moldova		1	33	35	41	67	115	141	22.8%	
Montenegro			72	118	118	118	118	118	0.0%	
Netherlands	2,237	3,391	4,393	4,484	6,648	7,674	8,755	10,749	22.8%	12.8%
North Macedonia		37	37	37	37	37	73	110	50.4%	
Norway	425	867	1,710	2,914	4,030	5,049	5,062	5,065	0.1%	21.0%
Poland	1,108	4,886	5,766	5,838	6,298	6,967	8,150	9,307	14.2%	17.8%
Portugal	3,796	4,937	5,172	5,223	5,122	5,427	5,538	5,617	1.4%	3.1%
Romania	389	3,130	3,032	3,038	3,013	3,015	3,015	3,087	2.4%	17.3%
Serbia		10	227	398	398	398	398	511	28.4%	
Slovakia	3	3	3	4	4	4	4	4	0.0%	2.2%
Slovenia		3	3	3	3	3	3	3	0.0%	
Spain	20,693	22,943	23,405	25,590	26,819	27,908	30,114	31,028	3.0%	3.2%
Sweden	2,017	5,819	7,300	8,681	9,976	12,116	14,279	16,252	13.8%	17.4%
Switzerland	42	60	75	75	87	87	87	87	0.0%	5.8%
Türkiye	1,320	4,503	7,005	7,591	8,832	10,607	11,396	11,697	2.6%	18.3%
Ukraine	88	514	621	1,258	1,402	1,761	1,761	1,761	0.0%	25.9%
United Kingdom	5,421	14,305	21,606	23,887	24,458	25,748	28,762	30,215	5.1%	14.1%
Others Europe	4	20	16	13	19	23	23	23	0.0%	14.0%

^(*) Data source: Eni's calculations on IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.

Wind Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Russia and Central Asia	15	93	263	476	1,522	2,730	3,414	4,049	18.6%	54.1%
Russia	10	11	52	102	945	1,955	2,218	2,518	13.5%	53.0%
Armenia	3	3	3	3	3	3	3	3	-0.9%	0.7%
Azerbaijan	2	8	66	66	66	66	64	67	3.9%	30.9%
Georgia			20	21	21	21	21	21	0.0%	
Kazakhstan		72	121	284	486	684	1,108	1,440	30.0%	
Uzbekistan			1	1	1	1	1	1	0.0%	

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Middle East	104	286	623	786	934	1,040	1,564	1,871	19.6%	24.9%
Bahrain	1	1	1	1	1	1	3	3	0.0%	11.2%
Iran	95	153	282	305	308	310	342	365	6.7%	10.9%
Israel	6	6	27	27	27	27	136	316	132.1%	35.7%
Jordan	1	118	295	384	529	632	614	614	0.0%	59.7%
Kuwait		2	12	12	12	12	12	12	0.0%	
Lebanon		3	3	3	3	3	3	3	0.0%	
Oman				50	50	50	50	50	0.0%	
Saudi Arabia			3	3	3	3	403	403	0.0%	
Syria	1	1	1	1	1	1	1	1	0.0%	0.0%
Others Middle East		2				0	0	104	690000.0%	

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Africa	865	3,320	5,471	5,528	6,514	6,909	7,745	8,654	11.7%	19.4%
Algeria		10	10	10	10	10	10	10	0.0%	
Chad			1	1	1	1	1	1	0.0%	
Egypt	555	755	1,130	1,132	1,380	1,640	1,643	1,890	15.1%	9.9%
Ethiopia		324	324	324	324	324	404	324	-19.8%	
Ghana		0	0	0	0	0	0	0	0.0%	
Kenya	6	26	336	336	336	436	436	436	0.0%	39.7%
Madagascar	0	0	0	0	0	0	0	0	0.0%	0.2%
Mauritania		34	34	34	34	34	34	137	297.6%	
Morocco	221	797	1,225	1,225	1,435	1,471	1,558	1,858	19.3%	17.8%
Namibia	0	0	5	5	5	5	5	5	0.0%	27.6%
Senegal				55	159	159	159	159	0.0%	
Somalia		3	4	4	4	4	4	4	0.0%	
South Africa	10	1,079	2,094	2,094	2,516	2,495	3,163	3,442	8.8%	56.5%
Tanzania					2	2	2	2	0.0%	
Tunisia	54	240	245	245	245	245	245	245	0.0%	12.4%
Others Africa	19	51	62	62	62	82	81	141	74.3%	16.7%

^(*) Data source: Eni's calculations on IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.

Wind Power Capacity

Countries^(*)

(MW)

	2010	2015	2018	2019	2020	2021	2022	2023	Δ y/y (2023-2022)	CAGR (2023-2010)
Asia-Pacific	48,538	166,656	236,124	266,011	342,406	395,594	436,848	519,472	18.9%	20.0%
Afghanistan		0	0	0	0	0	0	0	0.0%	
Australia	1,864	4,181	6,409	7,881	10,207	10,555	10,555	11,327	7.3%	14.9%
Bangladesh	2	3	3	3	3	3	3	3	0.0%	3.3%
China	29,633	131,048	184,665	209,582	281,993	328,973	365,964	441,895	20.7%	23.1%
Hong Kong			1	1	1	1	1	1	0.0%	
India	13,184	25,088	35,288	37,505	38,559	40,067	41,930	44,736	6.7%	9.9%
Indonesia	0	1	144	154	154	154	154	154	0.0%	60.1%
Japan	2,294	2,809	3,498	3,952	4,120	4,262	4,372	5,232	19.7%	6.5%
Mongolia	1	51	156	156	156	156	156	156	0.0%	52.0%
Myanmar		0	0	0	0	0	0	0	0.0%	
Nepal		0	0	0	0	0	0	0	0.0%	
New Zealand	540	689	690	690	690	913	994	1,059	6.5%	5.3%
North Korea	0	1	1	1	2	2	2	2	0.0%	15.7%
Pakistan	6	308	1,186	1,236	1,236	1,335	1,845	1,845	0.0%	55.4%
Philippines	33	427	427	443	443	443	443	443	0.0%	22.1%
Singapore			0	0	0	0	0	0	0.0%	
South Korea	382	847	1,420	1,494	1,645	1,724	1,908	2,167	13.6%	14.3%
Sri Lanka	34	131	128	128	179	252	252	267	6.0%	17.2%
Taiwan	476	647	713	845	937	1,033	1,581	2,674	69.1%	14.2%
Thailand	6	234	1,103	1,507	1,507	1,545	1,545	1,545	0.0%	54.1%
Vietnam	31	136	237	375	518	4,118	5,065	5,888	16.2%	49.7%
Others Asia - Pacific	52	54	55	57	57	57	77	77	0.0%	3.0%

^(*) Data source: Eni's calculations on IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.

Wind Power Capacity

Countries^(*)

(MW)

	2010	2015	2016	2017	2018	2019	2020	2021	Δ y/y (2023-2022)	CAGR (2023-2010)
Americas	45,314	98,462	132,566	146,272	165,615	186,205	199,985	214,345	7.2%	12.7%
Argentina	1	188	751	1,609	2,624	3,292	3,310	3,706	12.0%	86.4%
Barbados	0	0	0	0	0	0	1	1	0.0%	29.6%
Belize	0	0	0	0	0	0	0	0	0.0%	0.0%
Bolivia	0	3	27	27	27	128	128	135	5.6%	74.1%
Brazil	927	7,633	14,843	15,438	17,198	21,161	24,163	29,135	20.6%	30.4%
Canada	3,967	11,214	12,816	13,220	13,735	14,259	15,265	16,989	11.3%	11.8%
Chile	163	907	1,524	1,620	2,340	3,137	3,830	4,510	17.8%	29.1%
Colombia	18	18	18	18	18	18	18	18	0.0%	0.0%
Costa Rica	120	278	408	411	394	390	390	408	4.5%	9.9%
Cuba	16	66	66	66	66	66	66	66	0.0%	11.8%
Curacao	12	30	47	47	47	47	47	47	0.0%	11.0%
Dominican Republic		86	183	370	370	370	417	417	0.0%	
Ecuador	2	21	21	21	21	21	21	71	236.3%	29.8%
El Salvador					36	54	54	54	0.0%	
Guatemala		76	107	107	107	107	107	107	0.0%	
Guyana	0	0	0	0	0	0	0	0	0.0%	15.4%
Haiti			0	0	0	0	0	0	0.0%	
Honduras		156	229	239	239	239	239	239	0.0%	
Jamaica	42	42	102	102	102	102	102	102	0.0%	7.1%
Mexico	519	3,271	4,180	6,541	6,995	7,155	7,318	7,318	0.0%	22.6%
Nicaragua	63	186	186	186	186	186	186	186	0.0%	8.7%
Panama		205	270	270	270	270	336	336	0.0%	
Peru	1	240	372	372	409	409	539	705	30.9%	70.2%
Trinidad and Tobago		0	0	0	0	0	0	0	0.0%	
United States	39,350	72,767	94,666	103,836	118,664	133,019	141,674	148,020	4.5%	10.7%
Uruguay	41	857	1,513	1,516	1,516	1,516	1,516	1,516	0.0%	32.1%
Venezuela		43	43	43	43	43	43	43	0.0%	
Others Americas	73	175	192	210	205	214	214	214	0.0%	8.6%

^(*)Data source: Eni's calculations on IRENA (2024), *Renewable Energy Statistics 2024*, International Renewable Energy Agency, Abu Dhabi, data.